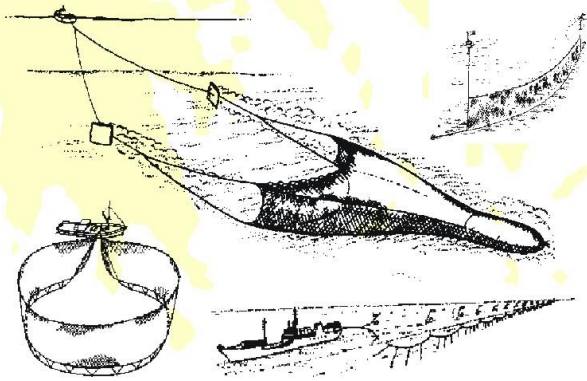


GREECE
National Fisheries Data Collection Program
2011-2013

(IN APPLICATION OF EC DECISION 93/2010)



MINISTRY OF RURAL DEVELOPMENT AND FOOD
DIRECTORATE GENERAL FOR FISHERIES

2010

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I. General framework

The current document presents the proposal for the Greek National Programme (NP) for the collection of data in the fisheries sector. The NP proposal covers the three-year period 2011-2013 (NP-years). The programme has been developed following the rules of the:

Commission Regulation No 199/2008 establishing a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy

Commission Regulation No 665/2008 laying down detailed rules for the application of Council Regulation (EC) No 199/2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy.

Commission Decision 2010/93/EU adopting a multiannual Community programme for the collection, management and use of data in the fisheries sector for the period 2011-2013.

The format of the document follows the most recent guidelines from the Commission.

Owing to the requirements of the new DCF, the current programme includes a number of elements that differentiate it from the past programmes: (a) most biological variables are associated with specific fishing métiers and have to be collected on a métier basis, (b) the spatial scale of data collection and analysis in the Mediterranean will be the GFCM Geographical Sub-Areas (GSA), (c) collection of economic variables on aquaculture sector, (d) calculation of ecosystem parameters. In order to achieve the objectives of the DCF, representative sampling will be accomplished in the various sectors of the fleet, employing a scheme that is based on that followed in the 2002-2008 period. As the areas exploited by the Greek fleets are not exploited by any other member state no regional coordination is needed for the implementation of the current DCF.

II. Organisation of the National Programme

II.A National organisation and co-ordination

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The National Fisheries Data Collection Program for Greece is carried out by the institutes that follow. The profile of each institute is given in Appendix I

NATIONAL AGRICULTURAL RESEARCH FOUNDATION (N.AG.RE.F.)

Address : 19 Aigialeias Aven.,
151 25 Marousi, GREECE
Tel: +30-210-8175410

Fax: +30-210-6846700

NAGREF-FISHERIES RESEARCH INSTITUTE (F.R.I)

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Tel.: +30 25940 22691-3

Fax: +30 25940 22222

E-mail: fri@inale.gr, akallian@inale.gr;

web-site: <http://www.inale.gr>

NAGREF-AGRICULTURAL ECONOMICS AND POLICY RESEARCH INSTITUTE (AG.E.P.R.I)

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135 61 Ag. Anargiroi, Athens, GREECE

Tel: +30-210-2756596

Fax: +30-210-2751937

Email: tzouramani.inagrop@nagref.gr

HELLENIC CENTRE FOR MARINE RESEARCH (H.C.M.R.)

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**HELLENIC CENTRE FOR MARINE RESEARCH (H.C.M.R.)
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One national coordination meeting is planned at the end of each sampling year to discuss report preparation and any sampling deficiencies that should be amended for the next sampling period

II.B International co-ordination

An overview of the international co-ordination meetings (Planning Groups, Study Groups, Regional Co-ordination Meetings, etc.) and the workshops that will be attended is provided in Table II.B.1.

II.C Regional co-ordination

Greece will participate in the following Regional Co-ordination Meetings:

- RCM for the Mediterranean and Black Seas

III. Module of evaluation of the fishing sector

III.A General description of the fishing sector

The Greek fishery sector has some distinctive features, which differentiate it from the other Mediterranean fishery sectors. These features include the exploitation of an extended coastline with many islands and the existence of numerous small vessels of

a multi-gear character, which form the largest artisanal fleet segment among all EC countries. Fishing activities are mainly extended down to 500m, which suggests that fishing grounds below that depth are under-exploited. The fishery sector is separated into 2 categories: (a) small scale (coastal fisheries) and (b) medium (trawlers, purse-seiners and large pelagic longliners). The fleet comprises around 18000 vessels while there are around 40000 active professional fishermen, both number of vessels and fishermen being the highest among European Union member states. Greek fisheries are characterised by great spatio-temporal variation and scattering of fishing activity in the extensive Greek coastal zone (the Greek coastline length is higher than 17000 Km), resulting to difficulties in the monitoring of fishing activity and production. Due to the multi-species and multi-gear nature of the Greek fisheries, more than 70 species have been recorded in the commercially retained catches. Greek fishing activities cover three GSAs: (a) Aegean Sea (GSA 22), (b) Ionian Sea (GSA 20) and (c) Crete (GSA 23).

For a general description of the sector see Table III.A.1

III.B Economic variables

SUPRA-REGION: Mediterranean Sea and Black Sea

The method that will provide acceptable results on the economic state of the fishing fleet is the sample-based collection of economic data as provided by the regulations. The collection of economic data, however, is a difficult task as its aims to the collection of sensitive information, which is not easily disclosed by professional fishermen, since it does not constitute an obligation. The fear of possible leakage of such information either to competitors or tax authorities or other authorities involved in the planning of fisheries policy is creating a negative attitude to the professional fishermen. Moreover, if the fishermen eventually provide such information, it might be of limited credibility since there is no particular mechanism for the objective evaluation of the information. In the case of the Greek fleet, in particular, a large segment does not have and keep financial books on income-expenses since they are taxed based on a fixed rate set based on a level of expected income while the VAT is paid as a lump sum based on a scale derived from the tonnage of the fishing vessel. Finally, the vast majority of vessels have no obligation to use logbooks according to community and national legislation. In Greece no large fishing industries or enterprises exist and the profession is mainly family-oriented. This results in a large number of “small enterprises” which demands relatively high sampling effort.

III.B.1 Data acquisition

(a) Definition of variables

The economic parameters on which data will be collected for the purpose of basic economic evaluation per fleet segment are those reported in Appendix VI of Commission Decision 2010/93/EC.

Imputed value of unpaid labour: The value of the unpaid labour is included. The imputed value of the unpaid labour will be estimated based on the average wage given to the entire segment for each specific job. Its value will differ for different types of work performed.

Employment: FTE National and FTE harmonised will be calculated according to the methodology presented in the study No Fish/2005/14.

FTE National: The engaged crew is defined as the number of jobs on board, equal to the average number of persons working for and paid by the vessel. This includes temporary crew as well as rotation crew. According to national standards, the FTE will be estimated per segment based on the total allowable days (by Greek Law) of operation of each gear. These data are collected from Fleet Register and from questionnaires.

According to the Greek legislation, the following are the allowable days per year for the operation of each gear:

Trawlers	243	days per year
Purse Seiners	230	days per year
Shore Seiners	183	days per year
Passive gears	365	days per year

The raw data required are:

- Number of vessels per segment from the Fleet Register (a)
- Average number of days at sea (b) from questionnaires
- Average number of crew per vessel excluding rotation (c) from questionnaires
- Average number of crew per vessel including rotation (d) from questionnaires [c<d]
- Average number of hours of work per crewman per day at sea estimated through questionnaires (e)

From the above data the following will be estimated:

The total number of work-days at sea in the segment = a · b
 The total number of work hours at sea in the segment = a · b · c · e
 Average hours at sea per crew member = $\frac{a \cdot b \cdot c \cdot e}{a \cdot d} = \frac{b \cdot c \cdot e}{d}$
 Total engaged crew per segment = a · d
 FTE National = $\frac{a \cdot b \cdot c \cdot e}{threshold}$

Harmonized FTE (2000 hours) (annually): The harmonised FTE will be estimated for segments based on 2000 hours per year of operation.

The raw data required are:

- Number of vessels per segment from the Fleet Register (a)
- Average number of days at sea (b) from questionnaires
- Average number of crew per vessel excluding rotation (c) from questionnaires
- Average number of crew per vessel including rotation (d) from questionnaires [c<d]
- Average number of hours of work per crewman per day at sea estimated through questionnaires (e)

From the above data the following will be estimated:

The total number of work-days at sea in the segment = $a \cdot b$

The total number of work hours at sea in the segment = $a \cdot b \cdot c \cdot e$

Average hours at sea per crew member = $\frac{a \cdot b \cdot c \cdot e}{a \cdot d} = \frac{b \cdot c \cdot e}{d}$

Total engaged crew per segment = $a \cdot d$

Harmonized FTE = $\frac{a \cdot b \cdot c \cdot e}{2000}$

Fuel efficiency of fish capture: This is an environmental indicator and it should be calculated. It measures the effects of fisheries on the marine ecosystem. It is calculated as the ratio between value of landings and cost of fuel by quarter and by métier. Greece shall estimate fuel efficiency of fish capture by using a proportionality key based on the quarterly effort by métier to distribute the fuel consumption to métiers and quarter.

Capital costs: Capital costs will be calculated according to the PIM methodology documented in the capital valuation report (No Fish/2005/03). Templates available on the DCR website will be applied. Calculations of capital cost will be based on the replacement values. Depreciation is one of the main costs and will be calculated according to the value of the fixed asset. The Straight Line Method will be used.

Capital value: Value of physical capital will be estimated as the depreciated replacement value of the hull, engine, electronics and other equipment. Calculations of capital value are also based on the same data and sources as capital costs and the template related to the PIM methodology in (No/Fish/2005/03) is also used to estimate capital value.

We have to assess three main parameters:

- ✓ Value of physical capital: depreciated replacement value
- ✓ Value of physical capital: depreciated historical value
- ✓ Value of quota and other fishing rights

The starting date will be the date of construction (enter into sea duty) of the oldest vessel in the segment until 2010. The renovation period (time in years between 2 subsequent overhauls) will be set following a face to face interview survey with fishermen – vessel owners so that by the end of 2011, we have these data in hand. The same procedure will be followed for the setting of the share in the total investment of the 4 different categories of the vessel components (hull, engine, electronics and others). The latter data will be cross evaluated by interviewing also vessel designers and vessel constructors (shipyards). Market rate for loans will be defined as the average of the loans provided by Greek banks for fishermen from the Agriculture Bank of Greece for the current year. The interest of government bonds will be set at the value they have by January 1st of every year. Finally, the percentage of loan contribution in the total investment (capital) will be collected using questionnaires

through face to face interviews of selected fishermen-vessel owners within each segment.

The depreciation rates which will be used are in accordance to the Greek legislation Presidential Decree 299 of 2003 (O.J. 255/4-11-2003) Definition of upper and lower depreciation coefficients'. Average economic life span per vessel component is set us: hull, 25 years; engine, 10 years; electronics, 5 years; other equipment, 7 years.

The basic data matrix will be completed with the age structure histogram of the fleet in each segment and the corresponding total gt per year. The histogram will cover the whole age span of the segment (from older to newer vessel annual class).

Since data from logbooks, insurance valuations and book registers do not exist in Greece, **the estimation of capital and depreciation will follow the methodologies of current replacement value and historical value.**

For the **replacement value method**, the price per gt unit will be calculated as the product of the division of the current replacement value of the vessel and the total gt per segment per year (from age structure analysis). In the case of the **historical value method**, the current price per gt index will be depreciated from the current year (replacement value in current year) backwards in time towards the oldest age class (oldest vessel group; start of the age structure histogram) using a coefficient based on the annual inflation (consumer index). The annual consumer index will be collected from the National Statistical Service Agency of Greece.

As replacement value, we will consider the market value of the vessel as whole (including engines, electronics and other tangibles) plus the market value of the license and this value will be estimated using questionnaire data from face to face interviews with the fishermen-vessel owners. **Fishing rights and other tangible or intangible assets do not exist in the Greek fishing sector** (there are no fishing companies which could possess such assets) which would affect the reliability of the estimation of the current replacement value.

(b) Type of data collection

For the minimization of the error of the evaluation of socio-economic parameters, the project management will cooperate with local representatives who have a good knowledge of the fishing sector and have close contacts with the fishermen. Two groups of representatives will be engaged in the data collection. The first group consists of a number of selected fishery Inspectors, which are public employees working for the local Prefectures. The second group consists of ichthyologists, specially employed for the data collection tasks. They are going to collect all the data required by the regulation including the economic data. For this particular task they will be trained accordingly. The information will be collected at thirty (30) major sampling stations, distributed in the whole country and especially the locations of high fisheries interest and belonging to the 3 GSAs as required by the DCF ie.: (a) Aegean Sea (GSA 22), (b) Ionian Sea (GSA 20) and (c) Crete (GSA 23). The social and economic information will be collected considering as total population the total number of registered vessels in the Greek fleet and not only the active vessels.

The method of data collection for all fleet segments, as they defined in Table III.B.1., will be questionnaires and data will be collected during face-to-face interviews organized by the regional representatives of the network. The method of data collection will be the stratified random sampling of all segments. Since the economic data collection is required to be organized at the fleet segment level and not the métier level as in the other DCF modules, the MS plans to organize a separate survey for the collection of the data.

(c) Target and frame population

The social and economic information will be collected considering as total population the total number of registered vessels in the Greek fleet and not only the active vessels; therefore the target population and the frame population are the same (Table III.B.1).

(d) Data sources

Data on economic variables will be collected by means of a sample survey using questionnaire. Also, the national fleet register will be used for some variables. Details for each variable are given in “III.B.2. Estimation” Table B.1.

(e) Sampling frame and allocation scheme.

The stratification will take effect in two levels:

- 1) Geographical stratification (the 12 major areas – see Figure 1)
- 2) Vessel activity level: Each vessel of the local fleet (fleet of the specific major area where the correspondent/observer is working) will be categorized in one of the three following activity groups:

full-time active (vessels that carried out fishing activity in more than 60% of the days when fishing was possible during the month)

part time active (vessels that carried out fishing activity in more than 30% of the days when fishing was possible during the month)

occasionally active (vessels that carried out fishing activity in less than 30% of the days when fishing was possible during the month)

The activity groups will serve as strata for the stratification of sampling. The sampling unit will be the vessel and a number of vessels from each stratum will be randomly selected for monitoring by the observers. The number of vessels monitored will be sufficient to cover the precision level required for economic variables.

