
TECHNICAL REPORT – 2011

PORTUGUESE PROGRAMME FOR THE COLLECTION OF FISHERIES DATA

**Lisbon, 31st May 2012
(version of 7 _ May _ 2013)**

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I. GENERAL FRAMEWORK

This report describes the work done by Portugal pursuant to Council Reg. (EC) 199/2008 and Reg (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(2009)6816 final from 14, September, 2009.

This Annual Report is based on the “Guidelines for the Submission of Annual Report on the National Data Collection Programmes, Version January 2012”, which were designed for reporting the achievements from ARs 2011-2013.

Budgetary constrain has had significant influence on the execution of the Portuguese data collection programme in 2011.

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

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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:

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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.

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IPIMAR 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. IPIMAR is also responsible for conducting scientific surveys in the Iberian Fishing Ground and participates on the Flemish Cap Groundfish Survey.

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RAA is responsible for gathering data related with Economic variables in the Autonomous Region os Azores.

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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.

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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.

In 2011, two national co-ordination meeting took place:

On the 7 of April – Main subjects:

- Development of Data Collection Data Base;
- Reports of several meetings;
- Technical and Financial Report 2010, and
- Data Calls.

On the 11 of October – Main subjects:

- Development of Data Collection Data ;
- Regional Data Base (Fishframe);
- RCM's;
- NP 2012;
- CFP Reform, and
- Financial Budget 2014-2020.

II.B. Regional and International Coordination

II.B.1. Attendance of International Meetings

Budgetary constraints had influenced the participation on meetings, namely the ones planned for the beginning of the year (e.g. WKFRAME2).

Nevertheless, Portugal has ensured its participation in most of the planned and relevant international coordination meetings. It should be noted that some of the initially planned meetings (listed in table II.B.1) were cancelled. Furthermore, once defined the ToRs, it was considered that the participation in some of those meetings could be conducted by correspondence.

We should point it out that, following the 2011 PGCCDBS recommendations, a small otolith exchange was set for black spot sea bream. Portugal (DOP) and Spain (Gulf of Cadiz) agreed to participate. Spain was no longer collecting otoliths by the dates agreed for the exchange, so it was decided that the age reader from DOP would travel to Cadiz.

There were meetings, not considered for eligibility under “Coordination Meeting_2011”, which were attended by our colleagues from Azores Region. Those meetings were:

Working Group on the Organization of the SCRS (Madrid, 2-4 March):

Dr. Joao G. Pereira (EU-Portugal), General Rapporteur of the Tropical Tunas Species Group, attended the meeting. The agenda of the WG included several items related to statistics, including the needs for implementing multidimensional statistical models for preparing management advice, the implementation of the data confidentiality policy, the catch composition and disposition of the fleets impacting ICCAT species of concern as well ecologically related species, intensify and improve scientific observer programs, sampling, tagging programs and research to support these requirements.

Tropical tuna species group intersessional meeting on the Ghanaian statistics analysis (Phase II) (Madrid, 30 May-3 June):

Dr. Joao G. Pereira (EU-Portugal), General Rapporteur of the Tropical Tunas Species Group, chaired the meeting. The Work Plan included the revision of the data for the eastern tropical purse seine fisheries, in particular the Ghanaian statistics, as well as the accounting of “*faux poissons*”. The work conducted during the meeting focused on obtaining the best scientific estimates of catch, effort and size data for the three main species of tropical tunas. These estimates will allow the SCRS to better estimate the stock status and to provide more accurate responses to the Commission requests.

Yellowfin stock assessment session (San Sebastián, 5-12 September):

Dr. Joao G. Pereira (EU-Portugal), General Rapporteur of the Tropical Tunas Species Group, attended the meeting. The objective of the meeting was to assess the stock of Atlantic yellowfin tuna, following a request of the Commission.

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

Portugal participates in the Regional Coordination Meetings (RCMs) North Sea & Eastern Arctic, North Atlantic. See sections on 'regional coordination' for the various sampling parameters in the individual sections below.

For follow-up of STECF recommendations, see section VII.

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 2011 the Portuguese fleet operating in the traditional grounds of both Divisions I and II, was composed by 6 trawlers using a bottom trawl gear. The fishery in the international waters of Div. IIa was carried out by 3 trawlers fishing with a pelagic trawl gear.

The Portuguese fleet operating in the Irminger Sea, Norway and Svalbard (9 ships were in operation in 2011) also operated in the NAFO area (13 ships in 2010). This fleet uses bottom trawling techniques in the NAFO area, Norway and Svalbard (Div. IIa,b) and midwater trawling techniques in the Irminger Sea (Div. XII and XIVb).

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

In 2011, the Portuguese nominal catches recorded 5.506 ton: 2.250 ton proceeding from the traditional grounds of both Divisions I and II and 3.256 ton proceeding from the redfish pelagic fishery in the “Banana Hole” zone (international waters of Div. IIa).

For the period from 1993 till 2011, 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).

Sebastes Mentella fishery in ICES Div. XII, XIVb and NAFO Div. 1 F

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 t and 383 fishing days). In 2011 the effort was 154 fishing days and the catches were 1.540 t.

Fishery in the NAFO Area

In 2011, the Portuguese nominal catches proceeding from NAFO Regulatory Sub Area 3 have reached 17.278 ton, the highest value since 2003.

Redfish continues to be by far the most important species in the Portuguese commercial catches from Sub Area 3, representing in recent years more than 50% (10.897 ton in 2011) of the overall catch, followed by codfish, with catches of 2.930 ton and Greenland halibut, with catches of 2.350 ton.

In 2011 the fishing effort was 1.906 fishing days.

Bottom Trawl Fishery in Div. IXa

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 2011 about 92 vessels operate in this fishery, 17 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).

Artisanal Fishery in Div IXa

The artisanal fishery is composed of a large number (around 6500) 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 scabbardfish 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 GRT of 1.5 and an average of 18 KW engine power.

The artisanal fishery represents 14% and 28% in weight and value, respectively, of the total commercial species landed in 2011.

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 71.859 t in 2011. This fleet targets mainly sardine, which constitutes 63% of their landings in 2011, using a mesh size of 16 mm. 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 2011, 18 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 2011 landings of black scabbard fish amounted to 3.475 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 longline fleet is all registered at Sesimbra harbour that is also the base for their fishing activities.

The Swordfish Fishery in Atlantic Ocean

There is a drifting longline fishery directed to the swordfish in Atlantic Ocean involving 21 vessels with a mean GRT of 125, an average of 311 kW engine power and a mean overall length of 22 meters. The main landing ports for swordfish in mainland west coast are Sesimbra (about 21% of the total catch in 2011) and Peniche (about 79% of the total catch in 2011).

The Surface Longline Fishery in Indian Ocean

In 2011 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 2.000 ton. From those, about 38% were swordfish and 42% were blue shark, approximately 504 and 556 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)

Every 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 2011 statistical information on fish landings shows a decrease in catches from the Autonomous Region of the Azores compared to 2010. This tendency is mainly due to a decrease in the volume landed of *K. pelamis*. Compared with last year, it fell by almost 8000 tons. This means that its contribution to the total volume captured was reduced from 60% in 2010 to 23% in 2011.

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 black scabbard fish *Aphanopus carbo* (Lowe, 1839) a benthopelagic species captured with drifting long lines at meso and bathypelagic zones – as well as 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 through 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.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.

In 2011 the reference year was 2010 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 strata regarding NP are due to the activity of the vessels and to the changes in the fleet. NP numbers and strata 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.

The segments clustered were due to confidentiality reasons. 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 2010 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 2010 were:

- Small scale fleet segment = 20 300,00euros/GT
- Polyvalents segment > 12 meters = 44 560,00 euros/GT^{0,7}
- Trawl segment = 24 900,00 euros/GT^{0,8}
- Seiner segment = 14 630,00 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 2011, data for this module was collected in Azores Region.

As was programmed we use Fisheries Association staff to collect data.

The fleet was segmented according to Appendix III of Commission Decision 2008/949/CE.

In the segment 18-24 we have only a one vessel, therefore we clustered this segment with the 12-18 segment.

We also made stratification by island to cover better the entire Region.

We made a total of 109 inquires, 82 for the segment 0<10 m, 8 for the segment 10<12 m, 6 for the segment 12<18 m and 3 for the segment 24<40m.

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 (reference year 2010) 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

For the year 2012 is our purpose to increase the response rate of the planned sample rate for 100%.

Autonomous Region of Madeira (CECAF 34.1.2)

In 2011, 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 2011 were mostly achieved concerning the acquisition of data. The sample rate planned was fully achieved in the purse seiners segments (Table III.B.1.). In the case of the segments of the vessels using hooks, only about 60% of the planned sample was achieved in the segment below 10m and 68% 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 2010 were:

- Polyvalents segment = 11000,00 euros/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 response the results are not trustable.

The sample size for each fleet segment is determined by statistical tools and targeting the precision level required by DCF for the variable income of the previous year.

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.

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 classifications of vessels were made with

their licences. 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. After an analysis of the number of vessels in each vessel length class versus the landings values it was decided that a census should be applied to all vessels with overall length bigger or equal to 15 metres. For vessels with overall length less than 15 metres it was maintained the stratified random method of selection.

Autonomous Region of Madeira (CECAF 34.1.2)

MADEIRA proposed to collect economic data using census as collection scheme in the case of the active vessel. In two of the segments the response rate was less than planned – around 60% . However this response rate allowed a substantial increase of the vessels inquired and of the number of answers obtained in relation to previous years.

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

Source: page/section	recommendation
PLEN-09-01: 12/4.1 AER	STECF also notes that, despite previous recommendations, no information is given on the quality of data and its reliability. STECF recommends including quality indicators in next years' AER. Some of them (coverage, sample size) are already available from the national technical reports. Other indicators will be proposed by the next working group on data quality (SGECA –09-02) that will suggest indicators of accuracy and precision that need to be provided in the national technical report to evaluate the quality of estimates for each economic variable.
9/4.1. SGECA-09-02: Quality aspects of the collection of economic data, methods of calculation of the indicators and sampling strategies	STECF reviewed the list of recommendations suggested by SGECA 09-02 and considers that their application will allow MS to better comply with the requirements of the DCF in relation to data quality assurance. Therefore, STECF endorses the SGECA 09-02 recommendations.

