

MINISTRY OF AGRICULTURE

CROATIAN MULTI-ANNUAL PROGRAMME FOR  
COLLECTION OF FISHERIES DATA

2014 – 2016

**REVISION FOR YEAR 2016**

Zagreb, 20 November 2015

## **Summary of proposed amendments to the Programme for year 2016**

There are no major methodological changes to the sampling scheme or the financial construction of the Programme. However, the proposed amendment to the Programme is the following:

- I. The transition process from non-commercial category of small scale fisheries for personal needs to the restricted commercial category of small scale artisanal coastal fisheries ended in April 2015. Due to the characteristics of this fishing category this fleet is to be included into the PGP segment - Vessels using polyvalent passive gears only. Therefore in 2016 increased economic data sampling of PGP segments is planned, following the inclusion of around 3500 small-scale vessels to the sampling scheme.

Regarding Reference years, Croatia chose not to update the standard tables, as a complete revision of the programme is planned following EU-MAP in 2016. Croatia updated data in Annual report 2014 reporting tables.

# CROATIAN MULTI-ANNUAL PROGRAMME FOR COLLECTION OF FISHERIES DATA 2014 – 2016

July 2013

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## Index

I. General Framework .....	5
II. Organisation of the National Programme .....	5
II.A National organisation and coordination .....	5
II.B International coordination.....	6
II.C Regional coordination .....	7
III. Module of evaluation of the fishing sector .....	7
III.A General description of the fishing sector .....	7
III.B Economic variables .....	9
III.B.1 Data acquisition .....	9
III.B.2 Estimation .....	12
III.B.3 Data quality evaluation .....	12
III.B.4 Data presentation.....	13
III.B.5 Regional coordination .....	13
III.B.6 Derogations and non-conformities.....	14
III.C Biological – metier-related variables.....	14
III.C.1 Data acquisition .....	14
III.C.2 Estimation and preparation of data for end-users .....	19
III.C.3 Data quality evaluation .....	19
III.C.4 Data presentation .....	19
III.C.5 Regional coordination .....	19
III.C.6 Derogations and non-conformities.....	20
III.D Biological variables – Recreational fisheries .....	21
III.D.1 Data acquisition .....	21
III.D.2 Estimation and preparation of data for end-users .....	21
III.D.3 Data quality evaluation .....	21
III.D.4 Data presentation .....	21
III.D.5 Regional co-ordination.....	21
III.D.6 Derogations and non-conformities.....	22
III.E Biological – stock-related variables .....	22
III.E.1 Data acquisition .....	22
III.E.2 Estimation procedures .....	22
III.E.3 Data quality evaluation .....	22
III.E.4 Data presentation.....	22
III.E.5 Regional coordination .....	22
III.E.6 Derogations and non-conformities.....	23
III.F Transversal variables .....	25

III.F.1 Capacity .....	25
III.F.2 Effort.....	26
III.F.3 Landings.....	29
III.G Research surveys at sea .....	31
III.G.1 Planned surveys .....	31
III.G.2 Modifications in the surveys .....	34
III.G.3 Data presentation .....	34
III.G.4 Regional coordination.....	34
III.G.5 Derogations and non conformities.....	34
IV. Module of evaluation of the economic situation of the aquaculture and processing industry sectors .....	34
IV.A Collection of aquaculture data .....	35
IV.A.1 General description of the aquaculture sector .....	35
IV.A.2 Data acquisition .....	36
IV.A.3 Estimation.....	37
IV.A.4 Data quality evaluation .....	38
IV.A.5 Data dissemination and presentation .....	38
IV.A.6 Regional coordination.....	39
IV.A.7 Derogations and non-conformities .....	39
IV.B Collection of data concerning the processing industry.....	39
IV.B.1 Data acquisition .....	39
IV.B.2 Estimation.....	40
IV.B.3 Data quality evaluation .....	41
IV.B.4 Data dissemination and presentation .....	41
IV.B.5 Regional coordination.....	41
IV.B.6 Derogations and non-conformities .....	41
V. Module of evaluation of the effects of the fishing sector on the marine ecosystem.....	41
VI. Module for management and use of the data .....	43
VI.A Management of the data .....	43
VI.B Use of the data .....	45
VII. Follow-up of recommendations of professional services of the European Commission and STECF recommendations .....	46
VIII. List of derogations .....	46
X. References .....	49
XI. Annexes.....	51
ANNEX I .....	51
ANNEX II .....	52
ANNEX III – Standard tables.....	54

## I. General Framework

The Data Collection Framework was established through Council Regulation (EC) No 199/2008 of 25 February 2008 and Commission Regulation (EC) No 665/2008 of 14 July 2008, which defined the technical issues of the creation, enforcement and methodologies of national fisheries data collection programs. In order to ensure continuity in data collection during the transition from the DCF to the Multi-annual Programme for Data Collection (DC-MAP) which will replace the current DCF, the contents of the 2013 programme were mostly maintained in this programme which is drafted in accordance with the current Data Collection Framework.

The Programme is structured according to the Commission's "Guidelines for the submission of National Programme Proposals on the National Data Collection Programmes under Council Regulation (EC) 199/2008, Commission Regulation (EC) 665/2008 and Commission Decision 2008/949/EC Version 2009" and is composed of two parts – textual and tabular.