The methods used for data collection are the following for each variable group:

i. Landing records delivered by vessel owners at the landing places

Income and income per species

Value and production per species; prices

ii. Questionnaires completed during face-to-face interviews at the landing places

Production cost

Investments

Employment

Financial position

Effort

iii. Census data from the Fleet Registry (Ministry of Mercantile Marine)

Fleet

Enterprises

iv. Specific methodology

Capital cost and capital value Perpetual Inventory Method

Employment (FTE) Employment calculation method inc. FTE

Those methods will be based on detailed methodology documents (FISH/2005/14 and FISH/2005/03) as well as sample templates which are uploaded in STECF website for harmonized calculation of the values with the other member states.

The variables which will be collected are in all in accordance to Appendix VI of the regulation while the transversal economic variables will be collected at the individual vessel level (horizontally) based on the sampling scheme of Appendix VIII of the regulation.

The sampling density required in order to meet the precision levels mentioned in the Regulation was based on previous experience of the number of vessels on which the estimates of averages should be based. It should be noted that in many cases the fishermen are reluctant to provide certain information (primarily their annual incomes and others). This results in data gaps which affect the precision levels making necessary the allocation of additional effort to cover the required sample size.

Given the large size of the Greek fishing fleet, the sampling ratio of vessels per fishing segment is provided in relation to the size of the segment:

- Number of vessels in segment < 50, sample = 50%
- Number of vessels in segment < 500, sample = 30%
- Number of vessels in segment < 2000, sample = 10%
- Number of vessels in segment > 2000, sample = 5%

In the Table III B.1 the fleet per segment and total number of vessels to be sampled are summarized. As indicated there, the total number of sampled vessels will be 1470 vessels divided in the 3 GSAs as:

- Aegean Sea – GSA 22 = 900
- Ionian Sea – GSA 20 = 377
- Cretan Sea – GSA 23 = 193

No clustering of segments was made; hence Table III.B.2 is not filled.

III.B.2 Estimation

Variables estimated through a probability sample survey: The Horvitz-Thompson estimator will be used to estimate the total values (i.e., total revenues, total employment, total costs, and so on) while the Sen-Yates-Grundy formula will be used to estimate the relative sampling error.

The following table (B.1) shows the data required, the collection schemes and the planned methodologies to derive final estimates, for each one of the economic variables.

Table B.1: Data sources, data collection schemes and methodology that will be used for the estimation of the economic variables.

VARIABLE	METHOD
Gross value of landings (monthly)	The raw data required for this indicator are: Monthly landings per species Average monthly market prices of each species (€/kg) received from ex-vessel prices from landing protocols at the landing places Total income will be estimated as the product between landings and prices.
Income from leasing quota	The Greek management system does not involve quotas or fishing rights
Direct subsidies (annually)	The data required for this indicator will originate from the fishermen owners of the vessel using questionnaires. The indicator will be the product of the sum of amounts for (not exhaustive list): Compensation for fishing cessation Fuel duty refunds from purchasing transit fuel Compensation for the increase of international oil prices
Other income (annually)	There is no other use of the fishing vessels than for fishing. Other uses require special permits. The fishing vessels because of their design do not fulfil the requirements for such permits (for example safety requirements for their use for recreation etc.)
Wages and salaries of crew (annually)	Cost parameters will be collected directly from the vessel owner (vessel owner estimates) based on a questionnaire at the market (point of sale). Especially the indicator 'energy consumption' will be the sum of fuel cost, other energy cost for land facilities (if existing; fuel and electricity) and cost for electricity provided at the harbour. Energy costs will be collected on a monthly basis.
Imputed value of unpaid labour (annually)	
Energy costs (annually)	
Repair and maintenance costs (annually)	
Variable costs (annually)	

VARIABLE	METHOD
Non-variable costs (annually)	<p>Cost parameters were collected directly from the vessel owner (vessel owner estimates) based on a questionnaire. The non-variable costs will be the sum of the following costs related to the operation of the vessel:</p> <ul style="list-style-type: none"> income taxes harbour tolls bank loans (only for the vessel, vessel equipment and gears) maintenance costs (vessel and gear) administration costs wages of crewmen if hired on a salary basis wages for on-land work (for example gear repairing-preparation) rents (buildings, warehouses etc.)
Annual depreciation (annually) ¹	<p>The method of depreciation which will be used is the linear depreciation rate and the digressive depreciation rate per segment.</p>
Value of physical capital: depreciated replacement value (annually)	<p>The starting date will be the date of construction (enter into sea duty) of the oldest vessel in the segment until 2010. The renovation period (time in years between 2 subsequent overhauls) will be set following a face to face interview survey with fishermen – vessel owners so that by the end of 2011, we have these data in hand. The same procedure will be followed for the setting of the share in the total investment of the 4 different categories of the vessel components (hull, engine, electronics and others). The latter data will be cross evaluated by interviewing also vessel designers and vessel constructors (shipyards). Market rate for loans will be defined as the average of the loans provided by Greek banks for fishermen from the Agriculture Bank of Greece for the current year. The interest of government bonds will be set at the value they have by January 1st of every year. Finally, the percentage of loan contribution in the total investment (capital) will be collected using questionnaires through face to face interviews of selected fishermen-vessel owners within each segment.</p>
Value of physical capital: depreciated historical value (annually)	<p>The depreciation rates which will be used are in accordance to the Greek legislation Presidential Decree 299 of 2003 (O.J. 255/4-11-2003) Definition of upper and lower depreciation coefficients'. Average economic life span per vessel component is set us: hull, 25 years; engine, 10 years; electronics, 5 years; other equipment, 7 years.</p> <p>The basic data matrix will be completed with the age structure histogram of the fleet in each segment and the corresponding total gt per year. The histogram will cover the whole age span of the segment (from older to newer vessel annual class).</p> <p>Since data from logbooks, insurance valuations and book registers do not exist in Greece, the estimation of capital and depreciation</p>

¹ General methodology will follow the No FISH/2005/03 report

VARIABLE	METHOD						
	<p>will follow the methodologies of current replacement value and historical value.</p> <p>For the replacement value method, the price per gt unit will be calculated as the product of the division of the current replacement value of the vessel and the total gt per segment per year (from age structure analysis). In the case of the historical value method, the current price per gt index will be depreciated from the current year (replacement value in current year) backwards in time towards the oldest age class (oldest vessel group; start of the age structure histogram) using a coefficient based on the annual inflation (consumer index). The annual consumer index will be collected from the National Statistical Service Agency of Greece.</p> <p>As replacement value, we will consider the market value of the vessel as whole (including engines, electronics and other tangibles) plus the market value of the license and this value will be estimated using questionnaire data from face to face interviews with the fishermen-vessel owners. Fishing rights and other tangible or intangible assets do not exist in the Greek fishing sector (there are no fishing companies which could possess such assets) which would affect the reliability of the estimation of the current replacement value.</p>						
Value of quota and other fishing rights	The Greek management system does not involve quotas or fishing rights						
Investments in physical capital (annually)	<p>The data will be collected from the vessel owners with face-to-face interviews based on questionnaires and landing records and will focus on the expenditure for investments during the running year related to improvements/changes/modernization of:</p> <ul style="list-style-type: none"> hull engine fishing gear electronics and fishing aids 						
Debt/asset ratio (annually)	The indicator will be derived as the product of debt (loans for vessel + vessel equipment such as electronics + gears) divided by the capital value						
Engaged crew (annually)	The data will be collected from the vessel owners with face-to-face interviews based on questionnaires and landing records.						
FTE National (annually) ²	<p>The FTE at national level will be estimated per segment based on the total allowable (buy Greek law) days of operation of each gear. According to the Greek legislation, the following are the allowable days per year for the operation of each gear:</p> <table border="0" data-bbox="544 1854 1007 1921"> <tr> <td>Trawlers</td> <td>243</td> <td>days per year</td> </tr> <tr> <td>Purse Seiners</td> <td>230</td> <td>days per year</td> </tr> </table>	Trawlers	243	days per year	Purse Seiners	230	days per year
Trawlers	243	days per year					
Purse Seiners	230	days per year					

² In accordance to Study No FISH/2005/14 "Calculation of labour including FTE (full-time equivalent) in fisheries"

VARIABLE	METHOD
	<p>Shore Seiners 183 days per year Passive gears 365 days per year</p> <p>The raw data required are:</p> <p>Number of vessels per segment from the Fleet Register (a) Average number of days at sea (b) from questionnaires Average number of crew per vessel excluding rotation (c) from questionnaires Average number of crew per vessel including rotation (d) from questionnaires [c<d] Average number of hours of work per crewman per day at sea estimated through questionnaires (e)</p> <p>From the above data the following will be estimated:</p> <p>The total number of work-days at sea in the segment= a·b The total number of work hours at sea in the segment = a·b·c·e Average hours at sea per crew member = $\frac{a \cdot b \cdot c \cdot e}{a \cdot d} = \frac{b \cdot c \cdot e}{d}$ Total engaged crew per segment = a·d FTE National = $\frac{a \cdot b \cdot c \cdot e}{threshold}$</p>
FTE harmonised (2000 hours) (annually)	<p>The FTE at national level will be estimated for segments based on 2000 hours per year of operation.</p> <p>The raw data required are:</p> <p>Number of vessels per segment from the Fleet Register (a) Average number of days at sea (b) from questionnaires Average number of crew per vessel excluding rotation (c) from questionnaires Average number of crew per vessel including rotation (d) from questionnaires [c<d] Average number of hours of work per crewman per day at sea estimated through questionnaires (e)</p> <p>From the above data the following will be estimated:</p> <p>The total number of work-days at sea in the segment= a·b The total number of work hours at sea in the segment = a·b·c·e Average hours at sea per crew member = $\frac{a \cdot b \cdot c \cdot e}{a \cdot d} = \frac{b \cdot c \cdot e}{d}$ Total engaged crew per segment = a·d FTE Harmonised = $\frac{a \cdot b \cdot c \cdot e}{2000}$</p>
Fleet number (annually)	The fleet data originate from the census data kept by the Ministry of Merchant Marine at January 1 point. The data refer to the total

VARIABLE	METHOD
Fleet mean LOA (annually)	fleet and include information for any particular vessel. The data collected in each segment will be: number of vessels per segment GT per vessel kW per vessel length (LOA) per vessel age (estimated as the product of current year minus the construction year + 1) All indicators will be up-scaled to the segment level
Fleet mean vessel tonnage (GT) (annually)	
Fleet mean vessel power (kW) (annually)	
Fleet vessel mean age (annually)	
Days at sea (monthly)	
Energy consumption (annually)	The data will be collected from the vessel owners with face-to-face interviews based on questionnaires.
Number of fishing enterprises/units (annually)	The data will be collected from the vessel owners with face-to-face interviews based on questionnaires.
Value of landings per species (monthly)	The raw data required for this indicator are the total monthly landings per species based on landing protocols at the landing places
Average price per species (monthly) Average price per species (annually)	The raw data required for this indicator are the average monthly market prices of each species (€/kg) received from ex-vessel prices from landing protocols at the landing places. The monthly prices will be then up-scaled to the annual level

III.B.3 Data quality evaluation

Table III.B.3 provides details on the sampling methods used and the methods to assure the quality of the collected data. Bias and variability indicators will be used as quality indicators and will be provided in compliance with the guidelines.

Two types of errors should be distinguished: bias and variability.

For data collection type A (census), there is by definition no sampling error and therefore there is no variability indicator. The indicator of bias is the response rate.

For data collection type B (Probability Sample Survey), the related types of error are coverage rates and response rates. The indicator of variability is the coefficient of variation (CV).

Coverage errors: The target and the frame population are the same and therefore no coverage errors.

Measurement errors: Outliers will be assessed and possibly cleaned out before performing the final estimations and we'll present information on the corrections that will be take place.

Non-response adjustments: Non-response adjustments will be adjusted by using auxiliary information depending on variable.

III.B.4 Data presentation

The data that will be obtained using questionnaires will be available 6 months after the end of the reference year. A similar lag time is expected for the results of the surveys, since the enterprises get their accounting finished by the end of the following year. Thus, the results of 2011 will be ready in 2012 and the same will happen for the years 2012, 2013.

III.B.5 Regional coordination

The GSAs exploited by the Greek fisheries are not shared with any other member state; hence no regional coordination is foreseen.

III.B.6 Derogations and non-conformities

Not applicable.

III.C Biological - métier-related variables

SUPRA-REGION: Mediterranean Sea and Black Sea

III.C.1 Data acquisition

(a) Codification and naming convention

Sampling will be carried out for the evaluation of length distribution and quantity of the catches and of discards. Data will be collected by métier referred to level 6 of the matrix defined in Appendix IV (4), for all the relevant LOA classes per métier (Commission Decision 2010/93/EU), per quarter and per GSA (Level 4 Appendix I) (Commission Decision 2010/93/EU).

The coding of métiers followed the rules and definitions in Commission Decision 2010/93/EU, Appendix IV (4). According to PGMed 2009 the reference list of métiers agreed at Regional level during the RCMed&BS 2009 should be used for the selection of the métier to sample. From that list the métiers of the Mediterranean Sea and Black Sea that used by the Hellenic fishing fleet are the following:

SB_SV_DEF_0_0_0

FPO_DEF_0_0_0

GNS_DEF_>=16_0_0

GTR_DEF_>=16_0_0

LHP_LHM_FIF_0_0_0

LLD_LPF_0_0_0

LLS_DEF_0_0_0

LTL_LPF_0_0_0

OTB_DEF_>=40_0_0

PS_SPF_>=14_0_0

(b) Selection of métiers to sample

The input data used in order to select the métiers to sample originated from the National Fisheries Data Collection Program of the year 2008. Usage of 2010 data was not possible due to the non-implementation of the National Fisheries Data Collection Program in the above year (2010), as well as in years 2009 and 2007.

The selection of métiers to sample was based on the requirements of the Commission Decision. As reported from the SGRN 08-01, for each GSA, the métier cells were first ranked according to their share in the total commercial landings. Thereafter the shares were cumulated, starting with the largest, until a cut-off level of 90% was reached. All métiers belonging to the top 90% were selected for sampling. The same procedure was repeated using data on the total value of the commercial landings and repeated a third time according to the total effort expressed in days-at-sea. The métiers in the top 90% of the rankings based on total value of landings and days at sea that had not been included in the previous selections were added in the list of métiers to sample. As a result the final list of métiers to sample included the métiers participating in the highest shares of the 90% of landings, value or effort.