	<p>In particular, STECF recommends that MS indicate the data collection category that is to be applied for each fleet segment and for each economic variable as listed in Appendix VI of Council Decision 949/08. SGECA 09-02 identified three different categories of data collection scheme that covers all the possible typologies of data collection :</p> <ul style="list-style-type: none"> A. Census, which attempts to collect data from all members of a population. B. Probability Sample Survey, in which data are collected from a sample of a population members randomly selected C. Non-Probability Sample Survey, in which data are collected from a sample of population members not randomly selected. <p>STECF notes that this classification will facilitate the comparison of survey methodologies among Member States (MS). STECF also recommends that MS:</p> <ul style="list-style-type: none"> • include in their NPs for the period 2011-2013, a methodological report to describe the sampling strategies. STECF also recommends that MS adhere to the guidelines for the preparation of the methodological report given in Table 4.1.1 below (adapted from the report of the STECF-SGECA 09-02). • include in their annual Technical Reports, the data quality indicators given in Table 4.2.2 below (discussed under TOR 2 of STECF-SGECA 09-02).
SGECA 09-02: 17/ 3 ON PRECISION LEVELS	<p>“SGRN has repeatedly recommended every MS to estimate the precision of the data obtained by sampling in order to assess the quality of the associated estimates. In SGRN opinion, the best way to explore data is to evaluate the precision with the aim of optimising the sampling design (see Section 7.2 in SGRN-06-03 report, Anon. 2006). More than the exact quantification of the level of uncertainty, the objective of calculating precision levels should be to improve the quality of the data that is collected. In parallel, SGRN has supported the idea of developing a common tool for assessing the accuracy and precision of the biological parameters estimated through sampling programmes. Such a tool has been granted financial support by the Commission through the Call for Service Contracts FISH/2006/15. (COST project) SGRN will continue to request all MS to assess the quality of the estimates even if the different methodologies used prevent the direct comparisons of the results between MS.”</p>

Portugal included quality indicators whenever they are requested, in data calls and in the Technical report, according to the Recommendations. Classification of collection schemes were also made accordingly to the recommendations stated above. A methodological report is also included in the Technical Report.

III.B.4. Actions to avoid shortfalls

Mainland

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.

A new methodology was introduced, as described in Annex VI. This methodology was tested against data from previous years and consistency of data was checked before proceeding with the estimations of the variables for 2010. Results show consistency and overall quality improved as a result of the new process.

Autonomous Region of Madeira (CECAF 34.1.2)

Due to some doubts arising 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.

III.C. Metier-related Variables

Tables III.C.3, III.C.4, III.C.5 and III.C.6 present the information collected during 2011.

IPIMAR 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).

III.C. 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 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.

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: 3/2.

Concurrent sampling at market: not planned.

Total: 3/2.

Reason for exceeding: the fleet operating in Eastern Arctic (ICES areas I, II) also operates in areas NAFO, often during the same fishing trip. In both regions sampling is carried out by samplers who remain on board throughout the period of the entire trip. Taking advantage of the permanence of the observer on board sampling is performed in both areas.

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.

For all fish stocks, the number of length measurements well exceeded the planned and requested minimum number of measurements. Taking advantage of the permanence of the observer on board (once an observer is on-board, the entire trip is sampled) sampling is performed by sampling one set (haul) each day. For each haul, the species more abundant in the catch are sampled followed by the species required by DCF. 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.

As in previous years, the 2011 Portuguese sampling in 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.

The fisheries, in the Eastern Arctic, Iceland, Greenland and Irminger Sea 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.

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 and AR2010 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

Metier-related variables		
Source	Recommendation	Follow up actions
RCM NS&EA 2011 Hamburg, Germany 26-30 September 2011	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	Not applicable to Portugal in North Sea and Eastern Arctic region. Sampling scheme refers to unsorted catches.

	an estimate of the level of discarding (volume and percentage) and the main species contributing to the discard fraction of the catch.	
RCM NS&EA 2010 Charlottenlund, Denmark 17-21 May 2010	RCM NS&EA recommends MS to provide an overview of their inland sampling of the recreational fishery on eel.	Not applicable to Portugal in North Sea and Eastern Arctic region. Sampling scheme refers to unsorted catches.
RCM NS&EA 2010 Charlottenlund, Denmark 17-21 May 2010	RCM NS&EA recommends MS to use the average landing figures over the years 2007-2008 as the basis for ranking métiers within the NP 2011-2013	As recommended, 2007-2008 average retained landings were used as the basis for ranking métiers within the NP 2011-2013.
RCM NS&EA 2010 Charlottenlund, Denmark 17-21 May 2010	<p>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:</p> <ul style="list-style-type: none"> 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 and simulating different sampling schemes and levels with COSTsim; e) Make the tool user friendly. 	Portugal stresses that a trial of the COST package within the AR2009 and AR2010 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.
RCM NS&EA 2010 Charlottenlund, Denmark 17-21 May 2010	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	Not applicable to Portugal in North Sea and Eastern Arctic region. Sampling scheme refers to unsorted catches.

	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.	
RCM NS&EA 2009, Boulogne-Sur-Mer, France 15-18 September	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. The Chair is responsible for requesting the data and compiling it on a regional level.	To allow meaningful international task sharing, portuguese metiers were described in the agreed template forms (see RCM NS&EA 2010). The agreed naming conventions of fishing ground, metiers and units of the variables were considered throughout 2011.
RCM NS&EA 2009, Boulogne-Sur-Mer, France 15-18 September 2009	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 format in Annex 9. 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	As recommended, metier descriptions were provided in the agreed format (see RCM NS&EA 2010)

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.

The Portuguese catches of other species than those planned in the NP were extremely low compare with the target species. The total catches of those species are less than 1% of the total catches of the respective stocks. Sampling these species will be extremely time consuming (if

not impossible) and will not affect or bring any improvement to the assessments. Portugal will ask for derogation in the next RCM NS&EA.

III.C. North Atlantic

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

Iberian Fishing Ground (ICES sub-area IXa)

Table III.C.3 include the total number of trips made by the fleet and the number of trips sampled in 2011. Regarding ICES area IXa, 8 fisheries were selected either by retained catches, effort or value.

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.

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: 128/180

Total: 128/180.

Reason for shortfall: As mentioned above, an important part of the Portuguese mainland fleet is composed by a large number of vessels operating a variety of gears (gillnets, trammel nets, longlines, traps and pots) with permission to a maximum of five gears. Often it is used several different gears in the same trip. Thus, a large proportion of trips operating traps also include fishing operations with other metiers.

Although there was no prior sampling plan regarding mixed metiers, they are accounted and included in the table III.C.4. Given that fishing operations including a mixture of metiers is a relevant part of the national fleet, an important number of mixed metiers including traps (those listed below) were sampled on shore:

FPO_MOL_0_0_0/GNS_DEF_60-79_0_0: 36 trips;

FPO_MOL_0_0_0/GNS_DEF_60-79_0_0/GTR_DEF_>=100_0_0: 6 trips

FPO_MOL_0_0_0/GNS_DEF_80-99_0_0: 8 trips;

FPO_MOL_0_0_0/GTR_DEF_>=100_0_0: 58 trips

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: 7/12.

Concurrent sampling at market: 309/180

Total: 316/192

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, most owners are not willing to accept observers on board. It is also very difficult to have prior information about which fishing gear will be used in a certain trip.

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.

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: 7/12.

Concurrent sampling at market: 155/132

Total per metier: 162/144

Reason for shortfall: same as above (GNS_DEF_80-99_0_0, GNS_DEF_60-79_0_0 and GNS_DEF_>=100_0_0).

As described for traps, an import part of the portuguese mainland fleet is composed by a large number of vessels operating a variety of gears (gillnets, trammel nets, longlines, traps and pots) with permission to a maximum of five gears. Often it is used several different gears in the same trip. Thus, a large proportion of trips operating gillnets also include fishing operations with trammel nets.

Although there was no prior sampling plan regarding mixed metiers, they are accounted and included in the table III.C.4. Given that fishing operations including a mixture of metiers is a relevant part of the national fleet, an important number of mixed metiers including gillnets and trammel nets (those listed below) were sampled on shore:

GNS_DEF_60-79_0_0/GTR_DEF_>=100_0_0: 8 trips

GNS_DEF_80-99_0_0/GTR_DEF_>=100_0_0: 24 trips

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: 52/48.

Total: 52/48.

LLS_DWS_0_0_0

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

Sampled metiers: LLS_DWS_0_0_0.

Concurrent sampling at sea: 6/12.

Concurrent sampling at market: 41/24.

Total: 47/36.

Reason for shortfall: some vessel owner's refused to take observer due to lack of space on-board and other logistic reasons indicated by the ship owners. Hence, the number of trips sampled at sea is below the expected.

***OTB_CRU* >= 55_0_0**

Target species: *Nephrops norvegicus* (OTB_CRU >= 70_0_0), *Parapenaeus longirostris*, *Aristeus antennatus* (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: 48/96.

Total: 61/108.

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, 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: 30/27.

Concurrent sampling at market: 120/144.

Total: 150/171.

Reason for shortfall: A number of demersal trawls do not sell directly at the market, but have contracts with buyers.

***PS_SPF* >= 16_0_0**

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

Sampled metiers: PS_SPF >= 16_0_0.

Concurrent sampling at sea: 18/24.

Concurrent sampling at market: 127/84.

Total: 145/108.

Reason for shortfall: logistical difficulties hindered the compliance with the on-board sampling plan. 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.

***TBB_CRU* < 55_0_0**

Target species: *Palaemonidae*.

Sampled metiers: TBB_CRU < 55_0_0

Concurrent sampling at sea: 1/12.

Concurrent sampling at market: 12/12.

Total: 13/24.

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.

Iceland, Greenland and Irminger Sea and NAFO Areas

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.

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: 3/1.

Concurrent sampling at market: not planned.

Total: 3/1.

Reason for exceeding: the fleet operating in the North Atlantic (Iceland, Greenland and Irminger Sea and NAFO Areas) also operates in the Eastern Arctic (ICES areas I and II), often during the same fishing trip. In both regions sampling is carried out by observers who remain on board throughout the period of the entire trip. Taking advantage of the permanence of the observer on board sampling is performed in both areas. Farther, two out of three observed trips were very short (6 and 17 days).

