ANNUAL REPORT – 2012

PORTUGUESE PROGRAMME FOR THE COLLECTION OF FISHERIES DATA

Lisbon, 31st May 2013

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I. General Framework

This report gives the results of the Portuguese National Programme for collection of Fisheries data in 2012 under the Council Regulation (EC) 199/2008, Commission regulation (EC) 665/2008 and Commission Decision 2010/93/EU in accordance with the Portuguese Programme for the Collection of Fisheries Data (NP 2011-2013), approved by Commission Decision C(2011)1096 final from 3, March, 2011 and Commission Decision C(2012)7939 final from 6, November, 2012.

The work submitted has been presented in accordance with the 2013 version of the *Guidelines for Submission of Annual Reports on the National Data Collection Programmes under Council Regulation (EC) 199/2008, Commission Regulation (EC) 665/2008 and Commission Decision 2010/93/EU*, established by STECF.

Budgetary and administrative constrains on a national scale had significant influence on the execution of the Portuguese data collection programme in 2012.

In particular: it turn unfeasible Noruega RV reparation and chartering of another research vessel to perform the planned DCF surveys for the Iberian fishing ground and it was not possible yet to resume the work relating allocation by metier of catches for small scale fisheries was made by subcontract in years 2008 and 2009. The preliminary work include the identification of the main metiers throughout the country. However, budget constraints in the last few years doesn't allow for this work to continue and no model was made for the allocation of catches into metiers. Therefore it is not possible to have data by metier for small scale fisheries.

Regarding the collection of biological variables, the recent reorganization of the former IPIMAR and its integration on the newly created Portuguese Institute for Sea and Atmosphere (Instituto Português do Mar e da Atmosfera**,** IPMA) created some difficulties in the financial and administrative management.

The Departament of Oceanography and Fisheries from University of the Azores (DOP/Uac) has participated in the Data Collection since 2002, as one of the partners of the Portuguese National Program, being responsible for the program activities in the Azores.

Since early 2012, the difficult economic situation of Portugal and the strict rules for public expenditures in the Portuguese administration have made very difficult the execution of the program. With few exceptions, the program activities that depended on acquisitions of goods (such as purchasing of fish), the participation in meetings and other activities have been severely restricted.

List of derogations

Short title of derogation	NP proposal section	Type of data-variables	Region	Derogation approved or rejected	Year of approval or rejection	Reason/ justification for derogation
Berix spp, Merlangius merlangius, Pleuronectes platessa, Pollachius pollachius ,	III.E	Estimation of stock-related variables	ICES IX	na	2009/2010	Stocks for which TAC's and quotas have not been defined, which relevant quotas correspond to less

Phycis blenoides, *Salmo salar*, *Trachurus mediterraneus* stock-related variables[1]						than 10% of the Community share of the TAC or to less than 200 tonnes on average during the previous three years.
Pandalus borealis stock-related variables[1]	III.E	Estimation of stock-related variables	NAFO 3MN	na	2009/2010	Stocks for which TAC's and quotas have not been defined, which relevant quotas correspond to less than 10% of the Community share of the TAC or to less than 200 tonnes on average during the previous three years.
Pandalus spp stock-related variables[1]	III.E	Estimation of stock-related variables	NAFO 3LM	na	2009/2010	Stocks for which TAC's and quotas have not been defined, which relevant quotas correspond to less than 10% of the Community share of the TAC or to less than 200 tonnes on average during the previous three years.

[1] State of derogation not relevant. According to the Commission decision 2010/93/UE, the Portuguese national programme could exclude the estimation of the stock-related variables for stocks for which TAC's and quota follow the stated exemption rules (Chapter II.B.B2.5), namely stocks for which TAC's and quotas have not been defined, which relevant quotas correspond to less than 10% of the Community share of the TAC or to less than 200 tonnes on average during the previous three years.

Where relevant, reference has been made to the organisation responsible for the information.

In the results per area:
i)   The mainland sub-area of the Portuguese EEZ corresponds to ICES Sub-area IX and, when referring to local fishing, to ICES Division IXa.
ii) The Azores sub-area of the Portuguese EEZ corresponds to ICES Sub-area X.
iii) The Madeira sub-area of the Portuguese EEZ corresponds to CECAF Division 34.1.2.

II. National Data Collection Organisation

II.A. National Correspondent and Participating Institutes

National Correspondent
The National correspondent representing Portugal is:

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Participating Institutes

There are five organizations/institutes involved in the planning and implementation of the Portuguese Programme for the Collection of Fisheries Data:

Direcção-Geral dos Recursos Naturais, Segurança e Serviços Marítimos/Directorate General for Natural Resources, Safety and Maritime Services (DGRM)
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DGRM is responsible for gathering the data related with economic variables (fleet, aquaculture and processing industry) and transversal variables in Mainland.

Instituto Português do Mar e da Atmosfera / Portuguese Institute for Sea and Atmosphere (IPMA)
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IPMA is the Portuguese Institute responsible for on-shore and at-sea sampling for the Mainland fleet operating in the Iberian Fishing Ground and exploiting stocks assessed by ICCAT as well as on-board sampling (unsorted catches) for NAFO Areas and North Sea and Eastern Artic. IPMA is also responsible for conducting scientific surveys in the Iberian Fishing Ground and participates on the Flemish Cap Groundfish Survey.

Secretaria Regional do Ambiente e Mar/Gab.Subsecretário Regional das Pescas (RAA)
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RAA is responsible for gathering data related with Economic variables in the Autonomous Region of Azores.

Departamento de Oceanografia e Pescas da Universidade dos Açores (DOP/UAç)
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DOP is a department of the University of the Azores which is responsible for the collection of scientific data under the Data Collection Framework. DOP/UAç is also responsible for the provision of scientific advice for the fisheries sector of the Autonomous Region of the Azores.

Direcção Regional de Pescas da Região Autónoma da Madeira (DRPM/RAM)
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The collection of data from the fisheries sector of the Autonomous Region of Madeira, in the framework of this programme, is carried out by the Madeira Service Directorate of Fisheries Research (DSIP), which is a branch of the Regional Directorate of Fisheries of Madeira from the Environment and Natural Resources Secretary of the Regional Government of Madeira.

Web pages are dedicated to DCF on DGRM web site under the tab "Programa Nacional de Recolha de Dados". The menu allows selecting:

- Legal framework of the DCF;
- Information and organism involved;
- National Program and some meetings report;
- Online survey forms for aquaculture and catching sector.

The web site is in Portuguese only but it is foreseen to make it available in English.

In 2012, one national co-ordination meeting took place. The main subjects were:

- Data Collection Data Base;
- Regional Data Base (Fishframe);
- CFP Reform and the structural Fund (EMFF);
- Technical and Financial Report 2011;
- Meetings and Workshop.

II.B. Regional and International Coordination

II.B.1. Attendance of International Meetings

The international meetings planned for 2012 and eligible under DCF are listed in table II.B.1. With few exceptions, Portugal has ensured its participation in most of the planned and relevant international coordination meetings. Budgetary and administrative constraints, as well as conflicting dates with

regard to other commitments, had influenced the meeting attendance and the international coordination could not be prioritised as planned.

Budgetary and administrative constraints turned unviable to RCM NS&EA and ICCAT Bluefin Tuna Eastern Atlantic and Mediterranean. Nevertheless, participation was ensured by correspondence and/or web conference.

Once defined the ToRs for some of the planned meetings (WKMSSPDF-2 WKTSBLUES, WGISDAA, WKRED and WKMATCH, Workshop on Eel and Salmon, WGIPS, SGCal, WGFAST, WGEEL and SGRF), the Portuguese attendance was considered of low relevance and in some cases the participation was conducted by correspondence.

There were meetings, not considered for eligibility under "Coordination Meeting_2012", which were attended by Portugal, namely the Working Group on Cephalopod Fisheries and Life History [WGCEPH] (27–30 March 2012 Cadiz, Spain) ICCAT Intersessessional meeting of the Subcommittee on Ecosystem (2-6 de July, Sète), ICCAT Intersessessional meeting of the Shark working group (11-18 June, Olhão), Working Party on Billfish [WPB] (11–15 September, Cape Town, South Africa) and the Working Party on Ecosystems and Bycatches [WPEB] (17–19 September, Cape Town, South Africa).

The DOP/UAç organized the meeting of the Working Group on Anchovy and Sardine (WGANSA) at Horta, Azores (Portugal) from 23 to 28 June 2012.

II.B.2. Follow-up of Regional and International Recommendations

General recommendations made by RCM NA, RCM NS&EA and RCM LDF from 2010 to 2012 and actions taken by Portugal are listed below. The list of recommendations made within the RCMs during 2011 and 2012 were summarised and listed in an annex in the Liaison meeting report from 2011 (Anon, 2011a) and 2012 (Anon, 2012a).
The relevant regional and international recommendations are listed and dealt within the specific sections below.
For follow-up of STECF recommendations, see section VII.

RCM NA 2011	
Recommendation	**Follow up actions**
RCM NA recommends that the collection of otoliths of John Dory is continued but not proceed with age readings until an agreed standardized method is developed.	Not applicable. Portugal doesn't sample the John Dory.
RCM NA recommends MS to describe in detail the methodology on the separation of the catches of the 2 Lophius species. This information should be available to the 2012 benchmark assessment.	The two species of anglerfish (Lophius piscatorius and Lophius budegassa) are not usually landed separately, for the majority of the commercial categories, and they are recorded together in the ports' statistics. Therefore, estimates of each species in Spanish landings from Divisions VIIIc and IXa and Portuguese landings of Division IXa are derived from their relative proportions in market samples. ICES. 2011. Report of the Working Group on

RCM NS&EA 2011

Recommendation	Follow up actions
Quality issues: use of FishFrame as regional database: *The RCM NS&EA recommends that that all MS respond to the data call in 2012 from the chair of RCM NS&EA and load their data to FishFrame or make it available in the FishFrame format. This data call will include Commercial Landings(CL), Commercial Effort (CE) and Commerciall Samples (CS) records for 2010 and 2011.*	Portugal experienced difficulties when uploading data to FishFrame 5.0 in response to the "Data call for commercial fisheries landing and sample data for the 2012 Regional Coordination Meeting" (Date, June 1, 2012). While some of the difficulties sparked from format differences and inefficient design of the National DB, most reflect innadaptation and lack of flexibility in current FishFrame DB in what concerns data collected from the wide diversity of fisheries sampled in EU waters. Of particular concern are aspects regarding Anonymity of the vessel data which is not guaranteed by the current FishFrame version. We suggest a number of changes to Fishframe 5.0 that can be considered in FishFrame updates and will ultimately improve MS capabilities to answer future data calls. IPMA presented a report listing the issues experienced during the data upload and offer some resolutions to these issues. This report was sent to the relevant RCMs, the Head of ICES Advisory Programme (Poul Degnbol), the Head of ICES Data Centre (Neil Holdsworth) and Henrik Degel (with whom we exchanged emails during the data upload process). DGRM had a technician working with the conversion of data to fishframe during two weeks in order to comply with all the inconsistencies of that database. The conclusion was that fishframe is poorly designed and incomplete regarding the codification needed for the Portuguese data (missing métiers and fishing areas). The use of scientific names as a key in the fishframe is not understandable and use of FAOs is recommended. Our final conclusion is that fishframe may be an interesting tool in the future but, as it is now, it's not ready for use and should not be used for the uploading of data by MS.
Quality issues: data raising methods: *RCM NS&EA recommends that each MS should send a representative to WKPICS to discuss data collection and the methods used to raise this data for assessment use and that WKPICS adds this to its ToR.*	Finalized.

III. Module of Evaluation of the Fishing Sector

III.A. General Description of the Fishing Sector

The national fishing fleet is extremely diverse, differing between zones. This is related to the activities carried out and the fishing technology used in each zone. It is dominated in numbers by small wooden vessels, most of which are open decked. This reflects the fundamentally artisanal nature of the activity, which is nevertheless extremely important for a significant part of the coastal communities.

In terms of national distribution, the fishing fleet is distributed between 45 Registration Ports. Of these, 27 are Port Authorities and 18 are Maritime Delegations. On Mainland are located 32 of the main ports,, 11 are in the Autonomous Region of the Azores and 2 are in the Autonomous Region of Madeira.

The national waters can be divided into three large fishing zones: the sub-area of the EEZ of the Mainland and those of the Autonomous Regions of the Azores and Madeira.

The sub-area of the EEZ of the Mainland has a narrow continental shelf and is located in a transitional area in terms of productivity, which in turn controls production. The sub-area is characterised by a great variety of species, none of which, however are abundant. On the Mainland, fishing activities are carried out on grounds close to the coast, and they exploit a small group of species (sardine, horse mackerel, mackerel, chub mackerel, hake, monkfish, silver scabbard fish, octopus and clams). Of these species, sardine is almost half of the total catch in this area.

The Autonomous Regions of the Azores and Madeira also have a narrow continental shelf. Given their oceanic nature, there is a reduced number of shoals of fish, and the island's platforms which make up the fishing zone are fairly irregular. In the Azores, the blackspot seabream is the most important demersal species, while in Madeira the black scabbard fish is the most important.

Mainland

Fisheries in ICES sub-areas I, II, XII, XIV, NAFO Div. 1F and Sub-area 3

In 2012 the Portuguese fleet operating in the traditional grounds of both Divisions I and II, was composed by 4 trawlers using a bottom trawl gear. The fishery in the international waters of Div. IIa was carried out by 3 trawler fishing with a pelagic trawl gear.

The Portuguese fleet operating in the Irminger Sea, Norway and Svalbard (4 ships were in operation in 2012) also operated in the NAFO area (10 ships in 2012). This fleet uses bottom trawling techniques

Fisheries in ICES Sub-areas I and II (Norway and Svalbard) and international waters (Div.IIa)

In 2012, the Portuguese nominal catches recorded 4,893 ton: 2,497 ton proceeding from the Division IIa and 2,396 ton proceeding from the Division IIb.

For the period from 1993 till 2012, cod (*Gadus morhua*) is the most important species in the catches, with the exception of 1993 in Division IIa. In the recent years, 60% of the fishing effort has been deployed in Norway zone (Division IIa), corresponding to a same percentage in catch allocation (not including the new fishery in the "Banana Hole" zone).

<u>Sebastes Mentella fishery in ICES Div. XII, XIVb and NAFO Div. 1 F</u>

The redfish Portuguese trawl pelagic fishery started in 1994, at first in the Irminger Sea but now this fishery is wide spread till NAFO Divisions 1F, 2H, 2J and 3K. Redfish from the species *Sebastes mentella* essentially supports this fishery.

The Portuguese nominal redfish catches recorded a peak in 1995 (5 125 ton and 383 fishing days). In 2012 the effort was 44 fishing days and the catches were 207 ton.

<u>Fishery in the NAFO Area</u>

In 2012, the Portuguese nominal catches proceeding from NAFO Regulatory Area have reached 16 451 ton, a decrease of 827 ton comparing to 2011.

Redfish continues to be by far the most important species in the Portuguese commercial catches from NAFO Area, representing in recent years more than 50% (8 896 ton in 2012) of the overall catch, followed by Codfish, with catches of 2 998 ton and Greenland Halibut, with catches of 1 972 ton.

In 2012 the fishing effort was 1 780 fishing days.

<u>Bottom Trawl Fishery in Div. IXa</u>

The bottom trawl fishery comprises two fleet components e.g., the trawl fleet catching demersal fish (65-mm mesh size) and the bottom trawl fleet directed at crustaceans (>=55 mm mesh size for shrimps and above 70 mm for Norway lobster). In 2012 about 79 vessels operate in this fishery, 25 of which are licensed for crustaceans.

The catches of this trawl fishery represents 10 % of the total landed in Div. IXa (Portuguese coast). The trawl fleet component targeting fish (hake, horse mackerel, axillary sea breams, pouting, octopus, squids, blue whiting) operates off the entire Portuguese coast mainly at depths between 100 and 250 m and during all the year.

The fleet targeting crustaceans (Norway lobster and rose shrimp) operates mainly in the Southwest and South in deeper waters, from 100 to 800 m. This fishery takes place throughout the year, with the highest landings usually being made in the spring and summer.

Trawl fishing effort in Portuguese continental waters has been recorded since 1950 until present as hours fished. It can be seen that effort increased until the early 1970s, and has since then decreased to levels similar to those of the 1950s (ICES Advice, 2006. Volume 7).

<u>Artisanal Fishery in Div IXa</u>

The artisanal fishery is composed of a large number (around 6400) of small boats, operating mainly inshore and using a variety of gears as gillnets and trammel nets (the majority), purse seine, beam trawls, longlines, traps, pots and dredges. Some of these boats are licensed for more than one type of gear (with permission to a maximum of five gears).

Often it is used several different gears in the same trip and depending of the species availability this fishery use also different gears by season. The main species landed are hake, pouting, sole, cuttlefish and anglerfish from gillnets and trammel nets, sardine, horse mackerel and mackerel from purse seine, hake, conger, skates and black scabardfish from longlines, octopus from traps and pots, bivalves from dredges and coastal shrimps from beam trawl.

The large number of small boats (< 12 m) involved in this fishery has a mean GT of 1,5 and an average of 18 KW engine power.

The artisanal fishery represents 17% and 29% in weight and value, respectively, of the total commercial species sold in auctions in 2012

Purse-seine fishery in Div IXa

The purse-seine fishery, the most important in landings volume, is composed of around 118 purse seines with a total catch of 66 585 t in 2012. This fleet targets mainly sardine, which constitutes 42% of their landings in 2012, using a mesh size of 16 mm. With the introduction, in 2012, of specific legislation restricting sardine catches, the importance of this species was reduced, by comparison with 2011, where catches of sardine was responsible for 63% of total catches. Sardine catches were replaced by Chub Mackerel catches, specie whose catches increased substantially in importance in 2012, from 28% to 41% of total catches. Other target species are horse mackerel and Spanish mackerel.

Sardine is the basis of this fishery in Portugal and represents an important source of income for local economies

The black scabbardfish long-line fishery in Div. IXa

In 2012, 20 deep-water longline vessels were routinely targeting the Black scabbard fish (Aphanopus carbo) in a limited area (hard grounds along canyon slopes off Sesimbra, South of Lisbon). In 2012 landings of Black scabbard fish amounted to 2 668 ton. This fishery started in 1983 at Sesimbra port. Associated with the capture of Black scabbard fish other deep-water sharks important to the incomes generated by this fishing activity are also captured, namely Portuguese dogfish (Centroscymnus coelolepsis) and Leafscale Gulper shark (Centrophorus squamosus).

The Swordfish Fishery in Atlantic Ocean

There is a drifting longline fishery directed to the swordfish in Atlantic Ocean involving 23 vessels with a mean GT of 135, an average of 312 kW engine power and a mean overall length of 23 meters. The main landing ports for swordfish in mainland west coast are Sesimbra (about 22% of the total catch in 2012) and Peniche (about 79% of the total catch in 2012).

The Surface Longline Fishery in Indian Ocean

In 2012 the Portuguese longline fishery in Indian Ocean (East and West) comprised 7 vessels, ranging from 265 to 602 GT. Target species were Swordfish and Blue shark.

This fleet activity's outcome has a total catch of around 1 621 ton. From those, about 44% were Swordfish and 37% were Blue shark, approximately 714 ton and 596 ton, in that order.
Catches in the fishing area were landed in African ports, namely Mozambique, Namibia and South Africa.

Autonomous Region of the Azores (Div. X)

All Azorean fishing, data collection and sampling activity is concentrated in the ICES Sub-area X, where vessels are committed to demersal, pelagic, deep-water, tuna and other highly migratory fishes. The ecosystem is a seamount type with fishing operations occurring in all available areas (coastal and seamounts within the Azorean EEZ) until 1000 m depth, catching species from different assemblages, mostly on the 200-600 m strata (intermediate strata where the most commercially important species occur).

Fishing activities in the Autonomous Region of the Azores can be divided into 4 main categories:

(i) – a fishery targeting horse and chub mackerel operating with small vessels, normally less than 12,5m in length, and uses purse seine nets;

(ii) – a pole and line fishery which targets tuna, and is carried out between March/April and September/October, and operates with vessels that vary in length between 15 and 30m. Tuna catches are highly variable from year to year. The main tuna species are: bigeye tuna (T. obesus) skipjack tuna (K. pelamis) and albacore (T. alalunga);

(iii) - a fishery targeting demersal species, operating with vessels of less than 22m in length, and that uses bottom set long line and various hand-held instruments;

(iv) - a fishery targeting swordfish using pelagic longlines. This fishery is carried out mainly between May and December, using vessels which vary between 12 and 30 m in length.

These fisheries are all inter-related, since the same vessel can carry out two or more fishing gear. The demersal and tuna fisheries have a high economical value in the Autonomous Region of the Azores. The deep-water fishery for demersal species in the Azores is a multispecies and multigear fishery, where several types of hooks and lines gears are used by the local fleet. The dynamic of the demersal fishery seems to be dominated by the dynamic of the main target species, the blackspot seabream (Pagellus bogaraveo). However, other commercially important species are also landed and the target species seems to change seasonally according to abundance, species vulnerability and market demands. The fishery is clearly a typical small scale one, predominating small vessels, <12m (90% of the total fleet) using mainly traditional bottom longline and several types of hand lines.

In 2012 statistical information on fish landings shows a decrease in catches from the Autonomous Region of the Azores compared to 2011. This tendency is mainly due to a decrease in the tuna catches, that dropped by almost 2000 tons, while the landings remained stable for other species.

Autonomous Region of Madeira (CECAF 34.1.2)

The bio-geographical conditions of the archipelago of Madeira, e.g. narrow insular shelf, oligotrophic waters and steep incline of the slope, have always imposed severe limitations on fishing, since the small biomass of the populations of the available fishing species, particularly in the neritic zone (to a depth of around 200m) forced the Madeira fishing fleet, operating inside the Madeira Economic Exclusive Zone (CECAF 34.1.2), to concentrate on exploiting deepwater and/or migratory resources.