The métiers of the three Greek GSAs are presented in Table III.C.1. In grey are those that were not included in the selection of métiers to sample according to the procedure described above.

A brief description of the métiers that will be sampled is given below:

The bottom trawlers (OTB_DES_>=40_0_0) have been selected in all GSAs. It is multi-species fishery that operate from 50 to 500m and targets target hake (*Merluccius merluccius*), mullets (*Mullus barbatus* and *Mullus surmuletus*), nephrops (*Nephorps norvegicus*), cuttlefishes (*Sepia officinalis*) and pink rose shrimp (*Parapenaeus longirostris*). It is of the most important segments of Greek fishery

The Purse seine (PS_SPF_>=14_0_0) has also selected in all GSAs and is a very important segment of Greek fishery. It operates all over the Greek seas and targets mainly small pelagic species (*Engraulis encrasicolus* and *Sardina pilchardus*).

Pots and traps for demersal species (FPO_DES_0_0_0), have been selected in GSA 22 Aegean sea. Landing is represented by cephalopods (e.g *Sepia officinalis* and *Octopus vulgaris*) crustaceans (e.g *Squilla mantis*) and fish (mainly of the family Serranidae and Sparidae)

Small-scale fishery (using a combination of passive and mobile gears), represent the most significant Greek fleet segment in terms of number of vessels (>80%). Their participation on landings is also very significant. The métier selected (GNS_DEF_>=16_0_0; GTR_DES_>=16_0_0; LLS_DEF_0_0_0), operating in all the Greek GSAs, target different species of fish crustaceans and cephalopods.

In Greece the drifting long lines (LLD_LPF_0_0_0).targets swordfish (*Xiphias gladius*), blue fin tuna (*Thunnus thynnus*) and albacore (*Thunnus alalunga*) are bycatch in swordfish fishery. The métiers selected for the sampling in all Greek GSAs

(c) Type of data collection

Sampling will be carried out in each GSA through concurrent sampling on-board the fishing vessels and at market, for one-year period. Both on-board and market sampling will provide data concerning landings, while only on-board sampling will

provide data on discards. The sampling has been designed taking into account the spatial and temporal variability in order to detect seasonal differences in the demographic structure and composition of the landings for different métier. Table III.C.3 show the different types of data collection strategy and the sampling schemes that will be used for the different métier.

(d) Target and frame population

The target population is all the catches from the total trips carried out by commercial vessels during one year period. Given that the proposed sampling scheme, (Fig. 1, includes all sampling units the frame population is identical to the target one. Table III. C.3 gives information on the average total number of trips during the reference year 2008 for each métier, as well as the sampling scheme and the expected number of trips to be sampled.

(e) Sampling stratification and allocation scheme

No métiers were merged in any GSA, thus Table III.C.2 is not filled. Regarding the drifting long line fishery, in Greece it targets only swordfish, bluefin tuna and albacore are by-catch in swordfish fishery. Thus, the métier LLD_LPF_0_0_0 is only for SWO and is not merged in any GSA. In case there is any change we will modify accordingly. The innovations of the new Data Collection Program (sampling by métier) have led to an update of the existing sampling scheme in order to achieve the precision targets set by the Commission. The Greek coastline and marine areas were divided in 12 regions-major areas (Figure 1), each comprising several main landings ports in a way ensuring continuity with the former National Data Collection Program. These regions cover the entire Greek fishing fleet. These regions were defined as clusters for stratified cluster sampling. In each region, sampling will be carried out by local fishery inspectors and trained observers to guarantee good coverage of the population sampled.

Sampling will be carried out through concurrent sampling on-board the fishing vessels and at market. Both on-board and market sampling will provide data concerning landings, while only on-board sampling will provide data on discards. The sampling unit will be the fishing trip. According to the Regulation the minimum number of fishing trips to be sampled will be at least 1 trip per month for each métier. In the Greek National Project there will be a minimum coverage of at least 2 trips per month, métier and major area (12 major areas in total). The total number of trips to be sampled was defined proportionally to the effort (number of days at sea for each métier). In cases of métiers with high variability in the landings the number of trips to be sampled was further increased. The number of trips that will be sampled by métier and GSA is presented in Table III.C.4. The number of fish sampled per species is presented in Table III.C.5. Estimates for demersal trawlers, purse seiners, and drifting longliners are based on the analysis of past data. Sampling intensity to achieve the required precision levels for the rest of the métiers, which include small-scale fisheries (i.e. métiers using gillnets, trammel nets, set long lines, pots/traps, beach seines, hooks and lines, trolling lines), could not be defined from the previous data because all small-scale fisheries had been considered as a unique segment. In the past National Projects, sampling on effort, landings and fish length had been independent. In the framework of effort and landings, additional information regarding métiers had been collected. This information was adequate for the post-classification in the ranking of métiers (Table III.C.1) and the calculation of sample sizes for the number of trips to be sampled by métier (Table III.C.3). On the contrary, length samples were

few and not related to the métiers. As a result, we can apply a post-stratification for effort and landings (and thus calculate sample sizes in Table III.C.3), but not for métier related length data concerning the number of fish to be sampled (Table III.C.5). Thus, sampling intensity on length samples (Table III.C.5) was allocated based on information on the catch composition and the spatiotemporal pattern of the fishing activity and tactics. In this case, the results of the 1st year (2011) will be analyzed in order to conclude on any sampling modifications needed to cover the required precision levels. The updated sampling scheme will be followed in the 2nd and 3rd year (2012-2013). This approach is necessary as past data from the coastal multi-gear fisheries were not collected on a métier basis so far; hence they cannot be used to estimate the required sampling intensity for a métier sampling approach.

For some species the number of fish caught is zero or very low; thus the planned number of fish to be measured could not be assessed. These species will be sampled on an opportunistic basis and will be measured whenever found during sampling. In these cases, in the corresponding cell was written “zero or low catch” and an explanatory note was added. The same is valid for the eel fishery that will be monitored through a pilot study. Estimates will be made on a quarterly basis.

III.C.2 Estimation procedures

For discards the length frequency distributions will be calculated from the proportions of sampled discard weights, sampled discard numbers and total landings. Calculations will be made by size class and per month before being summed to give total annual discards by size class. Discards will be added to landings data to give the total catches, which then is used for stock assessment.

The estimation of the length structure of the catches will be made using the method developed by Vigneau and Mahevas (2004) (ICES, 2004b), which allows estimating the precision, in terms of coefficient of variation (CV) for each length class and for the whole LFD at métier level, will be adopted.

Age distribution of landings will be calculated using the estimated quarterly length frequency distribution of landings and the quarterly proportion of landings of age i in the length class j , estimated from the age-length keys (ALKs). ALKs by quarter will derive from age sub-samples of the length samples, taken as fixed number per length class. For the estimation of the age distribution it is intended to use both analytical and bootstrap methods.

III.C.3 Data quality evaluation

Representative sampling from all major areas will be achieved by stratified cluster sampling according to the clusters identified in Figure 1.

In the former National Projects, samples for length data had been collected according to the minimum number of samples defined in the corresponding Regulation and according to landings reported by the National Statistical Survey of Greece. This resulted to a very low number of samples for most of the species. In the cases that the number of samples was adequate for the coverage of the spatiotemporal dimension and the achievement of the precision level, it was retained in the present National Project.

Additionally, since no data collection was performed in 2007 and 2009 the available data were not sufficient to calculate the required sample size for a list of species, for which sampling started in 2006: *Anguilla anguilla*, *Parapenaeus longirostris*, *Pagellus erythrinus*, *Sepia officinalis*, *Loligo vulgaris*, *Illex coindetii*, *Eledone moschata*, *Lophius budegasa*, *Penaeus kerathurus*, *Sarda sarda*, *Scomber scombrus*, *S. japonicus* and *Solea vulgaris*. Under the new Regulation and in the framework of this proposal the minimum number of samples is calculated in order to cover the time, space and different métiers (at least 2 per month x major area x métiers). This sampling scheme will provide adequate data in order to further improve the future sampling scheme.

For the identification of the potential sources of bias the ICES WKACCU (ICES 2008) report was taken into consideration. Some of the sources that are related to biological-métier-related variables are the following:

A – Species Identification

- Species subject to confusion and staff trained to species identification. This is a problem that may occur during on board sampling of bottom trawlers where there are a lot of species. In order to minimize this potential bias a well trained and experienced staff will be involved in the sampling teams. In the rare cases where the identification on board is not possible a small sample of species may be transferred to the laboratory for identification
- Species misreporting by the fishermen. The way to mitigate this potential bias is to cross-check the landings by on-board observers, the fishermen's records and landing statistics.
- Grouping of statistics: In some cases fishermen's records and landing statistics may refer to group of species (e.g ray species under the name of *Raja clavata*). In order to reduce this problem we will use the data of on board sampling in order to quantify the percentage of the species within the group.

B – Landings weight

- Quantity misreporting. The way to mitigate this potential bias is to cross-check the landings by on-board observers, the fishermen's records and landing statistics.
- Percentage of mixed in the landings. In order to reduce this problem we will use the data of on board sampling in order to quantify the percentage of each species.

C – Discards weight

- Working conditions: Sometimes there may be lack of space especially in small vessels and that makes difficult to sample. Also, the time interval between the hauls, mainly in bottom trawls, is very short and the crew may have to help the observers or delay its work. A mean to diminish the problem with the working conditions is to have well trained and experienced staff in the sampling teams and to provide good compensation to vessel owner.

D– Mean weight

Working conditions: The evaluation of the mean weight with a scale needs proper conditions, especially weather conditions, which are not always possible. In case of coastal fishery, when the weather is not good, the weight

measurements are taken after the vessel reaches the port. In case of bottom trawls and purse seines few things can be done.

Another source of bias is the extensive diffusion of small scale fishery boats in remote islands and not easily accessible ports in the mainland. Despite the intensive sampling, is practically impossible to cover satisfactorily all harbours. Moreover it should be taken into consideration as source of bias, the different seasonal activity and the gears used in different areas. Some of these patterns are transferred in areas where the boats are directed for brief periods, due to bad weather conditions or extreme biological phenomena, adding bias in a differently organized local group of boats. However in the Greek National program the sampling system is focused on the main landing ports, covering the largest part of fishing activities in the country and explaining large part of existing variability

III.C.4 Data presentation

The data will be available to end users 6 months after the end of the reference year. Thus, the results of 2011 will be ready in 2012 and the same time lag will be applied for the data of 2012, 2013.

III.C.5 Regional coordination

RCM Med&BS 2009 Recommendation Métier and stock variables – Bluefin tuna : Regional sampling protocols

Greece has applied the recommendation in its 2011-2013 NP.

RCM Med&BS recommends that Table 3.3.3.a (length) and Table 3.3.3.b (stock related) are used for length sampling and stock related samples respectively. The number of samples to be collected for length and stock related variables will be revised during the PGMed 2010 and RCM 2009 recommends MS to adjust their NP 2011-2013 accordingly.

RCM Med&BS 2010 Recommendation Métier variables: Technical tables - Naming conventions – Miscellaneous métiers

Greece has applied the recommendation in its 2011-2013 NP

RCM Med&BS recommends all MS to follow strictly the métiers reference list established at the regional level (RCM Med&BS 2009 report). If the combination between gear and target assemblage does not correspond to an identified reference métier of level 6, the national métier must be registered as a Miscellaneous one (Misc.), ranked as the other métiers and described in the NP and the required forms if sorted by the ranking system.

RCM Med&BS 2010 Recommendation. Métier and stock related variables: Large pelagic sampling

Greece will apply the recommendation in all the revisions of its NP

RCM Med&BS recommends to continue the exercise carried out during PGMed 2010 reviewing yearly the sampling figures for métier related variables and to estimate CV at regional level. MS should adjust their NP accordingly to these results

RCM Med&BS 2010 Recommendation. Eel: Métier and Stock related variables on eel fishery in

Greece has applied the recommendation in its 2011-2013 NP. Eel fisheries will be monitored

Mediterranean area

*The RCMed&BS recommends that all the Mediterranean countries that are not performing biological samplings on eel (*Anguilla anguilla*) in Mediterranean area should present their grounds for not doing it. RCMed&BS reminds that eel is Group 1 species and is under Recovery Plan. Métier data (i.e. length frequencies distribution) shall be collected by MS. Stock related variables (sex, age, weight and maturity) should be also collected. In case eel Stock variables are not collected justification shall be provided.*

by a pilot study in 2011 and according to the results of the pilot study, monitoring of eel fisheries will be accomplished in 2012-2013.

III.C.6 Derogations and non-conformities

Eel fisheries will be monitored by a pilot study in 2011 (see Annex II) and according to the results of the pilot study, monitoring of eel fisheries will be accomplished in 2012-2013. Information about eels in Greece is very scarce, since no detailed study has ever been performed. Also, no recreational fishing of eels has ever been recorded. Thus, an eel pilot study is needed before the normal collection of data, because a detailed description of the eel catches, landings, stocks and their exploitation should be done in Greece. This study will help to collect the data needed in order to formulate a data collection programme for the following years.

This pilot study is proposed to include: a) the silver & yellow eel monitoring, that includes the evaluation of landings of all adult eel catches and the biological sampling of catches and b) the existence of any recreational activity will be investigated.

The sampling scheme will be adjusted to support the Eel Management Plan sampling demands.