OTB_MDD_130-219_0_0

Target species: *Reinhardtius hippoglossoides*

Sampled metiers: OTB_MDD_130-219_0_0

Concurrent sampling at sea: 4/4.

Concurrent sampling at market: not planned.

Total: 4/4.

Autonomous Region of the Azores

In order to achieve the objectives planned in the National Proposal 2011-2013 some difficulties were experienced. In the image of what was stated in the 2010 Annual Report, the two main objections still are 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 oversampling noted, on one hand the number of species presented 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, 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.

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. Technicians implemented a scheme of tracking this métier landings, as well as an extra effort by visiting Santa Maria island resulting in more than 100% increase of the number of trips sampled when compared to the last technical report. Besides that, during 4 months the programme experienced the absence of the sampler from Pico island, due to health problems which had an effect on the results. All these facts resulted in 56% achieved number of trips for this métier.
2. Métier LHM_CEP (hand lines for squid) – oversampling occurred because of the presence of a sampler in Pico island in the first quarter of the year which dedicated a bigger effort on sampling this métier.
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 need to perform further samples which resulted in oversampling.

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

1. Métier LHM_FIF (hand line for finfish) – 15% achieved number of trips at sea sampled for this métier represents an increase of almost 100% comparatively with 2010. The justifications for the shortfall verified are lack of space on board for one extra person, which results in a high refusal rate, and also the administrative constraints verified which prevented the hiring of extra observers for the summer months.
2. Métier LLS_DEF (set longline for demersal fish) – the achievement of only 65% 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.*: During 2011 a fleet of at least 5 vessels started to target their fishing operations to this species which increased its landings in the region as well as its availability for sampling. This is the reason why oversampling occurred.
2. *Phycis phycis* and *Raja clavata*: An increase in the volume of landings for these 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*, *Phycis blennoides* 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.

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

Iberian Fishing Ground (ICES sub-area IXa) and Iceland, Greenland and Irminger Sea and NAFO Areas

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. Precision targets were met in most cases.

A trial of the COST package within the AR2009 and AR 2010 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.

Regarding the Iberian Fishing Ground, estimates of length sampling on board are only available for the métiers of group OTB_CRU and OTB_DEF.

The protocols for the métiers of group GNS_DEF, GTR_DEF were found difficult to standardize due to the variability found in catch sorting procedures, fishing effort, and gears used in vessels. Therefore, annual CVs of length distributions on discards and volume of discards were not estimated. In LLS_DWS, safety concerns and difficulties in adapting sampling protocols to smaller vessels have led to reduced sampling effort. Consequently estimates to fleet level were deemed not representative and the annual precision levels on volume of discards were not calculated. Efforts are now being made to redesign the sampling protocols to be implemented by 1-observer teams. This will allow for an improved sampling scheme.

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 the Azores (Div. 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

Iberian Fishing Ground (ICES sub-area IXa)

Metier-related variables		
Source	Recommendation	Follow up actions
RCM NA 2011 La Rochelle, France 12 – 15 September 2011	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.	Portugal regularly updates these templates and data.
RCM NA 2011 La Rochelle, France 12 – 15 September 2011	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	Portugal already filled in the template on concurrent sampling.
RCM NA 2010 Ostend, Belgium 19 – 21 April and 31 May – 2 June, 2010	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 well as the deadline for submission of the information.	Portugal regularly updates these templates and data.

RCM NA 2010 Ostend, Belgium 19 – 21 April and 31 May – 2 June, 2010	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 2010 Ostend, Belgium 19 – 21 April and 31 May – 2 June, 2010	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 Ostend, Belgium 19 – 21 April and 31 May – 2 June, 2010	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, Cadiz, Spain 29 September to 2 October, 2009	<p>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.</p> <p>RCM NA recommends the use the average of the reference period 2007 – 2008 for the ranking.</p>	<p>Portuguese sampling and national data on effort, retained catches and value was provided to the RCM NA 2010</p> <p>Agreed naming conventions of fishing ground, metiers and units of the variables were considered throughout 2011.</p>
RCM NA 2009, Cadiz, Spain 29 September to 2 October, 2009	<p>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</p>	<p>To allow meaningfull international task sharing, portuguese metiers were described in the agreed template forms (see RCM NA 2010).</p> <p>Agreed naming conventions of fishing ground, metiers and units of the variables were considered throughout 2011.</p>

	and compiling it on a regional level.	
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Iceland, Greenland and Irminger Sea and NAFO Areas

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

III.C.4 Actions to avoid shortfalls

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 métier. 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 métier. Portugal is considering and evaluating several sampling schemes (increase on-board sampling, inquiries, self-sampling, etc) to overcome this issue.

Iceland, Greenland and Irminger Sea and NAFO Areas

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.

Autonomous Region of the Azores (Div. 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 to perform this task will occur in 2012.

New efforts will be made in order to improve the access to landings from métier GNS_FIF. The main harbors where this fishing activity is more representative of occurring will be identified, followed by regular visits in order to increase access to samples.

Sampling of *Polyprion americanus* will also be reviewed in order to increase the mean number of fish measured per sample.

III. C. 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 V).

Total: Sum of all trips.

ICCAT

LLD_LPF_0_0_0

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

Sampled métiers: LLD_LPF_0_0_0.

Concurrent sampling at sea: 6/6.

Other: 26/36.

Total: 32/42.

Reason for shortfall: The achieved concurrent sampling at market is below the proposed. Usually large pelagic fishing trips have long duration and result on retained catches extending for a large number of hours. Concerning this métier, due to exhaustive need on data collection, it's not being possible to systematically guarantee the total concurrent sampling at market, particularly due to the fact that a significant part of the landing is occurring in Vigo (EU-Spain). These issues are named as responsible for the deviations from the NP.

FPN_LPF_0_0_0

Target species: *Thunnus thynnus*.

Sampled métiers: FPN_LPF_0_0_0.

Concurrent sampling at sea: not planned.

Other: 30/24.

Total: 30/24.

Reason for exceeding: according to fish availability, the trap activity varies considerably among seasons.

IOTC

LLD_LPF_0_0_0

Target species: *Xiphias gladius*, *Prionace glauca*
Sampled métiers: LLD_LPF_0_0_0.
Concurrent sampling at sea: 1/2.
Concurrent sampling at market: 3/2.
Total: 4/4.

ICCAT and IOTC

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

For most of the fish stocks, the number of length measurements exceeded the planned and requested minimum number of measurements. 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).

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) – due to the fact that the Azorean archipelago experienced very good weather conditions in 2011 it did not affect the practice of fishing, resulting in oversampling this métier. Thus, 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*: An increase in the volume of landings for these species was reflected in the higher number of specimens sampled.

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

1. *Isurus oxyrinchus*: these species is landed in very low quantities and is difficultly available for sampling.
2. *Katsuwonus pelamis*: unlike what happened in 2010, 2011 landings of this species decreased in volume which is reflected in the samples (from 11.668 tons in 2010 to 3.777 tons in 2011).
3. *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 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. and the merging of metiers is discriminated in T 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 2011.

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

ICCAT and IOTC

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. 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.).

Estimates of lengths sampled on board are not available. Estimates to fleet level were deemed not representative and the CVs were not calculated. Therefore, annual precision levels on volume of discards of length distributions were not estimated.

Autonomous Region of the Azores (ICCAT)

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.

Autonomous Region of Madeira (CECAF 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 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 2011, of implementing the plan of observers onboard due to administrative and budgetary constraints.

In the case of the CECAF area, métiers LLD_DWF_0_0_0, LHP_LPF_0_0_0 and PS_SPF_16_0_0, the under sampling was due to the impossibility to carry out the program of observers onboard, as

already explained above. This situation did not allowed for the sampling of the planned number of trips at sea. An additional effort was made on the sampling of métiers on shore in order to compensate this situation.

Concerning the following métiers: LLS_FIF_0_0_0, MISC_MOL_0_0_0 and LHM_FIF_0_0_0 these are performed mostly by small boats with in an irregular and diffuse pattern of the unloading. These may occur in small scale in several small fishing ports around the islands of Madeira and Porto Santo increasing the difficulty of coverage by our sampling program.

In the current year of 2012, an adjustment was made in the allocation of the human resources of this institute, with night coverage of unloading, improving the efficacy of the sampling program on shore in the small scale fisheries.

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

ICCAT and IOTC

Metier-related variables		
Source	Recommendation	Follow up actions
RCM LDF 2011 Ljubljana,Slovenia 10-13 May 2011	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.
RCM LDF 2011 Ljubljana,Slovenia 10-13 May 2011	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.
RCM LDF 2011 Ljubljana,Slovenia 10-13 May 2011	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.	During 2011 Portugal has ensured the participation of experts on the relevant scientific meetings.

RCM LDF 2010 Madrid, Spain 3-5 March 2010	All MS involved in industrial small pelagic fishery in “From Morocco to Guinea Bissau” fishing ground to ensure adequate sampling coverage for the landings and discards. All MS involved in fishery to draft one agreement to share tasks.	Not applicable. Portugal is not involved in this industrial pelagic fishery.
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III.C.4 Actions to avoid shortfalls

ICCAT and IOTC

The deviations are due to technical and logistic issues related to market and on-board sampling concerning large pelagic fisheries. Portugal considers the need for a re-evaluation of the sampling design, taking into account the fishing regime (each fishing trip lasts for more than 2 months) and enhancing communication with stakeholders aiming at short notice on landing that will contribute to increase market sample intensities.

Despite the achieved concurrent sampling at market being below the proposed, the achieved number of individuals measured at a national level was well above the planned (minimum requested is 1 fish per ton). The shortfall reported for the concurrent sampling at market in 2011 resulted in operational changes, but the problem was overtaken in 2012. Therefore, no bi-lateral agreement has been established with Spain nor it is forecasted.

Autonomous Region of the Azores (ICCAT)

Constant adjustments are made to the sampling programme to avoid problems but bias can 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.

Autonomous Region of Madeira (CECAF 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 pier during 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 métier 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, CECAF, etc.