The greater relative weight in this sector belongs to the mixed fishery of two sympatric species black scabbard fish Aphanopus carbo (Lowe, 1839) and the intermediate scabbard fish A. intermedius Parin, 1983. These benthopelagic species are captured with drifting long lines at meso and bathypelagic zones. Also important are the large migratory pelagic species (Tuna), captured by bait boats using pole and line. The dominant species in this group are: Thunnus obesus (Lowe, 1839), bigeye tuna, and Katsuwonus pelamis (Linnaeus, 1758), skipjack tuna, among others.

On a decreasing scale of commercial importance, we find the small coastal pelagic species (locally called "ruama"), notably: Trachurus picturatus (Bowdich, 1825) (horse mackerel) and Scomber japonicus (Houttuyn, 1782) (chub or common mackerel), caught by purse seiners, out of a total of a hundred marine species commercially exploited in this region.

Despite their small commercial importance when compared to the species mentioned above, the demersal species even so have an important role in the socio-economic context of fishing in Madeira. These species, which have a high commercial value, are fished using multispecific techniques by a number of small boats mostly operating with bottom long lines, traps and hand lines.

There is also a small, in terms of unloadings, but fairly important fishery in terms of value and fishing effort, of gastropod molluscs (limpets) carried out by small boats trough scuba diving in the subtidal zone.

The Madeira fisheries sector does not comprise any Industrial fishery targeting species for the production of fish meal, fish oil, etc.

III.B. Economic Variables

III.B. Baltic Sea (ICES areas III b-d), North Sea (ICES areas IIIa, IV and VIId) and Eastern Arctic (ICES areas I and II), and North Atlantic (ICES areas V-XIV and NAFO areas)

III.B.1. Achievements: Results and Deviation from NP Proposal

Mainland

As stated in our NP 2011- 2013 the collection of economic data defined in DCF was achieved through a survey, applied to a statistical sample, by means of random stratified sampling method.

The reference year was 2011 and the target population was composed of vessels with issued licenses to operate throughout the reference period (including vessels under 10 m), withdrawn from the national Vessel Register. These are the only vessels authorized to operate under Portuguese law. If in the survey a vessel owner states that the vessel didn't have any activity and the vessel has no landings or logbooks then it is considered inactive.

The questionnaire was drafted and mailed directly to the owners of the selected vessels and/or to producer's organizations and associative.

The differences between stratums regarding NP are due to the activity of the vessels and to the changes in the fleet. NP numbers and stratums are estimates based on licensing. When we take in consideration the activity of the vessels, as stated in DCF regulation, some reallocations between fleet segments occur and with them the needs of possible clustering also changes.

Clustering was made for segments with less than 3 vessels, accordingly to the confidentiality rules. Segments can be clustered when they are similar to each other. The segments were considered similar to each other by an analysis on the landings from logbooks and sales notes. The analysis compared the average value of landings per vessel for each segment to be clustered. If the values are of the same order of magnitude (usually differences less than 150% from each other) then the segments were considered similar. The segments to be clustered have the same main gear and belong either to the same vessel length class or, if not possible, to an adjacent vessel length class.

The number of sample units per stratum and the coverage rate is reported in Table III.B.1.

The inquiry process for 2011 data was completely carried out.

The value of fixed assets and the capital costs are estimated processing data of the Vessel Register and according to the methodology suggested by the study on "evaluation of the capital value, investments and capital costs in the fisheries sector" (No FISH/2005/03).

According to the capital study, the estimation of the capital value (GCS) consisted of three steps:

1. Specification of the composition of the active fleet by age

The specification of the composition of the active fleet by age has been done by processing the fleet register.

2. Estimation of price per unit of capacity (e.g. per GT)

In order to apply the PIM (perpetual inventory method) and in absence of other possibilities, the price per unit of capacity is estimated having in mind the price for building new vessels (replacement values). Those prices for 2011were:

- Small scale fleet segment = 21 050,00euros/GT
- Polyvalents segment > 12 meters = 47 250,00euros/$GT^{0,7}$
- Trawl segment = 25 820,00 euros/$GT^{0,8}$
- Seiner segment = 15 170,00 euros/GT

3. Calculation of the values of each vintage of the fleet at current prices.

After (1) and (2) we are able to estimate the Gross capital stock, the depreciated replacement value, and all the others variables, using the spread sheet. Inactive vessels are considered in the evaluation of the capital value and capital costs.

Autonomous Region of the Azores (Div.X)

In 2012, fleet economic data was collected in the Autonomous Region of the Azores following the methodologies described in the National Programme. Frame population was determined from the total population based on the fleet register and licensing for the reference year (2011). The frame population of active vessels was stratified into segments based on size and island..

A random sample was formed from each segment and the national questionnaire mailed to the professional associations based in each island of the Azores.

A total of 120 inquires were conducted, 96 for the segment 0<10 m, 14 for the segment 10<12 m, 8 for the segment 12<18 m and 2 for the segment 24<40m. All primary data was stored in Si2P using the application developed by DGRM.

We used the database register fleet, for the fleet variables and questionnaires for the others variables, with exception for the variables belong to the Group of Variables: Capital Costs and Capital Value, which were estimated according to the proposed PIM methodology. In what concern this group of variables we should refer that the price per unit of capacity is the price per unit of capacity of a new vessel, e.g.replacement price. Which for the following segments, in 2011 were:

Polyvalents 0<10m = 21 890,00euros/GT
Polyvalents 10<12m = 16 130,00euros/GT
Polyvalents 12<24m = 11 640,00euros/GT
Polyvalents 24<40m = 11 930,00euros/GT

III.B.2. Data quality: Results and Deviation from NP Proposal

Mainland

There is a special effort to get consistent results for some economic parameters like: financial position in what concern the small scale fisheries. The information to calculate those variables was collected, however due to non consistent responses the results are not trustable.

The sample size for each fleet segment is determined by statistical procedure and targeting the precision level required by DCF for the variable income of the previous year (usually CV < 5%).

The accuracy in some strata/indicators is bellow expectable. There are several reasons to this: low rate of response, non consistent responses to the survey and great variability in each strata. In order to overcome the great variability in each strata further segmentation is used, which allow for a better quality. One big reason for the great variability of data results from the regulation itself, which requires the MS to collect data for all vessels, as long as they have at least one day of activity. We notice that any vessels, although licensed, have only few days of activity, usually for recreational purposes (for example, vessel owner is retired and fish only for self consumption). The result of this is that fleet segments, as required by the data collection framework, are not homogeneous.

The differences in segment numbers and clustering came from the fact that when the NP was made there was no data regarding the activity of the fleet and the classification of vessels was made with their licenses. At the start of the 2010 reference year data collection a new classification was made based on the activity of the fleet (mainly logbook data). This resulted in some reallocation of vessels regarding NP segments, therefore segment numbers and clustering needs changed as well. When clustering was necessary (insufficient number of vessels in a segment) an analysis for homogeneity was made based on landings data from logbooks and auction sales notes.

III.B.3. Follow-up of Regional and International recommendations

RCM LDF 2011	
Recommendation	**Follow up actions**
Information about fishing activity of Portuguese fleet in the CECAF area must be completed. *Follow–up actions needed: Description or full templates (used in 2010) to be prepared by Portugal.*	It is not clear what the Recommendation means.
The RCM received information on fishing activities of Portuguese vessels in the CECAF area other than those in the waters around Madeira. The NP of Portugal makes no mention of these fisheries. *Follow–up actions needed: Portugal to clarify the information. If the information is correct, the Portuguese NP must be adjusted*	It is not clear what the Recommendations means.

III.B.4. Actions to avoid shortfalls

In order to increase the reliability of the answers we crosscheck the responses to the survey with recorded data from vessel activity, e.g., income with landings, employment with minimum vessel crew, fuel volume with administrative data.

Increase of accuracy was accomplished by disaggregating the population into more homogeneous strata at the time of collection phase.

New, automated procedures were developed in 2012, including the possibility of calculation of quality indicators in real time, now a capability built in the database application. These new procedures reduce the manual manipulation of data, hence reducing the possibility of human error. They also improve the timeliness of available data and allows for the recalculation of those same indicators if primary data is changed.

Autonomous Region of the Azores (Div.X)

To ensure the consistency of the data collected, the responses to the questionnaires were crosschecked with administrative data from vessel activity, e.g., income with landings and fuel consumption.

III.B. Other Regions

III.B.1. Achievements: Results and Deviation from NP Proposal

Autonomous Region of Madeira (CECAF 34.1.2)

In 2012, data for this module was collected in the Madeira region following the methodologies described in the National Plan for this year. Population segments considered for the collection of economic data resulted from the Universe of the registered vessels and its distribution is included at a national level in Table III.B.1. The acquisition of economic data was made by census, and the percentage of coverage achieved is indicated in this Table for each of the population segments.

The form prepared for national use was adapted and used in active vessels both in the census survey. Source of the data required in the case of non-active vessels was the fleet register. Table III.B.3. show the strategy used for the collection of data in each of the variables.

The objectives set for 2012 were fairly achieved concerning the acquisition of data (Table III.B.1.). Response rate achieved in the case of the purse seiners was about 33%. In the case of the segments of the vessels using hooks, only about 38% of the planned sample was reached in the segment below 10m and 44% in the segment above it at a local level.

The value of fixed assets and the capital costs are estimated using the same methodology as the one referred for Mainland (e.g. "evaluation of the capital value, investments and capital costs in the fisheries sector" (No FISH/2005/03).

The only difference is the price per unit of capacity (e.g. per GT).

Those prices for 2011 were:
- Polyvalents segment = 12.000,00 euros/GT

III.B.2. Data quality: Results and Deviation from NP Proposal

MADEIRA proposed to collect economic data using census as collection scheme in the case of the active vessel. The response rate was less than planned – around 38% , and inferior to the response rate obtained in 2011.

III.B.3. Follow-up of Regional and International recommendations

Not applicable.

III.B.4. Actions to avoid shortfalls

Autonomous Region of Madeira (CECAF 34.1.2)

Due to some doubts arousing from answers to the inquiries, especially in the case of small vessels (under 10 m), validation of data was made in the case of the variables where administrative data exists. This validation allows to increase the reliability of the answers through the crosschecking of the responses to the survey versus recorded data from vessel activity, e.g., income with landings and fuel volume. However, due to the decrease of the response rate to the inquiries a new approach will be conducted in 2013 linking the answer to the inquiries to the emission of the fishing licenses.

III.C. Metier-related Variables

Tables III.C.3, III.C.4, III.C.5 and III.C.6 present the information collected during 2012.

IPMA is responsible to collect and analyse the biological data from ICES Division IXa, ICES Sub areas XII, XIV and I, II, NAFO area and the long-line fleet targeting swordfish (ICCAT and IOTC). DOP/UA is responsible for the collection of this information in ICES Division X and in pole and line fishery which targets tuna (ICCAT). Madeira is responsible for collecting information of local vessels operating around the archipelago (CECAF 34.1.2) and also of tuna fishery data of that fishing area (ICCAT).

North Sea and Eastern Arctic (ICES areas I, II)

III.C.1. Achievements: Results and Deviation from NP Proposal

The fleet operating in ICES areas I and II also operates in NAFO area. In its under way to NAFO area catch demersal fish and redfish in subareas I and II. In both regions, sampling is carried out by observers who remain on board throughout the period of the fishing trip, which can last from 2 to 3 months. Since 1995 the crew male nurses were trained to carry out sampling during the fishing trip.

The description below should be considered along the following sampling strategies:
Concurrent sampling at sea: Samples of a trip drawn by an observer on board of a fishing vessel.
Concurrent sampling at market: Samples of a trip drawn in the harbor.
Total: Sum of all trips.

There are two metiers operating in this region:

OTB_DEF_>=120_0_0
Target species: *Gadus morhua*, *Melanogrammus aeglefinus*, and *Sebastes mentella*

Sampled metiers: OTB_DEF_>=130_0_0

Concurrent sampling at sea: 1/2
Concurrent sampling at market: not planned
Total: 1/2

Reason shortfall: budgetary and administrative constraints on a national scale had significant influence on sampling plan implementation. On-board sampling is carried out by crew male nurses properly trained, with whom IPMA (former IPIMAR) has established successive annual contracts. During 2012, the hiring processes were substantially blocked and no alternatives to accomplish the plan were made available. Those constraints are the reason for shortfall on the achieved number of trips sampled at sea and on the sampling intensity for length compositions.

OTM_DEF_100-119_0_0

Target species: *Sebastes spp.*

Sampled metiers: OTM_DEF_100-119_0_0

Concurrent sampling at sea: 1/1
Concurrent sampling at market: not planned
Total: 1/1

Table III.C.5 shows sampling intensity for length compositions (all metiers combined). Table III.C.6 provide the achievements on length sampling of catches, retained catches and discards by metier and species. Obtained data refer to unsorted catches.

As in previous years, the 2012 Portuguese sampling in NAFO Areas and Eastern Arctic fishing ground was performed on-board by a nurse man, member of the crew. Therefore, for each sampled haul, representative samples of target or priority species (as those under moratorium) along with another from the most abundant by-catch are sorted. This task is performed by one person under a short time constraint, leaving no room to collect samples of less abundant and/or non commercial fish. It must be stressed that the fisheries, in the Eastern Arctic fishing grounds are composed by almost clean catches of the target species, with few by-catches, which are difficult to collect within the total catch. For this reason, table III.C.6 includes no other species than those planned in the NP were sampled during concurrent sampling at sea.

Sampling intensity for length compositions is clearly above the planned. Reason for shortfall is explained above.

III.C.2. Data Quality: Results and Deviation from NP Proposal

Quality control procedures are implemented on the data base. The checks assure the type of data and the range of values of the variables are correct. A random check of 10% of the data per year is executed by inspecting the sample forms and the registered data.

A trial of the COST package within the AR2009, AR2010 and AR 2011 indicated that the analytical calculation of CVs was not feasible. To our knowledge, no new routines facilitating the implementation of COST for the fulfilment of the DCF requirements were released. Therefore, the precision were computed by created R routines according to the method described in Annex 1. Achieved precision on unsorted catches are as expected.

III.C.3. Follow-up of Regional and International Recommendations

RCM NS&EA 2011	
Recommendation	**Follow up actions**
MS to fill update metier descriptions already	The update of the metier description was not a

compiled by RCM NS&EA 2010 and using the standard template complete descriptions for any new metiers identified. Updated and new files to be uploaded by Fishing Ground coordinators.	priority for the RCMNS&EA 2012 as priority was given to the data call and to provide data to be uploaded to the RDB. Nevertheless, Portugal regularly updates these templates and data.

RCM NS&EA 2010

Recommendation	Follow up actions
RCM NS&EA considers that, in a situation where sampling resources are limited, priority should be given to the sampling of discards in those métiers with high discarding. In order to be able to allocate and prioritize sampling effort to observer programmes at sea or self sampling programmes for estimating discards, preliminary information is required on discarding by métier where it is available. The information required is an estimate of the level of discarding (volume and percentage) and the main species contributing to the discard fraction of the catch.	In nowadays Portuguese North Atlantic far sea fisheries continue to record a negligible level of discards on their metiers
The RCM NS&EA recommends that relevant countries investigate the distribution of their landings from the named stocks in in relation tothe overall distribution across the stock area. Where they have no sampling plans for catches, they should consider if their component of the stock is adequately sampled, spatially and temporally by other MS.	Portuguese sampling has followed the major concentrations of Greenland halibut distribution on NRA Sub Area 3.

RCM NS&EA 2009

Recommendation	Follow up actions
RCM NS&EA considers that given the fact that most likely, almost all Member States involved in the DCF will use COST for computing their precision levels for 2009 and prepare assessment working groups, resulting in a positive attitude of the EC towards the implementation of COST, a follow up of the COST project – COST 2 is required. The framework for the continuation of the project has several objectives: *a) avoiding the development of national versions of the tool* *b) creating a functional help mailing list and expanding/enhancing the examples (taking into account the simulation outcomes).* *c) correcting the possible bugs, improving the code, adapting to new versions of exporting (InterCatch)* *d) progressing on benchmarking the methods*	Portugal stresses that a trial of the COST package within the AR2009, AR2010 and AR2011 indicated that the analytical calculation of CVs was not feasible. To our knowledge, no new routines facilitating the implementation of COST for the fulfilment of the DCF requirements were released. Despite the problems and recognizing the need for harmonized methodologies, Portugal is prepared to use COST.

and simulating different sampling schemes and levels with COSTsim; *e) Make the tool user friendly.*	

III.C.4. Actions to Avoid Shortfalls

As mentioned before, the fleet operating in ICES areas I and II also operates in NAFO area. In both regions sampling is carried out by samplers who remain on board throughout the period of the fishing trip, which can last from 2 to 3 months with likely short notice changes in the fishing behaviour and operation area. To avoid shortfalls Portugal is always trying to reach a wide participation of vessels which have not been sampled by observers before. As stated above, 2012 data collection ran atypically. In 2013 administrative issues are being overcome and sampling programme is proceeding as planned.

To ensure that the planned length sampling is covering, as much as possible, the full range of expected lengths for each species with a good ratio cost/benefit, IPMA is developing an approach to set a minimum sampling effort on board to the Portuguese NAFO and NEAFC main fisheries. This approach is under implementation and in the near future will be presented to the relevant working groups in order to be included on the new DC-MAP.

North Atlantic

III.C.1. Achievements: results and deviation from NP proposal

NAFO Areas, Iceland, Greenland and Irminger Sea

The metiers selected in NAFO 1J, 1F and NAFO 3LMNO are also presented in Table III.C.1. The sampling is carried out by samplers who remain on board throughout the period of the fishing trip, which can last from 2 to 3 months. Since 1995 the crew male nurses were trained to carry out sampling during the fishing trip. The description below should be considered along the following sampling strategies:

Concurrent sampling at sea: Samples of a trip drawn by an observer on board of a fishing vessel.

Concurrent sampling at market: Samples of a trip drawn in the harbor.

Total: Sum of all trips.

OTB_MDD_130-219_0_0

Target species: *Reinhardtius hippoglossoides*

Sampled metiers: OTB_MDD_130-219_0_0

Concurrent sampling at sea: 3/4
Concurrent sampling at market: not planned
Total: 3/4

Reason shortfall: budgetary and administrative constraints on a national scale had significant influence on sampling plan implementation. On-board sampling is carried out by crew male nurses properly trained, with whom IPMA (former IPIMAR) has established successive annual contracts. During 2012, the hiring processes were substantially blocked and no alternatives to accomplish the plan were made available. Those constraints are the reason for shortfall on the achieved number of trips sampled at sea and on the sampling intensity for length compositions.

OTM_DEF_100-129_0_0

Target species: *Gadus morhua*, *Melanogrammus aeglefinus* and *Sebastes mentella*

Sampled metiers: OTM_DEF_100-129_0_0

Concurrent sampling at sea: 1/1
Concurrent sampling at market: not planned
Total: 1/1

Table III.C.5 shows sampling intensity for length compositions (all metiers combined). Table III.C.6 provide the achievements on length sampling of catches, retained catches and discards by metier and species. Obtained data refer to unsorted catches.

As in previous years, 2012 Portuguese sampling in NAFO Areas and Eastern Arctic fishing ground was performed on-board by a nurse man, member of the crew. Therefore, for each sampled haul, representative samples of target or priority species (as those under moratorium) along with another from the most abundant by-catch are sorted. This task is performed by one person under a short time constraint, leaving no room to collect samples of less abundant and/or non commercial fish. It must be stressed that the fisheries, in NAFO areas and Iceland, Greenland and Irminger Sea are composed by almost clean catches of the target species, with few by-catches, which are difficult to collect within the total catch. For this reason, table III.C.6 includes no other species than those planned in the NP were sampled during concurrent sampling at sea.

Except for *Gadus morhua* and *Sebastes spp.* in NAFO areas, sampling intensity for length compositions is clearly above the planned. Reason for shortfall is explained above.

Iberian Fishing Ground (ICES sub-area IXa)

Most Portuguese non-pelagic fisheries are typically mixed fisheries that catch a wide variety of species, reflecting the biological diversity of the areas they exploit. Portuguese multi-gear fleets use a diversity of gears that allow exploitation of ecological communities in different habitat types, depths, and substrata (Duarte et al., 2009).

The coastal mixed-species multi-gear Portuguese fleet comprises medium-sized (>12 m) vessels, using a diversity of passive gears (Duarte et al., 2009), often operated during the same fishing trip. On-board sampling procedures allow catch determination by haul and fishing gear. However, on market sampling of multi-gear fishing trips, landing disaggregation by metier is not feasible.

Table III.C.3 include the total number of trips during the sampling year and the achieved number of sampled trips by metier according to the expected. Thus, this table doesn't include multi-gear fishing trips, which are reported on table II.C.4, according to its sampling frame.

The description below should be considered along the following sampling strategies:
Concurrent sampling at sea: Samples of a trip drawn by an observer on board of a fishing vessel.
Concurrent sampling at market: Samples of a trip drawn in the harbor.
Total: Sum of all trips.

The Portuguese on-board sampling program in Iberian Fishing Ground is based on a quasi-random sampling of cooperative commercial vessels of a fleet segment between 12 and 40 meters.

FYC_CAT_0_0_0

Target species: *Anguilla anguilla*

Sampled metiers: FYC_CAT_0_0_0

Concurrent sampling at sea: not planned
Concurrent sampling at market: 21/44
Total: 21/44

Reason for shortfall: fishing trips performed with fyke nets are not landed directly in the auction, but directly sold to regular buyers. Sampling scheme depends on collaborative eel fishermen and on prior information to the fishing trip.

FPO_MOL_0_0_0

Target species: *Octopus vulgaris*

Sampled metiers: FPO_MOL_0_0_0

Concurrent sampling at sea: not planned
Concurrent sampling at market: 196/180
Total: 196/180

Although there was no prior on-shore sampling plan for multi-gear fishing trips (as above), those that include pots and traps for octopus (sampling frame code PT4) and other passive fishing gears other than gillnets and trammel nets (sampling frame code PT5) are reported on table III.C.4.