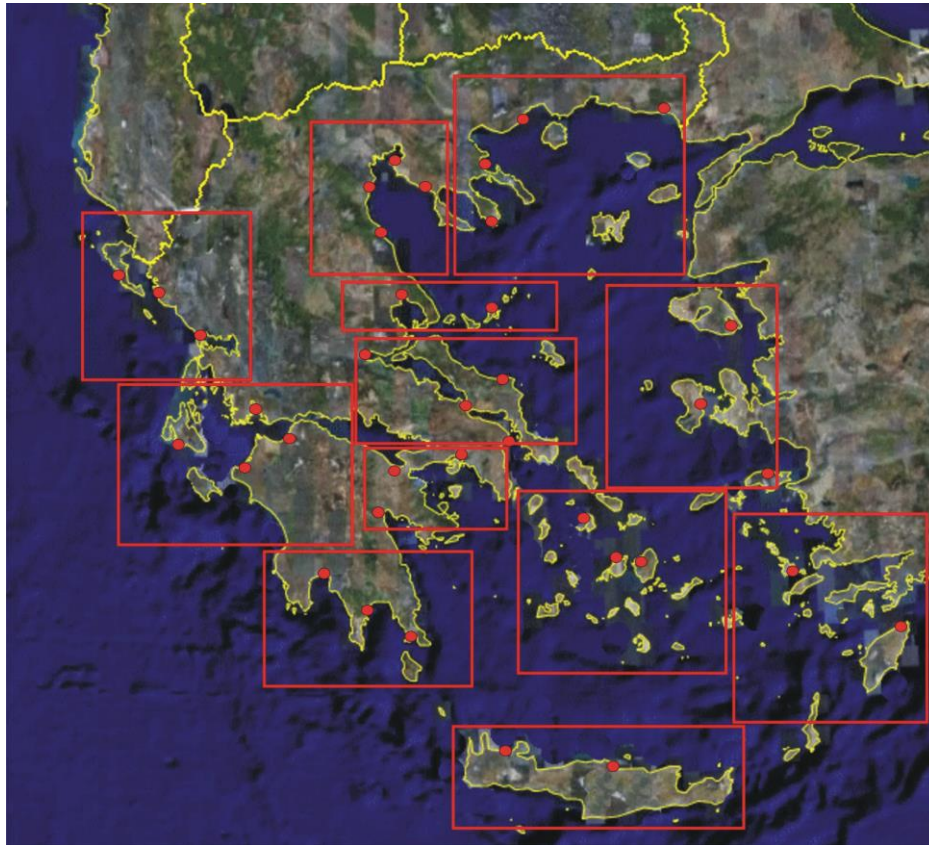


Figure 1. Map of Greece indicating the sampling areas and the major landing ports

III.D. Recreational fisheries

According to Commission Decision 2010/93/EU catch volume in weight is to be estimated for recreational fisheries for some significant species listed in Appendix IV and to be provided by region specified in Appendix II. Those relevant to Greek fisheries are eel and blue fin tuna. In Greece there is no recreational fishing for any of the two species, so, no sampling is proposed. However, in the frame of the pilot study that will be conducted for eel, any recreational eel fishery in the study areas will be recorded.

III.E Biological - stock-related variables

SUPRA-REGION: Mediterranean Sea and Black Sea

III.E.1 Data acquisition

(a) Selection of stocks to sample

Variables concerning individual information on age, length, weight, sex, maturity and fecundity of the stocks will be collected according to the Appendix VII of the 2010/93/EC Commission Decision. The stocks included in the sampling scheme are presented in Table III.E.1. Stocks that will not be sampled for any of the biological variables are highlighted in pale grey. The stocks that will not be sampled either

because the catch is below 200 t or because the Greek share in the EU Mediterranean landings is below 10% are the following:

<i>Alopias superciliosus</i>	<i>Mustelus punctulatus</i>
<i>Alopias vulpinus</i>	<i>Myliobatis aquila</i>
<i>Aristeomorpha foliacea</i>	<i>Odontaspis ferox</i>
<i>Aristeus antennatus</i>	<i>Oxynotus centrina</i>
<i>Carcharinus plumbeus</i>	<i>Prionace glauca</i>
<i>Carcharias taurus</i>	<i>Pristis pectinata</i>
<i>Centrophorus granulosus</i>	<i>Pristis pristis</i>
<i>Cetorhinus maximus</i>	<i>Pteroplatytrygon violacea</i>
<i>Coryphaena hippurus</i>	<i>Raja asterias</i>
<i>Coryphaena equiselis</i>	<i>Raja clavata</i>
<i>Dalatias licha</i>	<i>Raja miraletus</i>
<i>Dicentrarchus labrax</i>	<i>Raja undulata</i>
<i>Dipturus batis</i>	<i>Rhinobatos cemiculatus</i>
<i>Dipturus oxyrinchus</i>	<i>Rhinobatos rhinobatos</i>
<i>Eledone cirrosa</i>	<i>Rostroraja alba</i>
<i>Etmopterus spinax</i>	<i>Scyliorhinus canicula</i>
<i>Eutrigla gurnardus</i>	<i>Scyliorhinus stellaris</i>
<i>Galeorhinus galeus</i>	Shark-like <i>Selachii</i>
<i>Galeus melastomus</i>	<i>Sparus aurata</i>
<i>Gymnura altavela</i>	<i>Sphyrna lewini</i>
<i>Heptranchias perlo</i>	<i>Sphyrna mokarran</i>
<i>Hexanchus griseus</i>	<i>Sphyrna tudes</i>
<i>Isurus oxyrinchus</i>	<i>Sphyrna zygaena</i>
<i>Lamna nasus</i>	<i>Squalus acanthias</i>
<i>Leucoraja circularis</i>	<i>Squalus blainvillei</i>
<i>Leucoraja melitensis</i>	<i>Squatina aculeata</i>
<i>Lophius piscatorius</i>	<i>Squatina oculata</i>
<i>Micromesistius poutassou</i>	<i>Squatina squatina</i>
<i>Mugilidae</i>	<i>Squilla mantis</i>
<i>Mustelus asterias</i>	<i>Torpedo marmorata</i>
<i>Mustelus mustelus</i>	<i>Trigla lucerna</i>
	<i>Veneridae</i>

The catch of shark-like fish in Greek fisheries consists of numerous species with low proportions of the total. As a result, while the total Greek catch of shark-like *Selachii* is higher than 200 t, this group consists of many species which individually attain landings considerably lower than 200 t. Shark-like *selachii* will be sampled for biological variables, however not in a systematic basis. Also, data related to length, weight, sex and maturity will be collected during MEDITS scientific survey. The same applies to *Istiophoridae*, of which the catch is below 200 t and the share in EU landings is below 10%.

(b) Type of data collection

The collection of individuals for biological parameters will be done with concurrent sampling at sea and at market. The biological-stock related variables (weight, sex ratio, maturity) will be collected spatio-temporally to detect seasonal differences in the structure and composition of the species examined. This data collection can be considered as probability based sampling (B).

(c) Target and frame population

The target population is all the landings from the total trips carried out by commercial vessels during one year period. Given that the proposed sampling scheme (see Fig. 1), includes all sampling units, the frame population is identical to the target one.

(d) Sampling stratification and allocation scheme

In Table III.E. 2, an overview of planned sampling per species for age, weight, sex ratio, maturity and fecundity is presented. The sampling strategy overview by species with reference to annual data collection by GSA is provided in Table III.E. 3

Stock-related biological variables will be collected from both on-board and market sampling (concurrent sampling).

III.E.2 Estimation procedures

Age: Age compositions are generally estimated from two-stage sampling where random length samples are taken and length-stratified age samples are used to construct an age-length-key.

Length: Length distributions are obtained from random samples.

Weight: Individual weights are recorded for all fish that are aged. A length-weight relationship is fitted to estimate weight-at-length and weight-at-age is estimated from this using an age-length-key

Sex: Sex-at-age is estimated using a sex-age-length-key

Maturity: Maturity-at-age is estimated using a maturity-age-length-key or, if appropriate, a sex-maturity-age-length-key.

The estimation of the biological parameters will be made using analytical methods.

III.E.3 Data quality evaluation

According to the Commission Decision 2010/93/EU, Chapter III, section B2.4, the stock-related variables should be estimated with a precision level 3 (for the stocks that can be aged). Sampling is planned to achieve the coverage and precision levels specified in the Commission Regulation. However, since no data collection was performed in 2007 and 2009, the available data were not sufficient to calculate the required sample sizes for a list of species, for which sampling started in 2006: *Anguilla anguilla*, *Parapenaeus longirostris*, *Pagellus erythrinus*, *Sepia officinalis*, *Loligo vulgaris*, *Illex coindetii*, *Eledone moschata*, *Lophius budegasa*, *Penaeus kerathurus*, *Sarda sarda*, *Scomber scombrus*, *S. japonicus* and *Solea vulgaris*. For these species, sample size was defined according to the rules of the former national programme.

Concerning the large pelagic species, the samples proposed are based on the 2010 RCM Med&BS.

CVs for maturity-at-age and size-at-age for all sampled species will be calculated annually at the GSA level. Estimates will be made using the “open source” tool developed in the frames of the COST project (Vigneau, 2008), which allows to assess the accuracy of the biological parameter estimates collected for stock assessment purposes within the framework of the Data Collection Regulation.

III.E.4 Regional coordination

Concerning the demersal and small pelagic stocks, the GSAs exploited by the Greek fisheries are not shared with any other member state; hence no regional coordination is foreseen. For the sampling of large pelagic species there is regional coordination.

Recommendation

Responsive actions

RCM Med&BS 2009 Recommendation on Stock variables: Regional sampling protocols for bluefin tuna, swordfish, albacore, dolphinfish and Atlantic bonito

Greece has complied with this recommendation and has applied the 2010 PGMed recommendations in its 2011-2013 NP.

RCM Med&BS recommends MS to follow the sampling intensities as detailed in table 3.3.3.c for bluefin tuna and in tables 3.4.2.a-d for other main large pelagics, and to achieve the required minimum number of samples as stated by the Decision EC 949/08. RCM recommends also that the data gathered in 2009 should be provided to the PGMed meeting of 2010, to allow PGMed to calculate the precision level and the minimum number of samples required to achieve the required precision, MS to adjust their NP 2011-2013 accordingly.

RCM Med&BS 2009 Recommendation Stock variables: Reference landings data for sampling requirements

Greece has applied the recommendation in its 2011-2013 NP.

RCM Med&BS recommends that all MS follow strictly the SGRN guidelines and give the landing data by species and not by genus. For that, MS should find adequate solutions for providing this information in the next NP proposals and to PGMed

III.E.5 Derogations and non-conformities

Formal derogations of species due to catches lower than 200 t or share in EU Mediterranean landings below 10% are already included in Table III.E.1. Eel biological variables will be recorded by a pilot study (see Annex II) in 2011 and biological variables will be recorded in 2012 and 2013 according to the results of the pilot study. The final sampling scheme will be adjusted to support the Eel Management Plan sampling demands.

III.F Transversal variables

SUPRA-REGION: Mediterranean Sea and Black Sea

For the collection of data the sampling scheme and stratification used for métier-related variables will be adopted. The Hellenic coastline and marine area will be divided in 12 major areas that include about 40 major and minor landing sites and stratified cluster sampling will be carried out using these areas as clusters in order to ensure data representative of the target population. (Figure 1). Data collection will be accomplished on a monthly basis from trained observers located at the sampled areas and local fisheries inspectors of the Ministry of Rural Development and Food.

III.F.1 Capacity

III.F.1.1 Data acquisition

Data from the official fleet registry, which is communicated by the Ministry of Maritime Affairs and Fisheries in regular time intervals, will be used to classify

vessels by fleet segment and area. Following the DCF, vessels less than 12m using passive gears will be aggregated by gear type.

The rest of the vessels (vessels using active gears and vessels over 12m) will be allocated in fleet segments based on the actual gears used during the year. For vessels using more than one gear (multi-licensed) allocation in segments will be based on the number of fishing days each gear is used during the year. A field survey will be accomplished to monitor the activities of those vessels and identify dominant gears.

The variables that will be calculated include: number of vessels, kw, GT, and mean vessel age (Table III.F.1).

III.F.1.2 Data quality evaluation

Validation will not be accomplished as the official fleet registry data will be used.

III.F.2 Effort

III.F.2.1 Data acquisition

The data on effort and landings will be attained based on the sampling scheme described here. The data collection system that is going to be used is based on the principles of stratified random sampling. Recording of effort and landings will be accomplished on a monthly basis.

The stratification will take effect in two levels:

- 1) Geographical stratification (the 12 major areas described above –see Figure 1)
- 2) Intensity of vessel activity: Each vessel of the local fleet (fleet of the specific major area where the correspondent/observer is working) will be categorised in one of the three following activity groups:

full-time active (vessels that carried out fishing activity in more than 60% of the days when fishing was possible during the month)

part time active (vessels that carried out fishing activity in more than 30% of the days when fishing was possible during the month)

occasionally active (vessels that carried out fishing activity in less than 30% of the days when fishing was possible during the month)

The activity groups will serve as strata for the stratification of sampling. The sampling unit will be the vessel and a number of vessels from each stratum will be randomly selected for monitoring by the observer in the main ports of each area. The number of vessels monitored will be sufficient to cover the precision level required for transversal variables. The observer will record the total days of activity per month, the days of activity for each gear used by the vessel and the rest of the effort related variables of the Commission Regulation from port interviews. From these data, effort estimations will be made for the sampling stratum and the statistical population based on the statistics of stratified sampling.

The aforementioned approach will be followed for all métiers apart from the drifting longliners targeting large pelagic species. In this case, due to the high mobility of those vessels that exploit extensive areas of the eastern Mediterranean, global estimates will be based on data from three pilot fleets, based on Kalymnos (south-eastern Aegean), Hania (Crete) and Western Peloponnese. Sampling will cover

random vessels of those fleets and sampling estimates will be extrapolated to the total number of vessels. This approach is similar to that followed in the previous Data Collection Programme.

In all cases, information will be collected for all variables mentioned in Appendix VIII of the 93/2010 Commission Decision. The small scale fishing fleet is mainly composed of vessels having length lower than 10 m. Sampling of those vessels will be also accomplished following the aforementioned stratification scheme.

The sampling ratio for fishing effort per fleet segment will be:

		Length classes (LOA)					
		0- <6m	6- <12m	12- <18m	18- <24m	24- <40m	>40m
Using "Active" gears	Beam trawlers	-	-	-	-	-	-
	Demersal trawlers and/or demersal seiners	-	-	15%	15%	50%	-
	Pelagic trawlers	-	-	-	-	-	-
	Purse seiners	-	-	15%	15%	50%	-
	Dredgers	-	-	-	-	-	-
	Vessels using other Active gears (beach seine)	-	2%	10%	10%	-	-
	Vessels using polyvalent Active gears only	-	-	15%	15%	50%	-
Using "Passive" gears	Vessels using hooks	2%	2%	10%	10%	-	-
	Drift and/or fixed netters			10%	10%	-	-
	Vessels using pots and/or traps			10%	10%	-	-
	Vessels using other Passive gears			10%	10%	-	-
	Vessels using polyvalent Passive gears only			10%	10%	-	-
Using "Polyvalent" gears	Vessels using active and passive gears	-	2%	10%	10%	-	-

Inactive vessels		-	-	-	-	-	-
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Since in each area the number of vessels belonging to the full-time active, part time active and occasionally active segment will be recorded, the raising to the level of the population of the area will be accomplished based on the sampling ratio of each segment. In all cases the estimators of stratified random sampling will be used, i.e. overall (population) means and variances will be respectively estimated from the equations given below:

$$\bar{Y} = \sum_{h=1}^L W_h \bar{Y}_h$$

$$V(\bar{Y}) = \sum \frac{W_h^2 S_h^2}{n_h} (1 - f_h)$$

Where: the suffix h denotes the stratum, W the stratum weight, S^2 the variance, n the sample number, and f the sampling ratio. In cases with low sampling ratio (<5%) the finite population correction term $(1-f_h)$ will be ignored.