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

In 2010 a sampling plan was established in order to collect data regarding seabass. Some issues remained because due to the simplex process, the licensing for recreational fisheries is made on ATM machines and the only personal data that is recorded in the process is an identification number of a personal document, meaning that there is no possibility of accessing the target population by address or by email. In 2011 no improving of the system was possible. To circumvent this issue it was implemented a pilot study targeting the maritime touristic operators. This results from this study appoints to very low quantities of seabass catches. A given reason is that fisheries targeting seabass have low demand from their clients.

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

Data collected allow a first approach to study the impact of recreational fisheries in seabass stocks. No licensed owners declarations were received during 2011. An alternative method must be taken in order to collect that data. During 2011 it was not possible to implement this alternative method because there is no database with addresses regarding recreational fisheries. With the restructuration of the Directorate General in 2012 possible implementations will be made possible.

We still face the problem that the licensing process, as defined by national regulation, doesn't record any contacts from the license owners. However, some efforts were done to overcome that problem, and now, we are in a process of data analysis in order to see if the data available could allow us to define a sample or not.

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

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 2011. Implementation of the online survey will be made when financial situation allows it.

III.E. Stock-related variables

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

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

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

In areas I, II the achieved no 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) sampling is performed by sampling one set (haul) each day. In each haul, species more abundant in the catch are sampled followed by the species required by DCF. As the measurements are taken on observer trips, the reason for over-sampling is also that all fish of a once randomly chosen sub-sample has to be measured.

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.

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. That is the case of the 2009-2011 commercial catch at age for cod in NAFO Div. 3M, made available by annual age length keys based on Flemish Cap cod otoliths collected by our sampling programme.

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 and AR2010 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

Stock-related variables		
Source	Recommendation	Follow up actions
RCM NS&EA 2011	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 (<i>Sebastes mentella</i>) in ICES DIV. I,II. For the moment Portugal has no experts on redfish aging available.
RCM NS&EA 2010	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.
RCM NS&EA 2009 Boulogne-Sur-Mer, France 15-18 September 2009	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 above, 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 5 months with a very opportunistic (an so unpredictable) effort strategy. The goal on each trip is to get the best possible coverage of the catch under such circumstances.

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.

Due to the present and predicted budget reductions and to the restrictions in force, the reading of otoliths is not foreseen in the near future. However the collection on board of otoliths will continue as planned during 2013.

III.E. North Atlantic

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

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.

In several cases, the planned sample sizes have not been achieved. 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.

For Northwest Atlantic, Portugal continues to be one of the two major sources of information from the NAFO Regulatory Area in Scientific Council assessments.

Otoliths readings: For several species, no readings of otoliths were performed in 2011. 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.

The interim reports on both pilot studies, regarding glass eel (*Anguilla anguilla*) and regarding métiers where skates are caught in IXa are attached (Annexe 2 and 3).

Iberian Fishing Ground (ICES sub-area IXa)

Anguilla anguilla, all areas: eel is not sold directly at the market, but directly through regular contacts with buyers. Sample acquisition is subject of market availability and pricing. Given that catches do not meet market needs, during 2011 none of collaborative eel fishermen had available fish for sampling purposes.

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 piscatorius, areas IXa, VIIIc: as the fish reaches the market gutted, weight sampling and gonads collection only occur during surveys at sea, or purchased (very expensive) before processed. This results in reducing the possibility of sampling weight@length, sex-ratio@length and maturity@length.

Nephrops norvegicus, FU 28, 29: 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. Thus, weight@length, sex-ratio@length and maturity@length are above the planned minimum number of individuals to be measured.

Raja brachyura, area VII, IXM; *Raja clavata*, *Raja montagui*, *Raja naevus*: all areas: sample acquisition is subject of market availability. Portugal is trying to solve logistical problems associated with fish samples acquisition.

Sepia officinalis all areas: sample acquisition is subject of market availability. Portugal is 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.

Iceland, Greenland and Irminger Sea and NAFO Areas

Currently, biological sampling of NAFO stocks is performed by two observers which remain on board throughout the fishing trip of two different commercial vessels which usually operating in NAFO Regulatory Area. At the beginning of the first trip to NAFO, one of the nurse men trained to carry out sampling was injured. This fact prevent the observer to perform the usual biological sampling, causing a decline on the sampling intensity conducted in this area. Further, the other monitored vessel went to Norway instead of NAFO.

As regards the Irminger Sea, the decline in sampling effort should be directly related with the observed drop in fishing effort in the XIVb high sea waters off Greenland. The decline in age sampling is due to the short spatial (only Div. XIVb) and time period (only 3 months) of the trips observed. The age sampling is a subsample of the length sampling (3 otoliths per length class/division/month). Due to similar growth by sex, length and biological sampling for cod and white hake is taken from unsexed samples.

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

Autonomous Region of the Azores

Concerning the 10 stocks to be sampled for stock-based variables, for eight of them the sampling intensity was successfully accomplished.

Landings of *Dalatias licha* decreased substantially since implementation of EU Reg. 1225/2010 where TAC 0 is fixed for deep-sea sharks. Together with this, the majority of the few individuals landed are presented gutted. This turned out to be very difficult to gather samples for the proposed planned minimum number of individuals to be measured at a national level.

As for *Raja clavata*, besides the increasing volume of landings, this stock which is mainly captured with LLS_DEF, suffers from collateral damages when samplers try to achieve sampling scheme 2 for the same reasons as the ones explained in section III.C.1. Another factor that difficult the size sampling for *Raja clavata* is that often this fish is transformed on board.

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

Iberian Fishing Ground (ICES sub-area IXa) and Iceland, Greenland and Irminger Sea and NAFO Areas

Several 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 and AR2010 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.

Regarding the exceeding sampling intensities for statistical purposes, the achieved sampling intensities are not high and result in high precision data 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 the Azores (Div.X)

There are no deviations from the NP proposal.

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

Iberian Fishing Ground (ICES sub-area IXa)

Stock-related variables		
Source	Recommendation	Follow up actions
RCM NA 2011 La Rochelle, France 12 – 15 September 2011	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 2011 La Rochelle, France 12 – 15 September 2011	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 and amendments to NP 2011.
RCM NA 2010 Ostend, Belgium 19 – 21 April and 31 May – 2 June, 2010	RCM NA recommends MS to include a detailed methodology on the method used for estimating the catches of the 2 <i>Lophius</i> species. This description should be sent to the WGHMM <i>Lophius</i> stock coordinators in 2011 and included in a revised NP proposal.	The two species of anglerfish (<i>Lophius piscatorius</i> and <i>Lophius budegassa</i>) 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

		<p>Portuguese landings of Division IXa are derived from their relative proportions in market samples.</p> <p>ICES. 2011. Report of the Working Group on the Assessment of Southern Shelf stocks of Hake, Monk and Megrin (WGHMM), 5 - 11 May 2011, ICES Headquarters, Copenhagen. ICES CM 2011/ACOM:11.625 pp.</p>
<p>RCM NA 2009, Cadiz, Spain</p> <p>29 September to 2 October, 2009</p>	<p>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</p>	<p>Portugal has followed this recommendation in the elaboration of NP 2011-2013.</p>

Iceland, Greenland and Irminger Sea and NAFO Areas

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

III.E.4 Actions to avoid shortfalls

Mainland

Iberian Fishing Ground (ICES sub-area IXa)

In order to minimize the risk of missing eel samples an even more intense contact with the fishermen involved will be prioritized. For crustacean species, sampling directly at the auction by the staff has in general been very successful and cost effective and Portugal will continue with the sampling setup. Regarding the other stocks Portugal plans to keep following the fishing activity.

Iceland, Greenland and Irminger Sea and NAFO Areas

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

Autonomous Region of the Azores (Div.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.

III.E. Other Regions

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

Mainland

ICCAT and IOTC

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. Given the available data sources, the use of scales depend on vessels facilities and weather conditions.

Autonomous Region of the Azores (ICCAT)

Regarding all 5 stocks planned for stock-based variables in this region, the achievement of the planned number of individuals to be measured was not possible for reasons that differ with the stock in concern.

Once métier LLD_LPF is not a selected métier for sampling, and being this activity the one that targets for *Xiphias gladius* with considerable by-catch of both *Prionace glauca* and *Isurus oxyrinchus* it is hard to harmonize with the sampling of other métiers. Another reason that contributes to this scenario is that most of this fishes are landed gutted and transformed being landed directly into containers.

Thunnus alalunga and *Thunnus obesus* are landed either directly to the transforming factories or into a new facility that consists in a certain way as a factory boat. Tuna are directly landed into this boat (anchored just outside Horta harbour) where fishes are immediately transformed and gutted.

Autonomous Region of Madeira (CECAF 34.1.2)

Tables III.E.1 and III.E.2 summarises the landings in 2011 and the long term sampling of required stocks. Table III.E.3 summarises the sampling intensity for stock-based variables. In general a good coverage was achieved in the species considered.

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

Mainland

ICCAT and IOTC

A trial of the COST package within the AR2009 and AR 2010 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.

Autonomous Region of Madeira (CECAF 34.1.2)

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 acquisition of specimens for laboratorial biological sampling.

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

ICCAT and IOTC

Not applicable.

III.E.4 Actions to avoid shortfalls

ICCAT and IOTC

Not applicable.

Autonomous Region of the Azores (ICCAT)

Samplers will be asked to conduct a bigger sampling effort towards the métier LLD_LPF in order to achieve the number of individuals to be measured from the species in concern.

Regarding tuna, a special authorization will be asked to the local authorities in order to license the sampler on board the factory boat allowing this way the needed proximity with the fish so samples can be obtained.

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 2011 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 2011 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 2011.

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 2011, as stated in the previous section.

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

Not applicable.

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.34. Actions to avoid shortfalls

Not applicable.

III.G. Research surveys at sea

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

As indicated in the Table III.G.1 all the programmed surveys were performed. Given details:

1. Sardine DEPM (triennial)

The survey was carried out by RV Noruega, from February 8th to March 9th. Refer to Figure III.G.1a for achieved CalVET (A) and local sampling of adult sardines (B). Figure III.G.1b represent surface temperature distribution (A) and total number of sardine eggs counted *in situ* (B).

Shortfalls were due to bad weather conditions. Data coming from Sardine DEPM is stored in a national database.