GNS_DEF_80-99_0_0, GNS_DEF_60-79_0_0 and GNS_DEF_>=100_0_0

Target species: *Merluccius merluccius* (all metiers), *Pagellus acarne and other Sparidae* (only GNS_DEF_80-99_0_0), *Trisopterus luscus* (only GNS_DEF_60-79_0_0);

Sampled metiers: GNS_DEF_80-99_0_0, GNS_DEF_60-79_0_0 and GNS_DEF_>=100_0_0. Despite being able to set a goal regarding number of trips to be sampled at market, it is not possible to predict the number of trips to be sampled at sea discriminated by metier. Most of the vessels of the gillnet fleet hold licenses to operate with different mesh size and trammel nets as well and there is no prior information which gear will be used.

Concurrent sampling at sea: 10/12
Concurrent sampling at market: 342/180
Total: 349/192

Reason for exceeding: Regarding concurrent sampling at market, the intensity was assured and exceeding is consequence of the inherent concurrent sampling characteristics. Likewise, once the observers are at the market, while waiting to sample targeted metiers, time is used to sample an accessory number of trips with no additional costs.
18 out of 342 trips sampled on-shore were sampled under the pilot study on the métiers where skates are caught in IXA (Annex III) wherewith, to improve the knowledge on the metiers where skates are caught, gillnets and trammel nets on-shore sampling intensity increased.

GTR_DEF_80-99_0_0 and GTR_DEF_>=100_0_0

Target species: *Sepia officinalis, Solea spp., Rajidae* and *Lophius spp* (only GTR_DEF_>=100_0_0)

Sampled metiers: GTR_DEF_80-99_0_0 and GTR_DEF_>=100_0_0. Despite being able to set a goal regarding number of trips to be sampled at market, it is not possible to predict the number of trips to be sampled at sea discriminated by metier. Most of the vessels of the of gillnet fleet hold licenses to operate with different mesh size and trammel nets as well and there is no prior information which gear will be used.

Concurrent sampling at sea: 27/12
Concurrent sampling at market: 320/132
Total per metier: 345/144

Reason for exceeding: 20 out of 27 trips sampled on-board were sampled under pilot study on the portuguese trammel nets fishery in ICES Div. IXa (Annex IV) and the pilot study on the métiers where skates are caught in IXA (Annex III). Both pilot studies promoted trammel nets on-board sampling intensity.
Regarding concurrent sampling at market, as with gillnets metiers, the intensity was assured and exceeding is consequence of the inherent concurrent sampling characteristics, with no additional costs. 131 out of 320 trips sampled on-shore were sampled under the pilot study on the métiers where skates are caught in IXA (Annex III). 12 out of 320 trips sampled on-shore were sampled under pilot study on the portuguese trammel nets fishery in ICES Div. IXa (Annex IV).

Although there was no prior on-shore sampling plan for multi-gear fishing trips, those that include at least both gill and trammel nets are reported on table III.C.4 for sampling frame PT5 (Gillnets and trammel nets).

LLS_DEF_0_0_0

Target species: *Merluccius merluccius, Conger spp, Pagellus spp.*

Sampled metiers: LLS_DEF_0_0_0. Additionally to those metiers selected by the DCF ranking algorithm, the metier "longliners targeting demersal species" (LLS_DEF_0_0_0) was also selected to be sampled in Div. IXa. This metier targets largest individuals than the other metiers, which are particularly relevant in the case of hake, subject to a recovery plan. The sizes caught by this metier have a large contribution to the estimates of SSB and their absence from catch-at-age matrices can bias this parameter.

Concurrent sampling at sea: not planned
Concurrent sampling at market: 82/48
Total: 52/48

Reason for exceeding: on-shore sampling exceed the planned due to the permanence of the observers at the market with no additional costs.

LLS_DWS_0_0_0

Target species: *Aphanopus carbo, Centroscymnus coelolepsis, Centrophorus squamosus.*

Sampled metiers: LLS_DWS_0_0_0

Concurrent sampling at sea: 9/12
Concurrent sampling at market: 28/24
Total: 37/36

Reason for shortfall: Regarding on-board sampling, the number of vessels prepared to take observers on board is much reduced when compared with the whole fleet. Additionally, some vessel owner's are not willing to take observer due to lack of space on-board and other logistic reasons.

OTB_CRU>=55_0_0

Target species: *Nephrops norvegicus* (OTB_CRU>=70_0_0), *Parapenaeus longirostris, Aristeus antenntus* (OTB_CRU_55-59_0_0) and *Micromesistius poutassou.*

Sampled metiers: OTB_CRU>=70_0_0 and OTB_CRU_55-59_0_0. Crustacean trawlers are invariably licensed for two different mesh size, 55-59 mm targeting shrimps and >= 70 mm targeting Norway lobster.

Concurrent sampling at sea: 13/12
Concurrent sampling at market: 64/96
Total: 77/108

Reason for shortfall: A number of crustacean trawls do not sell directly at the market, but have contracts with buyers. Others land crustaceans in frozen blocks. Therefore, besides the permanence of the observer at the auction, the chances to perform crustaceans sampling at the auction is lowered.

OTB_DEF_>=55_0_0

Target species: *Merluccius merluccius, Trachurus spp, Lophius spp* and *Micromesistius poutassou.*

Sampled metiers: OTB_DEF_>=55_0_0.

Concurrent sampling at sea: 31/27
Concurrent sampling at market: 150/144
Total: 181/171

PS_SPF_0_0_0

Target species: *Sardina pilchardus, Trachurus spp, Scomber colias.*

Sampled metiers: PS_SPF_>=16_0_0.

Concurrent sampling at sea: 24/24
Concurrent sampling at market: 126/84
Total: 150/108

Reason for exceeding: the same as for LLS_DEF_0_0_0.

TBB_CRU_<55_0_0

Target species: *Palaemonidae*.

Sampled metiers: TBB_CRU_<55_0_0

Concurrent sampling at sea: 0/12
Concurrent sampling at market: 23/12
Total: 23/24

Reason for shortfall: according to *Palaemonidae* availability, beam trawl fleet might reduce the fishing activity throughout the year. This fishery is based on seasonality national regulations. Taking into account the rules applied specifically to beam trawl fleet, which prevent license transferring beam trawl license between vessel's and owners, the number of beam trawl vessels has been undergoing significant reductions. Thus, each year, there are significantly less available vessels to take observers on board. Moreover, some of the few vessels' owners refused to take observer due to lack of space and other logistic reasons indicated by the ship owners. The sampling strategy of the metier has to be re-evaluated during DC-MAP implementation.

Table III.C.5 gives the sampling intensity for length compositions (all metiers combined). For several species, namely *Loligo vulgaris*, *Lophius budegassa*, *Lophius piscatorious*, *Parapenaeus longirostris*, *Raja brachyura*, *Raja clavata*, *Raja montagui*, *Raja naevus*, *Scomber colias*, *Sepia Officinalis*, *Solea solea*, *Trisopterus spp* and *Octopus vulgaris* sampling intensity is above the planned minimum number of fish to be measured at national level. It should be taken into account that the planned minimum number of fish established for 2011-2013 did not consider the sampling from the pilot study on the métiers where skates are caught in IXa (Annex III) and under pilot study on the portuguese trammel nets fishery in ICES Div. IXa (Annex IV), started in 2012.

Length sampling is in line with the explanations given above regarding the sampled trips by metier and depends on the landing and catch composition. This is the main reason for the shortfalls met. Precision targets were met in most stocks.

As stated above, *Anguilla anguilla* is not sold directly at the market, but directly through regular contacts with buyers. Sampling intensity depends on species availability but, especially, on collaborative fishermen. This is the reason implied on shortfalls met.

"Concurrent sampling" requires the sampling of the length frequencies of all species landed or caught during the sampled trip, aiming at the characterisation of target species and/or assemblages and selection patterns of distinct species. Table III.C.6 gives the number length sampling intensity of catches, landings and discards, by metier, of all species landed or caught. Table III.C.6 highlights the importance of on-board sampling on catch determination of multi-gear fishing trips by metier.

<div align="center">

Autonomous Region of Azores (ICES area X)

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In achieving the objectives planned in the National Proposal 2011-2013 some difficulties were experienced. In the image of what was stated in the 2011Annual Report, the two main difficulties are still in the implementation of sampling scheme 2 on métier LLS_DEF and achieving the number of trips at sea planned for the discards observer programme. Regarding the first, there are two variables contributing to the noted oversampling noted, on one hand the number of species present at landings (that can, very often, exceed 15 different species), and, on the other hand, depending on the island, the short time available for sampling experienced by the technicians.

As for the implementation of the discard observer sampling programme, once again some problems occurred regarding the access of the fisheries observers on board fishing vessels that either do not present the necessary conditions to take one extra person or refuse to accept them. Besides that, problems occurred within the institution mainly due to administrative constraints, which resulted in a late implementation of the programme. All these reasons led the occurrence of the shortfalls noted.

The difficult economic situation of Portugal and the strict rules for public expenditures in the Portuguese administration have made very difficult the execution of the program. With few exceptions, the program activities have been severely restricted.

Concerning Tables III.C.3 and III.C.4:

"Achieved number of trips landings on shore":

1. Métier GNS_FIF (gill nets for finfish) – the access to these landings still remain the main difficulty in achieving the number of trips planned for sampling. The irregular activity of some vessels that use gill nets in an opportunistic bases, the remote location of some landing sites and also the fact that some are located in islands without a resident sampler, make difficult to achieve the initial goal. All these facts resulted in 38% achieved number of trips for this métier.

2. Métier LHP_PB (pole lines targeting tuna) – oversampling occurred due to an increase in the number of trips and the easy access to the vessels at landing. The samplers dedicated a bigger effort on sampling this métier. The original planned number of trips to be sampled was calculated in reference to a year with low catches of tuna.

3. Métier LLS_DEF (set longline for demersal fish) – For most of the trips sampled in this métier there are failures in the application of the sampling scheme for the reasons described above. Thus, there is a need to perform further samples, which resulted in oversampling. The samplers dedicated a bigger effort on sampling this métier, also because other activities could not be executed (e.g. sampling GNS_FIF in smaller islands), due to financial constraints.

In relation to "Achieved number of trips on sea":

1. Métier LHM_FIF (hand line for finfish) – 58% achieved number of trips at sea sampled for this métier represents an increase of almost 260% comparatively with 2011. The justifications for the shortfall verified are lack of space on board for one extra person, which results in a high refusal rate.

2. Métier LLS_DEF (set longline for demersal fish) – the achievement of only 77% of the trips sampled was mainly due to the late authorization for the implementation of the discard observer sampling programme. Besides that, captains continue to deny the presence of the observers on board, or giving false dates and times for departure.

Concerning Tables III.C.5 and III.C.6:

The reasons for the occurrence of oversampling, and according to each species are:

1. *Aphanopus spp.*: Since 2011 a several vessels started to target their fishing operations to this species which increased its landings in the region as well as its availability for sampling. The opportunity to collect data on this species/stock was taken and that's the reason why oversampling occurred.

2. *Phycis phycis* and *Raja clavata*: An increase in the volume of landings of this species was reflected in the higher number of specimens sampled.

3. *Sparidae*: the high number of individuals measured was due to the increase in the number of landings sampled of the métiers responsible for its capture (GNS_FIF, LHM_FIF and PS_SPF).

4. *Squaliformes*: Only sampling from discards provided length compositions for the species of this genus. Once the sampling of discards aims for 100% data collection from the species

discarded, the fact that there was oversampling (259%) is not surprising. Major input (77%) of samples in number was from species belonging to the genus *Etmopterus spp.*

The reasons for the occurrence of shortfalls, and according to each species are:

1. *Aspitrigla cuculus, Centrophorus granulosus, Dalatias licha, Mullus surmuletus* and *Zeus faber*: all these species are landed in very low quantities and are difficultly available for sampling.

2. *Molva dypterygia, Helicolenus dactylopterus* and *Sarda sarda*: a continuous decrease in the volume of landings was reflected in the lower number of specimens sampled.

3. *Polyprion americanus*: the number of fish to be measured concerning this species was clearly overestimated resulting in a low mean number of individuals per sample for length sampling. Another fact contributing to this shortfall (38%) is the presence of gutted fish mixed with whole fish. This implies that for the same capture two separate samples of the same species are collected, duplicating the sampling effort and decreasing the number of samples.

4. *Octopus vulgaris*: the métiers (FPO_MOL) targeting this species were not selected for sampling, this way the individuals sampled are a consequence of an opportunistic behavior from them regarding other fishing gears.

5. *Beryx spp. Phycis blennoides* The decrease of the quota available reduced the fishing season to 6 months, and its reflected in the low number of specimens sampled.

6. *Raja clavata*: most of the specimens landed are processed on board, only the wings are landed. The discarding at sea it's also a common practice for this species. The access to whole fish is irregular.

III.C.2. Data Quality: results and deviation from NP proposal

NAFO Areas, Iceland, Greenland and Irminger Sea

See section III.C.2 for Supra-region North Sea and Eastern Arctic (ICES areas I, II).

Iberian Fishing Ground (ICES sub-area IXa)

Different quality control analysis (quarterly and annual) are implemented on the data base. The checks assure the type of data and the range of the variables are correct.

For on-board sampling data, R scripts perform quarterly checks on all data logged by the observers into the database. Each observer checks his/her data and gets feedback on quality results. Checks are run sequentially and until observer data is free of major errors.

For both, on-board and market sampling data, a random check of 10% of the data per year is executed by inspecting the sample forms and the registered data. On this procedure observers check each other's field logs against database value. When systematic biases are found, all observer records are checked. Additionally R scripts perform annual checks on all data logged by the observers into the database.

A trial of the COST package within the AR2009, AR 2010 and AR2011 indicated that the analytical calculation of CVs was not feasible. To our knowledge, no new routines facilitating the implementation of COST for the fulfilment of the DCF requirements were released. Therefore, the precision were computed by created R routines according to the method described in Annex 1.

Achieved precision on unsorted catches (Iceland, Greenland and Irminger Sea and NAFO Areas) and on retained catches and/or landings (Iberian Fishing Ground) are as expected.

As pointed out during PGCCDBS 2012 (ICES, 2012) the métier concept is a very useful one in that it allows for a common description of fishing trips after they have occurred. This enables the routine monitoring of fleet activity, changes in target species, changes in discarding practices, etc. The métier is not however a useful concept for defining sampling stratum. For the reasoning set out in WKPRECISE and WKMERGE, sampling strata have to be defined in advance, have to be stable over time, have to be non-overlapping and have to include attributes of the sampling unit that can be used to inform the allocation of effort between strata.

Métiers do not generally fulfill these criteria, and the attempt to sample to métier defined targets has resulted in the widespread adoption of quota sampling, with the likely consequence that the collection of data may actually have become more biased, and certainly less cost effective to collect. The resolution at which métiers are defined may also be detrimental to the cost effective use of limited resources. As an example, a case-study on the precision levels required to attain a 20% CV in quarterly total discard volume of two Portuguese bottom otter trawl fisheries indicated that an unmanageable three-fold increase in current annual at-sea sampling levels would be required to achieve such precision for both métiers (Prista and Jardim, 2012).

It seems clear that there are a number of steps that need to be taken before we approach the ideal both at the national and the coordinating regional level.

Autonomous Region of Azores (ICES area X)

Quality checks and validation procedures implemented are: (1) All samples are checked by a coordinator before the input of data (2) All data introduced in the database is checked for syntax errors; (3) A random check of 10% of the data is executed by inspecting the registered data for logical errors; (4) Length distributions are then connected with the market landings for future cross examinations.

III.C.3. Follow-up of Regional and International Recommendations

NAFO Areas, Iceland, Greenland and Irminger Sea

See section III.C.3 for supra-region North Sea and Eastern Arctic (ICES areas I, II).

Iberian Fishing Ground (ICES sub-area IXa)

RCM NA 2012	
Recommendation	**Follow up actions**
RCM NA 2012 recommends that the metier descriptions for fishing grounds under the remit of the RCM be up-dated by each MS in as much detail as possible. These descriptions to be used as a tool, in conjunction with outputs from the RDB, to identify metiers that could be combined for region ally coordinated sampling plans. *Follow-up actions needed: MS to update Metier descriptions.*	The update of the metier description was not a priority for the RCM NA 2012 as priority was given to the data call and to provide data to be uploaded to the RDB. Nevertheless, Portugal regularly updates these templates and data.

RCM NA 2011	
Recommendation	**Follow up actions**
MS should make sure that their landings abroad are included in the Regional Database upload allowing the RCM to analyse the possible needs for bilateral agreements. *The RCMs should perform an annual analysis on landings in foreign countries and conclude where bilateralagreements need to be made. MS should setup agreements, fixing the details of sampling, compilation and submission of data in each case when it is indicated by the RCM that a bilateral agreement is needed. Standard output algorithms to enable analysis of compiled data should be included in the RDB.* *Follow-up actions needed: MS to make sure landings abroad data are included into the RDB*	Portugal will take this recommendation into consideration. In 2012, Portugal didn't upload data in the RDB. Some difficulties were experienced when uploading data to FishFrame 5.0 in response to the "Data call for commercial fisheries landing and sample data for the 2012 Regional Coordination Meeting" (Date, June 1, 2012). Most of those difficulties reflect innadaptation and lack of flexibility in current FishFrame DB in what concerns data collected from the wide diversity of fisheries sampled in EU waters. Of particular concern are aspects regarding Anonymity of the vessel data which is not guaranteed by the current FishFrame version. Portugal submitted a working document to the RCMs 2012 detailing the problems met during the upload.
RCM NA recommends MS to check in their NP proposal 2012 that sufficient coverage of deep - water fisheries on-board sampling is planned, in order to meet the EWG needs. *Follow-up actions needed: MS to check and consider increasing the sampling coverage of deep-water fisheries in their amendment of 2012 NP proposal*	Regarding on-board sampling of deep water metiers, some vessel owner's refused to take observer due to lack of space on-board and other logistic reasons indicated by the ship owners. Although Portugal is making an effort to increase the participation of vessels in the national sampling programme, the number of trips sampled at sea is usually below the expected. These aspects are described below in section III.C.4.
MS to update metier descriptions already compiled by RCM NA 2010 and using the standard template complete descriptions for any new regionally ranked metiers identified.	The update of the metier description was not a priority for the RCM NA 2012 as priority was given to the data call and to provide data to be uploaded to the RDB. Nevertheless, Portugal regularly updates these templates and data.
MS to fill in template on concurrent sampling and provide it to the chair of RCM NA for compilation and sending to the chair of STECF EWG 11-19 in advance of the December meeting	Done.
RCM NA 2010	
Recommendation	**Follow up actions**
RCM 2010 recommends that MS use the template provided by RCM NA 2009 to update old métier descriptions (when needed) and describe new ranking métiers identified at this RCM, and strictly respect the agreed naming conventions of fishing ground and métiers as	The update of the metier description was not a priority for the RCM NA 2012 as priority was given to the data call and to provide data to be uploaded to the RDB. Nevertheless, Portugal regularly updates these templates and data.

well as the deadline for submission of the information.	
RCM 2010 provides a template for summarizing national information on the actions undertaken by MS to include concurrent sampling in their sampling programmes, and recommends that MS use this template to document their activities regarding this topic.	This template has been set up during RCM NA 2011. Portugal already documented the activities regarding concurrent sampling in the adopted template.
RCM NA recommends Spain and Portugal to arrange between them a common distinction of mesh size ranges for all of their metiers operating in Iberian waters.	A common distinction of mesh size ranges for all the métiers operating in Iberian waters has already been agreed between Portugal and Spain.
RCM NA 2010 recommends MS to review precisely all statements made by RCM NA in the section describing the fishing and sampling activities per fishing grounds, and propose actions.	Portugal responds to RCM recommendations and agreements, as far as they are relevant for portuguese fisheries.

RCM NA 2009	
Recommendation	**Follow up actions**
For the purposes of ranking metiers to sample, National data on effort, retained catches and value by metier and fishing ground should be compiled regionally in advance of the next meeting. To enable this, participants from MS should strictly respect the agreed naming conventions of fishing ground, metiers and units of the variables as well as the deadline for submission of the national data. *RCM NA recommends the use the average of the reference period 2007 – 2008 for the ranking.*	Portuguese sampling and national data on effort, retained catches and value was provided to the RCM NA 2010 Agreed naming conventions of fishing ground, metiers and units of the variables were considered throughout 2011.
For the purposes of understanding the heterogeneity of metiers and the consequences for task sharing and discard sampling, national descriptions of the regionally ranked metiers should be compiled using the metier description template Annex XII. To enable this, participants from the MS should strictly respect the agreed naming conventions of fishing ground and metiers as well as the deadline for submission of the information. Appointed persons are responsible for requesting the data and compiling it on a regional level	To allow meaningfull international task sharing, portuguese metiers were described in the agreed template forms (see RCM NA 2010). Agreed naming conventions of fisghing ground, metiers and units of the variables were considered throughout 2011.

III.C.4. Actions to avoid shortfalls

NAFO Areas, Iceland, Greenland and Irminger Sea

See section III.C.4 for supra-region North Sea and Eastern Arctic (ICES areas I, II).

Iberian Fishing Ground (ICES sub-area IXa)

Concerning the on-board sampling, the strategy is conditioned by the good will of the skippers to cooperate with IPMA. Portugal is making an effort to increase the participation of vessels in the national sampling programme. The institute is approaching vessel owners and skippers through the national fishermen organisation, which accounts for 80% of the fleet, and has in this way been successful in increasing the number of collaborating boats. However, it is still difficult to reach the remaining 20% of the fleet in order to cover all vessels of a métier (refuse rates are being recorded). At the same time, the number of vessels that can carry observers on board is also limited due to technical (space) aspects. For these reasons, the sampling strategy is quasi-random.

It should be noted that the chance to go on board on a vessel depends on the vessel's owner readiness to take an observer on board. Influenced by current consequences of the fishery policy, fishermen often decline from assisting the DCF. Additionally, a large number of vessels are not prepared to take observers on board. Other deviations occurred because of short notice changes in the fishing behaviour.

As shown on the achievements results regarding concurrent sampling at market, there was a large number of trips corresponding to the use of more than one metier. An import parcel of the portuguese mainland fleet is composed by vessels operating a variety of gears and often using several different gears in the same trip, making it impossible to separate retained catches by metier. Portugal is considering and evaluating several sampling schemes (increase on-board sampling, inquiries, self-sampling, etc) to overcome this issue.