III.F.2.2 Data quality evaluation

Regarding the medium scale fisheries, VMS data will be used for validation purposes. For coastal fisheries, an attempt will be made to use fuel expenses for the same purposes.

III.F.2.3 Data presentation

The data will be available to end users 6 months after the end of the reference year.

III.F.2.4 Regional coordination

Not applicable

III.F.2.5 Derogations and non-conformities

Not applicable

III.F.3 Landings

III.F.3.1 Data acquisition

The sampling scheme used for the recording of effort will also be followed for landings. The description of the sampling plan (methodology, sampling size, raising methods) is described in Section III.F.2.1, above. In all cases, information will be collected for all variables mentioned in Appendix VIII of the 2010/93/EC Commission Decision. The conversion factors used are presented in Table III.F.2. Annual average prices will be estimated from weighted averages of monthly recordings. Estimates will be obtained using the commonly used stratified random sampling estimators (see section III.F.2.1).

The small scale fishing fleet is mainly composed of vessels having length lower than 10 m. Sampling of those vessels will be also accomplished following the aforementioned stratification scheme.

III.F.3.2 Data quality evaluation

The data on landings will be cross-checked with information from ETANAL S.A. (FISHING DEVELOPMENT CORPORATION) and traders when possible.

III.F.3.3 Data presentation

The data will be available to end users 6 months after the end of the reference year.

III.F.3.4 Regional coordination

Not applicable

III.F.3.5 Derogations and non-conformities

Not applicable

III.G Research surveys at sea

SUPRA-REGION: Mediterranean Sea and Black Sea

III.G.1 Planned surveys

International Bottom Trawl Surveys in the Mediterranean (MEDITS)

The aim of this survey is to annually collect scientific data in Greek seas following the MEDITS protocol and to study from the data series, which will arise, the time-trends existing in abundance indices and length frequency distributions of the species being examined. Moreover, environmental indicators applied to MEDITS data series either on the different populations or on the whole community level, contribute to the estimation of the effects of fisheries on the marine ecosystem. Finally, the use of the data series from the aforementioned experimental cruises, in conjunction with the use of fishing activity data, which is proposed in other actions in this program, will provide more reliable results for assessing the stocks in Greek seas.

The sampling procedure will be carried out as in the previous MEDITS surveys so that the results are comparable with those collected during the period 1994–2008. More specifically, the fishing gear (bottom trawl) designed specifically for the MEDITS program (IFREMER reference GOC 73) will be used, while the sampling season will be centred to the beginning of summer. The program will cover the continental shelf and slope of Greece at depths from 10 to 800 m. The sampling areas are presented in Figure 2. Five depth zones have been defined for all areas: 10-50 m, 50-100 m, 100-200m, 200-500 m and 500-800 m. The sampling stations are distributed depending on the surface area of each depth zone with a random distribution inside of each zone. Sampling takes place on the same stations every year according to the MEDITS protocol. The total number of sampling stations and the surface area of each area are shown in Table G1

All macrofauna species will be identified, counted and weighted by species. The biological parameters (individual lengths, sex, stage of sexual maturity) for the reference species will be collected in accordance with the last version of the Manual of Protocols for MEDITS sampling (MEDITS survey – Instruction manual – Version 5, 4/2007) and according to the needs of the indicator approach introduced in the EC decision 93/2010 for the DC Programme 2011-2013. At the same time basic environmental data will be systematically collected (mainly temperature), which can help to interpret the biological data.

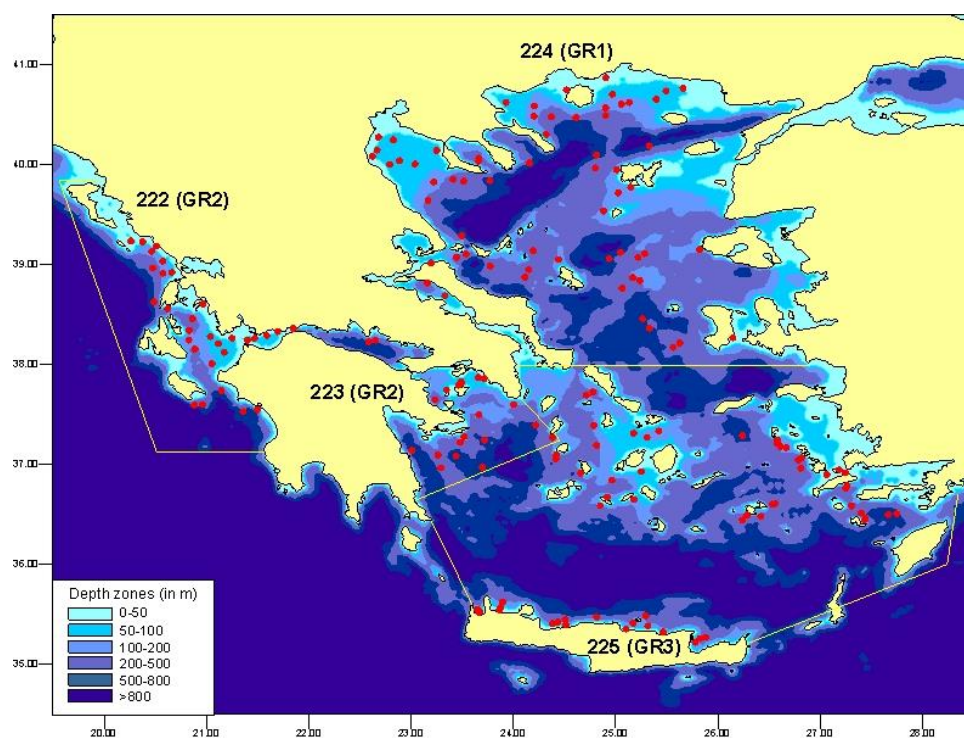


Figure 2. Map of MEDITS sampling areas in the Greek seas

Table G1. Surface of depth zones from 10 to 800 m in Greek seas and number of hauls per area

Geographical area	Surface	No. of hauls
2.2.2	16823	32
2.2.3	24916	22
2.2.4	68157	65
2.2.5	62601	61
Total	172497	180

Where possible, participants will use the same vessels as in previous years, which are chartered commercial bottom trawlers. The basic equipment that has been purchased for MEDITS sampling in past National Projects will be used again in this National Project. However, during the MEDITS cruise, equipment that is damaged and becomes unsuitable for sampling, has to be replaced in order to continue the sampling procedure. For this reason back-up equipment will be purchased.

Following sampling, each working group will validate and store the data collected and after gathering of all data, they will be checked and stored in the Greek MEDITS database using the MEDITS Data Management System (MDMS) created in the context of program DG XIV/EU No 96/016. MDMS allows the calculation and presentation of the species abundance indices and length compositions per depth zone and per area (MEDITS or GFCM). Furthermore, the environmental indicators relevant to the MEDITS survey, as defined in the EC decision 93/2010 for the DC Programme 2011-2013, will be provided.

MEDiterranean Acoustic Survey (MEDIAS)

The aim of this survey is to annually collect scientific data in the Greek Seas in order to provide fisheries independent information for the assessment of small pelagic species. The survey will follow the protocol of MEDIAS adopted by the survey Steering Committee during its meeting in Athens in February 2008,

The survey will cover the Aegean Sea (GSA 22), with an approximate ship-time of 40 days and the Ionian Sea (GSA 20), with a ship-time of about 30 days. The target species for assessment purposes will be anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*). For these two species, abundance estimates will be provided in the report.

The abundance indices that will be estimated and provided in the DCF report will include NASC (Nautical Area Scattering Coefficient, m^2/nm^2) and Biomass values (t), as listed below:

Total fish NASC per EDSU

Target Species NASC per EDSU

Biomass per EDSU per target species

Numbers per EDSU per target species

Numbers/age/Target species

Biomass/age/Target species

In addition in the report for the DCF the following items will also be provided:

Point maps of total pelagic fish NASC

Point maps of target species in NASC/mile; biomass/mile.

Catch compositions of the hauls: pie-charts indicating biomass per species

For non-target pelagic species that are considered important in each area, Length-Weight relationships and Length frequency distributions will be provided.

The methodology of the acoustic survey will follow the protocol of MEDIAS so that results will be harmonized and comparable to the other Mediterranean areas.

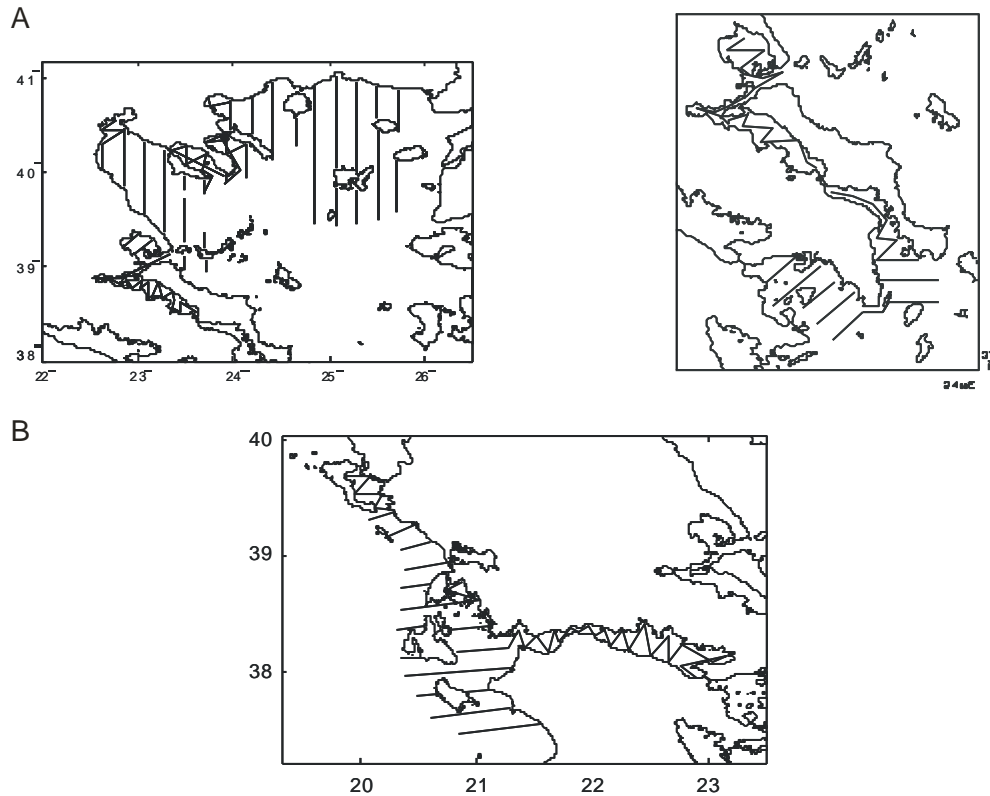


Figure 3. Map of MEDIAS sampling areas and transects in (A) the Aegean Sea (GSA 22) and (B) the Ionian Sea (GSA 20).

The raw acoustic data will be available in *.hac file format. The survey methodology is summarised below:

Summary of methodology of the MEDiterranean Acoustic Survey (MEDIAS).

Echo sounder parameters	
Echo sounder	Split beam
Frequency for assessment (kHz)	38
Complementary frequencies (kHz)	120
Pulse duration (ms)	1 ms
Ping rate	Maximum depending on depth
Calibration (No per survey)	A calibration report will be given One calibration per survey
Threshold for acquisition (dB)	-80
Threshold for assessment (dB)	-70 to -60 (reported)
Survey design	

Transects design	Perpendicular to the coastline/bathymetry, otherwise depending on topography
Inter-transect distance (nm)	Max ≤ 12 NM.
Time of day for acoustic sampling	Day time
EDSU (nm)	1 NM
Distance from the coast according to the Bottom depth (min, m)	At least 20 m bottom depth, minimum 10 m of echo-sampling.
Echo sounding depth (min, m)	Depending on the draught of RV. To be reported
Echo sounding depth (max, m) recording.	200 m
Vessel speed	8-10 knots
Software for analysis	Movies and/or Echoview
Inter - transect	Acoustic energy in the inter-transect track will not be taken into account
Applied TS (dB)	Keep historical TS equations.
Echo partitioning into species	Echo trace classification based on echogram visual scrutinisation Direct allocation and allocation on account of representative fishing station
Target species	Anchovy, Sardine
Fishing gear	Pelagic trawl, Codend and trawl characteristics to be reported. Max Codend mesh size = 24 mm (side of mesh = 12 mm).
Duration of haul	Minimum 30 min for unknown echoes
Vessel speed during fishing	3.5 – 4.5 knots
Sampling intensity, no of hauls	The total number of hauls has to be adequate to ensure identification of echo traces obtain length structure of the population obtain species composition get biological samples

The sampling areas as well as the sampling scheme are presented in Figure 3.

Module implementation

Module III G will be implemented by the Fisheries Research Institute (FRI) and the Hellenic Centre for Marine Research (HCMR), which will act as partners (see Annex I for details). A small daily fee will be provided to fishing vessel owners when accommodating scientists for the on board sampling foreseen under sub-modules III.E and III.F. Those expenses have been considered in the budget forms as subcontracting costs.

III.G.2 Modifications in the surveys

None

III.G.3 Data presentation

The data will be available to end users 6 months after the end of the reference year.

III.G.4 Regional co-ordination

Any related recommendation on the coordination of Medits and Medias surveys by the RCM Med&BS and the relevant working groups will be followed.

III.G.5 Derogations and non-conformities

None

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

IV.A Collection of data concerning the aquaculture

IV.A.1 General description of the aquaculture sector

Greece has a relatively long tradition in the field of aquaculture, owing to the extensive farming of brackish and fresh-water species in the country's estuaries and lagoon systems. However, it has been the culture of marine-water species (mariculture), which started in the mid-1980's, and developed through intensive culture systems, that provided the big 'boost' of the sector, with production volumes of sea bass and sea bream in 2007 being around 81,000 tons.