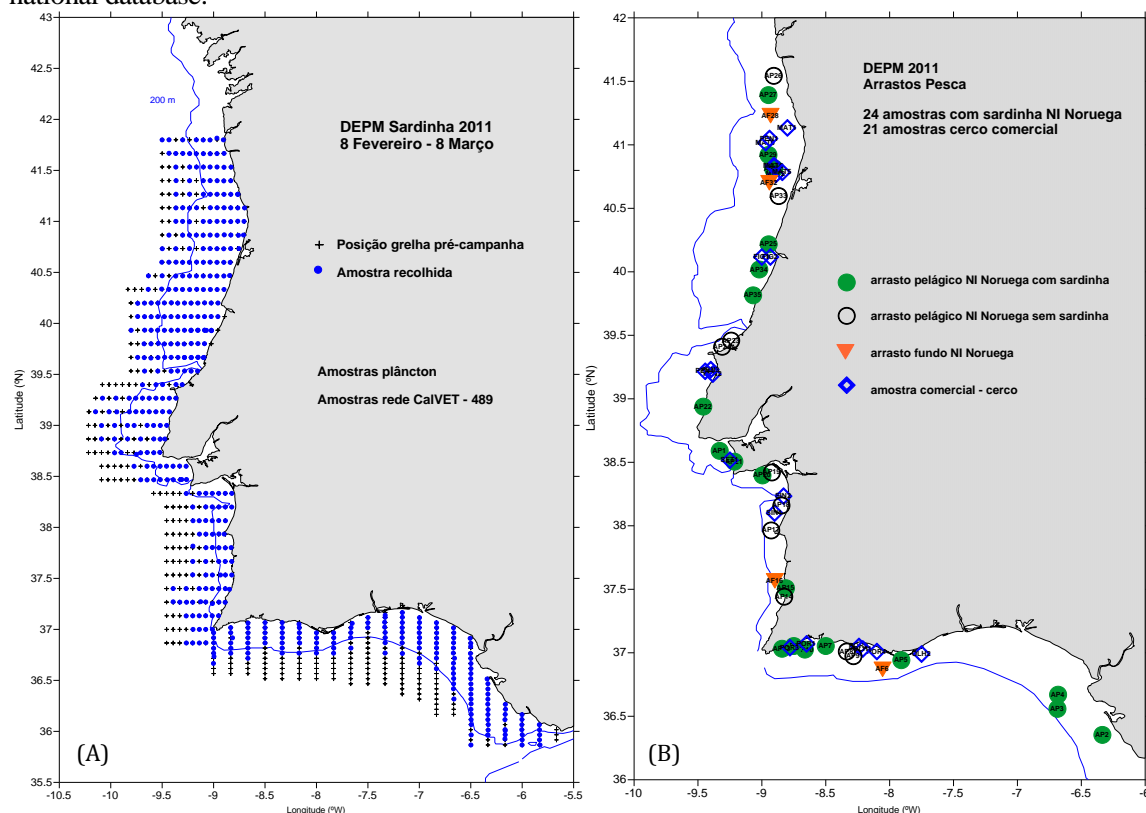


Figure III.G.1a. Sardine DEPM (triennial). (A) Achieved CalVET. Pre-defined grid (crosses) and occupied positions (blue circles) in accordance with the adaptive sampling. (B) Local sampling of adult sardines (green circles represent pelagic trawl stations with catches of sardines, transparent circles represent pelagic trawl stations with no catches of sardines, orange triangles represent bottom trawl stations, blue lozenges represent ports where purse seine commercial samples where collected).

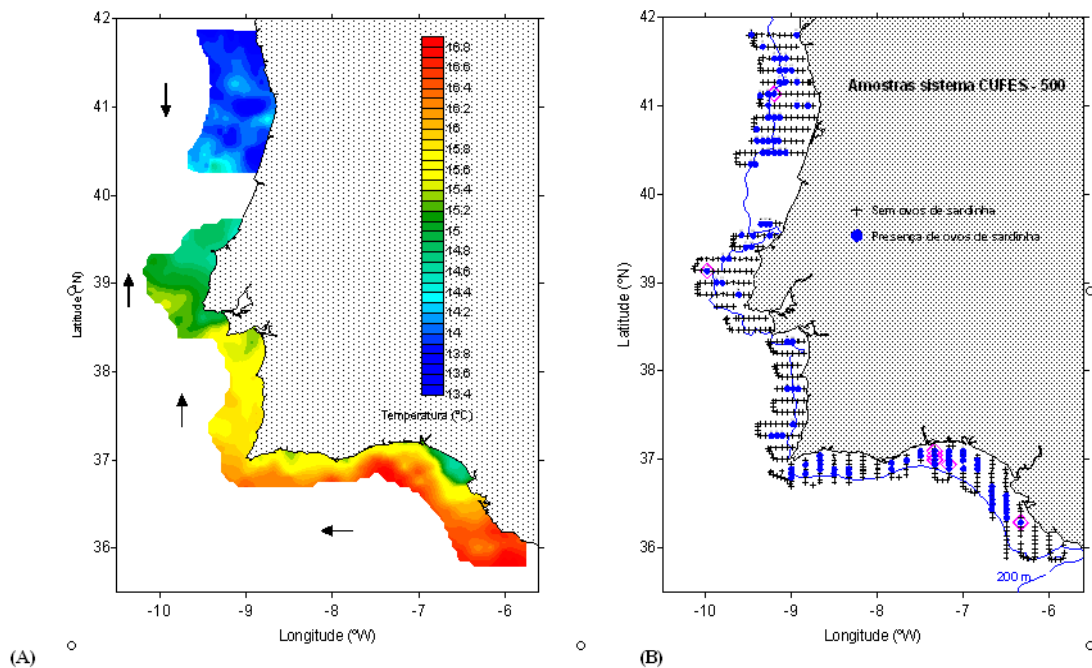


Figure III.G.1b. Sardine DEPM (triennial). (A) Surface temperature distribution. (B) Total number of sardine eggs sardine (counted *in situ*) from data collected with system CUFES + EDAs (blue dots indicate the presence of sardine eggs, pink diamonds point the greatest abundance).

2. Sardine, Anchovy, Horse Mackerel Acoustic Survey

The survey was carried out by RV Noruega, April 19th to May 16th. Refer to Figure III.G.1b for sampling radials (A) and fishing stations (B). Deviations from planned days at sea are under the margin of 10%. There are no shortfalls for the sampling target.

Data coming from Sardine, Anchovy and Horse Mackerel Acoustic survey is stored in a national database. Data was sent to the ICES WGANSA and used on the assessment of sardine and anchovy.

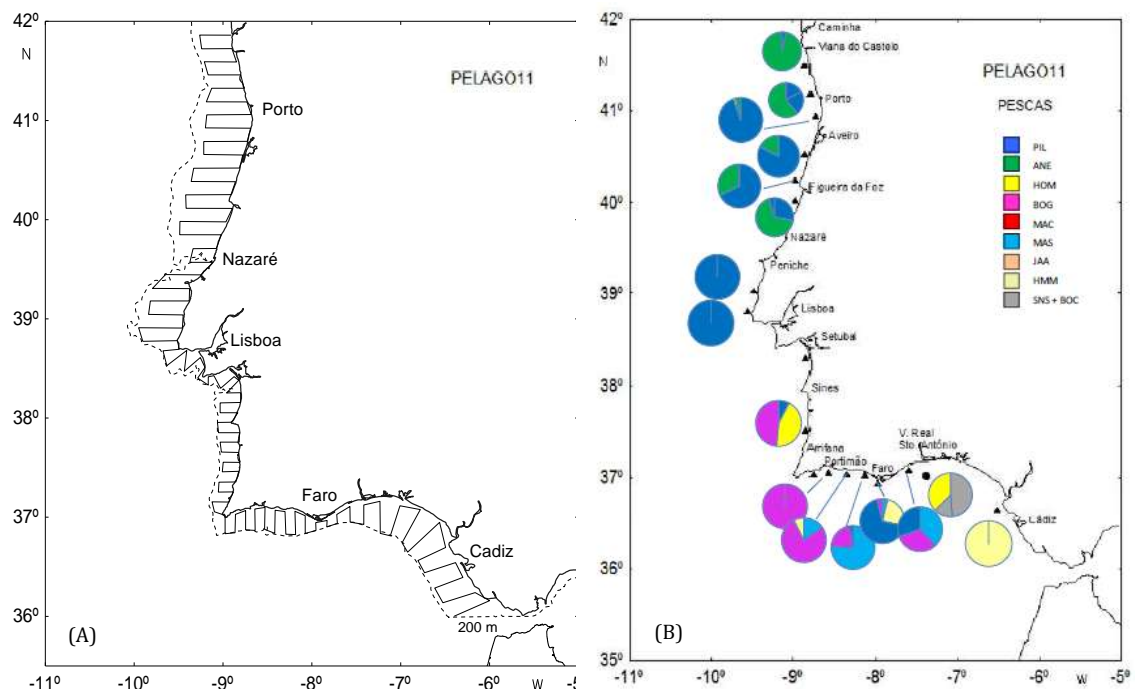


Figure III.G.1c. Sardine, Anchovy and Horse Mackerel Acoustic Survey. Sampling radials (A) and species composition by fishing station, (B).

3. Nephrops TV Survey - Offshore Portugal

The survey was carried out by RV Noruega, June 9th to June 25nd. Refer to Figure III.G.1d for sampling grid (A) and fishing stations (B).

A technical failure on vessel's engine motives the deviations on the achieved number of days. Portugal notes that these technical problems are related to the age of the vessel and measures towards its replacement are being taken.

The main objectives of the survey is to estimate the abundance and to study the distribution and the biological characteristics of the main crustacean species, namely *Nephrops norvegicus* (Norway lobster), *Parapenaeus longirostris* (rose shrimp) and *Aristeus antennatus* (red shrimp). The sampling design was adapted from the bottom trawl surveys (stratified random sampling) and formed the basis for data collection for the crustacean surveys since 1997.

Besides the technical problems and the deviations on the achieved target, a large part of the survey area was covered and it was possible to estimate abundance indices for the two main crustacean species, the rose shrimp and *Nephrops*.

Complementarily to the use of bottom trawl, ACFM has recommended the use of Underwater TV (UWTV) survey for *Nephrops* abundance estimation.

In 2005 and 2007, some experiments to collect UWTV images from the *Nephrops* fishing grounds were made with a camera hanged from the trawl headline.