Autonomous Region of Azores (ICES area X)

Constant adjustments are made to the sampling programme to avoid problems but bias can be occur due to difficulties raised by the fishing industry operators concerning the fish handling, or allowing observers onboard, or even weather conditions. The resulting is an opportunistic sampling strategy, which always tries to counteract to the benefit of a random sampling.

In order to achieve the number of trips at sea planned concerning both métiers (LHM_FIF and LLS_DEF), and to solve part of the problems observed in 2011, a sub-contracting with a private company occurred in 2012, but the late implementation of the contract did not allowed to achieve the total planed trips.

Other Regions

III.C.1. Achievements: results and deviation from NP proposal

The description below should be considered along the following sampling strategies:
Concurrent sampling at sea: Samples of a trip drawn by an observer on board of a fishing vessel.
Other: Samples of a trip drawn in the harbor or by a fisherman at sea - self sampling (see attached self_sampling form - Annex VI).
Total: Sum of all trips.

ICCAT

LLD_LPF_0_0_0
Target species: *Xiphias gladius*, *Prionace glauca*

Sampled metiers: LLD_LPF_0_0_0

Concurrent sampling at sea: 11/6
Other: 73/36
Total: 84/42

Reason for exceeding: During 2012 Portugal overtook some operational and management difficulties through the placement of a scientific observer at Peniche- the main landing port for long liners targeting large pelagic fish. Thereby, Portugal achieved to sample both, long and short duration trips. Sampling shorter fishing trips allowed sampling of a larger number of trips.
Regarding on-shore sampling, 22 out of 84 are trips sampled through self-sampling with no additional costs. Whenever on-shore, the permanence of an observer at Peniche enhanced communication with stakeholders and contributed to increase market sampling. These are the main reasons for exceeding.

FPN_LPF_0_0_0

Target species: *Thunnus thynnus*.

Sampled metiers: FPN_LPF_0_0_0

Concurrent sampling at sea: not planned
Other: 72/24
Total: 72/24

Reason for exceeding: according to fish availability, the trap activity varies considerably among seasons. Under national regulations, each tuna harvesting must be monitored by a scientific observer. Taking advantage of this obligation, sampling is, in fact, a census.

Table III.C.5 shows sampling intensity for length compositions (all metiers combined). Table III.C.6 provide the achievements on length sampling of catches, retained catches and discards by metier and species. Obtained data refer to unsorted catches, retained catches and/or landings and discards.

Length sampling intensities is conditional to the concurrent sampling characteristics and depends on the landings and catch composition. This is the main reason for the shortfalls met. For most stocks, the achieved length sampling at a national level is above the planned and requested minimum number of measurements (minimum requested is 1 fish per ton). As most of the measurements are taken on observer trips, once an observer is onboard, the entire trip is being sampled (i.e. sampling does not stop after a few hauls or fishing days, but lasts until the end of that trip).

Regarding *Thunnus thynnus* reason for exceeding is mainly the census enforced by legal provisions. Taking advantage on scientific observer's presence during each tuna harvesting, all individuals were measured. This effort has no costs to IPMA. Besides traps, IPMA proceeded on-board and market sampling for long liners targeting large pelagic fish.

IOTC

LLD_LPF_0_0_0

Target species: *Xiphias gladius*, *Prionace glauca*

Sampled metiers: LLD_LPF_0_0_0

Concurrent sampling at sea: 1/2
Other: 5/4
Total: 6/4

Reason for exceeding: sampling through self-sampling has no additional costs and Portugal is always trying to increase stakeholder participation. The fleet actually operating in IOTC is much reduced and each trip lasts, in average, for 120 days.

Table III.C.5 shows sampling intensity for length compositions (all metiers combined). Table III.C.6 provide the achievements on length sampling of catches, retained catches and discards by metier and species. Obtained data refer to unsorted catches, retained catches and/or landings and discards.

Length sampling intensities is conditional to the concurrent sampling characteristics and depends on the landings and catch composition. This is the main reason for the shortfalls met.

Autonomous Region of the Azores(ICCAT)

Concerning Tables III.C.3 and III.C.4

"Achieved number of trips landings on shore":

1. Métier LHP_FIF (pole lines for tuna) – since the Azorean archipelago experienced a good tuna fishing season in 2012, it resulted in oversampling this métier. In addition to tuna, there were also many landings from smaller vessels of other pelagic fishes captured with pole and line.

Concerning Tables III.C.5 and III.C.6:

The reasons for the occurrence of oversampling, and according to each species are:

1. *Thunnus obesus, Thunnus alalunga and Katsuwonus pelamis*: The important volume of landings for the tuna species was reflected in the higher number of specimens sampled. Since tuna are migratory species and the occurrence varies enormously every year, the planed minimum number of fish to be measured is difficult to forecast.

The reasons for the occurrence of shortfalls, and according to each species are:

1. *Isurus oxyrhinchus*: this species landed very low quantities and is difficultly available for sampling.
2. *Prionace glauca* and *Xiphias gladius*: the métier (LLD_LPF) targeting these species was not selected for sampling, this way the individuals sampled are a consequence of an opportunistic behavior from them regarding other fishing gears.

Autonomous Region of Madeira (CECAF area 34.1.2)

Procedures to assign each individual fishing trip to a specific metier were conducted using the methodology described in the NP 2011_2013. The selection of the metiers was achieved using effort (fishing days), landings and the value of the landings from the reference years (2008-2009). Results from this selection are presented in Table III.C.1. Results of the implementation of the sampling of metiers are presented in Table III.C.3 and the metier sampling strategy employed is in Table III.C.4.. These tables present the expected samples by metier (in accordance with the NP) and its achievement during 2012.

Tables III.C.5. show the total number of individual measured (all metiers combined) and Table III.C.6. the length sampling of catches, landings and discards by metier and species. In Table III.C.5 it is also provided the precision level (CV) obtained.

III.C.2. Data Quality: results and deviation from NP proposal

High CVs are expected for the highly migratory pelagic species, due to the wide size range of the catch. On the other hand, it is difficult to increase sampling, as most fishing trips last for months (up to 4/5 months). Another reason for such high CVs is the change on the size classes used for the calculations. In the past 5cm size classes were used, but currently these were changed to 2cm, as requested by the relevant RFMOs. However, it must be acknowledge that these data are a minor part of the data set used for the stock assessment, which combines data reported by all major countries fishing for these species in the Atlantic (e.g. Spain, Japan, Brazil, Taiwan, etc.). Moreover, RCM Med&BS 2012 considers that the calculation of CV is a poor indicator for quality.

Regarding data collected by the Autonomous Region of the Azores, quality checks and validation procedures implemented are: (1) All samples are checked by a coordinator before the input of data (2) All data introduced in the database is checked for syntax errors; (3) A random check of 10% of the data is executed by inspecting the registered data for logical errors; (4) Length distributions are then connected with the market landings for future cross examinations.

IOTC

See section III.C.2 above for supra region Other Regions (ICCAT)

Autonomous Region of Madeira (CECAF area 34.1.2)

Analysis of the fulfilment of the sampling objectives set for 2011 in the above mentioned tables show that the overall coverage was in accordance with these objectives. However, like in the previous years, a different situation result for the trips sampled on shore in comparison with the trips sampled on board (see Table III.C.4.). There was a good coverage of trip landings on shore, in general over passing the initial number of trips planned (largely exceeding 100% in all metiers). The oversampling achieved in the coverage of trip landings on shore was intended to overcome the impossibility, in 2012, of implementing the plan of observers onboard due to administrative and budgetary constraints

III.C.3. Follow-up of Regional and International Recommendations

ICCAT

RCM LDF 2012	
Recommendation	**Follow up actions**
The RCM MED&BS recalls its 2008 recommendation and recommends MS to investigate the accuracy of the geographical origin of landings and effort data (using the VMS data where possible). This information should be reviewed during the next RCM MED&BS	
Concerning the east bluefin tuna stock (Eastern Atlantic and Mediterranean sea), the RCM Med&BS appreciates the progress achieved with the provision of metier related data (length) from MS participating in RCM LDF (Portugal,	Data has been provided according to the required data formats.

France, Spain) to the PGMed chair. However, the Group recommends that the data are provided according to the required data format, in order to be actually utilized for a complete estimation of the relevant CV of the bluefin tuna.	

RCM LDF 2011

Recommendation	Follow up actions
Considering that the quality of the work of the ICCAT working groups depends on the adequate participation of experts by all UE-MS, therefore the two groups strongly recommend the participation of experts in scientific meetings from all MS involved in fisheries of managed by ICCAT.	Portugal is ensuring the participation of experts on the relevant scientific meetings.
Considering that the current DCF does not allow any changes on the codification of métiers, the two groups recommend all MS involved in tuna and tuna-like fisheries to strictly follow the SGRN guidelines in terms of coding and naming conventions and also the reference list of métiers agreed by both groups at levels 6 and 7. For the transmission of data to the relevant RFMO (i.e. ICCAT), the conversion tables adopted by the two groups should be used.	Portugal is following this recommendation on data transmission.
For future DCF, the naming and coding métiers should approximate the coding system of RFMOs involved in this RCM.	Portugal is following the preparation of the forthcoming DCF.

IOTC

See section III.C.3 above for supra region Other Regions (ICCAT).

III.C.4. Actions to avoid shortfalls

ICCAT

As stated above, during 2012 IPMA overtook some operational and management difficulties through the placement of a scientific observer at Peniche- the main landing port for long liners targeting large pelagic fish. IPMA, is always enhancing communication with stakeholders in order to minimize difficulties raised by the fishing industry operators and trying to reach its wide participation.

Regarding the Autonomous Region of the Azores sampling scheme, constant adjustments are made to the sampling programme to avoid problems but bias can be occur due to difficulties raised by the fishing industry operators concerning the fish handling. The resulting is an opportunistic sampling strategy, which always tries to counteract to the benefit of a random sampling. A supplementary sampling effort is foreseen at the tuna main landing places.

IOTC

See section III.C.4 above for supra region Other Regions (ICCAT).

Autonomous Region of Madeira (CECAF area 34.1.2)

As it was done in previous years, to overcome the difficulty of collecting information of the fisheries onboard we made a considerable effort, using the technical resources from the institution, in the collection of information and concurrent sampling made in the fishing pierduring the unloading of fish (this implied an increased utilization of our own personnel due to the fact that most of the unloading of fish, namely the demersal species from the metier LLS_FIF_0_0_0 occur during the night) and also the cross references with logbooks.

The implementation of the annual plan of observers will be resumed as soon as the Region overcome the budgetary constraints.

III.D. – Recreational fisheries

North Atlantic (ICES areas V-XIV and NAFO areas), ICCAT, IOTC CECAF

III.D.1. Achievements: results and deviation from NP proposal

Catches of Salmon Sharks are forbidden by national law for recreational fisheries. Regarding the Sea Bass, a Survey targeting maritime-touristic operators was made in 2011 and results show that catches of this species are very low (only few hundred kg) within this area of activity. As stated in previous reports, we still face the problem that the licensing process, as defined by national regulation, doesn't record any contacts from the license owners. Because of this, during 2012 it was not possible to implement a pilot study targeting all vessels with recreational fisheries. In 2013 an online survey is previewed to be in place in order to collect this kind of information.

III.D.2. Data quality: results and deviation from NP proposal

No new data was collected during 2012 regarding Sea Bass.

III.D.3 Follow-up of Regional and international recommendations

Recreational fisheries: Best practice.	
RCM NA 2010 Recommendation	RCM NA recommends MS not to wait for the outcomes of the PGRFS to revise current (when relevant) and prepare future NP Proposal on recreational fisheries, but base their planning on the DCF requirements and their own knowledge of the fisheries. RCM NA also recommends to consider the recommendations of WKSMRF, WGEEL, and the future recommendations of PGRFS.

Follow-up actions needed	Revising MS NP proposals 2011-2013 and drafting new NP's.
Responsible persons for follow-up actions	All MS.

Recommendations were followed, with the constraints explained in section III.D.2.

III.D.4. Actions to avoid shortfalls

Further steps are being taken, like implementing an online survey in DGPA website. Due to financial constraints in Portugal it was not possible to proceed with this option during 2012. Implementation of the online survey will be made in 2013.

III.E. Stock-related variables

The required, planned and achieved sampling is summarized in Table III.E.3.

Portugal is running three pilot studies: Pilot Study for Glass Eel (Annex I), Pilot Study on the Métiers Where Skates are Caught in IXa (Annex II) and the Pilot Study on the Portuguese Trammel Nets Fishery in ICES Div. IXa (Annex III).

North Sea and Eastern Arctic (ICES areas I, II)

III.E.1. Achievements: results and deviation from NP proposal

Budgetary and administrative constraints on a national scale had significant influence on sampling plan implementation. On-board sampling is carried out by crew male nurses properly trained, with whom IPMA (formed IPIMAR) has established successive annual contracts. During 2012, the hiring processes were substantially blocked and no alternatives to accomplish the plan were made available. Those constraints are the reason for shortfall on the achieved number of trips sampled at sea and on the sampling intensity for length compositions.

Portugal is trying to solve the inability to read otoliths through the training of specialized resources and seeking to establish international agreements. However it is arguable that these shortcomings can directly be translated into a low cost-benefit status, taking into account that, at least as regards catch at age data, otoliths have continue to be collected for the most important commercial fish species, following the sampling protocols. These otolith collections are properly stored and available to the EU fisheries research network, in order to provide age length keys for various commercial catches on an annual basis.

Since one fishing trip lasts, on average, four months it is practically impossible to collect and store gonads on board. Thus, maturity data is not collected. In addition, the fast fish processing after each haul is not compatible with the harvesting procedure of gonads.

III.E.2. Data Quality: Results and deviation from NP proposal

Quality control procedures are implemented on the data base. The checks assure the type of data and the range of the variables are correct. A random check of 10% of the data per year is executed by inspecting the sample forms and the registered data.

A trial of the COST package within the AR2009, AR2010 and AR2011 indicated that the analytical calculation of CVs was not feasible. To our knowledge, no new routines facilitating the implementation of COST for the fulfilment of the DCF requirements were released. Therefore, the precision were computed by created R routines according to the method described in Annex 1.

III.E.3. Follow-up of Regional and international recommendations

RCM NS&EA 2012

Recommendation	Follow up actions
Where it was identified that bilateral agreement is required, according to the rules agreed upon at the RCM NS&EA 2011 and endorsed by the LM8 and STECF 11-19, MS are requested to establish or update a bilateral agreement on sampling of landings abroad. *Follow-up actions: MS to evaluate the need for such an agreement based on the overview provided by the RCM NS&EA (Annex No ??)*	Not applicable.

RCM NS&EA 2011

Recommendation	Follow up actions
The RCM NS&EA recommends that the task sharing species are investigating by MS participating in current age reading programs and decide whether task sharing is desirable or possible for the future	Portugal is labeled as a possible "leading country" only for the redfish (*Sebastes mentella*) in ICES DIV. I,II. For the moment Portugal has no experts on redfish aging available.

RCM NS&EA 2010

Recommendation	Follow up actions
RCM NS&EA considers that, in a situation where sampling resources are limited, priority should be given to the sampling of discards in those métiers with high discarding. In order to be able to allocate and prioritize sampling effort to observer programmes at sea or self sampling programmes for estimating discards, preliminary information is required on discarding by métier where it is available. The information required is an estimate of the level of discarding (volume and percentage) and the main species contributing to the discard fraction of the catch.	The specific workshop allocated to this topic was not planned yet. Portugal has collected some information on discards, in most recent years, and has reported this information at the relevant working groups.
The RCM NS&EA recommends that relevant countries in vestigate the distribution of their landings from the named stocks in Table 12 in relation to the overall distribution across the stock area. Where they have no sampling plans for catches, they should consider if their	In nowadays Portuguese North Alantic far sea fisheries continue to record a negligible level of discards on their metiers

component of the stock is adequate ely sampled, spatially and temporally by other MS.	

RCM NS&EA 2009	
Recommendation	**Follow up actions**
The RCM NS&EA recommends MS to refer to the table in Annex 5 of its report for elaborating maturity sampling programmes, when drafting their National Programme proposals 2011-2013.	Portugal has followed this recommendation in the elaboration of the NP 2011-2013.

III.E.4. Actions to avoid shortfalls

As mentioned before, the fleet operating in ICES areas I and II also operates in NAFO area. In both regions sampling is carried out by samplers who remain on board throughout the period of the fishing trip, which can last from 2 to 3 months with likely short notice changes in the fishing behaviour and operation area. To avoid shortfalls Portugal is always trying to reach a wide participation of vessels which have not been sampled by observers before. As stated above, 2012 data collection ran atypically. In 2013 administrative issues are being overcome and sampling programme is proceeding as planned.

With likely short notice changes in the fishing behaviour and operation area fleet activity is unpredictable. To avoid shortfalls Portugal is always trying to reach a wide participation of vessels which have not been sampled by observers before.

It is recognized that the variety of stock assessment input data, obtained by the Portuguese sampling of NAFO areas and Eastern Arctic fishing grounds is reduced.

To ensure that the planned length sampling is covering, as much as possible, the full range of expected lengths for each species with a good ratio cost/benefit, IPMA is developing an approach to set a minimum sampling effort on board to the Portuguese NAFO and NEAFC main fisheries. This approach is under development and in the near future will be presented to the relevant working groups in order to be included on the new DC-MAP.

Portugal is trying to solve the inability to read otoliths through the training of specialized resources and seeking to establish international agreements. However it is arguable that these shortcomings can directly be translated into a low cost-benefit status, taking into account that, at least as regards catch at age data, otoliths have continue to be collected for the most important commercial fish species, following the sampling protocol of the programme. These otolith collections are properly stored and are available to the EU fisheries research network, in order to provide age length keys for various commercial catches on an annual basis.

Since one fishing trip lasts, on average, four months it is practically impossible to collect and store gonads on board. In addition, the toxicity and volatility of storage organic compounds is not compatible with hygiene and food safety requirements for the fisheries sector. Thus, maturity data is not collected.

North Atlantic

III.E.1. Achievements: results and deviation from NP proposal

Reasons for shortfalls are explained in the following text by fishing ground. Note that Portugal has provided sufficient length measurements and age samples to the relevant ICES workings groups for assessment purposes.

NAFO Areas and Iceland, Greenland and Irminger Sea

Except for the variable sex-ratio@length on *Sebastes spp.* (stock 3M and 3LN), the achieved number of individuals is clearly above the planned and requested minimum number. These shortfalls are conditional to the budgetary and administrative constraints that took effect during 2012 which allowed a single observer subcontracting.

Iberian Fishing Ground (ICES sub-area IXa)

For a few stocks, the achieved number of individuals well exceeded the planned and requested minimum number of measurements. The reason for exceeding is the sampling scheme based on the number of samples and not individuals, with a minimum number of specimens per sample to ensure its quality. Excess sampling does not incur in additional expenditure. Reasons for shortfall described below.

For several species, no readings of otoliths were performed. Portugal is trying to solve the inability to read otoliths through the training of specialized resources and seeking to establish international agreements. The absence of age readings for several species gave rise to the mentioned lack of CVs. However, as planned, otoliths were collected and stored following the practices recommended by the expert groups, prepared for reading and subsequent calculation of precision levels.

Lepidorombus whiffiagonis, areas VIIIc, IXa: although the share of this species in EU TAC is barely 3% and current retained catches are reduced to a few tons, it was not asked for derogation. The concernment on supporting a sampling scheme for the species is due to the use of its length composition in stock assessment.

Lophius budegassa and *Lophius piscatorius*, areas VIIIc, IXa: as the fish reaches the market gutted, weight sampling and gonads collection only occur during surveys at sea, or purchased (very expensive) before processed. During 2012 no surveys were performed (see Section III.G). This results in reducing the possibility of sampling weight@length, sex-ratio@length and maturity@length.

Nephrops norvegicus, FU 28, 29 and *Parapenaeus longirostris*, area IXa: due to the high cost of samples, most individual sex-ratio and maturity variables are sampled during concurrent sampling at market. Maturity is only ascertained if females and individual weight is mainly collected during surveys at sea. During 2012 no surveys were performed (see Section III.G). Thus, weight@length, sex-ratio@length are above the planned minimum number of individuals to be measured.

Aphanopus carbo, all areas; *Merluccius merluccius*, areas VIIIc, IXa: *Raja brachyura*, area VII, IXa; *Raja clavata*, *Raja montagui*, *Leucoraja naevus*, all areas; *Scomber scombrus*, areas II, IIIa, IV, V, VI, VII, VIII, IX; *Sepia officinalis*, all areas: sample acquisition is subject of market availability. Portugal is always trying to solve logistical problems associated with fish samples acquisition.

Solea solea, area IXa: sample acquisition was suspended until results from the ongoing analysis of collected data are available to identify gaps on stock related variables.

Trisopterus spp., all areas: sample acquisition was suspended until results from the ongoing analysis of collected data are available to identify gaps on stock related variables.

Autonomous Region of Azores (ICES area X)

Since early 2012, the difficult economic situation of Portugal and the strict rules for public expenditures in the Portuguese administration have made very difficult the execution of the program. With few exceptions, the program activities that depended on acquisitions of goods (such as purchasing of fish), and other activities have been severely restricted. For this reasons the number of fish sampled for stock based variables where not achieved for most off stocks.

A directed effort was made for *Raja clavata* and other Squaliforms, in order to calculate a length-weight relationship, resulting in a large number of individuals sampled for length, weight and sex.

III.E.2. Data Quality: Results and deviation from NP proposal

NAFO Areas and Iceland, Greenland and Irminger Sea

See section III.E.2 for Supra-region North Sea and Eastern Arctic (ICES areas I, II).

Iberian Fishing Ground (ICES sub-area IXa)

Different quality control analysis (quarterly and annual) are implemented on the data base. The checks assure the type of data and the range of the variables are correct.

For on-board sampling data, R scripts perform quarterly checks on all data logged by the observers into the database. Each observer checks his/her data and gets feedback on quality results. Checks are run sequentially and until observer data is free of major errors.