At present, aquaculture (in fact mostly mariculture), is considered a major industry in Greece, not only because of the impressive results in production volumes but also because of a number of important socio-economic aspects associated with it. The sector is estimated to provide employment to more than 10,000 people, through direct and indirect activities, especially in rural areas with scarce investments and no employments alternatives. The high rate of investment in the sector has created the necessary infrastructure and has developed the relevant 'know-how', having thus improved the economic indices of the wider fishery industry as none of the other sectors of the primary production have done.

Extensive farming in estuaries and lagoons cover in national level, a total area of 38.091.200 m². In terms of production volumes, total production in 2000 from estuaries and lagoons reached 1.087 tones. The main species produced are sea bream, sea bass, striped mullet, annular sea bream, eel e.t.c. The traditional extensive method of lagoon management places special barriers in appropriate lagoon sites to capture fish mainly during their autumn migration to the open sea. Barriers made of reeds, nets or cement stay open from February until May for the lagoon to be naturally stocked with fry.

The Greek aquaculture industry consists of various segments, depending on the species produced, and the technique employed (see relevant standard table IV.A.1.) The main segments of the Greek aquaculture industry are: (a) sea bass and sea bream culture, (b) other marine fish culture, (c) shellfish culture, (d) carp culture, (e) trout and salmon culture, (f) eel culture, (g) extensive farming -estuaries & lagoons

Apart from the long-established and rather traditional culture of shellfish, the culture of trout, and the fairly recent –but rapidly developed- intensive culture of marine species, there also exists a small number of other segments, which are however of minor importance in terms of production volumes and value.

Overall, based on 2005 data, the value of the national aquaculture produce accounts for 55% of the total value of the combined national capture fisheries and aquaculture production. The value of aquaculture products reached a value of 450.479 thousand €, out of a total of 886.534,88 thousand €. In terms of production volumes, total aquaculture production in 2005 reached 112.000 tonnes, accounting for 59% of the total national aquaculture and fisheries production.

Based on more recent data (Federation of Greek Maricultures) production of sea bass and sea bream only in 2007 reached 120.000 tonnes, at a total value of around 360 million €.

IV.A.2 Data acquisition

As becomes obvious from section I.V.A.1 above (and noted in the relevant standard table), there is a lack of updated national data concerning the industry because there was no provision for integrated data collection programs at national level. Under the proposed sampling scheme, important parameters concerning the industry will be collected.

The Greek aquaculture industry can be divided in the following broad segments (based on Appendix XI of Commission Decision 93/2010. It should be noted that an additional segment has been added, that of ‘Extensive farming -estuaries & lagoons’, due to the important socio-economic aspects that are associated to it.

The proposed sampling strategy differs depending on the importance of the segment surveyed and the population within each segment. For example, segments 1,2 & 3, despite the relatively high number of the population, will be exhaustively surveyed, as these segments are by far the most important ones –both in terms of production volumes and value- of the Greek aquaculture industry. Segments 5 & 6, due to their low population –and the high discrepancies that this may yield- will also be surveyed exhaustively.

Segments 4,7 & 8 will be surveyed through the use of random samples.

Finally, the herein proposed segment 9 will be surveyed via a fixed panel.

	Aquaculture Segments surveyed	Sampling strategy
1	Cages - sea bass & sea bream	Exhaustive
2	Land based farms - Hatcheries & Nurseries- sea bass & seabream	Exhaustive
3	Cages – other marine fish	Exhaustive
4	Land based farms – On growing - Other fresh fish	Random
5	Land based farms - combined - Carp	Exhaustive
6	Land based farms - combined - Salmon	Exhaustive
7	Land based farms - combined - Trout	Random
8	Rafts/ Long line/Others - Mussel	Random
9	Extensive farming -estuaries & lagoons	Fixed Panel

As noted in the relevant standard table IV.A.1, apart from the segments presented above there exist a number of additional segments (subcategories of the above) for which the available information makes neither separation nor distinction. However, but –based on experience- some additional segments do in fact exist (market as (YES) in table IV.A.1.). These segments will be appropriately treated and presented separately at the final report, based on the findings of the survey. The sampling strategy for these segments is expected to follow the ‘species’ categorisation pattern.

Segments falling under the main categories presented above, for which no separate and distinct data exists, but will be treated and presented separately at the final report (market as (YES) on table IV.A.1.).	Sampling Strategy
Land based farms- On Growing – Salmon	Exhaustive
Land based farms- On Growing – Trout	Random
Land based farms- Hatcheries & Nurseries – Trout	Random
Land based farms- On Growing - Sea bass & Sea Bream	Exhaustive
Land based farms- Combined - Sea bass & Sea Bream	Exhaustive
Land based farms- Hatcheries & Nurseries – Carp	Exhaustive
Land based farms- On Growing – Carp	Exhaustive
Land based farms- Hatcheries & Nurseries - Other Marine Fish	Exhaustive
Land based farms- On Growing - Other Marine Fish	Exhaustive
Land based farms- Combined - Marine Fish	Exhaustive
Oyster-Long line	Random

The population to be considered is composed by enterprises whose primary activity is defined as “Fish Farming” The target population is all licensed aquaculture companies operating in Greece.

The relevant standard table IV.A.2 provides a general outline of the sampling strategy proposed based on :

The segment to be examined

The year to which the collected data refer

To total population of each segment to be surveyed

The planned sample

The planned sample rate

The sampling strategy to be employed.

The data required will be collected mainly through the use of a questionnaires and face-to-face interviews. Required information referring to certain parameters will also be collected (estimated, correlated and validated) through an analysis of Company published financial accounts (where available). For this reason ‘focal points’ might need to be established within some companies and/or group of companies, especially the larger ones for which a breakdown by separate company will be required.

Similarly, records and reports from respective national competent authorities, (Ministry of Rural Development and Food, Ministry of Finance, Regional Administration Services, Prefecture Fisheries Departments etc) will be used.

The data and information to be collected are those defined in Table IV.A.3. The questionnaires will be standardised and computerised. The interviewers will be provided with PCs to fill in the questionnaires for a 1st level analysis and confirmation/correction of any abnormalities in the data and information provided. The recorded data (filled questionnaires) will be collected at a central level at least at the end of each working week, either directly by the interviewer or sent electronically. During the 2nd level analysis, and where required, the relevant weightings will be applied for expansion to the entire population.

IV.A.3 Estimation

Capital cost is presented in the annual balance sheet of companies with such obligation. For smaller companies estimation of capital cost refers mainly to the cost of loans (cost of loans = interests of loans + cost of banks – income from deposits).

Unpaid labour is a financial variable which refers to small scale companies (e.g. personal companies, etc) and is estimated according to owner’s statement.

IV.A.4 Data quality evaluation

Details on the sampling methods to be used are presented on the relevant standard table IV.A.3, along with the precision levels and the sample rates. It should be noted that for each group of variables, all subsequent variables – as presented in Appendix

X of Commission Decision 2010/93 and described in the matrix below - will be examined. Also, employment information will be collected by gender

Variable group	Variable	Specification	Unit
Income	Turnover	Per species or group of species (type of culture)	EUR
	Subsidies	Per species or group of species (type of culture)	EUR
	Other income	Per species or group of species (type of culture)	EUR
Personnel costs	Wages and salaries	Per species or group of species (type of culture)	EUR
	Imputed value of unpaid labour (*)	Per species or group of species (type of culture)	EUR
Energy costs	Energy costs	Per species or group of species (type of culture)	EUR
Raw material costs	Livestock costs	Per species or group of species (type of culture)	EUR
	Feed costs	Per species or group of species (type of culture)	EUR
Repair and maintenance costs	Repair and maintenance	Per species or group of species (type of culture)	EUR
Other operational costs	Other operational costs	Per species or group of species (type of culture)	EUR
Capital costs (*)	Depreciation of capital	Per species or group of species (type of culture)	EUR
	Financial costs, net	Per species or group of species (type of culture)	EUR
Extraordinary costs, net	Extraordinary costs, net	Per species or group of species (type of culture)	EUR
Capital value	Total value of assets	Per species or group of species (type of culture)	EUR
Investments	Net Investments	Per species or group of species (type of culture)	EUR
Debt	Debt	Per species or group of species (type of culture)	EUR
Raw material volume	Livestock	Per species or group of species (type of culture)	Tonne
	Fish Feed	Per species or group of species (type of culture)	Tonne
Volume of sales	Volume of sales	Per species	Tonne

			(13)
Employment	Number of persons employed	By gender	Number
	FTE National	By gender	Number
Number of enterprises	Number of enterprises	By size category where the number of persons employed is: (SBS 16.11.0) 1. ≤ 5 2. 6-10 3. > 10	Number

Certain –less sensitive- parameters will be examined through records of the Relevant National Authority records, Producer Organisations (ie No of enterprises, subsidies) and cross checked with the enterprises. Such information is expected to be absolutely accurate and reliable for all segments and upon this information the subsequent –more detailed- categorisation of the segments will be based.

In general, due to the ‘voluntary’ nature for the provision of the data required (reliable and accurate data) , effort will be given to validate and control the quality of the data obtained, even at the 1st level of analysis (upon collection, by direct correlation to comparable data from other samples of the population).

Persisting discrepancies and deviations will be accordingly evaluated.

For the parameters that derive from audited financial accounts, wherever these parameters do not exist (small size firms), relevant questionnaires will be devised and used. In such cases, while the quality and reliability of the data provided cannot be guaranteed, cross reference and validation processes will be employed as to ensure maximum accuracy of the data to be reported.

It is should be stressed that the data and information required are, by their nature, business and operational financial data, and as such –some parameters – are considered confidential, especially as competition among them is fierce. In this respect, special attention will be given as to establish the necessary medium of trust and confidentiality concerning the data and information collected, and their subsequent use. This medium can only guaranteed through the employment of experienced researchers with proven record of reliability and confidentiality.

IV.A.5.Data presentation

The data will be available to end users 6 months after the end of the reference year.

IV.A.6.Regional coordination

None

IV.A.7.Derogations and non-conformities

No derogation is requested during the 1st (initial) year of Greece in the implementation of the new DCF for aquaculture. A thorough 1st year analysis will lay the foundations for the subsequent years and the necessary amendments to be made.

IV.B Collection of data concerning the processing industry

Exploitation of fisheries products is an integral part of fisheries production and includes the activities of trade, processing, preservation and conserving of catches. It was estimated that of catches traded and consumed in Greece, 45% are fresh, 25% frozen and the remaining 30% is used for the production of processed fishery products. In Greece, this sector is made up of around 157 small to medium sized enterprises (SMEs). The activities of 50 fish processing enterprises include preserving of pelagic fish in salt as well as filleting, smoking and tinning of catch. In the year 2003 the specific enterprises produced a total of 21.476 tons of final products. The 74 freezing fish enterprises produced 34.967 tons of frozen final products and finally the 33 mussel de-shelling enterprises produced 1.620 tons of final products (2003 yearly data). The above productions of processed and frozen final seafood products are higher up to 5 % and 250 % respectively compared to the 1995 yearly productions. The aim of the project named “Evaluation of the economic situation of the processing industry” as part of the National Programme 2011-2013 is to record the actual state of this sector in Greece (in annually basis) from an economic and social point of view.

Data to be studied will be provided by (1) visits to all enterprises (with >10 employers) and to 75% of the enterprises (with ≤10 employers, stratified random sampling strategy) in the sector (completing of a specific questionnaire), (2) official bodies such as the Chamber of Commerce, the Ministry of Rural Development and Food, the Statistical Service, the fishing ports and (3) from official financial agencies (the press, institutes, etc.).

The general outline of population numbers, the planned sampling levels and sampling methods used for the processing industry are provided in Table IV.B.1.

Initially, the enterprises will be recorded from data collected from the official bodies. Then, via visits to the enterprises, the head of each enterprise will be informed about the aim of the project and will be requested to assist in completing the questionnaire (see Annex III). Moreover, the size of the enterprises and their production capacity will be recorded and a first assessment of their share in the seafood national market will be made. Following this, data will be collected from the enterprises in order to determine their financial parameters.

The questionnaire will gather the information mentioned in Table IV.B.2.

IV.B.1 Data acquisition

(a) Definition of variables

Economical data will be collected according to Appendix XII of Commission decision 2010/93/CE. Parameters will be collected on annual basis from the entire sector of processing industry. (Table IV.B.1.)

(b) Type of data collection

For the majority of variables, data will be gathered with the census method. For the remaining variables the method of probability sample survey will be applied, as shown in Table IV B_2. The reason being that many companies, small and very small enterprises in their majority, have:

- Mistrust and reserved ness in proving data, especially in questions regarding receiving loans, sale prices of final products, price of raw material
- Difficulties in completing sections of the questionnaire concerning costs (production, sales, administration and financing), due to the lack of computerization in the small in capacity companies, and also due to the lack of time and available staff in the total of the companies.

Concerning data gathering, this will be effectuated through questionnaires, personal interviews, official National sources (Ministry of Rural Development and Food) and from balance sheets (financial account) of the enterprises that are required to publish their balance.

(c) Target and frame population

Please see Table IV.B.1 has been prepared in the different segment foreseen in Appendix XII. Sample has been chosen according to what already prepared in the previous National programme of the year 2003.

(d) Data sources

Economical data to be monitored are those reported in Table IV.B.2.. with a specific form.

(e) Sampling stratification and allocation scheme

Information will be collected in a census basis, probable substitutions will be reported at the end of the national programme.

IV.B.2 Estimation

For those variables that the census method will be used, the estimation procedure will not be applied.

Energy costs and other operational costs, as well as any other variable for which no information is provided (see above for potential problems), these will be estimated based on the average sales values and costs for raw materials declared by the enterprises that provided information for all variables considered.

IV.B.3 Data quality evaluation

All variables gathered from different sources will be compared and cross-checked for their credibility. As mentioned above, the sources to be used are:

a) Questionnaire, b) personal or telephone interviews, c) use of published balance sheets (financial account), d) government sources (National Statistical Service, Ministry of Rural Development and Food).

We estimate that the number of enterprises not responding and/or failure to obtain sufficient data from all other available sources, is very small (<10-15% according to our previous studies).

IV.B.4 Data presentation

In 2011, data referred to 2010 will be collected. The same time lag will be applied for data referred to the years 2012 and 2013.

IV.B.5 Regional coordination

None

IV.B.6 Derogations and non-conformities

None

Module implementation

Module IV will be implemented by the Fisheries Research Institute (FRI) and the Hellenic Centre for Marine Research (HCMR), which will act as partners (see Annex I for details). Part of Module IV.A will be accomplished by a subcontractor that will be identified at a later stage through a call for tenders.