Portugal emphasizes that FU 28+29 *Nephrops* stocks are deeper than the further northern stocks where this technique has been used. In these stocks, the burrows counting is done in real time with a camera mounted in a sledge and connected to the vessel with an umbilical cord. For the Portuguese stocks, a combined trawl and UWTV survey is being carried out since 2007. These depths were planned to be covered with a stand-alone UWTV camera and recorder placed in the trawl head rope allowing a subsequent *Nephrops* burrows count. However, as the Portuguese bottoms are very deep, the trawl survey is crucial to estimate abundance indices for the main crustacean species.

In 2008, the images collected from 9 stations in FU 28 with this procedure looked very promising. In 2009 survey, a two-beam laser pointer was attached to the camera and UWTV images were recorded from 58 of the 65 stations. The trawling speed and the turbidity were the main problems affecting the clarity of the image and the high variation of the height of the camera to the ground resulted in a variable field of view. In 2010 and 2011, no images were collected due to technical problems of the research vessel. It is not guaranteed that this method can be used for abundance estimation (information presented to SGNEPS 2012 – Study Group of *Nephrops* Surveys).

Data from *Nephrops* TV Survey Offshore Portugal, UWTV (FU 28-29) survey is stored in the CRUZDEM national database. This data was sent to the ICES WGHMM and used on the assessment of *Nephrops*. Moreover, data on species abundance and biodiversity was used for Descriptors 1 and 3 of the MSFD.

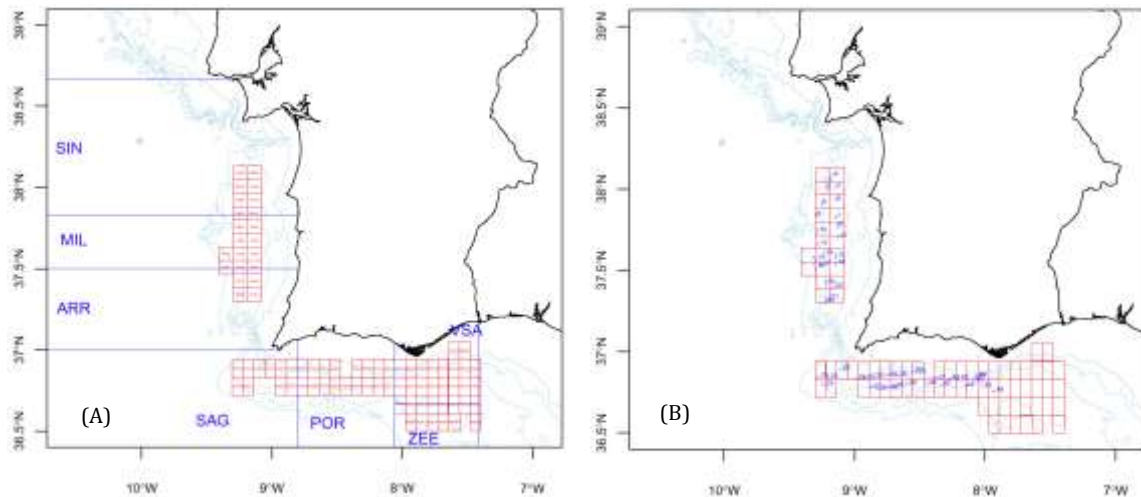


Figure III.G.1d. Nephrops TV Survey Offshore Portugal, UWTV (FU 28-29). Sampling grid (A) and fishing stations (B).

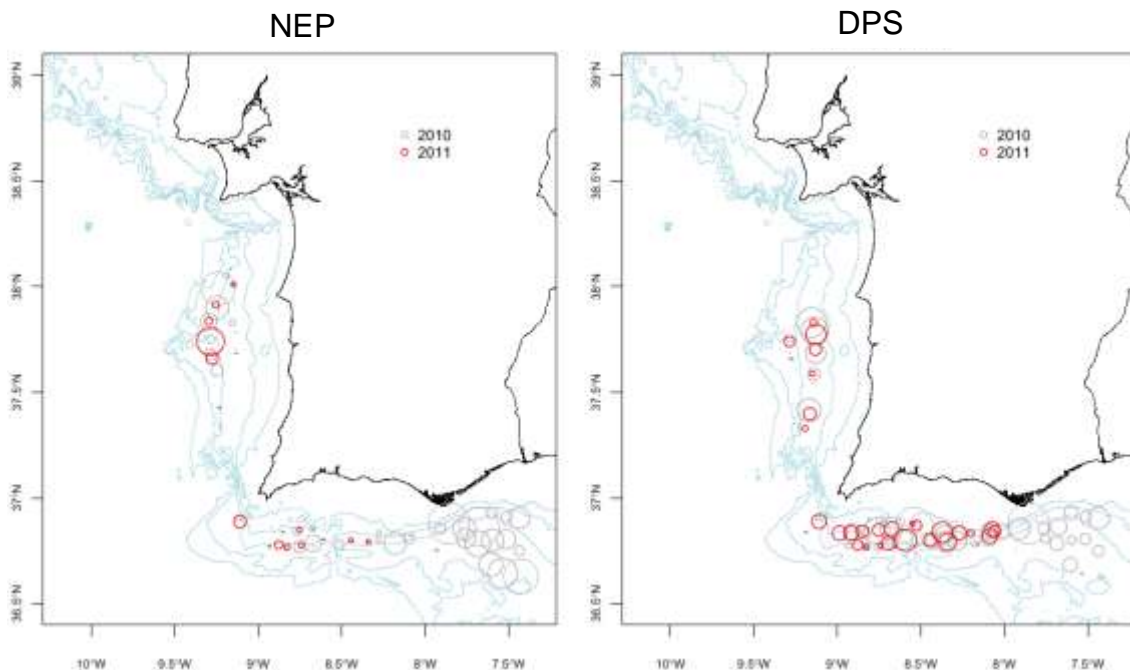


Figure III.G.1e. Nephrops TV Survey Offshore Portugal, UWTV (FU 28-29). *Nephrops norvegicus* (NEP) and *Parapenaeus longirostris* (DPS). Indices of biomass distribution for 2010 and 2011.

4. Flemish Cap Groundfish Survey, FCGS

The Flemish Cap Groundfish Survey (FCGS) is a joint survey between Spain and Portugal. This survey is carried out with the RV Vizconde d'Eza between June 28st to August 3rd. Portugal has taken part by means of a team of two technicians.

In 2011, due to a malfunction of the fishing gear, there are deviations on the achieved target and exceeding on the achieved number of days. For repair purposes, the vessel had to bear away to St. Johns, this stop took 15 days, which prevented the realization of the planned 181 hauls.

To perform 127 hauls, the survey had to be extended more 4 days. This extension did not affect the timing of IPIMAR staff and was conducted by the Spanish team's campaign in division 3L. The 32 planned strata were sampled (Figure III.G.1f.), but in two of those

only a unique trawl was carried out. Nevertheless the results can be compared to previous years. Spain is in charge for supplying the vessel, so the detailed explanation of the fishing gear malfunction must be reported by Spain. Nevertheless, the reason of malfunction was the breakdown of the axis of one of the engines that pull the net, forcing the vessel to stay on land several days for reparation. The data from the Flemish Cap Groundfish Survey, FCGS, is stored in the IEO data base.

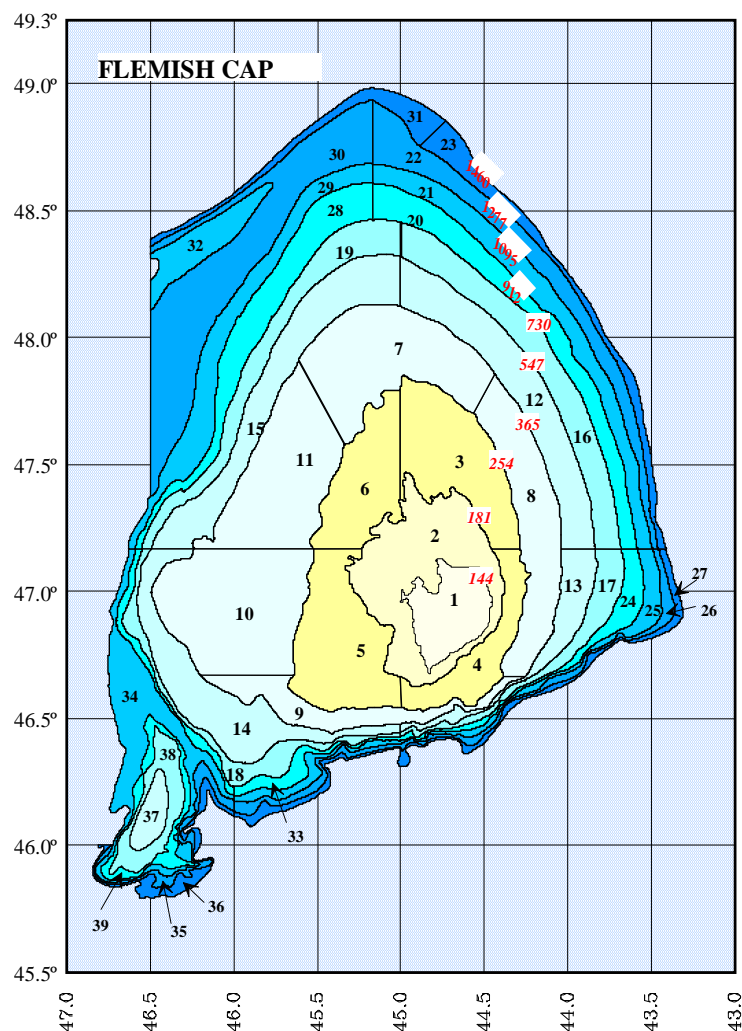


Figure III.G.1f. Flemish Cap Groundfish Survey, FCGS (RV Vizconde d'Eza). Sampling grid.

5. Western IBTS 4th quarter – IBTS Q4

The survey was carried out by RV Noruega, September 28th to October 24th. Refer to Figure III.G.1g. for sampling grid. Occurring shortfalls were under the margin of 10%.