For both, on-board and market sampling data, a random check of 10% of the data per year is executed by inspecting the sample forms and the registered data. On this procedure observers check each other's field logs against database value. When systematic biases are found, all observer records are checked. Additionally R scripts perform annual checks on all data logged by the observers into the database.

A trial of the COST package within the AR2009, AR2010 and AR2011 indicated that the analytical calculation of CVs was not feasible. To our knowledge, no new routines facilitating the implementation of COST for the fulfilment of the DCF requirements were released. Therefore, the precision were computed by created R routines according to the method described in Annex 1.

The exceeding sampling intensities which did not incur in extra costs resulted in improved precision level in most cases.

The major problems are found to cover the entire range sizes in order to obtain the required accuracy levels. This, in most cases, is due to the impossibility of access to some places for fishing purposes.

Autonomous Region of Azores (ICES area X)

Quality checks and validation procedures implemented are: (1) All samples are checked by a coordinator before the input of data (2) All data introduced in the database is checked for syntax errors; (3) A random check of 10% of the data is executed by inspecting the registered data for logical errors.

III.E.3. Follow-up of Regional and international recommendations

NAFO Areas and Iceland, Greenland and Irminger Sea

See section III.E.3 for Supra-region North Sea and Eastern Arctic (ICES areas I, II).

Iberian Fishing Ground (ICES sub-area IXa)

RCM NA 2012	
Recommendation	**Follow up actions**
RCM NA recommends MS put in place bilateral agreements for sampling of landings abroad where applicable.	Bilateral and multilateral agreements in place between Portugal and any other country already listed in table *bl&mlagreements_NP*.

RCM NA 2011	
Recommendation	**Follow up actions**
RCM NA recommends all MS to have a careful look at the tables in annex, in order to identify stocks for which a bilateral agreement would improve the sampling scheme.	Portugal plans to identify stocks for which a bilateral agreement would improve the sampling scheme.
RCM NA recommends MS to complete properly the tables III.E.1 and III.E.2.	Portugal has followed this recommendation in the submitted NP 2012.

RCM NA 2010	
Recommendation	**Follow up actions**
RCM NA recommends MS to include a detailed methodology on the method used for estimating the catches of the 2 Lophius species. This description should be sent to the WGHMM Lophius stock coordinators in 2011 and included in a revised NP proposal.	The two species of anglerfish (*Lophius piscatorius* and *Lophius budegassa*) are not usually landed separately, for the majority of the commercial categories, and they are recorded together in the ports' statistics. Therefore, estimates of each species in Spanish landings from Divisions VIIIc and IXa and Portuguese landings of Division IXa are derived from their relative proportions in market samples. ICES. 2011. Report of the Working Group on the Assessment of Southern Shelf stocks of Hake, Monk and Megrim (WGHMM), 5 - 11 May 2011, ICES Headquarters, Copenhagen. ICES CM 2011/ACOM:11.625 pp.

RCM NA 2009	
Recommendation	**Follow up actions**
The RCM NA recommends MS to refer to the table in Annex X of the report for elaborating maturity sampling programmes, when drafting their National Programme proposals 2011-2013	Portugal has followed this recommendation in the elaboration of NP 2011-2013.

III.E.4. Actions to avoid shortfalls

NAFO areas, Iceland, Greenland and Irminger Sea

See section III.E.4 North Sea and Eastern Arctic (ICES areas I, II).

Regarding crustacean species, sampling directly at the auction by the staff has in general been very successful and cost effective. Portugal will continue with this sampling setup.

Regarding the other stocks, Portugal plans to keep following the fishing activity improving sampling when acquisition is subject of market availability

Autonomous Region of Azores (ICES area X)

Concerning the species where shortfalls were noted, observers on board will be asked for conducting the collection of biological data from individuals that are discarded.

Other Regions

III.E.1. Achievements: results and deviation from NP proposal

ICCAT

For a few stocks, the achieved number of individuals well exceeded the planned and requested minimum number. Taking advantage of the permanence of the observer on board, once an observer is on-board, the entire trip is sampled. As the measurements are taken on observer trips, the reason for over-sampling is also that all fish of a randomly chosen sub-sample has to be measured. Excess sampling does not incur in additional expenditure.

For several species, as indicated in table III.E.3, it is difficult to plan in advance the number of individuals to be weighted on board since the use of weighing scales on board depend on vessels facilities and weather conditions.

IOTC

See section III.E.1 above for supra region Other Regions (ICCAT).

Autonomous Region of Madeira (CECAF area 34.1.2)

Tables III.E.1 and III.E.2 summarises the landings in 2012 and the long term sampling of required stocks. Table III.E.3 summarises the sampling intensity for stock-based variables. The coverage achieved in the species considered was below than it was planned previously and this was due to a lack of fish for biological samplings.

III.E.2. Data Quality: Results and deviation from NP proposal

ICCAT

A trial of the COST package within the AR2009, AR 2010 and AR2011 indicated that the analytical calculation of CVs was not feasible. To our knowledge, no new routines facilitating the implementation of COST for the fulfilment of the DCF requirements were released. Therefore, the precision were computed by created R routines according to the method described in Annex 1.

High CVs are expected for the highly migratory pelagic species, due to the wide size range of the catch. On the other hand, it is difficult to increase sampling, as the fishing trips last for months (up to 4/5 months). Another reason for such high CVs is the change on the size classes used for the

calculations. In the past 5cm size classes were used, but currently these were changed to 2cm, as requested by the relevant RFMOs.

<div align="center">**IOTC**</div>

See section III.E.2 above for supra region Other Regions (ICCAT).

<div align="center">**Autonomous region of Madeira (CECAF area 34.1.2)**</div>

Determination of variables including age estimates from otolith readings are still in progress due to a delay in otolith readings. In case of sardine, the small amount of landings of this species did not allowed the collection of data in this species.

It was not possible to accomplish the biological sampling of *thunnus obesus* due to the impossibility of accessing to the specimens processed in the industry and the very high cost of this species does not allow the acquision of specimens for laboratorial biological sampling. Similar situation was observed concerning the biological sampling of *Sardina pilchardus*, *Centrophorus squamosus* and *Katsuwonus pelamis*, mainly due to the lack of fish for bio sampling purpose.

III.E.3. Follow-up of Regional and international recommendations

<div align="center">**ICCAT**</div>

Not applicable.

<div align="center">**IOTC**</div>

Not applicable.

III.E.4. Actions to avoid shortfalls

<div align="center">**ICCAT**</div>

Not applicable.

<div align="center">**IOTC**</div>

Not applicable.

III.F. Transversal variables

III.F.1. Capacity

III.F.1.1. Achievements: Results and deviation from NP proposal

As stated in our NP the collection of capacity data defined in DCF was achieved through Fleet register database and covers 100% of population.

III.F.1.2. Data quality: Results and deviation from NP proposal

Results reflect the actual state of the fleet. There are no deviations from the NP proposal. Some numbers might not match the fleet register data. This is due to the recommendation to include any active vessel in 2012 and as a consequence DCF capacity includes some vessels that became active after January, 1st.

III.F.1.3. Actions to avoid shortfall

Not applicable.

III.F.2. Effort

III.F.2.1. Achievements: Results and deviation from NP proposal

Mainland

As stated in our NP the collection of effort data defined in DCF was achieved through logbooks for vessels > 10m and through sales notes for vessels < 10m.

During 2012 all logbooks covering the vessels with a pattern of activity with more than one day, were computerised. This information covers all the activity in foreign grounds, landings in foreign ports and also information of larger vessels operating in national waters.

For the remaining vessels, with one day trip and landings of fresh fish on mainland ports, the source of information for effort estimation are the sales notes. For the purpose of effort estimation it is considered each auction sale as an effort day.

Therefore, for the mainland fleet all information to support effort estimation is collected, enabling to comply with rules laid down on the regulation.

For vessels > 10m data is already aggregated by metier. For vessels < 10 m, as stated in our NP, work was undertaken toward the metier approach and some of the metiers are already identified. This work continued through 2009 but stopped in 2010 due to several budget restrictions that prevented acquisitions of services. It was not yet possible to resume this work in 2012.

III.F.2.2. Data quality: Results and deviation from NP proposal

Mainland

The deviations from the NP proposal are related with metiers for vessels < 10 m, due to the impossibility of subcontract of services in 2012, as stated in the previous section.

III.F.2.3. Follow-up of Regional and international recommendations

STECF EWG 11-04	
Recommendation	**Follow up actions**
EWG 11-04 considers that duplication of Control Regulation (CR) data collection commitments in the DCF should be limited to the cases where the data collected under the CR is unlikely to fulfill the data quality requirements of the DCF.	The use of Control Regulation data is enough to fill all the needs regarding effort data for vessels >= 10m.

The Expert Group 11-04 recommends including in the DCF commitments for Member States to set up at national or regional level a formal system for cooperation between control authorities and the National programmes of the DCF. The cooperation system should address all issues of relevance for the collection and processing of data to be collected under the CR and the DCF.	

III.F.2.4. Actions to avoid shortfalls

Mainland

The work will resume when a future subcontract is made.

III.F.3. Landings

III.F.3.1. Achievements: Results and deviation from NP proposal

Mainland

The information resulting from sale at wholesale fish markets, in the case of landings of fresh or refrigerated fish, complemented by the logbook landing declaration for all landings of frozen fish at Portuguese ports and all landings at foreign ports, makes it possible to achieve the aims of this parameter.

The geographical origin of landings was disaggregated in accordance with level 3 of Appendix I. This parameter was collected, in the case of logbooks, from the information stated in the landings declaration and, by other hand, in the case of 1st sales, was disaggregated by fishery at mainland Portugal, the Azores and Madeira Autonomous Regions, Spain and Mauritania (ICES statistical divisions VIII, IXa and X and CECAF 34.1.2 and 34.1.3).

Only the information collected from the 1st sale by auction meets the required specifications in terms of the assessment of the value of commercial landings with disaggregation and in compliance with the criteria set forth in the Regulation. Information is therefore available for all species landed at the wholesale markets in mainland Portugal and the autonomous regions.

The collection of data makes it possible to assess annual commercial landings of all stocks in accordance with the level 3 for geographical disaggregation indicated in Appendix I.

III.F.3.2. Data quality: Results and deviation from NP proposal

There are no deviations from the NP proposal.

III.F.3.3. Follow-up of Regional and international recommendations

Not applicable.

III.F.3.4. Actions to avoid shortfalls

Not applicable.

III.G. Research surveys at sea

III.G.1. Achievement: Results and Deviation from NP proposal

During 2012, as stated in table III.G.1, Portugal planned to carry out the following research surveys at sea: Sardine, Anchovy, Horse Mackerel Acoustic Survey, Nephrops TV Survey Offshore Portugal, and the Western IBTS 4th quarter and to participate in the Flemish Cap Groundfish Survey .

However, budgetary and administrative constraints of national scope turn unfeasible Noruega RV reparation and chartering of another research vessel. Portugal achieved to participate in Flemish Cap Groundfish Survey, carried out by Spain with the RV Vizconde d'Eza.

Sardine, Anchovy, Horse Mackerel Acoustic Survey

Not performed.

Nephrops TV Survey Offshore Portugal

Not performed.

Flemish Cap Groundfish Survey

This survey was carried out by Spain with the RV Vizconde d'Eza between June 24th to July 25th. Portugal has taken part by means of a team of two technicians. The survey ran within normality, were performed in total 179 hauls, of which 174 valid. The 32 planned strata were sampled (Figure III.G.1a.)

The data from the Flemish Cap Groundfish Survey, FCGS, is stored in the IEO data base.
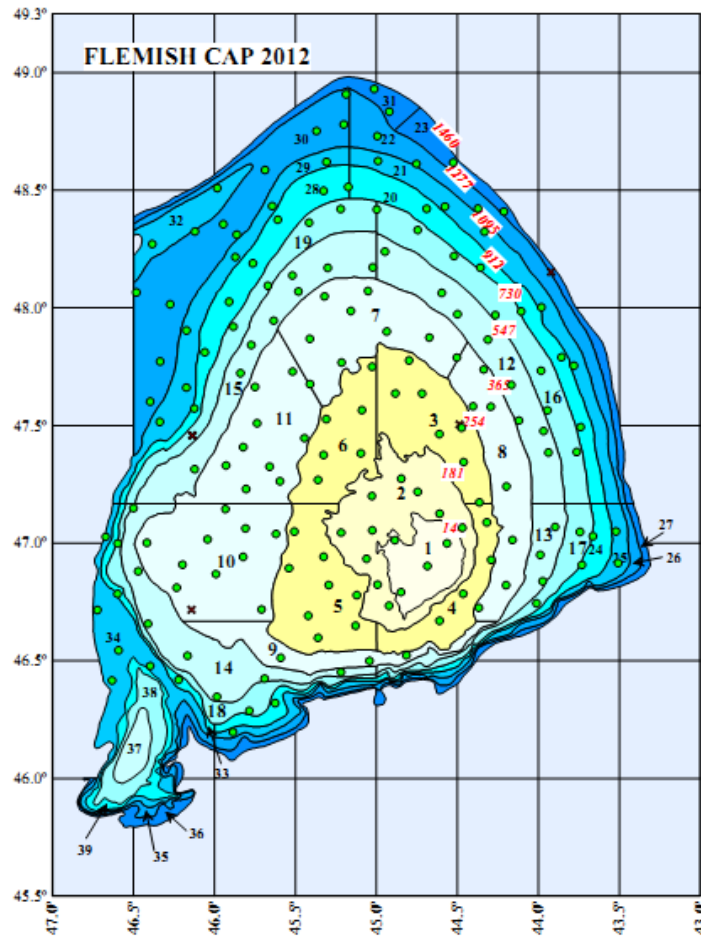
Figure III.G.1.a Flemish Cap Groundfish Survey, FCGS (RV Vizconde d'Eza). Sampling grid.

Western IBTS 4th quarter

Not performed.

III.G.2. Data Quality: Results and deviation from NP proposal

Due to the low technical execution the results are far from the expected.

III.G.3. Follow up of Regional and International recommendations

Not relevant.

III.G.4. Actions to avoid shortfalls

At the time of this report, Noruega RV is already repaired and the technical implementation of research surveys at sea takes place within the planned. In order to perform the triennial International Mackerel and Horse Mackerel Egg Survey IPMA charted a research vessel operated by the Hydrographic Institute of the Portuguese Navy. Likewise, the annual Sardine, Anchovy and Horse Mackerel Acoustic Survey was recently completed with success aboard Noruega RV.

Considering that a new research vessel is an essential tool for the national sea strategy, the Ministry of Agriculture, Sea, Environment and Spatial Planning recently announced that Portugal will have a new research vessel to replace Norway RV, which has several operational problems.

IV. Module of the evaluation of the economic situation of the aquaculture and processing

IV.A. Collection of data concerning the aquaculture

IV.A.1. Achievements: results and deviation from NP proposal

In 2012 the surveys used to collect data for EUROSTAT were also used to collect economic data for DCF.
Economic data for 2011 was collected and estimates were made.

IV.A.2. Data quality: results and deviation from NP proposal

There are no deviations from the NP proposal.

IV.A.3. Follow-up of Regional and international recommendations

Not applicable.

IV.A.4. Action to avoid shortfalls

Not applicable.

IV.B. Collection of data concerning the processing industry

IV.B.1. Achievements: Results and deviation from NP proposal

NP states that processing industry data were to be collected by NSI (National Statistic Institute). We received the 2011 data from NSI. The sources of information are: Structural Business Statistics (SBS) and SUT- Supply and Use Tables (Intermediate consumption by product and by industry).

Under SBS it is not possible to collect data on Depreciation of Capital. SBS also does not collect unpaid labour or FTE by gender. However there is sufficient information available in order to make estimates for these variables.

FTE by gender will be calculated using the following formula:
$$FTE(by\ gender) = TOTAL\_FTE \times gender\_employed/total\_nb\_employed$$
Where:
TOTAL_FTE = Total FTE in the reference year
Gender = Male/Female

Gender_employed = Number of males/females employed in the reference year
Total_nb_employed = Total number of person employed in the reference year

IMPUTED VALUE OF UNPAID LABOUR = UNPAID_LABOUR $\times$ AVG_WAGE
Where:
UNPAID LABOUR = Number of unpaid persons employed (SBS: S16120)
AVG_WAGE = Total_wages/Total_employees

IV.B.2. Data quality: Results and deviation from NP proposal

Quality under SBS and SUT is assured by National standards, guaranteed by NSI and in compliance with Eurostat rules of quality.

However it is not possible to provide quality indicator such as coverage rate or CV as they are not defined for these statistical procedures (e.g., no sample is defined as administrative data from fiscal declarations is used by NSI)

IV.B.3. – Follow-up of Regional and international recommendations

Not applicable.

IV.B.4. Actions to avoid shortfall

Procedures were developed during 2012 in order to obtain some of the missing variables from SBS (Imputed value of unpaid labour, FTE by gender) but it is not possible to obtain the variable "Depreciation of Capital"

V. Module of evaluation of the effects of the fishing sector on the marine ecosystem

V.1. Achievement: Results and deviation from NP proposal

The data required for the calculation of indicators 1, 2, 3, 4 and 8 as defined in Commission Decision 2010/93/EU is collected through the research surveys and from on-board sampling monitored by IPMA. For this purpose, IPMA is using data from 20-years' time series collected through national surveys and on-board sampling from 2004.

It has to be highlighted that IPMA has been able to connect the requirements related to the DCF with those defined by the EU Marine Strategy Framework Directive (MSFD). Having internationally agreed on the use of DCF data for MSFD purposes, IPMA has linked indicators 1 (Conservation status of fish species), 2 (Proportion of large fish), 3 (Mean maximum length of fish) and 4 (Size at maturation of exploited fish species) with the qualitative descriptors for determining the Good Environmental Status (GES) as defined in the MSFD, e. g. for Descriptor 1 (Biological diversity), Descriptor 3 (Commercial species) and also on Descriptor 4 (Elements of marine food webs) of MSFD.

Relatively to DCF indicators 5 (Distribution of fishing activities),6 (aggregation of fishing activities) and 7 (areas not impacted by mobile bottom gears) preliminary analysis were made in 2011 using 2005 VMS data for bottom trawl gears in Div IXa. However it must be stressed that the methodologies for calculation of these 3 indicators are still being discussed and proposed to be addressed in a ICES Workshop on DCF Indicators to be held in October 2013. Moreover, EU has recently requested ICES a scientific advice on data collection issues which includes the review of the existing environmental indicators to measure the impact of fisheries on the seabed and take proposals in time for the new DC-MAP 2014-2020. Therefore, the basis for ecosystem indicators definitions and its methodologies should outcome from these discussions and recommendations.

In what concern indicator 9, the fuel consumption (both quantity and value) was estimated with data from economic survey and crosschecked with administrative data. Values of landings, total and per commercial species were obtained from sales notes. Fuel consumption was obtained per fleet segment and year. Fuel consumption by quarter and metier was obtained as a proportion of the total effort days spent by metier and quarter in relation to the total fleet segment and year.

This was made only for vessels with overall length > 10 metres. For vessels < 10 m we couldn't calculate metiers due to the budget restrictions already stated in III.F.2.1.

V.2. Actions to avoid shortfall

Indicator 9

As soon as the budgetary constrains will overcome we will advance with the subcontract for the small scale vessels. Only after that can we calculate the métiers.

VI. Module for management and use of the data

Management of data

VI.1. Achievements: results and deviation from NP proposal

As stated in the NP 2011-2013, primary fisheries data, whether transversal, economic or biological, is scattered among the different databases standing in the five Institutions engaged in National Programme.

Mechanisms for quality control assessment and validation procedures are executed in each one of the Institutions.

The developments achieved in 2012 regarding economic and transversal variables are the following:

1. Fishing Fleet Database
   - Development of a new software module to collect vessel information. The design of this module provides a user-friendly environment, allowing expedite analysis and update of each fishing vessel's history. This, together with a comprehensive set of validations rules, ensures a better data quality;
   - Start of the development of data correction processes for the historic data of the vessels that comprise the Portuguese fishing fleet. This, together with the aforementioned data collection module will allow more consistent information on the fishing fleet.
2. Aquaculture
   - Consolidation of the surveys to the production, and of improvements to existing online surveys;
   - Implementation of additional validations in order to ensure improvements in data quality.

VI. 2 Actions to avoid shortfalls

Due to budgetary constrain we are not able to carry out with the work related with a Central Data Base for Data Collection. It is expected that, that work will be done in 2013.

In what concern the biological data collected by IPMA, the entry into force of the sampling scheme based on metiers and concurrent sampling, forced a number of changes in databases. Due to the large volume of information stored in the national databases, its complexity and variability of the fleet behaviour of the fleet it is necessary a continuous adaptation and improvement, allowing an effective data management, appropriated to the latest international recommendations. The application of sound

data management practices, alongside a continuing effort for upgrade and consolidation of databases and exploration tools, has helped to avoid many shortfalls with the Portuguese DCF data.

We have already chosen the technical approach for the central database, and major steps have already been done. However due the problems encountered by the National Research Institute, at the moment, we are not able to work on central database for the biological data, only for the economic and transversal variables.

Nevertheless we should point it out that, several data calls had to be answered in 2012, which was done within the respective deadlines and with complete and quality-checked data. Data were transmitted to regular data users, such as ICES, JRC, and assessment working groups (see Table VI.1). No deviations occurred.

Regarding biological data, IPMA (former IPIMAR) main lines of action considers implementing a new database in an open source database management system in order to build a system ensuring the compilation of all existing databases in a common system. The project is already running, the diagnosis phase is finished and the data model is being redesigned.

Use of the data

All the sets of data used to support scientific analysis in ICES, NAFO, ICCAT, IOTC, STECF and DG MARE were organised, analysed and transmitted.

VII. Follow-up of STECF recommendations

STECF EWG 12-02 (Evaluation of NP 2012)	
Recommendation	**Follow up actions**
On Concurrent Sampling: *EWG 11-19 recommends that for on-shore sampling, MS should continue to sample the metiers and make sure to cover all the species/stocks where a demand is formulated by an end-user (or listed in Appendix VII of the Comm. Dec.), but the methodology used to achieve the goals remains at the discretion of the MS, provided that it is fully documented and approved within their NP proposal.*	Portugal considered this recommendation.