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

The effects of the fishing sector on the marine ecosystem will be evaluated using the environmental indicators defined in the EC decision 2010/93/EC for the DC Programme 2011-2013. The indicators will be calculated by GSA. The calculations will be according to the Appendix XIII of Commission Decision 2010/93/EC.

Specification and calculation of indicator: 1. “Conservation status of fish species”

The MEDITS data will be used for the calculation of the indicator “Conservation status of fish species”. The MEDITS data are adequate for this purpose, since the surveys are conducted annually in the same areas with a standard gear. Moreover, the indicator approach has already been applied to the MEDITS data series, either on the different population or on the whole community level, in order to estimate the effects of fisheries on the marine ecosystem. Within the framework of the 2011-2013 surveys, special attention will be given during the processing of the catches to ensure

that all species needed for the calculation of the aforementioned indicators are properly identified and that all the biological parameters needed are collected according to the methods defined in the EC Decision 93/2010.

Specification and calculation of indicator: 2. “Proportion of large fish”

The MEDITS data will be used for the calculation of the indicator “Proportion of large fish”. The MEDITS data are adequate for this purpose, since the surveys are conducted annually in the same areas with a standard gear. Moreover, the indicator approach has already been applied to the MEDITS data series, either on the different population or on the whole community level, in order to estimate the effects of fisheries on the marine ecosystem. Within the framework of the 2011-2013 surveys, special attention will be given during the processing of the catches to ensure that all species needed for the calculation of the aforementioned indicators are properly identified and that all the biological parameters needed are collected according to the methods defined in the EC decision 93/2010

Specification and calculation of indicator: 3. “Mean maximum length of fishes”

The MEDITS data will be used for the calculation of the indicator “Mean maximum length of fishes”. The MEDITS data are adequate for this purpose, since the surveys are conducted annually in the same areas with a standard gear. Moreover, the indicator approach has already been applied to the MEDITS data series, either on the different population or on the whole community level, in order to estimate the effects of fisheries on the marine ecosystem. Within the framework of the 2011-2013 surveys, special attention will be given during the processing of the catches to ensure that all species needed for the calculation of the aforementioned indicators are properly identified and that all the biological parameters needed are collected according to the methods defined in the EC decision 93/2010.

Specification and calculation of indicator 4. “Size at maturation of exploited fish species”

For the calculation of the indicator “Maturation of exploited fish species” individual measurements (age, length, sex and juvenile/spawning adult/resting adult) will be taken for at least 100 individuals per age class per year for each of the studied species. Data will be provided by the fisheries independent research surveys (MEDITS), but, since the survey is carried out once a year in the beginning of summer when only a certain number of commercial species are mature, information from fisheries-dependent sources (concurrent on-board sampling for biological variables of landings/discards) will be used as well to cover the rest of species. Since maturation in most fish species is size-dependent, an examination of trends in length-at-age is considered necessary for the interpretation of any possible trends in maturity. The spawning period will be determined for each of the studied species by analysing the seasonal changes of the maturity stage of females over a one-year sampling period. Only potentially mature individuals will be used, i.e. individuals with total length greater than the length at first maturity for females of each species. Ages will be also estimated. Then, maturity ogives by length and age, describing the proportions of mature individuals at a given age or size, will be constructed using data collected during the period when the highest percentage of mature fish of each species is

observed. Finally, the maturity percentages will be fitted to the logistic model and estimations will be performed for each species by length class and age.

Specification and calculation of indicator 5. “Distribution of fishing activities”

An indicator of the spatial extent of fishing activity will be estimated in order to minimise the impact of fishing activities on the marine eco-system.

VMS vessel position records reported at intervals of 2 hours for vessels assigned to métiers according to the 6 level métier (includes trawlers, purse seines and artisanal fishing vessels with total length >15 m) classification recommended by STECF. The Ministry of Mercantile Marine will supply VMS data in electronic format. Specific software routines will be developed for the quality control and the calculation of the indicator. A GIS system will support the analysis of the data and the presentation of results. For the calculation and definition of the indicator, the methodology presented in the Regulation will be adopted. The indicator would state the total area (sum of areas of 2nm grid cells) where fishing activity was recorded for each fishing technique in each month and year. VMS data will be available for scientific purposes.

Specification and calculation of indicator 6. “Aggregation of fishing activity”

This is an indicator of the extent to which fishing activity is aggregated and contributes to assessing the performance of Common Fishery Policy.

VMS vessel position records reported at intervals of 2h for vessels assigned to métiers according to level 6 for the métier classification (includes trawlers, purse seines and artisanal fishing vessels with total length >15 m). The Ministry of Mercantile Marine will supply VMS data in electronic format. Specific software routines will be developed for the quality control and the calculation of the indicator. A GIS system will support the analysis of the data and the presentation of results. For the calculation and precision of indicator, the methodology presented in the Regulation will be adopted. The indicator would state the total area (sum of areas of 2nm grid cells) where 90% of fishing activity (90% of the total number of position records) was recorded for each fishing technique in each month and each year. VMS data will be available for scientific purposes.

Specification and calculation of indicator 7. “Areas not impacted by mobile bottom gears”

This is an indicator of the area of seabed that has not been impacted by mobile bottom fishing gears in the last year. It responds to changes in the distribution of bottom fishing activity resulting from catch controls, effort controls or technical measures (including Marine Protected Areas established in support of conservation legislation) and to the development of any other human activities that displace fishing activity.

VMS vessel position records reported at intervals of 2h by vessels using mobile bottom fishing gears, as identified to level 6 for the métier classification. The Ministry of Mercantile Marine will supply VMS data in electronic format. Specific software routines will be developed for the quality control and the calculation of the indicator. A GIS system will support the analysis of the data, the construction of thematic maps and the presentation of results. For the calculation and precision of indicator, the

methodology presented in the Regulation will be adopted. VMS data will be available for scientific purposes.

Specification and calculation of indicator 8. “Discarding rates of commercially exploited species”

In the frame of data collection planned to cover fishing activities on-board commercial vessels belonging to the main categories (métiers) in which the fishing fleet is distinguished the marketable and the discarded fraction of the catch are analysed. From those data discard rates by species in weight, as well as landings rates by species are calculated in each of the main fishing categories (métiers) for the three GSAs of the Greek territorial waters, quarterly and yearly. According to the latter, the indicator referring to total discard weight as a proportion of landed weight will be quantified by species, fishing technique, quarter and year.

Specification and calculation of indicator 9. “Fuel efficiency of fish capture”

This indicator is based on two sources of data: (a) the total value of landings (€) derived from the product between amount of landings (kg) and average prices (€/kg) per métier and (b) the total value of fuel costs per métier. The indicator will be derived by dividing the above two values (a/b) at the métier level. Since the economic variables should be collected at the segment level, the collection of the above raw data, adequate to estimate the indicator at the métier level, requires separate sampling survey other than that of socioeconomics (as in Appendix VI and per segment as in Appendix III). For this purpose, the representatives who will undertake the sampling of biological data in the market (concurrent sampling at market – point of sale) will also sample the above information by means of face to face interviews. Both data types required for this indicator will be collected on a monthly basis (based on the requirements of the Regulation regarding economic data and transversal data). The data will be stored in the central database maintained for the Greek DCF program and will be queried using specific statistical algorithms so that the final reported information will be the indicator per quarter and per year for each of the métier selected for Greece.

The indicator will be calculated as follows: The total value of landings (€) will be obtained by fishing technique, per quarter and per year and will be subsequently divided by the value by the fuel cost spent to get the landings.

The métiers for which the above indicator will be estimated are the same as in the biological sampling (see Table III.C.1.). The indicator will be calculated for each métier according to level 6 for the métier classification (see Appendix IV, part 4 "Mediterranean and Black Sea' columns 1-5) by marine region, quarter and year and for the 3 pre-set geographical areas, GSA 20 – Ionian Sea, GSA 22 – Aegean Sea and GSA 23 – Cretan Sea.

Module implementation

Module V will be implemented by the Fisheries Research Institute (FRI), and the Hellenic Centre for Marine Research (HCMR) which will act as partners (see Annex I for details).

VI. Module for management and use of the data

VI.A Management of the data

According to the 93/2010 EC decision concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice, Greece shall establish a computerized database system to integrate the collected biological, catch, effort, landing and socioeconomic primary data.

Database development

The database which will be designed to support the data collection system will be backwards compatible with the existing database that was supporting the data collection of the previous regulations in order to be able to utilise the historical data.

This requirement implies that several old components will be utilised by the new system, other components will be modified having in mind the backwards compatibility and finally some components will be designed from scratch. In general the basic structure of the database will contain two major components: the reference data component and the sampling data component.

The reference database contains the most of the datasets that are common between new and old system. The sampling database contains the subset that will be modified and adapted to the new requirements. This part will contain the following databases:

- Fishing effort database
- Landings database
- Socio-economic database
- Biological database
- Discards database
- Aquaculture database
- Experimental surveys database
- Environmental database

The system will be designed in such a way that it will ensure data integrity and security through a layered access permission system. Through this access system, data will be accessible either in their elementary form or in processed form. The processed data will be provided through an analysis and reporting system that will constitute the basic data dissemination structure.

Data storage:

The primary data and the metadata collected under the programme will be safely stored in databases and all necessary measures to ensure that they are treated as confidential will be taken. A security system shall be established to protect the data against any accidental or illicit destruction, accidental loss, deterioration, distribution or unauthorised consultation (according to Article 13, Council Regulation (EC) No 199/2008).

Data quality control and validation:

Appropriate quality control procedures will be developed to check for errors at the data entry process. Relative validation processes will be applied in the detailed and aggregated data (derived from primary data) before their transmission to end-users in

accordance with the procedures adopted by the international scientific bodies, regional fisheries management organisations and STECF.

Data covered:

An integrated databank will be constructed to cover the requirement of the new Regulation. The datasets that will be incorporated in the system are determined by the structure (content) of each module. The following groups of data are needed:

1) Data on vessels' activity based on information from satellite monitoring and other monitoring systems with the required format, 2) Data allowing the reliable estimation of the total volume of catches per stock by defined regional fishing types and fleet segments, geographical area and time period, including discards, 3) All biological data needed to assess the status of exploited stocks, 4) Ecosystem data needed to evaluate the impact of fishing activities on the marine ecosystem, 5) The socio-economic data from the fisheries sector.

The data bank will be developed in a multi-user environment using relational database architecture for managing and diffusing the information. The databases will be interconnected using a common codification system and provision will be made for connections to other sources of fisheries statistics from Greece (the National Statistical Service of Greece, the Fishing Development Corporation, the Ministry of Mercantile Marine). The data bank will be hosted at the fisheries data centre of the research Institutes that will carry out the program and will be connected to the General Directorate for Fisheries of the Ministry of Rural Development and Food. A web-based application will be available for data-entry, quality control, data mining, statistical analysis, presentation of the results and export in a common exchange format.

Access to and transmission of primary data:

The Commission will have the possibility of effective and unhindered access to the national computerised databases for the purpose of the verification of the existence of the collected primary data (other than socio-economic data). Moreover, for the purpose of the verification of the collected socio-economic data, the Commission will have the possibility of access to the specific datasets.

Appropriate data mining procedures will be constructed to ensure that the primary data collected under the research surveys at sea can be transmitted to international scientific organisations and appropriate scientific bodies within regional fisheries management organisations in accordance with the international obligations of the Community and the Member States.

Processing of primary data:

Specific software routines will be developed to process the primary data into data sets of detailed or aggregated data in accordance with: (a) relevant international standards, (b) protocols agreed at international or regional level and c) efficient probability estimators for sample estimates (national standards). The software will be incorporated in the integrated web-based application that supports the national programme.

Submission of detailed and aggregated data:

The detailed and aggregated data could be available to end-users via the integrated fisheries information system of the Institute to support scientific analysis: (a) as a

basis for advice to fisheries management, including to Regional Advisory Councils, (b) in the interest of public debate and stakeholder participation in policy development and (c) for scientific publication.

Transmission of detailed and aggregated data:

According to the Article 19 of Council Regulation (EC) No 199/2008, Greece shall transmit detailed and aggregated data in a secure electronic format.

The computerized database system to integrate the collected biological, catch, effort, landing and socioeconomic primary data is under construction. Unfortunately we need first to use the database and find out the weaknesses of the system in order to be able to improve and finalize it.

VI.B Use of the data

According to the Council Regulation (EC) No 199/2008, article 18(1), Member States shall provide detailed and aggregated data made available to end-users in order to support scientific analysis, stock assessments and bio-economic modeling.

Data use activities will include:

- production of sets of data which will be used to support scientific analysis as a basis for advice to fisheries management,
- biological parameter estimates (age, weight, sex, maturity and fecundity),
- preparation of sets of data for stock assessments, bio economic modelling and corresponding scientific analysis.

These data sets will be used in various assessment or other relevant groups of international committees or organizations, such as RCMs, GFCM, ICCAT, STECF working groups, etc, which will be attended by Greek scientists.

Module implementation

Module VI will be implemented by the Fisheries Research Institute (FRI) and the Hellenic Centre for Marine Research (HCMR), which will act as partners (see Annex I for details).