Data coming from the IBTS survey is stored <http://datras.ices.dk/Home/Descriptions.aspx> (ICES site with protocols and surveys data) and also in the CRUZDEM national database. This data was sent to the ICES WGHMM and used on the assessment of demersal species. Moreover, data on species abundance and biology and on biodiversity was used for Descriptors 1, 3 and 4 of the MSFD.

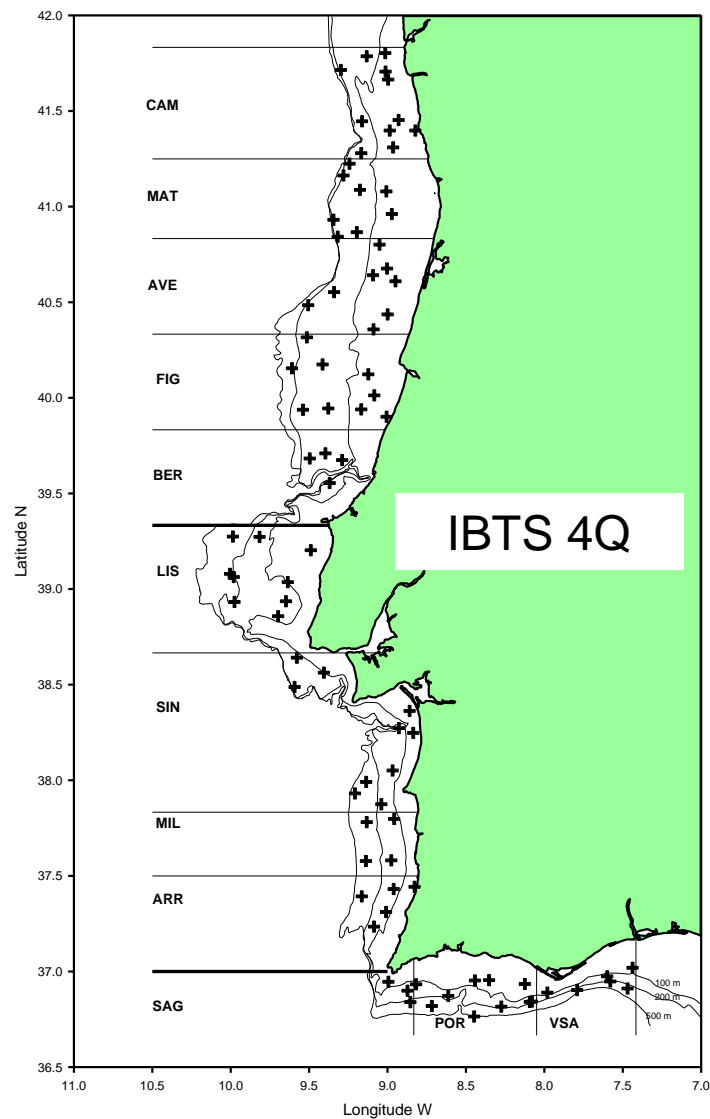


Figure III.G.1g: Western IBTS 4th quarter – IBTS Q4. Sampling grid.

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

The reasons for occurring shortfalls are explained in the section above.

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

Not relevant.

III.G.4. Actions to avoid shortfalls

Not applicable.

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 2011 the surveys used to collect data for EUROSTAT were adapted in order to also collect economic data for DCF. The adaptations to the existing surveys allow us to collect the DCF data at the same time as the EUROSTAT data and avoid a duplication of effort. Economic data for 2010 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 2010 data from NSI. The source of information is Structural Business Statistics (SBS).

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

There are no deviations from the NP proposal. Some data from NSI was not available by the time of the data call.

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

Not applicable.

IV.B.4. – Actions to avoid shortfall

Further meetings with NSI will take place in order to assess the problem of availability of the information by the time of the processing industry data call.

V. MODULE OF EVALUATION OF THE EFFECTS OF THE FISHING SECTOR ON THE MARINE ECOSYSTEM

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

Indicators 1, 2, 3 and 4: No deviations occurred in 2011.

Indicators 5, 6 and 7: Portugal applies to derogation for the years of 2009 and 2010.

Indicator 8: No deviations occurred in 2011.

Indicator 9 : Fuel efficiency of fish capture

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 constraints will overcome we will advance with the subcontract for the small scale vessels. Only after that can we calculate the métiers. The contract will contemplate the recollection of books from 2010 in order to have results from that year.

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.

Nevertheless, due to the new framework of Data Collection, some changes have to be done in those databases in order to fulfil the requirements.

Those changes in 2011 are focused in:

1. FISHING LOGBOOKS

- This module was modified to allow a more accurate calculation of Live Fish weight based on landings and transshipments.

2. FISH SALES

- Use of WebDAV access for uploading Sales data files.
- Enhanced data file processing; allows more accurate processing of correction data files.
- Enhanced data validations and conversions, allowing a better data quality control.

3. BUSINESS INTELLIGENCE FOR DATA COLLECTION

- Design of the mechanisms for integration of information from all the sources.
- Design the repository that will integrate all the information in a uniform data model.
- Design an interface to allow the EC to have direct and easy access to the intended data.

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 2012.

In what concern the biological data of the National Research Institute, 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 2011, 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 and DG MARE were organised, analysed and presented in those *fora* as usually.

VII. FOLLOW-UP OF STECF RECOMMENDATIONS

Source	Recommendation	Follow up actions
STECF EWG 11-08 (Evaluation of AR 2010)	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 2011 Annual Report (see section III.C.2 and Annex 1 of the AR 2011).
STECF EWG 11-08 (Evaluation of AR 2010)	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 meetings and not only the meetings attended should be provided.	Done.

STECF EWG 11-08 (Evaluation of AR 2010)	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.
STECF EWG 11-08 (Evaluation of AR 2010)	EWG 11-08 recommends that files with filters, hidden cells, track changes, coloured cells etc should not be submitted in AR.	Done.
STECF EWG 11-08 (Evaluation of AR 2010)	EWG 11-08 recommends that non conformities in the tables of the AR needs to be explained in the text.	Done.
SGRN 10-01 Evaluation of 2011- 2013 National Programmes linked to the Data Collection Framework	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.
SGRN 10-02 Evaluation of 2009 Annual Reports related to the Data Collection Framework	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 plans to ensure attend RCM LDF 2012.
SGRN 10-02 Evaluation of 2009 Annual Reports related to the Data Collection Framework	On Reporting of landings vs. retained catches: SGRN recommends using the term 'retained catches' instead of 'landings' throughout.	Portugal considered this recommendation.

VIII List of acronyms and abbreviations

CE	Comunidade Europeia
CECAF	Committee for the Eastern Central Atlantic Fisheries
CV	Coeficiente de variação
DGPA	Direcção Geral das Pescas e Aquicultura
DOP	Departamento de Oceanografia e Pescas da Universidade dos Açores
DRPM	Direcção Regional das Pescas da Madeira
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)
IOTC	Indian Ocean Tuna Commission
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
UAç	Universidade dos Açores

IX Comments, suggestions and reflections

X References

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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. Questionnaire to the Fleet Landing Skates**
- **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

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

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

$$TW = aTL^b$$

$$\sigma_u^2 = \frac{RSS}{n-2}$$

RSS , residuals sum of squares

$$Var(\hat{W}) = \sigma_u^2 \left(1 + \frac{1}{n}\right)$$

\hat{W} , 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

$$q = 1 - p$$

q , male proportion

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

$$Var(p) = \sum_{i=1}^{N_a} Var(\bar{p}_i) \left(\frac{n_i}{N_a} \right)^2$$

N_a , 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

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

$$Var(p) = \sum_{i=1}^{N_a} Var(\bar{p}_i) \left(\frac{n_i}{N_a} \right)^2$$

N_a , total number of samples

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

ANNEX II
INTERIM REPORT 2011
PILOT STUDY FOR GLASS EEL (*Anguilla anguilla*)

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: preliminary visits to establish relations with the fishermen and describe the local fishing gear, <i>tela</i> .	Some contacts have been made with fishermen.
Minho River: introduction of a voluntary logbook to be filled-in by fishermen.	6 fishermen with logbooks.
Minho River: weekly contacts by telephone and visits every month.	
Minho River: monthly purchase of glass eel samples to determine biological characteristics: length, weight, pigmentation stage.	Glass eels were sampled in November and December. Fishery season reduced for 3.5 months (middle November – end of February). Sampling will cover only 4 months instead of the 6 months

	as planned.
Lis River: preliminary visits to establish relations, contract fishermen and describe the local fishing gear, <i>sarrico</i> .	Contacts have been established with “former” fishermen (fishery is forbidden since 2001) but they were reluctant to realize fisheries. It was not possible to contract fishermen this year.
Lis River: four-monthly fishing (October-May) to evaluate abundance in terms of CPUE and seasonal trends of recruitment.	
Lis River: laboratory determination of length, weight and pigmentation stage.	

3. OTHER REMARKS

In order to protect eel resource and control fishery, The Portuguese Rio Minho Authority:

- a) reduced glass eel fishery season to 4 new moons, which corresponds to a period of approximately 3.5 months (18th November – 1st March for 2011-2012 season);
- b) introduced a mandatory 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 the national authority, 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 used to assess compliance levels and extrapolate data.

In Lis river we have a major problem. Fishery is forbidden so in theory there are no glass eel fishermen. 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.

Some contacts were made but fishermen shown reluctance participating in fishery actions. What we could confirm is that illegal fishery occurs in Lis river as happens in many other Portuguese rivers because of high value of glass eel that attract many people to this activity. This can explain the reluctance of fishermen. Even if we pay to fishermen we contract enough to compensate possible earnings of their possible illegal activity we still will be interfering with many others and what is supposed to be a simple action to gather information can easily be confused with a control action of illegal activity which we don't want to. A sensitive issue to discuss and analyze.

ANNEX III
INTERIM REPORT 2011
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 métiers 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 species;
- Preparation of a Guide of Rays in Iberian waters, in cooperation with Spain (Spanish, Portuguese and English versions);

2. Biological:

- Obtaining length frequencies, sex ratio and maturity 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 areis? a rare species in Portuguese landings.
- Description of condition of landings by port and métier.
- Estimation of conversion factors (wing/total weight ratios by species).