STECF EWG 11-08 (Evaluation of AR 2010)	
Recommendation	**Follow up actions**
EWG 11-08 recommends that information and descriptions of the method/software used for calculation of CV's should be included (or referred to) in the AR if not provided in NP.	Methodology of CV calculations is included in the 2012 Annual Report (see section III.C.2 and Annex 1 of the AR 2012).
EWG 11-08 recommends for the AR tables, Table II.B.1 (list of eligible meetings) that is provided by the Commission should be used and all	Done.

meetings and not only the meetings attended should be provided.	
EWG 11-08 recommends that Table III.C.1, III.C.2 and III E 1 should not to be deleted from the AR. Maintaining the tables is what is expected. This should be included in the revision of the AR guidelines.	Done.
EWG 11-08 recommends that files with filters, hidden cells, track changes, coloured cells etc should not be submitted in AR.	Done.
EWG 11-08 recommends that non conformities in the tables of the AR needs to be explained in the text.	Done.

SGRN 10-02 (Evaluation of 2009 AR)

Recommendation	**Follow up actions**
On Long-Distance Fisheries sampling: *SGRN recommends the relevant MS to attend the RCM LDF in future if the corresponding MS has a long-distance fishery in "Other regions" and to be equipped with the necessary data, background information and mandate to take decisions.*	Budgetary constrain has had significant influence on 2011 meetings attendance. Portugal attended RCM Med&BS 2012.
On Reporting of landings vs. retained catches: *SGRN recommends using the term 'retained catches' instead of 'landings' throughout.*	Portugal considered this recommendation.

SGRN 10-01 (Evaluation of 2011-2013 NP)

Recommendation	**Follow up actions**
On Sampling Codes: *Sampling frame codes table III.C.3 & III.C.4: in many MS this is missing or inconsistent between the two tables and the guidelines are not clear in explaining what is meant.*	Portugal considered this aspect and take into account the reviewed guidelines.

VIII. List of acronyms and abbreviations

CE	Comunidade Europeia
CECAF	Committee for the Eastern Central Atlantic Fisheries
CV	Coeficiente de variação
DGRM	Direcção Geral de Recursos Naturais, Segurança e Serviços Marítimos
DOP	Departamento de Oceanografia e Pescas da Universidade dos Açores
DRPM	Direcção Regional das Pescas da Madeira
GES	Good Environmental Status
IBTSWG	International Bottom Trawl Survey Working Group
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea
IPIMAR	Instituto de Investigação das Pescas e do Mar (equal to INRB/L-IPIMAR)
IPMA	Instituto Português do Mar e da Atmosfera
IOTC	Indian Ocean Tuna Commission
MSFD	Marine Strategy Framework Directive
NAFO	Northwest Atlantic Fisheries Organization
NP	National Programme
PGCCDBS	Planning Group on Commercial Catch, Discards and Biological Sampling
PNAB	Programa Nacional de Amostragem Biológica
RAA	Região Autónoma dos Açores
RAM	Região Autónoma da Madeira
SGCal	Study Group on Calibration of Acoustic Instruments in Fisheries Science
SGPIDS	Study Group on Practical Implementation of Discard Sampling Plans
SGNEPS	ICES Study Group on Nephrops Surveys
SGSIPS	Study Group on Standards in Ichthyoplankton Surveys
UAç	Universidade dos Açores
WGACEGG	Working Group on Acoustic and Egg Surveys for Sardine and Anchovy in ICES areas VIII and IX
WGDEEP	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources
WGECO	Working Group on the Ecosystem Effects of Fishing Activities
WGFAST	Working Group on Fisheries Acoustics, Science and Technology
WGEEL	Working Group on Eels
WGEF	Working Group on Elasmobranch Fishes
WGHANSA	Working Group on Southern Horse Mackerel, Anchovy and Sardine
WGHMM	Working Group on the Assessment of Bay of Hake Monk and Megrim
WGIPS	Working Group of International Pelagic Surveys
WGISDAA	Working Group on Improving use of Survey Data for Assessment and Advice
WGISUR	The Working Group on Integrating Surveys for the Ecosystem Approach
WGMEGS	Working Group on Mackerel and Horse Mackerel Egg Survey
WGNEACS	Working Group on North-east Atlantic continental slope surveys

WGNEW	Working Group on Assessment of New MoU Species
WGWIDE	Working Group on Widely Distributed Stocks
WPEB	Working Party on Ecosystems and Bycatch (IOTC)
WPTT	Working Party on Tropical Tuna (IOTC)
WKAMDEEP	Workshop on Age Estimation Methods of Deep Water Species
WKARHOM	Workshop on Age Reading of horse mackerel, Mediterranean horse mackerel and blue jack mackerel
WKFATHOM	Workshop on Egg staging, Fecundity and Atresia in Horse mackerel and Mackerel
WKLIFE	Development of assessments based on LIFE history traits and exploitation characteristics
WKMATCH	Workshop for maturity staging chairs
WKMSEL	Workshop on sexual maturit y staging on elasmobranches
WKMSGAD	Workshop on sexual maturity staging of cod, whiting, haddock, saithe and hake
WKMSPA	Workshop on Survey Design and Mackerel and Horse Mackerel Spawning Strategy
WKMSSPDF	Workshop on sexual maturity staging of sole, dab and flounder
WKPELA	Benchmark Workshop on Pelagic Stocks
WKPICS	Workshop on practical implementation of statistical sound catch sampling programmes
WKNEW	Benchmark Workshop on New Species
WKRED	Benchmark Workshop on Redfish
WKTSBLUES	Workshop on implementing a new TS relationship for blue whiting abundance estimates

IX. Comments, suggestions and reflections

No comments, suggestions and reflections.

X. References

Anon 2010a. Report of the Regional Co-ordination Meeting for the Noth Atlantic, 2010. Ostend, Belgium 19 – 21 April 2010 and 31 May – 2 June 2010.

Anon 2010b. Report of the Regional Co-ordination Meeting for the North Sea & East Arctic, 2010. Charlottenlund, Denmark, 17-21 May 2010.

Anon 2010c. Report of the Regional Co-ordination Meeting for the Long Distance Fisheries, 2010. Madrid, Spain, 3-5 March 2010.

Anon 2011a. Report of the 8th Liaison Meeting, Meeting between the Chairs of the RCMs, the chair of ICES PGCCDBS, the chair of PGMED, the ICES representative, the Chairs of STECF DCF EWG's and the European Commission, DG Maritime Affairs and Fisheries, Brussels, Belgium, 4-5 October 2011

Anon 2011b. Report of the Regional Co-ordination Meeting for the Noth Atlantic, 2011. La Rochelle, France, 12–15 September 2011.

Anon 2011c. Report of the Regional Co-ordination Meeting for the North Sea & East Arctic, 2011. Hamburg, Germany, 26-30 September 2011.

Anon 2011d. Report of the Regional Co-ordination Meeting for the Long Distance Fisheries, 2011. Ljubljana, Slovenia, 10-13 May 2011.

Anon 2012a. Report of the 9th Liaison Meeting Meeting between the Chairs of the RCMs, the chair of ICES PGCCDBS, the chair of PGMED, the chair of the Regional Database Steering Committee, the ICES representative, the Chairs of STECF DC F EWG's and PGECON and the European Commission, Brussels, Belgium, 24-26 September 2012

Anon 2012b. Report of the Regional Co-ordination Meeting for the Noth Atlantic, 2012. Galway, Ireland, 10-14 September 2012.

Anon 2012c. Report of the Regional Co-ordination Meeting for the North Sea & East Arctic, 2012. Ostend, Belgium, 3-7 September 2012.

Anon 2012d. Report of the Regional Coordination Meeting for the Mediterranean and Black Sea, 2012. Madrid, Spain, 23 – 27 July 2012.

Bishop, C. A., 1994. Revisions and additions to stratification schemes used during research vessel surveys in NAFO Subareas 2 and 3. NAFO SCR. Doc. 94/43 (rev.). Ser. No N2413.

Borges M.F., Velasco, F., Mendes, H. , Pinho, M. R., Silva, C. , Porteiro C., Le Quesne, W.J.F. 2010. Assessing the impact of fishing on the Marine Strategy Framework Directive objectives for Good Environmental Status. Developing and testing the process across selected RAC regions: The South Western Waters Region. MEFEPO Project 212881.

Doubleday, 1981. Manual of groundfish surveys in the Northwest Atlantic. NAFO Sci. Coun. Studies 2, 55p.

Duarte, R., Azevedo, M., and Afonso-Dias, M. 2009. Segmentation and fishery characteristics of the mixed-species multi-gear Portuguese fleet. ICES Journal of Marine Science, 66: 594–606.

Fernandes, A., Jardim, E., Pestana, G. 2010. Discards Raising Procedures for Portuguese trawl fleet – Revision of methodologies applied in previous years. W. Doc. Presented at the ICES 2010 Benchmark Workshop on Roundfish. 09-19 Feb 2010, Copenhagen.

ICES. 2002. Manual for the International Bottom Trawl Surveys in the Western and Southern AreasRevision II. Addendum to ICES CM 2002/D:03 Ref.: G, ACFM, ACE, 28 pp. Agreed during the meeting of the International Bottom Trawl Survey Working Group,8-12 April 2002, Dublin.

ICES. 2007. Report of the Working Group on Acoustic and Egg surveys for sardine and Anchovy in ICES Areas VIII and IX, (WGACEGG). ICES CM 2007/LRC:16

ICES. 2007. Workshop on the Use of UWTV Surveys for Determining Abundance in Nephrops Stocks throughout European Waters. 17–21 April 2007, Heraklion, Crete, Greece. ICES CM 2007/ACFM:14. 198 pp.

ICES. 2008. Report of the International Bottom Trawl Survey Working Group (IBTSWG).

ICES CM 2008/RMC:02, 228 pp. 31 March-4 April 2008,Vigo, Spain.

ICES. 2010. Report of the Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS).ICES CM 2010/SSGESST:02

ICES. 2012. Report of the Planning Group on Commercial Catches, Discards and Bio-logical Sampling (PGCCDBS 2012), 30 January–3 February 2012, Rome, Italy. ICES CM 2012/ACOM:50. 163pp.

Prista, N. and Jardim, E. 2012. Estimating Minimum Sample Size in the Portuguese Onboard Sampling Programme: Case-study with the Bottom Otter Trawl fleet. Presentation to PGCCDBS 2012.

XI. Annexes:

- **ANNEX I. Methods used to calculate CVs**
- **ANNEX II. Pilot Study for Glass Eel (*Anguilla anguilla*): Interim Report 2011**
- **ANNEX III. Pilot Study on the Métiers Where Skates are Caught in IXA: Interim Report 2011**
- **ANNEX IV. Pilot Study on the Portuguese Trammel Nets Fishery in ICES Div. IXa**
- **ANNEX V. Other Regions Self-Sampling Form**
- **ANNEX VI. Methodological document – *Annual Survey to the Fishing Fleet***

- **ANNEX I**

Methods used to calculate CVs

I.   Calculate analytical CV values of length compositions (all metiers combined) by species

$$\overline{TL} = \frac{\overline{TL_i} * n_i}{N}$$

$\overline{TL}$, mean length
i, indexes the number of samples collected
n_i, number of observed individuals per sample i
N, total number of observed individuals

$$Var(\overline{TL_i}) = \frac{\sum_{k=1}^{n_i}(TL_{ik} - \overline{TL_i})^2}{n_i - 1}$$

k, indexes any observation of the sample i

$$Var(\overline{TL}) = \sum_{i=1}^{Na} Var(\overline{TL_i})\left(\frac{n_i}{N_a}\right)^2$$

N_a, total number of samples

$$CV = \frac{\sqrt{var(\overline{TL})}}{\overline{TL}}$$

II.   Calculate analytical CV values for length@age by species

$$\bar{l}_i = \frac{\sum_j n_j \cdot p_{ij} \cdot l_j}{\sum_j n_j \cdot p_{ij}}$$

n_j, number of observed individuals by length class j

l_j, length class range

p_{ij}, proportion of individuals aged i in length class j

$$\bar{l}_i^2 = \frac{\sum_j n_j \cdot p_{ij} \cdot l_j^2}{\sum_j n_j \cdot p_{ij}}$$

$$var(l_i) = \bar{l}_i^2 - (\bar{l}_i)^2$$

$$CV(l_i) = 100 \times \frac{\sqrt{var(l_i)}}{l_i}$$

III. Calculate analytical CV values for weight@length by species

$$TW = aTL^b$$

$$\sigma_u^{\,2} = \frac{RSS}{n-2} \qquad\qquad RSS \text{, residuals sum of squares}$$

$$Var\!\left(\hat{W}\right) = \sigma_u^{\,2}\!\left(1 + \frac{1}{n}\right) \qquad\qquad \hat{W} \text{, predicted weight}$$

$$CV = \frac{\sqrt{Var(\hat{W})}}{\hat{W}}$$

IV. Calculate analytical CV values for sex-ratio@length by species

$$p = \frac{p_i * n_i}{N}$$

p , female proportion
i , indexes the number of samples collected
n_i , number of observed individuals per sample i
N , total number of observed individuals

$$q = 1 - p \qquad\qquad q \text{, male proportion}$$

$$Var(p_i) = \frac{p_i q_i}{n_i}$$

$$Var(p) = \sum_{i=1}^{Na} Var(\overline{p_i})\!\left(\frac{n_i}{N_a}\right)^{\!2} \qquad\qquad N_a \text{, total number of samples}$$

$$CV = \frac{\sqrt{Var(p)}}{p}$$

V. Calculate analytical CV values for maturity@length by species

$$p = \frac{p_i * n_i}{N}$$

p , mature proportion

i , indexes the number of samples collected

n_i , number of observed individuals per sample i

N , total number of observed individuals

$$q = 1 - p$$

q , imature proportion

$$Var(p_i) = \frac{p_i q_i}{n_i}$$

$$Var(p) = \sum_{i=1}^{Na} Var(\overline{p_i})\left(\frac{n_i}{N_a}\right)^2$$

N_a , total number of samples

$$CV = \frac{\sqrt{Var(p)}}{p}$$

1. INTRODUCTION

Recruitment of glass eel is at a historically low level and continues to decline with no signs of recovery across Europe. All glass eel recruitment series available from NW Europe demonstrate a clear decline since the early 1980s.

Although Portugal is considered one of the most important countries with respect to recruitment of glass eel, just after France and Spain, there are no reliable historical data on glass eel relative abundance.

With the implementation of the National Eel Management Plans according to the EU Regulation (CE) 1100/2007, eel recruitment monitoring is a key element for the evaluation of the measures adopted for the recovery of the stock of European eel. Although several European countries have already established recruitment monitoring programmes, in Portugal currently does not exist such monitoring. The proposal of this pilot study aims to establish the basis for a future sampling plan that monitors eel recruitment in Portugal and therefore permits the evaluation of the efficiency of the stock recovery measures currently being set in place. The objective is to initiate a monitoring plan to evaluate seasonal variation and interannual trends of glass eel recruitment based on CPUEs in two distinct riverine systems of Portugal.

2. ACHIEVEMENTS: RESULTS AND DEVIATIONS FROM THE PROPOSAL

SCOPE	RESULTS
Minho River: introduction of a voluntary logbook to be filled-in by fishermen.	6 fishermen with logbooks.
Minho River: monthly purchase of glass eel samples to determine biological characteristics: length, weight, pigmentation stage.	Glass eels were sampled in January and February, November and December. Fishery season reduced for 3.5 months (early November – middle of February in 2012-2013). Sampling will cover only 4 months instead 6 months as purposed
Lis River: preliminary visits to establish relations and contract fishermen.	The problem that we identified last year was not possible to be surpassed this year but the continuous contacts produce results at end of the year. Fisheries will be performed in 2013.

Lis River: four-monthly fishing (October-May) to evaluate abundance in terms of CPUE and seasonal trends of recruitment.	No fisheries
Lis River: laboratory determination of length, weight and pigmentation stage.	No fisheries

3. OTHER REMARKS

In Minho river 2012 actions are the continuation of the ones initiated in 2011. It was not possible to enlarge the number of fishermen filling-in log-books.

In Minho river, Capitania do Porto de Caminha in order to protect eel resource and control fishery:

a) reduced glass eel fishery season to 4 new moons, which corresponds to a period of approximately 3.5 months (7th November – 17th February for 2012-2013 season);

b) introduced an obligatory log-book to be filled in by fishermen of their daily activity.

The objective of Pilot Study was to initiate a monitoring plan to evaluate seasonal variation and interannual trends of glass eel recruitment based on CPUEs. In Minho river the fishery season was of 6 months (November-April) which covered almost all the main recruitment period (November-May). With the reduction for 3.5 months the objective is still valid for the commercial period but we must keep in mind that global year assessment can be biased. Recruitment is dependent of seasonal environmental conditions and half of the significant recruitment period is now out of commercial season

One possible action is the realization of independent fisheries during all the recruitment period. For quantitative purposes, data from independent fisheries during commercial season could provide an index related with commercial catches that allow extrapolations from data obtained out of commercial season.

With the introduction of an obligatory log-book by Capitania, log-books purposed in Pilot Study can look now as a duplication of actions. In reality official log-book will be a useful tool for control actions of authorities, cross-checking information reported by fishermen and traders, but it is not expected that data reported will be more reliable than data reported earlier when only total season catches were obligatory to declare. We still consider the introduction of log-books among a group of trustable fishermen the best way to evaluate recruitment based in CPUEs although official data can be use to assess compliance levels and extrapolate data.

In Lis river, our purpose in Pilot Study was to contract "former" fishermen to realize fisheries in order to evaluate actual level of recruitment in comparison with data from end of last century, based in CPUEs.

Fishery is forbidden but an illegal activity occurs similarly to other areas of the country.

The problem we had last year, that we reported, was the fact that fishermen contacted showed reluctance in performing fishery actions to us because of possible interference in the illegal activity. Our attempt to gather information could easily be considered a control operation.

This year we continue with contacts trying to explain them the importance of getting information about this resource attempting to surpass their reluctance about the interference on illegal activity, which is a fact. The performance of independent fisheries by a governmental institution will avoid, in a greater or minor degree, the illegal activity.

Finally, at the end of the year our contacts produced results and we reached an agreement with two fishermen to perform fisheries. which will start in 2013.

ANNEX III

INTERIM REPORT 2012

PILOT STUDY ON THE MÉTIERS WHERE SKATES ARE CAUGHT IN IXA

1. INTRODUCTION

The main objective of the pilot study is to improve the knowledge on the metiers where skates are caught, filling the gaps in existing basic data on the métiers, e.g. skates fishing effort and economic aspects and on the biology of rajidae species.

The pilot study was designed for three years, starting in 2011. During the first year focus was put in Peniche landing port, center Portugal. In the second and third years, based on the results obtained during the first year, the study is being extended to several landing ports, north and south of Portugal. This pilot study is being developed in Portugal but its conception, goal and data analysis will be performed in a close collaboration with Spain, which is also submitting a similar proposal for their Atlantic waters (ICES Subarea ICES VIIIb, VIIIc and IXa). Such joint approach constitutes an important contribution for the future stock assessment of skates at Iberian Eco-region.

The terms of the study will be subdivided in two categories:

1. Fishery:

   - Revisions and up to date of historical landings data (i.e. landed weight and value), according to the specific composition of rays by month, métier and geographical distribution;

   - Characterization of the fleet landing skates and discards;

   - Standardised effort and CPUE by month by specie;

   - Preparation of a Guide of Rays in Iberian waters, in cooperation with Spain (Spanish, Portuguese and English versions);

2. Biological:

   - Obtaining of length frequencies, sex proportion and maturity determination for all rajidae species. Besides the studies referred before, under the proposal, studies were initiated on age/growth and on reproduction for the species *Raja brachyura*, *Raja undulata* and *Rostroraja alba*, the later are a rare species in Portuguese landings.

   - Description of condition of landings by port and métier.

   - Estimation of conversion factors (wing/total weight ratios by specie).

2. ACHIEVEMENTS: RESULTS AND DEVIATIONS FROM THE PROPOSAL

SCOPE	RESULTS
Development and application of a data collection routine on artisanal fishery to overcome the lack of logbooks for vessels measuring less than 10 m.	The current sampling program was evaluated through the estimative of coefficients of variation in the fishing effort to several vessel groups and gear types. A method for characterization of the polyvalent fleet was developed based on vessel size and skates fishery seasonality. A paper describing the methodology and results, as well the evaluation of the current sampling program is currently being prepared. A comparison between 2010 and 2011 is performed aiming the improvement of data collection. In the same work issues as constrains on data collection and collaboration with the sector will be addressed.

During 2012 a total of 32 visits to fishing ports were performed (24 to Peniche and 8 to Sesimbra) resulting in a total of 242 inquiries (194 in Peniche and 48 in Sesimbra) on trips characterization. Inquiries aim to collect information on gears, fishing duration and localization of the fishing hauls as well on species length frequencies and sexes.