VII. Follow-up of STECF recommendations

SGECA/SGRN Meeting 09-01, February 2009 - Evaluation of 2009-2010 NPs	
<p>General comment 6– On métier sampling _minimum requirements</p> <p><i>According to the DCF, at least 12 trips per métier per year should be carried out for landings and 8 for discard. For several MSs, the planned number of trips is lower than indicated above. However, SGRN notes that some fisheries are only seasonal and therefore the minimum requirement is likely to be less than 12 trips per year. Even if it is less than 12 trips, the MS have to allocate their sampling in proportion to the seasonality of fishery. SGRN propose that a column indicating the length of the fishing season and average fishing trip is</i></p>	<p>Greece follows this comment</p>

<i>included in the NP (Table IIIC.3).</i>	
<p>General comment 9 – On Use of Survey Length and Age Data</p> <p><i>SGRN interpretation of the DCF (Section B2-3.1) is that length composition or age composition from surveys cannot be applied to derive length and age composition of landings. SGRN recognize that the DCF does not forbid the use of age reading (i.e. age at length information) from surveys to support/complement age reading from landings for the construction of age length keys.</i></p>	Greece follows this comment
<p>General comment 18: On the Estimation of Capital Value and Capital Costs</p> <p><i>SGRN would point out that the capital value and capital costs should be estimated according to the PIM methodology proposed in the capital valuation report of study No FISH/2005/03 (2006. Evaluation of the capital value, investments and capital costs in the fisheries sector, 203 p.). The data and estimation procedures should be explained in the national programme. In case this methodology cannot be applied, appropriate justifications should be given in the NP.</i></p>	Greece follows this comment
<p>General comment 19: On the Estimation of Employment</p> <p><i>SGRN would point out that the methodology for the estimation of employment (engaged crew and FTE) should be in accordance with the Study FISH/2005/14 (2006, Calculation of labour including full-time equivalent (FTE) in fisheries, 142 p.) and amended by the SGECA 07-01 report and should be explained in the national programmes.</i></p>	Greece follows this comment
<p>General comment 22: On the Coverage of Population</p> <p><i>MS has to cover all the fleet and collect the required data also for inactive vessels. Most of the MS do not provide any information about inactive vessels in the relevant tables of the national programs.</i></p>	Greece follows this comment
SGECA/SGRN Meeting 09-01, February 2009 - Evaluation of 2009-2010 NPs	
<p>General comment 1. Sampling of sharks, implications for table III_C_5, III_C_6 and III_E_1.</p> <p><i>SGRN, revising the comments of the RCMMed&BS, supports the idea to collect the métier based variables (i.e. length) for all the shark species present in the Appendix VII (Commission Decision 93/2010). SGRN stress that no derogations on individual species are accepted for length measurements within métier sampling and that all MS should fill in tables III_C_5 and III_C_6 (only TR) completely, including all appendix VII species in the region. This will allow SGRN (and RCMMed&BS) to evaluate the overall level of length sampling of sharks in the future</i></p>	Greece follows this comment

VIII. List of derogations

Short title of derogation	NP Proposal section	Derogation approved or rejected ¹	Year of approval or rejection of past requests for derogations
Eel fisheries in 2009	III.C.5		
Eel biological variables in 2009	III.E.5		

A pilot study for the derogations is proposed (Annex II).

IX. List of acronyms and abbreviations

CPUE: Catch per Unit of Effort

DCF: Data Collection Framework

GFCM: General Fishery Commission for the Mediterranean

GRT: Gross Registered Tonnage

GSA: Geographical Sub Areas

ICCAT: International Commission for the Conservation of Atlantic Tunas

MEDIAS: Pan-Mediterranean pelagic survey

MEDITS: Mediterranean International Trawl Survey

PGMed: Mediterranean Planning Group for Methodological Development

RCM Med: Regional Coordination Meeting for the Mediterranean Sea

SAC: Scientific Advisory Committee of GFCM

STECF: Scientific, Technical and Economic Committee for Fisheries

X. Comments, suggestions and reflections

None

XI. References

Commission Decision 2010/93/EU of 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– OJ L41, 16.2.2010, p.8.

Commission Regulation (EC) No 199/2008 of 25 February 2008 *establishing a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy* – OJ L60, 5.3.2008, p.1.

Commission Regulation No 665/2008 of 14 July 2008 *laying down detailed rules for the application of Council Regulation (EC) No 199/2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy* – OJL 186, 15.7.2008, p.3.

ICES 2004b. WKSCMFD. Workshop on Sampling Calculation and Methodology for Fisheries Data, 26-30 February 2004, Nantes, France, ICES CM 2004/ACFM:12.

ICES. 2008. Report of the Workshop on Methods to Evaluate and Estimate the Accuracy of Fisheries Data used for Assessment (WKACCU), 27–30 October 2008, Bergen, Norway. ICES CM 2008\ACOM:32. 41pp

Report of the 6th Regional Coordination Meeting for the Mediterranean and Black seas (RCM Med&BS), 13-16 October 2009, Venice, Italy.

Report of the 3rd Meeting of the Mediterranean Planning Group for Methodological Development (PGMed). 2-6 March 2009, Montpellier.

Vigneau and Mahevas (2004)

Vigneau J., 2008 - Common tool for raising and estimating properties of statistical estimates derived from the Data Collection Regulation (COST). European Commission, FISH/2006/15– lot 2, Project no: SI2.467814. Title: Studies and Pilot projects for carrying out the common fisheries policy.

XII. Annexes

Annex I: Partners

Summary information on the partners that will contribute in the realization of the program is given below.

Fisheries Research Institute (FRI)

FRI is one of the five specialized research institutes of the National Agricultural Research Foundation (NAGREF), being responsible to conduct research and to promote technological development in the fishery sector. The research activities of FRI cover a wide range of fields in the marine research and applications sector. The Institute participates in numerous research programmes, both European and National, which form the main funding source for its research activities. FRI has also participated in the accomplishment of the previous Fisheries Data Collection Program.

Hellenic Centre for Marine Research (HCMR), Greece

HCMR is a Governmental Research Institution engaged in research activities in all fields of the marine and freshwater science. As a National Centre, provides comprehensive services and technical support to the public on various aspects related to the aquatic environment. The HCMR has been established in 2003 through the amalgamation of the National Center for Marine Research and the Institute of Marine Biology of Crete and has a staff of about 410 people. HCMR comprises 5 research Institutes: Institute of Oceanography, Institute of Marine Biological Resources, Institute of Inland Waters, Institute of Aquaculture and Institute of Marine Biology and Genetics. The contributions to the project will be provided by the staff of the Institute of Marine Biological Resources, which is specialized in aspects related to the assessment and management of marine stocks. The aforementioned Institute has also participated in the accomplishment of the previous Fisheries Data Collection Program.

Agricultural Economics and Policy Research Institute (AG.E.P.R.I.)

The Agricultural Economics and Policy Research Institute (AG.E.P.R.I.) is the major Greek research institute that focuses on economic, managerial and social issues in the agri-food sector. It is embedded in the National Agricultural Research Foundation (N.AG.RE.F.), an organization supervised by the Greek Ministry for Agriculture. By its establishment, Institute's objective is to undertake research in the field of agricultural economics. The Institute actively participates to the formulation of the Greek Agricultural Policy with the constructive recommendations to the Ministry of Agriculture and through the participation in cross-meetings with researchers from other Institutes, Universities and Organizations. AG.E.P.R.I. is located at Athens and subdivided into three units: a) Agricultural Economics & Policy, b) Rural Sociology & Development, c) Agribusiness

Research within AG.E.P.R.I. is emphasized in the following areas.

- Agricultural and Fisheries policy
- Agribusiness management and economics
- Sustainable management of organizations and farms
- Management and economics of innovation and technology
- Sustainable rural development and social capital
- Environmental and natural resource economics
- Rural sociology

Annex II: Pilot study for the monitoring of eel fisheries

The population of the European eel (*Anguilla anguilla* (L.)) is in decline and current fisheries are considered outside sustainable limits. Factors involved include exploitation as well as other anthropogenic impacts (habitat loss, migration barriers, pollution), but also natural impacts (cormorants, ocean climate). Further assessment of the biological status of eel requires additional and consistent data (Dekker, 2005).

To this end, the eel has been included in the EU Data Collection Regulations (Council regulation 1543/2000 and Commission regulations 1639/2001, 1581/2004). According to the new EU Regulation the monitoring of commercial and recreational fisheries for eels in inland waters has to be included in each MS national program. Estimates should refer to total production, effort and biological sampling of landings.

Description of Eel fisheries in Greece

European Eel exploitation in Greece is limited in the catches of the migratory silver eel. In western Greece some catches of yellow eel are also done, since there is a local tradition (influenced by Italy) to consume also smaller eels, which doesn't exist in the rest of Greece.

No glass eel catches exist; even though some efforts have been done in the past in order to supply the eel aquaculture (catches of juvenile fish need special permission from regional authorities). No recreational fishing of eels has been recorded.

The majority of the Eel catches comes from coastal lagoons around Greece. Most coastal lagoons are found in North Greece (estuarine areas of rivers Evros, Nestos and Vistonis) and in West Greece (Messolonghi lagoon and the lagoons of Amvrakikos Gulf). Most of the lagoons are managed by the local regional authorities. A few of them are owned and exploited by the Ministries of Development and Economics, and some others by local municipalities. In any case, economic exploitation usually happens by leasing of the lagoon for a certain period of time (in most cases 10 years) to local professional fishermen's cooperatives that have the sole right to exploit the lagoon's fish (Koutrakis et al., 2007).

Catches are usually based on traditional barrier fish traps, consisting of permanent entrapment devices that catch eels alive during their reproductive migration to the sea, which is from September to January each year. Fyke nets are also used in some lagoons that do not have permanent trapping installations, or during periods of the year outside the fish migrating season. Cooperative fishermen are usually equipped with structures to store Eels alive till their sale (usually exported). All catches have to be reported to the regional authorities monthly.

Some catches are also done in lakes and in river mouths. No fishing is practised in rivers. The fishermen in the lakes are using special traps for eels (fyke nets), but as they catch almost nothing during the recent years, this type of fishing has mostly

disappeared. The fishing in river mouths is mainly practised by single professional marine fishermen who also use fyke nets. These catches are usually reported as marine catches, even though they are practiced in transitional waters.

Eel total landings in Greece are constantly decreasing, starting from the early 80's (Zompola et al., 2001). Eel landings in Greece amount to 21-24 t (2002-2006) from fisheries (marine and inland) and 500 t/year from aquaculture (Hellenic Statistical Service). However the catches from coastal lagoons and estuarine areas in Greece are declared as coming from "aquaculture" because these areas are considered as extensive aquaculture areas (even though no interference in the fish life cycle exists). These catches are estimated to be from 52-85 t (2003-2004). So the total amount of catches from all areas varies from 75 to 110 t /year.

Proposal for a pilot study on the European Eel

The pilot study proposed that will be structured as follows:

Silver & yellow eel monitoring

A) Evaluation of landings of all adult eel catches. Eel landings from all Greek lagoons and estuarine areas will be recorded either by local regional or prefectural authorities or Ministerial services. Moreover landings from lakes (if there any) will be recorded in the same way. Landings from river mouths will be estimated by direct interviews and cross checks with local regional authorities. Data will be recorded by management unit or by lagoon (if possible), where management unit is considered each big estuarine system.

Fishing effort will be expressed as total eel catches weight that corresponds to the estuarine area exploited (kg/ha for each coastal lagoon).

B) Biological sampling of catches. Data on length, weight, age (by using otoliths), sex (when possible) will be collected from a sample of eels collected from each estuarine system, in order to evaluate composition by age and by length and have information on the demographic structure of the eel local stocks and on their growth and mortality. The estuarine systems that samples will be collected are in northern Greece (estuarine systems of Evros, Nestos and Vistonis) and in western Greece (Messolonghi & Etoliko estuarine system and Amvrakikos estuarine system). Data and specimens collection and elaboration in western Greece will be done by two external collaborators: 1. Department of Biological Application & Technology, University of Ioannina, 2. Department of Biology, University of Patras. The two subcontractors are based near the sampling sites: hence the University of Ioannina will cover sampling in the nearby Amvrakikos Gulf and the University of Patras will cover sampling in the nearby Messolonghi & Etoliko estuarine system.

As regards the sample size the DCF requirement is 100 specimens for each 20 t of the MS total eel catches. Thus aim of this study will be to collect 100 eels from each estuarine system studied that is in total 400 to 500 eels. According the results of the landings evaluation, the number of specimens to be collected in the routine data collection will be adjusted.

Recreational fishing

Finally even though no recreational fishing of eels has been recorded, during the pilot program, effort will be done also to record if there is any recreational Eel fishery in the study areas (catches that come from non professional fishermen and not recorded by any state service).

Timetable

All the above activities will be done in 2011 and on the basis of the results of this pilot survey in 2012-2013 a routine data collection will be set up. The results will also allow to propose a complete data collection program for 2011 & 2012.

Implementation

Pilot study will be implemented by the Fisheries Research Institute (FRI). Subcontractors in the western Greece will be the Universities of Patras and Ioannina.

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Annex III: Questionnaire for the collection of data concerning the processing industry

QUESTIONNAIRE

INFORMATIVE ELEMENTS OF COMPANY

NAME:

LOCATION:

ADDRESS:

PHONE:

CORPORATE FORM: a) Individual partnership b) General partnership. c) Limited partnership d) Ltd. e) SA.

SECTOR OF ACTIVITY:

BASICALLY PRODUCED PRODUCTS:

ANNUAL BULLETIN 1

**INCOMES
SALES-FISHES**

	Raw material	Income
	Quantity (tons)	Income (€)
Total		

OTHER INCOME

Write the amount of income from other activities if there exists.

.....

ANNUAL BULLETIN 2

RAW MATERIAL

PURCHASE OF FISH

	Quantity (tons)	Net Value (€)
Total		

ANNUAL BULLETIN 3

ELEMENTS OF EMPLOYMENT OF PERSONNEL AND COST OF PRODUCTION

Category of personnel	Number of person employed	Duration of employment (for seasonal)	Cost (€)
Administrative personnel			
Sales personnel			
Technical personnel			
Personnel of production			
Other categories (for example: imputed value of unpaid labour)			
Total			

ANNUAL BULLETIN 4

Production costs

<i>Expense</i>	Value
<i>Production costs</i>	
Labour	
Energy	
Raw material	
Cost of packaging	
Other running costs	
Total	

ANNUAL BULLETIN 5

FIXED COSTS

Fixed expense	VALUE
Administration and disposal costs	
Depreciations	
Interests due	
Loan installments	
Other costs	
Total	

Extraordinary cost

.....

ANNUAL BULLETIN 6 FINANCING ASSETS OF ENTERPRISES

1. What is the amount of the own capital in the company:

.....

2. What is the amount of borrowed capital in the company:

.....

ANNUAL BULLETIN 7 INFORMATION RELATING TO INVESTMENTS

Investments

Total annual cost:

.....

**ANNUAL BULLETIN 8
SUBSIDIES**

Subsidies

Total annual cost:

.....

Annex IV: Indicative cost of multi-annual national programme 2011-2013.

National programme for the collection, management and use of data in the fisheries sector for the period 2011 - 2013

INDICATIVE COST OF MULTI-ANNUAL NATIONAL PROGRAMME 2011 - 2013) *

- EURO -

Year	Planned eligible expenditure	Maximum Community contribution
2011	4.497.987	2.248.993,50
2012	4.320.010	2.160.005
2013	4.470.682	2.235.341
TOTAL	13.288.679	6.644.339,50

* - to be inserted into the National Programme