2. ACHIEVEMENTS: RESULTS AND DEVIATIONS FROM THE PROPOSAL

SCOPE	RESULTS
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.	Landing data is being revised and compiled and the main results will be presented in the next working group.
Characterization of the fleet landing skates and discards.	<p>Based on several data sources (DGPA, self-sampling and questionnaires (Annex IV)), a paper on characterization of skate fishing regime is being prepared. In the same document, CV's are estimated in order to optimize the current sampling programme.</p> <p>Based on the estimated optimal sample size, an improvement in the sampling frequency was made and in the first quarter of 2012 a total of 90 trips were sampled in comparison to 38 in 2010 and 18 in 2011. It is important to note that this first effort only regards the Peniche landing port , as a first phase, but the main goal is to extend the new methodology to other Portuguese ports landing skates.</p> <p>The collection of information on the fleet landing skates in other fishing port began during 2011. A total of 122 questionnaires were made: 83 in Matosinhos, 19 in Figueira da Foz, 5 in Póvoa do Varzim, 15 in Aveiro and 11 in Sines landing port. In each of the mentioned fishing ports a short questionnaire on the general activity of several commercial vessels were also made.</p> <p>Data from self-sampling, resulting from the collaborative work with a fishermen cooperative (CAPA) of Peniche landing port, was analysed and its quality was evaluated. A meeting with the</p>

	<p>fishermen associated was promoted in order to communicate the first results and identify possible errors in the fulfilment of the questionnaires.</p> <p>During the first year of the project a total of 12 trips were realized onboard of the vessel "Mãe Purissima" in order to collect additional information on skate species composition and associated species, as well information on the skate survival rate related to the metiér. A working document resuming the first results is being prepared.</p> <p>In order to characterize the socio-economic structure a questionnaire is prepared and will be preformed in the future visits to the Peniche landing port.</p>
Standardised effort and CPUE by month by specie.	<p>Fishing effort estimates were presented in the WGEF 2011 and during this current year information will continue to be collected.</p> <p>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. A preliminary analysis of the fishing effort will also be performed for other fishing ports than Peniche, based on the already collected information.</p>
Preparation of a Guide of Rays in Iberian waters, in cooperation with Spain (Spanish, Portuguese and English versions)	-
<p>Obtaining of length frequencies, sex ratio and maturity n for all rajidae species.</p> <p>Besides the studies referred before, under the present proposal, studies will be initiated on age/growth and on reproduction for the species <i>Raja brachyura</i>, <i>Raja undulata</i> and <i>Rostroraja alba</i>, the later are is? a rare species in Portuguese landings.</p>	<p>Between March 2011 and March 2012 a total of 376 specimens of several species were sampled: 48 <i>Raja undulata</i>, 72 <i>Raja montagui</i>, 2 <i>Raja microocellata</i>, 80 <i>Raja clavata</i>, 89 <i>Raja brachyura</i>, 77 <i>Raja naevus</i> and 1 <i>Leucoraja circularis</i>. Data on biological parameters was collected.</p> <p>Data on reproductive biology (seasonality, size-at-maturity and fecundity) of the species <i>Raja montagui</i> is currently being analysed.</p>

Description of condition of landings by port and métier.	In Portugal, skates are landed whole. During 2012 detailed information on discards that happen during the sale will be collected.
Estimation of conversion factors (wing/total weight ratios by specie).	Information on several skate species has been collected: 24 <i>Raja clavata</i> , 54 <i>Raja brachyura</i> , 51 <i>Raja montagui</i> , 22 <i>Raja naevus</i> and 8 <i>Raja undulata</i> . A linear regression was applied to each species and conversion factors were estimated. The collection of more information will continue in order to increase the number of samples namely for the species <i>Raja clavata</i> , <i>Raja naevus</i> and <i>Raja undulata</i> .

ANNEX IV

QUESTIONNAIRE TO THE FLEET LANDING SKATES

Inquérito à Frota Polivalente com Desembarques de Raias

Caracterização das Viagens


Porto: _____ Data: ____/____/____
Embarcação _____

Nome (função) _____
Data nascimento ____/____/____ Contacto _____

Caracterização das artes de pesca usadas na viagem (Nº dias: _____)

Arte de Pesca #1 Tipo _____ Malhagem/nº Anzol _____ Espécies alvo _____ Nº redes/armadilhas/anzóis _____ Nº de Lanços _____ Tempo de pesca _____	Pesqueiro #1 Arte: <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4 Nome _____ Coorden. _____º _____' N; _____º _____' W Profund. Min: _____ Max: _____ braças Fundo _____ Dist. ao porto? _____ Dist. a costa? _____
Arte de Pesca #2 Tipo _____ Malhagem/nº Anzol _____ Espécies alvo _____ Nº redes/armadilhas/anzóis _____ Nº de Lanços _____ Tempo de pesca _____	Pesqueiro #1 Arte: <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4 Nome _____ Coorden. _____º _____' N; _____º _____' W Profund. Min: _____ Max: _____ braças Fundo _____ Dist. ao porto? _____ Dist. a costa? _____
Arte de Pesca #3 Tipo _____ Malhagem/nº Anzol _____ Espécies alvo _____ Nº redes/armadilhas/anzóis _____ Nº de Lanços _____ Tempo de pesca _____	Pesqueiro #1 Arte: <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4 Nome _____ Coorden. _____º _____' N; _____º _____' W Profund. Min: _____ Max: _____ braças Fundo _____ Dist. ao porto? _____ Dist. a costa? _____
Arte de Pesca #4 Tipo _____ Malhagem/nº Anzol _____ Espécies alvo _____ Nº redes/armadilhas/anzóis _____ Nº de Lanços _____ Tempo de pesca _____	Pesqueiro #1 Arte: <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4 Nome _____ Coorden. _____º _____' N; _____º _____' W Profund. Min: _____ Max: _____ braças Fundo _____ Dist. ao porto? _____ Dist. a costa? _____

Caracterização da captura de raias			
Detectou fêmeas de raia em desova?	<input type="checkbox"/> Sim <input type="checkbox"/> Não	Arte: <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4	Espécies _____
Detectou juvenis de raia?	<input type="checkbox"/> Sim <input type="checkbox"/> Não	Arte: <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4	Espécies _____
Fez rejeição?	<input type="checkbox"/> Sim <input type="checkbox"/> Não Quanto? _____ kg/unid.	Arte: <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4	Espécies _____

Observações:	
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ANNEX V
OTHER REGIONS SELF-SAMPLING FORM

Dado da lanca		Data	Nº lanca	Panção inicial	Panção final	Latidade (° ' S/N)	Longitude (° ' S/N)	Rumo	Profundidade (m)	Nº anzol	Nº líder	Tipa anzol	Vento	Luz	temperatura (°C)	Nº Tartaruga libertada	Nº Tartaruga morta	Nº Aveaz capturado	Catêcor
			1																
Espécie	Erpadorto (SWO)	Tintureira (BSH)	Anaquim (SMA)	Atum-patudo (BET)	Atum-olheira (YFT)	Atum-voador (ALB)	Erpadim-azul (BUM)	Erpadim-branco (WHM)	Valeira (SAI)	Ercaul (LEC)	Oniredo (DOL)	T. lúcidu (FAL)	T. pt. brn nca	T. mortel n (SPN)	Barreco 4a (BAZ)	Lírio (AMB)			
Capturar lanca para-... Barbatana	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz			
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Comprimentos dos peizes capturados (incluindo os de pequena dimensão)																			
Nº peixe não medido																			
Lancar rãvior (para...)	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz	Quiloz				
Total para barbatana		0	0									0	0	0					
Total para vivo	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				

[illegible]

Outras espécies (código 3 letras)

[illegible]

ANNEX VI

Methodological document

ANNUAL SURVEY TO THE FISHING FLEET

March 2012

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INTRODUCTION

Following the implementation of Data Collection, DCR and DCF, 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

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 dos Recursos Naturais, Segurança e Serviços Marítimos (DGRM)

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7. Others Entities

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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;
- Commission Decision No (2010/93/UE) of the 18 December 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

Annual

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

Project schedule - Economic Data of the Fishing Fleet -															
Year n+1	SEP		OCT		NOV		DEC		JAN		FEB		MAR		
	1 ^a q	2 ^a q	1 ^a q	2 ^a q	1 ^a q	2 ^a q	1 ^a q	2 ^a q	1 ^a q	2 ^a q	1 ^a q	2 ^a q	1 ^a q	2 ^a q	
Sample preparation															
Shipping questionnaire reception															
1st Insistence															
Computerisation data															
treatment of data															
provisional data															
analysis															
Definitive data															
estimates Available															

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 Regulation¹. 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:

¹ Commission Decision (2010/93/EU) – Pág. 22 – Apêndice 3

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

nr = not relevant

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

n_i - sample size in stratum i

N_i - the size of the universe, in stratum i

S_i - 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,

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

in which:

$$k_i = 0, \dots, n_i - 1$$

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, and 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.

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.

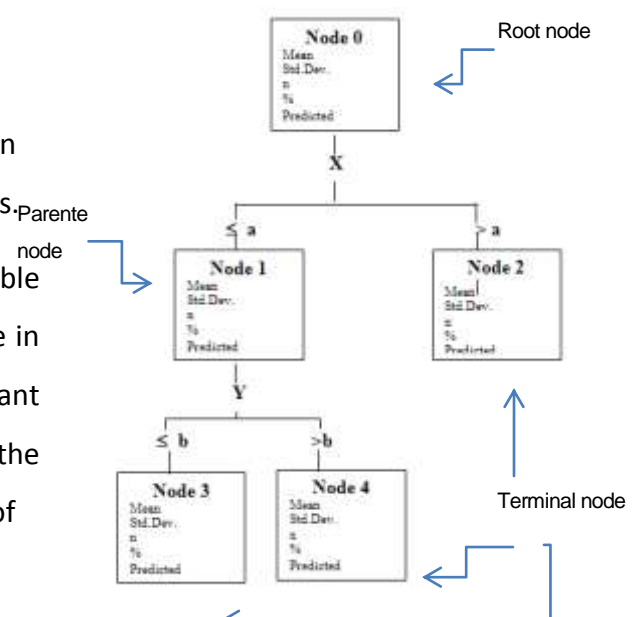


Figure - Example of a tree using the CART algorithm

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

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

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,

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

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	1,33%
	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	
	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 production (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

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Belmont, California: Wadsworth.