In October 2012, a meeting suggested by the AAPCS with Portuguese fishermen associations took place at the IPMA. The main goals of this meeting were the promotion of the direct collaboration with the sector and a review of the importance of the skates in Portuguese fisheries. For that a PowerPoint presentation was constructed and landings data was analysed. As a secondary output a report on the characterization of the skate fishery regarding their historical economic and quantitative importance is |

	currently being elaborated.
	In the beginning of the pilot study a collaborative work with a fishermen cooperative (CAPA) of Peniche landing port was established based on a self-sampling, scenario. The main goal of the collaboration was the collection of more detailed and accurate information on landed species, gear types used and location of the fishing hauls. Collected data was analysed and its quality was evaluated. Due to permanent errors in the fulfilment of the inquires, a meeting with fishermen collaborating with the pilot study was promoted in order to communicate the first results and to improve the data available. Yet during the same year a revaluation of data was performed revealing no improvements and leading to the end of the collaboration.
Identification of the main fishing regimes involved in the skates fishery and evaluation on its seasonal dynamics.	Based on several data sources (DGPA and fishing ports inquiries) an R Software routine was developed. The routine enables the characterization of the polyvalent fleet catching skates in the different Portuguese fishing ports. The routine was applied to Peniche, Matosinhos and Sesimbra since 2009 to 2012. In the future other fishing ports will also be addressed. The same routine will provide a basis for future analysis as fishing effort and landed weight by specie.
Standardised effort and CPUE by month by specie.	Fishing effort estimations were presented in the WGEF 2011 and 2012 and during the next year information will continue to be collected and analysed. Based on the fishing regimes characterized in the previous task a new analysis of the fishing effort will

	be performed for the Peniche fishing port. An R Software routine (combination between FDA and AFDM) was constructed in order predict the gear used in trips for which information is not available. The second step will be the estimation of the fishing effort by species and gear used. A preliminary analysis of the fishing effort will also be performed for other fishing ports than Peniche, based on the already collected information.
Preparation of a Guide of Rays in Iberian waters, in cooperation with Spain (Spanish, Portuguese and English versions).	-
Obtaining of length frequencies, sex proportion and maturity determination for all rajidae species.	During 2012 data on biological parameters was collected from 424 individuals from several species inhabit Portuguese waters: 64 *Raja undulata*, 133 *Raja montagui*, 31 *Raja microocellata*, 146 *Raja clavata*, 132 *Raja brachyura*, 23 *Leucoraja naevus* and *5 Raja miraletus*. Data on reproductive biology (seasonality, size-at-maturity and fecundity) of the species *Raja montagui* is currently being analysed.
Description of condition of landings by port and métier.	In Portugal, skates are landed whole. During 2013 detailed information on discards that happen during the sale will be collected.
Estimation of conversion factors (wing/total weight ratios by specie).	Conversion factors were estimated for several skate species through the application of a linear regression. A short report which describes the methodology and the first results was elaborated. Data collection will continue for the species *clavata*, *Raja microocellata, Leucorajaaja naevus* and *Raja undulata.*
Study of economical importance of landings of rays by fleet, based on inquiries.	A pilot inquire is already constructed and ready to be applied during 2013. The interviews will have a trimestral periodicity and will be performed in Peniche, Matosinhos e Sesimbra under the project scope.

ANNEX IV

INTERIM REPORT 2012

PILOT STUDY ON THE PORTUGUESE TRAMMEL NETS FISHERY IN ICES DIV. IXA

1. INTRODUCTION

The fishery targeting anglerfish (*Lophius* spp.) is one of the most important artisanal mixed fisheries in Portugal mainland. This group of species is mainly caught by trammel nets but high catches are also recorded from gillnet fisheries, and exploitation depths have historically been up to 600 m deep until the implementation of the Annex III to Regulation (EC) No 43/2009. According the rule in force, Community vessels shall not deploy gillnets, entangling nets and trammel nets at any position where the charted depth is greater than 200 m in the above mentioned areas in ICES zones IIIa, IVa, Vb, Via, VIb, VIIbcjk, VIII, IX, X, XII.

However, point 9.4 clearly stipulates the derogations for the use of gillnets and entangling nets down to 600 meters, targeting hake and anglerfish respectively. Moreover, point 9.12 of the same annex stipulates that the Commission may decide, after consulting the STECF, to exclude certain fisheries, in ICES Zones VIII, IX, X, from application of points 9.1 to 9.11, 'where information provided by Member States shows that those fisheries result in a very low level of shark by-catches and of discards'.

To accomplish such requirement and increase the knowledge on the fishery, a pilot study on the Portuguese trammel nets fishery targeting anglerfish in ICES Div. IXa started in May 2012 under the PNAB/DCF. The pilot study was designed for three years and has four main objectives:

1 - Characterization of the fisheries and of the fleets that use trammel nets between the 200m and 600m isobaths: number and characterization of the vessels, seasonal and spatial distribution of the fisheries.

2 - Characterization of the catches by species: variation in space and time.

3 - Estimation of fishing effort and its distribution in space and time.

4 - Estimation of the impact of these fisheries on sharks: definition of estimators and estimation of the catches of each shark species by these fleets.

Those are subdivided in three tasks:

1 - Analysis of fishing regime of vessels with trammel net licenses in Portugal mainland. The data used will be derived from the data base available at the General Portuguese Directorate. Possible data sources are logbook, daily landings by boat and VMS data.

2 - Development of an onboard sampling programme to estimate the level of by-catch, including deep-water sharks. The data analysis and results from 1) will be basis to select the vessels for which on board sampling will be performed. The sampling programme will be updated by cross-checking information from the on-board sampling and the other data sources referred in 1). The fishing trips with on board observers are authorized by the national entities to operate between 200 and 600 m deep.

3 – Analysis of the sampling data.

The first 8 months of the project were dedicated to the characterization of the fishery, design of the on board sampling scheme, skippers and fishermen associations' contacts and on board sampling.

2. ACHIEVEMENTS: RESULTS AND DEVIATIONS FROM THE PROPOSAL

SCOPE	RESULTS
Characterization of the fisheries and of the fleets that used trammel nets between the 200m and 600m isobaths	1. Use of official landing data to characterize landings of anglerfish by fleet and landing port. 2. Examination of the adequacy of logbooks to extract fishing trips/hauls information for the present study. 3. Use of logbook data to characterize trammel net fisheries in general and fisheries targeting anglerfish. Evaluation of other gears used by the fleet. 4. Definition of a criterion to identify the potential fishing hauls for anglerfish from logbooks data. 5. Selection of vessels and respective trips assumed to target anglerfish at certain time of the year. 6. Fleet segmentation of the vessels selected in 4. 7. Characterization of the catches, gears used, geographical areas and seasonality using logbooks information.
Characterization of the catches by species: variation in space and time	1. Use of official landing data to characterize seasonality in landings of anglerfish. 2. Use of logbook data to characterize trammel net catches in general and in fisheries targeting anglerfish: identification of the main target species, seasonality of the catches and other target species of the fleet (using other gears). 3. Use the dataset defined in points 3-5 from the previous objective to characterize anglerfish and other important species catches, seasonality and potentially important fishing grounds.

Development of an onboard sampling programme	1. Use the results from the objectives above to define main fishing grounds for anglerfish and to identify vessels that can potentially collaborate in the project. 2. Design of a sampling scheme at a quarter basis, for 5 different areas of Portugal mainland and two depth strata (200 to 400 and 400 to 600 m deep). Fishing hauls outside the range 200-600 m were also considered. 3. Elaboration/adaptation from concurrent projects of the sampling sheets and database. 4. Skippers and fishermen association contacts.
On board data collection	1. A total of 16 hauls targeting anglerfish were sampled at three different geographical areas. 2. Data collected included: identification of the catches at a species level, total length of the main species, depth and geographical position of the catch, effort data. 3. Biological sampling of some shark specimens brought to the laboratory.
Analysis of the sampling data	1. Interim analysis of the data has been developed in order to produce scientific advice to national authorities and for data quality control, particularly about the impact of the fishery in deep-water shark populations.
Port sampling and interviews	1. To better characterize the fisheries and to complement onboard sampling, dedicated sampling to trammel net fishing trips with anglerfish was carried out (length sampling and interviews, when possible), in coordination with other sampling programs under the DCF currently in place.

3. ACTIONS TO AVOID SHORTFALLS

1. Identification of fishing hauls at 200-600 m deep.

    The data available was not adequate to extract depth information precluding the execution of the initial objective of characterizing fisheries and catches at that depth interval (official landing data does not include such information and in logbooks the field for depth information is not mandatory being seldom reported), Besides, since the close of the fishery in 2009 (from 200-600m deep), the data analysis from recent years would not be helpful to fulfill the objective. As a consequence, analyses were carried out without depth constrains. In the future, vessel monitoring systems data will be available and will allow identifying those fishing hauls and crossing information between databases. In addition, the derogation established in EU regulation N. o 227/2013, point 34b from 20th March 2013, that allows

fishing operations with trammel nets at that depth range, will allow compiling more information for this fishery.

2.   On board sampling

The number of fishing trips sampled was lower than the expected due to:

-    Meteorological conditions
-    Change of the fishermen strategy (other target species, gears and/or fishing grounds) maybe because of the anglerfish availability.
-    Administrative constraints (must be treated one by one, depending on its nature)

ANNEX V

OTHER REGIONS SELF-SAMPLING FORM

Dados do lance	Data	Nº lance	Posição inicial	Latitude (º ' S/N)	Longitude (º ' S/N)	Rumo	Profundidade pesca	Nº anzóis	Nº bóias	Tipo estralho		Vento	Lua	Temperatura (ºC)	Nº Tartarugas libertadas	Nº Tartarugas mortas		Nº Aves capturadas		Catécons
		1	Posição final																	

Espécie	Espadarte (SWO)	Tintureira (BSH)	Anequim (SMA)	Atum-patudo (BET)	Atum-albacora (YFT)	Atum-voador (ALB)	Espadim-azul (BUM)	Espadim-branco (WHM)	Veleiro (SAI)	Escolar (LEC)	Dourada (DOL)	T.luzidia (FAL)	T.pt.branca	T.martela (SPN)	Barracuda (BAZ)	Líria (AMB)
Capturar lance para-vivo	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barbatanar		0	0									0	0	0		
Comprimentos dos peixes capturados (incluindo os de pequena dimensão)																
Nº peixes não medidos																
	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos	Quilos
Lance próximo (para-vivo)																
Total para barbatanar		0	0										0	0	0	
Total para vivo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total para limpo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

| | | | | | | | | | | | | | | | | Observações | | | | | | |

T.tigre (GAC)		T.zorra (BTH)		P.lua (MOX)		Uge (PLS)		Dragão (ALX)		Coção (GAG)		Jumento (RMM)		T.crocodila (PSK)		Outras espécies (código 3 letras)						
Nº libertador		Nº libertador		Nº libertador		Nº libertador		Nº libertador		Nº libertador		Nº libertador		Nº libertador		Nº libertador		Nº libertador	
Viva	Mort	Viva	Mort	Viva	Mort	Viva	Mort	Viva	Mort	Viva	Mort	Viva	Mort	Viva	Mort	Viva	Mort	Viva	Mort

ANNEX VI

Methodological document

ANNUAL SURVEY TO THE FISHING FLEET

March 2012

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INTRODUCTION

Following the Regulation 2010/93/EU of December 18, 2009, the DGRM develops an annual survey to the fishing fleet. The main objective is collecting data to enable the preparation of an annual report, based on statistical analysis of socio-economic variables by segment Portuguese fishing fleet (ensuring confidentiality of information transmitted). Variables to be collected are those identified in Appendix VI of Commission Decision 2010/93/UE.

I - GENERAL CHARACTERIZATION

1. Code/Version/Date

Code:

Version: 1.0

Date: March 2012

2. Designation

Annual Survey To The Fishing Fleet

3. Statistical activity

National programme of the data collection for the fisheries sector

- Gathering data related with Economic variables and transversal variables

4. Targets

The Annual Survey of Fishing Fleet is directed to each vessel and sent to the owners. It has as main goal to establish a common framework for the collection, compilation and transmission of data on the structure of economic and financial activity of the national fishing fleet.

It is intended to provide statistical information for analyzing:

• The structure and evolution of the activity of the fishing fleet;

• Evaluate the financial performance of the fisheries sector.

5. Description

The annual survey is sent by email or by mail to owners who belong to the selected sample.

The information collected focuses on qualitative and quantitative data.

Qualitative data:

- Identification of each respondent and responsible for completing the survey, which allows an update of the universe;

- Existence of activity of the vessel and the reason for which there was activity in that year.

Quantitative data:

- Number of months of operation of the vessel;

- Number of days of activity of the vessel;

- Average number of hours worked;

- Liters and fuel costs;

- Average monthly number of male, female, full-time and part-time workers;

- Number of workers on board the vessel without any salary;

- Personnel costs;

- Repair and maintenance costs, fixed and variable costs;

- New investments in the vessel;

- Total value of assets and debt;

- Income of the vessel.

The sending of surveys carried out annually. We sent the survey and instructions for completion. We guarantee the confidentiality of information provided.

6. Responsible Entity

Direcção Geral das Pescas e Aquicultura (DGPA)

Nome: Carlos Moura

Morada: Av. Brasília 1449-030 LISBOA

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7. Relacionamento com Outras Entidades

Direcção Regional de Pescas da Região Autónoma dos Açores (DRPA/RAA)

Nome: Alzira Luís

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8. Financing

The Costs of the Economic Survey of Fleet Data are entered in the budget of the National Fisheries Data Collection (DCF), more precisely in the budget of the evaluation module of the economic situation of the Sector.

DCF's budget is supported by national and Community funds. Community financing is 50%.

9. Legal Framework

The survey of economic data of the fleet is one of the components of the National Fisheries Data Collection, which was created with the approval of the regulations:

- Council Regulation (EC) No 199/2008 of the 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector;

- Regulation (EC) No 93/2010, December, 18, 2009 adopting a multiannual Community programme for the collection, management and use of data in the fisheries sector for the period 2011-2013;

10. Obligation to respond

Although Portugal is obliged to respond to the European community, there is no legal obligation to feedback from owners of fishing vessels.

11. Type of the Operating Statistics

- **Sample surveys**:   Fishing vessels licensed and active

12. Source Type of Information

Direct (survey);

Administrative Procedure

13. Periodicity of making the supply

Anual

14. Geographical Scope

Portugal Continental.

15. Users of Information

Internal

- DI

Community and International

- DG MARE

The needs of the users specify the data presentation.

16. Start Date

- 2003

17. Project schedule

Year n+1	SEP		OCT		NOV		DEC		JAN		FEB		MAR	
	1ªq	2ªq	1ªq	2ªq	1ªq	2ªq	1ªq	2ªq	1ªq	2ªq	1ªq	2ªq	1ªq	2ªq
Sample preparation														
Shipping questionnaire														
reception														
1st Insistence														
Computerisation data														
treatment of data														
provisional data														
analysis														
Definitive data														
estimates Available														

Project schedule - **Economic Data of the Fishing Fleet** -

18. Products

a) **Quality Standard :**

12 months.

Information of the year n available in year n +2.

b) **Available products:**

Tipo de produto	Periodicidade de disponibilização	Nível geográfico	Tipo de utilizador	Tipo de disponibilização
Data file with estimates	Annual	NUTS I	DG MARE	Regulation
Microdata file	Annual	NUTS I	DSIGA	Internal use

II – METHODOLOGY

19. Population

Universe: Set of all vessels of the Portuguese fishing fleet

Universe Target: Set of the vessels of the Portuguese fishing fleet operating in the reference year.

It is considered that a vessel is active in a year if there are licenses for this boat in this year.

20. Sampling

Fishing vessels of the Portuguese fleet operating with activity in the reference year.

Criteria for establishment of the reference universe

The universe of the Survey to the Fishing Fleet is what is on file of the Community fishing fleet at 1 January of the reference year.

21. Sample units

Vessel.

22. Observation Units

Vessel.

23. Drawing the Sample

Type of sampling: Probabilistic

Data Type: Transversal

Stratified random sampling method

The population is divided into subgroups or strata according to the fleet segments that correspond, at least, to those defined in the Regulation[1]. Then, two samples are selected: one consisted of active licensed vessels and other consisted of licensed vessels that have activity record.

Thus, in each case are collected simple random samples of each stratum (proportional to the representation of the stratum), which join in a single sample which is undoubtedly most representative of the population.

The segments can be subdivided if this results in increased accuracy.

The sample should be defined taking into account the following stratification:

Gear type	Gear groups	Fishery	Gear Codes
Passive gears	Vessels using hooks	NR	HOK
	Vessels using Pots and/or traps	NR	FPO

---

[1] (EC) 949/2009 – Pág. 22 – Apêndice 3

	Drift and/or fixed netters	NR	DFN
	Minho		
	Vessels using Polyvalent "passive" gears only	NR	PGP
Active gears	Dredgers	NR	DRB
	Purse seiners	Purse seiners	PS
		Xávega	
	Demersal trawlers and/or demersal seiners	trawl fish	DTS
		crustacean trawl	
		beam trawl	
	Vessel using polyvalent active gears only	NR	MGP
Polivalent gears	Vessels using active and passive gears	NR	PMP

Each one of the strata can be divided into several sub-strata, by the supra-region and length classes, according to the following classification:

Supra Region	Lengh classes (LOA)	Classe code	Subdivision (for the purpose of improving accuracy of statistical results)
AREA27	Vessels with LOA between 0 to 10 metres (including)	VL0010	VL0007
			VL0710
	Vessels with LOA more than 10 metres and less than or equal 12 metres	VL1012	
	Vessels with LOA more than 12 metres and less than or equal 18 metres	VL1218	
	Vessels with LOA more than 18 metres and less than or equal 24 metres	VL1824	
	Vessels with LOA more than 24 metres and less than or equal 40 metres	VL2440	
	Vessels with LOA more than 40 metres	VL40XX	
OFR	Division identical to AREA 27		

The subdivision of the smaller vessels allows the strata become more homogeneous and reduce the size needed to obtain the desired accuracy.

If the number of vessels to be sampled in a given stratum is less than 10, then these vessels can be clustered into another stratum with similar characteristics. The resulting stratum should be classified under the code of the sub-stratum of the most representative vessels.

The classification of vessels by stratum is made having regard to the licensing and the analysis of activity recorded in fishing logbooks and in note sales (in auction). To this file is used SQL query to the database that must be updated on each year in accordance with changes in force.

The result of this query is confronted with the file fleet Community on January 1 of the reference year n +1.

Dimension: The sample size is determined so as to ensure a coefficient of variation not exceeding 5% to the variable: "income" (reference year n-1), at the fleet segment. Some segments may be sampled thoroughly if this results in improving the quality of the estimates.

According to the regulation, the minimum size of the segment is 10 vessels.

The sample is distributed by the segments according to the "Neyman's allocation criterio"

$$n_i = \frac{N_i S_i}{\sum_{k=1}^{I} N_k S_k} \times n$$

in which:

i-index of stratum

ni - sample size in stratum i

Ni - the size of the universe, in stratum i

Si - standard deviation of the variable "Income", in stratum i

n- total dimension sample,

I-total number of strata, in the universe

Sampling: To each vessel is assigned a random number between 0 and 1 and the vessels are sorted by segment in ascending order of this number and is assigned a number of sequential order. The selection of the sample is performed independently in each segment, in a selection procedure routine. After the sequential numbering of vessels in the segment, the selection range (I_i) was determined by the ratio between the size of the universe in the segment and the size calculated for the sample, i.e. $I_i = \frac{N_i}{n_i}$.

Initially we used mid-range of selection interval $A_i = \frac{I_i}{2}$. Were selected vessels with order numbers obtained by the following expression,

$$A_{i,ki} = Int(A_i + k_i \times I_i)$$

in which:

k_i = 0,… , n_i-1

Three stages of changes occur to the sample. These changes imply the inclusion and / or disposal of vessels of the sample and thus of the universe, change the stratification variables and recalculation of the weights of extrapolation.

24. Survey design

Given that we intend to produce statistical information of economic and financial nature, we must take into account the following aspects:

• Needs expressed by users;

• Adjustment of the size to the response capacity of owners;

• Identification with the Official Accounting and tax models.

On the whole there are surveyed about 1,000 vessels.

25. Data Collection

Reference period of data:

year

Collection Period:

Data collection occurs between October and November of year n +1 by reference to the year n.

Date of Shipment:

The expedition is held annually, on September of year n +1 on the reference year n.

Initial Contact:

Letter / email.

Method of Collection:

Survey in paper - by post;   Electronic Survey (by Web);

Reminders

For vessels that do not respond within the prescribed period, we phone to owners and if needed, we send by mail or by post. The 1st insistence is generalized to all vessels at fault. The 2nd is made taking into account the size of the vessel and its relative importance in terms of economic activity. A maximum of three reminders are made.

The transmission by post can be complemented with phone interview or direct collection, depending on the response rate and the relative importance of the lacking vessels, either by their size or by representation in economic activity, either by geographic location of the company.

Criteria for closing:

The decision about the closing of the survey occurs when we consider that the response rate is significant by segment, usually between 80% and 90% of vessels and total sample Income.

Use of incentives:

Not applicable.

Provision of support to respondents:

Provision of a contact line telephone, a fax line and an email address for support of respondents.

Data capture:

Data Entry: Typing manual / electronic collection

Coding: Automatic

Software used: computer application developed by DI AJAX.

26. Data analysis

All information received is subjected to a critical phase, carried out by employees of the Division of Information. Associated with the register of information is a program for automatic validation. The automatic validation distinguishes situations unlikely but possible to occur (warning errors) and incorrect situations (fatal errors). Vessel responses whose validation present fatal errors are excluded.

The validation program is composed of automatic validation rules with the following types:

Domain rules;

Rules of limit;

Rules of algebraic operations;

Rules for consistency in the inter-frames or frames;

Rules of consistency according to the different approaches of inquiry;

Rules of comparison between year n and year n-1.

To analyze the quality of the survey we have to take into account three phases:

• Universe and Sample;

• Managing and implementing the survey;

• Analysis of the information produced.

The vessels that have very different characteristics from those that were surveyed at the segment level and that may influence the quality of survey results: changes in activity (gear type), region (NUTS I), are analyzed and placed in a new stratum.

27. Analysis Of Missing Data

The statistical units (vessels) who have not responded completely to the survey are treated as missing data. The goal of analysis of missing data is to eliminate the bias and reduce the variance of the estimators of the sample.
The analysis of missing data is applied to vessels who have not responded to some questions, but belong to segments with at least one valid answer.

The procedure is the same as that used in section 28, ie, the algorithm CART (Classification and Regression Trees) in which the independent variables may be administrative or resulting from the survey responses.

28. Estimation and achieving results

In order to better understand the structure of the data and determine a more accurate estimate for the target variable were carried out several experimental models based on the methodology of CART classification and regression.

In order to understand which variables are most crucial to obtain better results for the dependent variables were constructed tables of Pearson correlations for quantitative variables. Analysis of outliers is made and extreme values are removed to make the estimates.

To develop the regression model has been adopted CART methodology.

The CART algorithm (Classification and Regression Trees) was developed by Breiman, Friedman, Olshen and Stone, in 1984. This algorithm allows to develop classification or regression if the dependent or explained variable is nominal or metric, respectively. In this case only will refer to the regression trees, since this is the methodology of the study.

The Cart Regression Trees are essentially used to explain and predict a given attribute - dependent variable - from observed values of explanatory attributes of the same - independent variables. This method also allows build homogeneous groups of individuals who are characterized by the same values of the attributes.

This method is used in multidimensional studies. The advantages of their application are:

• is successful in situations where the explanatory variables are a mixture of nominal variables, ordinal and continuous;

• adapts easily to missing data;

• is invariant to transformations of variables;

• is a non-parametric model and therefore need not comply with conditions of applicability, as in parametric models.

The regression model assumes the dependent variable as continuous variable, and according to Breiman, application of the CART model in nonlinear problems, produces satisfactory results.

The CART regression methodology is developed in three steps:

• the growth of the tree - CART develops a complete tree, that is constructed by splitting a node into two child nodes repeatedly, beginning with the root node that contains the whole learning sample, to reduce the diversity of the variable under study in the leaf nodes;

• pruning and

• validation of the tree.

TREE GROWTH

Branching rules

When building a tree successive branches are made in order to reduce the diversity.

The branches split the set of data from one node into two subsets, using the value of an independent variable as criteria. Each variable can determine several different possible ramifications.

Generally, the algorithm chooses the variable which allows, in each step, a maximum decrease in diversity, with the aim of making the descendant nodes more homogeneous with respect to the variable under study, which results in reduction of the standard deviation of the target variable around its mean value.
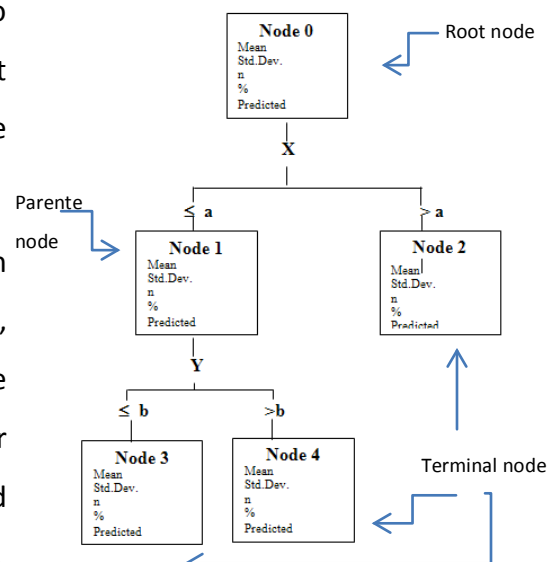
Figure - Example of a tree using the CART algorithm

This method aims to reduce the intra-node variability and increase the variability among-nodes, which will facilitate the prediction. Thus, the value of the cut-off variable is chosen to ensure that the partition maximizes the difference between the variability of the present tree and the variability of the new tree. The CART algorithm calculates this difference for all the predictor variables and for all possible cut-off values, selecting the variable and cut-off value for each node that maximizes the difference mentioned above. Each new branch obtained yields a tree with less variability than the tree that preceded it.

Stopping criteria

Every recursive algorithm needs to know when it's done, a stopping criterion. Here this means when to stop trying to split nodes.

Some stopping rules that can be used are the definition of the maximum number of levels of the tree - maximum depth of the tree, restricting the number of observations that each parent node or child may have and the imposition of a minimum increase of quality improvement of the model when a node is split.

For tree growth were considered the following criteria:

Criteria for tree growth	
Tree maximum depth	3/4 levels
Minimum number of cases in parents nodes	2
Minimum number of cases in child nodes	1
Minimal change in improvement	0,0001

Table-Criteria for tree growth

PREDICTION

The construction of a regression tree from CART method is intended to use the prediction of the dependent variable.

According to Breiman, the prediction associated with an element that was sent to a particular terminal node is given by the average of terminal node where this element fits. So, the prediction to the elements belonging to the same leaf node is equal, and in that case, an indicator of overall model accuracy is the weighted sum of variances intra- nodes.

After determination of the values estimated by the vessel, when there is response to the survey, the estimated values are replaced for the answers.

VALIDATION OF THE MODEL. CROSS-VALIDATION

The estimation of the quality of the model is made through a correction of the measure of the prediction error. Thus, it applies the model to new data.

To validate the model, cross-validation was carried out.

The procedure of cross validation is based on optimal proportion between the complexity of the tree and misclassification error. With the increase in size of the tree, misclassification error is decreasing and in case of maximum tree, misclassification error is equal to 0. But on the other hand, complex decision trees poorly perform on independent data. Performance of decision tree on independent data is called true predictive power of the tree. Therefore, the primary task - is to find the optimal proportion between the tree complexity and misclassification error.

Although cross-validation does not require adjustment of any parameters, this process is time consuming since the sequence of trees is constructed. Because the testing and learning sample are chosen randomly, the final tree may differ from time to time.

For this study it was performed a cross validation of the type 10-Fold Cross Validation, i.e., consisted of observations of 10 groups randomly, formed, whenever possible, by the same number of observations. Then were sequentially built 10 trees each using a 9/10 of observations and other observations were used to determine the error associated to every tenth not used in the construction of the trees. Once the sample is not used in the construction of the trees will be successively changed, in the end of the procedure is obtained the error associated to all observations.

Results / Evaluation Model

The regression model developed automatically selects all the variables introduced.

To make the evaluation of the model in question, is calculated the percentage of variance explained by the model (V), (ranging between 74% and 99% depending on the variable under study) using cross-validation "10-Fold Cross Validation", by the expression:

$$V = 1 - \sum_{v=1}^{V} \frac{n_v}{n} \left(\frac{\sum_{i=1}^{n_v} (\hat{y}_i - y_i)^2}{\sum_{i=1}^{n_v} (y_i - \bar{y}_v)^2} \right)$$

where $\hat{y}_i$ is the estimated value of the tree.

Importance of Predictor Variables

However, as Breiman et al. (1984) suggest for supporting the interpretation of the decision tree obtained, we calculated the relative importance of the variables used in the construction of the tree by the CART methodology. The relative importance of each variable is related to the reduction in diversity provided by its use for each ramification or at the potential use of the concept translated in the ramification replacement.

MEASURE OF RELATIVE IMPORTANCE OF PREDICTOR VARIABLES

Breiman et al. propose to support the interpretation of the decision tree obtained, one measure

M - measure of relative importance of predictor variables X_j used in the construction of the tree by CART algorithm.

Should be noted that sometimes, the variables can occur in the prediction masked by other, i.e.**, do not appear to be responsible for branches but their relative importance is high**, therefore, they may determine and may give a potential contribution to the prediction.

The **M** measure is based on the reduce of diversity of X_j variable in each branch or for their potential use in the branch replacement.

Consequently the **M** measure associated with X_j variable is given by the sum of several reductions of diversity associated with that variable at each of the branches, or possible replacement branches.

Let :

$$p(O) = \frac{\text{number of observations in node } O}{\text{total number of observations}}$$

$$p(Oc) = \frac{\text{number of observations in node } Oc}{\text{total number of observations}}$$
$$c = 1,2$$

π^j defines the partition X_j branching in O_1 e O_2, where $O_1 \cup O_2 = O$ e $O_1 \cap O_2 = \{ \}$

ΔS^2, the decrease of the variance resulting from the branch is given by :

$$\Delta S^2{}_{(O)} = p(O) \times S^2(O) - \sum_{c=1}^{2} p(Oc) \times S^2(Oc)$$

The **M** measure is given by:

$$M(X_j) = \sum_{O \in A} z^{jO} \Delta S^2(\pi^j; O)$$

where

$$z^{jO} = \begin{cases} 1 & \text{if } X_j \text{ branching node O or } X_j \text{ it is considered a replacement for the ramification node O} \\ 0 & \text{other case} \end{cases}$$

and

$\Delta S^2(\pi_j O)$ is the decrease of the variance resulting from the branch node O by the variable X_j.

29. Confidentiality of data

All information provided is subject to statistical confidentiality treatment. The primary confidentiality - information relating to fewer than three companies is subject to automatic processing. In the secondary confidentiality the treatment is manual.

30. Quality Assessment Statistics

To assess the statistical quality of data used is the coefficient of variation.

For sampling errors should be noted that the general term of the error estimator sampling on the total of a variable X in the stratum h, for a confidence level of 95.0%, is

$$E.R.A(\hat{X}_h) = 1.96 \frac{\sqrt{Var(\hat{X}_h)}}{\hat{X}_h}$$

Where $Var(\hat{X}_h)$ is the variance of the estimator $\hat{X}_h$, given by,

$$Var(\hat{X}_h) = \frac{N_h}{n_h}(N_h - n_h)s_h^2$$

where s_h^2 is the variance of the characteristic X in the sample and is obtained by the expression

$$s_h^2 = \frac{\sum_{i=1}^{n_h}(x_{hi} - \bar{x}_h)^2}{n_h - 1}$$

where $\bar{x}_h$ represents the mean of the characteristic X, in the stratum h and is given by

$$\bar{x}_h = \frac{\sum_{i=1}^{n_h} x_{hi}}{n_h}$$

The sample size was determined to limit superiorly the coefficient of variation of the Income variable, for crosses and aggregates of the stratification variables described above. The coefficient of variation is given by,

$$C.V(\hat{X}) = \frac{\sqrt{Var(\hat{X})}}{\hat{X}}$$

Where the variance of the estimator of the Income in the desired aggregate θ is obtained by the sum of the variances of the estimator of the constituents strata, ie,

$$Var(\hat{X}) = \sum_{h \epsilon \theta} Var(\hat{X}_h)$$

For example, the variation coefficient is calculated for each segment corresponding to leaf nodes of the tree.

CALCULATION OF THE VARIATION COEFFICIENT:											
	SEGMENTO FINAL			Nº of the node	Nº of the population vessels (N)	Nº of the sample vessels(n)	average of the variable	Standard desviation of the variable(S)	Sum of the variable values	VARIANCE N/n*(N-n)*S^2	coefficient. Square root(sum of variances)/ sum of
drift and fixed netters_0010meters_Area27	DFN	AREA27	VL0010	9	11	11	0	0	0	0	
	DFN	AREA27	VL0010	15	67	1	4578,313	214,34629	306747	2,03E+08	
	DFN	AREA27	VL0010	20	5	2	5316,076	3218,54542	26580,38	77692760	
	DFN	AREA27	VL0010	21	16	0	23748,6	0,00035659	379977,6		
	DFN	AREA27	VL0010	23	1	1	200	0	200	0	1,33%
	DFN	AREA27	VL0010	37	186	7	3320,365	241,483759	617587,9	2,77E+08	
	DFN	AREA27	VL0010	41	215	5	4367,017	274,992743	938908,6	6,83E+08	
	DFN	AREA27	VL0010	42	49	0	6889,26	0	337573,7		
	DFN	AREA27	VL0010	44	1	1	33445,89	0	33445,89	0	
...											

Consistency

The survey data are compared with data recorded in the database and statistical publications

fisheries.

III - CONCEPTS

Designation: FLEET SEGMENT   Code: 2051

Group of ships of the same length class (LOA - length overall) and predominant one particular type of fishing gear during the year.

Designation: ACTIVE GEARS   Code: 2052

Arts moved through the water by human power, animal or machine. Included in this category the beam trawl, demersal trawl, purse seine nets and dredges.

Designation: PASSIVE GEARS Code: 2053

Characterized by the absence of movement of the art. Included in this category hooks, drift nets and / or fixed, pots and traps.

Designation: POLYVALENT GEARS Code: 1484

Segment of the fleet consists of vessels using more than one type of art predominant (various passive gears, various active gears or gear passive and active).

Designation: SEADAYS   Code: 1484

Any continuous period of 24 hours (or part thereof) during which a vessel is present in an area and absent from port.

Designation: FISHDAYS Code: 1484

Day attributed to the area where the ship spent more time fishing in the sea during the day in question. In the case of passive gear, on a day when at least one (passive) gear remained at sea has not been performed any operation from the ship, that day will be associated to the area in which it was held the last setting of a fishing gear during this trip.

Designation: METIER Code: 1484

A set of fishing operations directed to the same species (or the same group of species), using similar gear, during the same time of year and / or in the same area and which are characterized by similar exploitation pattern.

Designation: POPULATION OF VESSELS   Code: 1484

All vessels in the Community Fishing Fleet Register as defined in Commission Regulation (EC) No 26/2004.

Designation: ACTIVE VESSELS   Code: 2395

vessels that have been engaged in any fishing operation (more than 0 days) during a calendar year. A vessel that has not been engaged in fishing operations during a year is considered 'inactive'.

Designation: INACTIVE VESSEL   Code: 2056

Vessel without a license or without active fishing days.

Designation: SUPRA REGION   Code: 832

Fishing areas defined by Regulation (EC). No. 93/2010 of 18 December 2009.

Designation: INCOME   Code: 5682

Includes the gross value of landings, direct subsidies and other income.

Designation: GROSS VALUE OF LANDINGS Code: 2403

Value obtained by the sale of fish by boat, excluding tax.

Designation: DIRECT SUBSIDIES   Code: 1519

Includes direct payments, such as:

 - Compensation for the cessation of fishing activities;

 - Refund of fuel tax;

 - Other compensatory payments standard.

 excludes:

 - Payment of benefits;

 - Reduced rates of tax on inputs such as fuel;

 - Investment aid;

 - Other indirect subsidies.

Designation: OTHER INCOME   Code: 1520

Includes other income of the vessel, for example:

 - Recreational fishing;

- Tourism;

- Fees charged to oil rigs;

- Insurance payments for damage / loss of gear / vessel.

Designation: WAGES AND SALARIES OF CREW   Code: 5683

Value corresponding to the remuneration of fixed crew or social contributions, pensions , compulsory charges on salaries, insurance of occupational accidents and occupational diseases, costs of social action and other personnel costs (which include basically, the costs of recruitment and selection, training and occupational medicine, the health insurance, compensation for dismissal and the optional pension supplements).   Do not include payments to workers placed through agencies.

Designation: IMPUTED VALUE OF UNPAID LABOUR   Code: 3911

Includes, for example, the work done by the owner of the vessel and their relatives.

Designation: ENERGY COSTS   Code: 3911

Exclui óleos de lubrificação. Discriminado por tipo (Gasóleo, Gasolina, Biocombustível, …). São incluídos os produtos energéticos se estes forem adquiridos para serem utilizados como combustível.

Excluem-se os produtos energéticos adquiridos como matéria-prima ou para revenda sem transformação.

Designation: ENERGY CONSUMPTION   Code: 3911

Fuel consumption of the vessel, in liters.

Designation: REPAIR AND MAINTENANCE COSTS   Code: 3911

Gross cost of repair and maintenance of vessels and fishing gear.

Designation: OTHER OPERATIONAL COSTS   Code: 3911

Includes Variable Costs and Non variable Costs.

Designation: VARIABLE COSTS   Code: 3911

Includes all purchases of factors of prodution (goods and services) related to fishing effort and / or catch / landings. For example: Baits, feeding the crew, lubricating oil, payments to workers placed through agencies, ...

Designation: NON VARIABLE COSTS   Code: 3911

Includes factors of production but not related to the effort and / or catch / landings (including leased equipment). For example, operating costs related offices of the owner.

Designation: INVESTIMENTOS   Code: 3911

Improvements of vessels / arts held during the reference year.

Designation: TOTAL JOB   Code: 3911

Number of jobs on board, equal to the average number of people who work for the ship and are paid by the Same. Includes temporary members of the crew and the crew that works on a rotation system.

Designação: FTE NATIONAL   Code: 3911

Equivalent to full time based on hours of reference for the working hours of the FTE crew members aboard the ship (excluding rest time) and working hours on the ground. If the annual work hours per crew member exceed the reference level, the FTE for each crew member will be one. Otherwise, the FTE corresponds to the ratio between the working hours and the reference level.

Designation: FTE HARMONISED   Code: 3911

Full-time equivalent based on a threshold of 2000 hours per FTE, following the same methodology referred to FTE.

Designation: CAPITAL COSTS   Code: 3911

Corresponds to annual depreciation.

Designation: ANNUAL DEPRECIATION   Code: 3911

Estimated based on FISH/2005/03 Report, "Evaluation of the capital value, Investments and capital costs in the fisheries sector."

Designation: VALUE OF PHYSICAL CAPITAL   code: 3911

Includes the replacement value and historical value amortization amortization.

Designation: VALUE OF PHYSICAL CAPITAL: DEPRECIATED REPLACEMENT VALUE   Code: 3911

Value of the ship, ie of the hull, the engine, of all equipment installed on board and the arts. Estimated in accordance with the methodology proposed in the Report FISH/2005/03, "Evaluation of the capital value, Investments and capital costs in the fisheries sector."

Designation: VALUE OF PHYSICAL CAPITAL: DEPRECIATED HISTORICAL VALUE   Code: 3911

Value of the ship, ie of the hull, the engine, of all equipment installed on board and the arts. Estimated in accordance with the methodology proposed in the Report FISH/2005/03, "Evaluation of the capital value, Investments and capital costs in the fisheries sector."

Designation: HOURS   WORKED   Code: 295

Total number of hours that staff devotes to the service . Includes overtime. It also includes time spent at work in the execution of works such as the preparation of tools, preparation and maintenance of tools, occasional absences due to work or coffee breaks. Excludes absences regardless of the hours they were paid or not.

Sources : Department of Labor Statistics, Employment and Vocational Training.

Designation: OPERATING LEASING   Code: 3414

Use of movable and immovable property for a period of time varies according to the prior contract on payment of user fee , the owner have the responsibility of the leased property conservation .

Designation: AVERAGE NUMBER OF EMPLOYEES   Code: 2728

Ratio of persons employed on the last day of each month in the year of activity and the number of months of activity during the year.

Designation: ENGAGED CREW   Code: 2439

People who, in the reference period, participated in the business of the company / institution, whatever the duration of this participation, under the following conditions:

 a) staff bound to the boat by an employment contract, receiving remuneration in return;

b) staff bound to the vessel, which is not bound by a contract of employment, does not receive regular remuneration for the hours worked or the labor supplied (eg owner-managers, unpaid family workers);

 c) staff with ties to other enterprises / institutions who worked on the vessel being paid directly from it;

 d) persons in the above situations, absent for a period not exceeding one month due to holidays, labor disputes, professional training, as well as disease and accidents at work.

Not included as staff serving people who:

i) meet the conditions described in subparagraphs a), b), c) and are absent for a period exceeding one month;

ii) workers with ties to the enterprise / institution who moved to other enterprises / institutions, receiving remuneration directly;

iii) workers in the vessel and whose remuneration is borne by other enterprises / institutions (eg temporary workers);

iv) self-employed workers (eg, service providers, also known as "green receipts").

Sources : Workshop – Labour Statistics   (Board statistics)

Designation: UNPAID LABOUR   Code: 3017

Individuals whose activities in the enterprise / institution and for not being bound by an employment contract does not receive regular remuneration in cash and / or gender by time worked or work performed. Includes self-employed, unpaid family workers, members of production cooperatives and posted workers.

Sources : Workshop – Labour Statistics   (Board statistics)

Designation: WAGE LABOUR   Code: 3018

workers carrying out an activity on the vessel under a contract of employment, subject or not in writing, giving them the right to regular remuneration in cash and / or gender. Includes workers in other companies are working on the vessel being observed directly paid for this, but keeping the link to the company / institution. Excludes employees of other companies are working on the vessel observed, being paid by the company / institution and maintaining the employment relationship with that company / institution.

Sources : Workshop – Labour Statistics   (Board statistics)

Designation: OUTSOURCING   Code: 2073

All work and services that are themselves the main goals or purposes of the statistical unit. Including the materials used where these are not billed separately.

Designation: SUBCONTRACTS   Code: 2085

All works required for the production process itself, for which it obtained the cooperation of other companies, subject to formal commitments or simple agreements.

Designation: FULL-TIME EQUIVALENT CREW   Code: 303

A full time employee has traditionally worked a 40 hour work week.

Sources : Employment national law

Designation: PART-TIME EQUIVALENT CREW   Code: 304

The number of employees converted into full-time equivalents (FTE). Figures for the number of persons working less than the standard working time of a full-year full-time worker, should be converted into full-time equivalents, with regard to the working time of a full-time full-year employee in the unit. Included in this category are people working less than a standard working day, less than the standard number of working days in the week, or less than the standard number of weeks/months in the year. The conversion should be carried out on the basis of the number of hours, days, weeks or months worked.

Sources : Employment national law

IV - DISAGGREGATION LEVELS USED FOR THE COLLECTION OF DATA

Designation: Length classes.

Designation: Supra region.

Designation: Gear type.

Designation: Target assemblage.

Designation: Active/Inactive/Minho river fleet.

V - VARIABLES

31. Observation Variables

Gross value of landings

Direct subsidies

Other income

Wages and salaries of crew

Imputed value of unpaid labour

Energy costs

Repair and maintenance costs

Variable costs

Non-variable costs

Investments in physical capital

Full-time Crew

Part-time Crew

32. Derived Variables

Annual depreciation

Value of physical capital: depreciated replacement value

Value of physical capital: depreciated historical value

FTE National

FTE Harmonised

VI – SUPPORT OF COLLECTION

33. Surveys

Information contained in the annexes.

34. Files

Not applicable.

VII - ABBREVIATIONS AND ACRONYMS

Abbreviations and acronyms	Designation
CAE	Portuguese Classification of Economic Activities (CAE-Rev.3)
DGRM	Directorate-General for Natural Resources, Safety and Maritime Services
DSIGA	Directorate of Information and Management Activity
DI	Information unit
LOA	Overall length
FTE	Full-time equivalent
PNRD	National programme for data collection
DCF	Data Collection Framework
SI2P	Information System Integrated for Fisheries
NPS	number of persons employed

VIII - BIBLIOGRAPHY

Reiman, L., Friedman, J. H., Olshen, R.A. e stone, C. J. (1984). Classification and Regression trees. Belmont, California: Wadsworth.