## II. Organisation of the National Programme

### II.A National organisation and coordination

#### National organisation:

The national authority responsible for implementing the National Data Collection Programme is the National Correspondent - Ministry of Agriculture, Directorate of Fisheries (MINAGRI/DoF). Details on organizational aspects of the Directorate of Fisheries are contained within the Regulation on the internal organization of the Ministry of Agriculture while the detailed description of the tasks of each administrative unit within the overall organizational scheme of the DoF is contained within the Ordinance on internal order of the MINAGRI.

In Croatia all administrative duties involved in the fishing sector, including monitoring, control and surveillance are undertaken by the DoF. Republic of Croatia has established a system of mandatory collection of fisheries data in line with the requirements of the *acquis*. This includes logbooks, fishing reports, landing declarations and sales notes, as well as the fishing fleet register and the register of issued licenses. These segments are regulated by subordinate regulations which are aligned with the *acquis communautaire*. In 2009, the CBS and DoF signed an agreement, delegating to the DoF all responsibilities related to the production of official statistics for fisheries and aquaculture concerning catch, effort, and production.

Apart from the central office placed in Zagreb, DoF has 7 field offices within each of the 7 coastal Counties (Pula, Rijeka, Senj, Zadar, Šibenik, Split, Dubrovnik). The employees of the field offices are in charge of technical and administrative issues with regards to issuing, registering and administrating the licences (commercial fisheries), approvals (sports and recreational fisheries) and authorisations (small scale subsistence fisheries), entering the data from logbooks and catch reports into the central data base, keeping registers of licences and fleet registers.

DoF coordinates the implementation of the Programme at the national level. The person responsible for overall implementation of the fisheries policy is the Assistant Minister in charge of fisheries issues. Ante Mišura, the Head of Sector for Fleet and Resources Management, has been assigned as DCF National Correspondent for Ministry of Agriculture, DoF, Sector for Resource and Fleet Management.

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Directorate of Fisheries  
Ulica grada Vukovara 78  
10000 Zagreb  
Republic of Croatia

+(385) 1 6106 111  
web: <http://www.mps.hr>

The participating Institutes are:

**Institute of Oceanography and Fisheries (IOF):**

The Institute of Oceanography and Fisheries (IOF) implements monitoring and data collection programmes in the field of fisheries biology. The IOF is a state-owned institution under the Ministry of Science, Education and Sports, covering a wide range of marine-related fields of research including fisheries. It is the only research institution in Croatia with the formal objective of undertaking fisheries research and is the institution in charge of the collection of all the variables for the biological component. PhD Nedo Vrgoč is assigned as contact person for the implementation of the Programme in 2014-2016.

Institute of Oceanography  
Šetalište I. Meštrovića 63  
21000 Split  
Republic of Croatia  
+(385) 2 14 08 000  
[office@izor.hr](mailto:office@izor.hr)

**Central Bureau of Statistics (CBS):**

The Croatian Bureau of Statistics (CBS) is a state administrative organisation, central authority, principal producer, disseminator and coordinator of the official statistics system of the Republic of Croatia. Amongst other duties CBS has the responsibility of maintaining the business register, which is used to identify fish processing establishments for the collection of data. The MINAGRI also has a specific department responsible for the processing industry. Nevertheless, the CBS is the institution responsible for statistical data collection concerning economic variables and socio-economic data in the fish processing industry. Ms Mira Šimanović is assigned as contact person for the implementation of the Programme in 2014-2016.

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**National coordination:**

It is envisaged that the first national coordination meeting is held in January 2014. The main goal of the first national coordination meeting is the practical elaboration of the provisions foreseen in this Programme for its implementation in the year 2014. National co-ordination meetings will be held twice a year (see Table II.B.1). The main aim of these meetings is planning in the forthcoming period(s) and an exchange of experiences on past NP implementation period(s).

**II.B International coordination**

It is envisaged that, for international communication purposes, appointed persons (i.e. relevant technical and scientific staff directly responsible for the collection and/or processing of data from each segment) take part as representatives of Republic of Croatia and partner institutions involved in the implementation of the Programme.

Table II.B.1 summarises all international meetings Croatia plans to attend. Croatia will attend the relevant Regional Coordination meetings to which it is invited. To that end, a specific budget is requested under the heading of “Coordination” in order to encourage participation by the national coordinator or the latter’s representative and the relevant scientific experts at meetings and working groups to be organised at the initiative of the European Commission. Croatia considers that two experts should participate in RCMs. Croatia also intends to participate at meetings organised by other bodies such as GFCM and ICCAT as related to the DCR framework.

## **II.C Regional coordination**

For Regional Coordination the presence of two people at the Regional Coordination Meeting for the Mediterranean Sea and Black Sea (RCM Med&BS) is foreseen under ST.II.1 along with the presence of two researchers on the annual working groups for MEDITS and MEDIAS which are also regionally coordinated and ICCAT Working Group on BFT.

Republic of Croatia has collaborated in the execution of research surveys, including the participation in the MEDITS research surveys and collaboration in the implementation of a resources monitoring programme for small pelagic fish using echolocation within the framework of regional cooperation in the FAO AdriaMed project. This collaboration will be maintained.

## **III. Module of evaluation of the fishing sector**

### **III.A General description of the fishing sector**

The fishery sector accounts for a small part of the total GDP in Croatia. According to the CBS it fluctuated at around 0.2-0.7% in 2011. But this figure reflects only fishing and aquaculture production, the other fisheries related activities such as fish processing, port services, and recreational fishery are not accounted for.

Capture fisheries are dominated by small pelagic species, accounting for about 80% of catches in 2009. Sardine and anchovy dominate the pelagic catches (although not the last figure available, the catches reached 55,000 tonnes in 2009). Additionally, tuna farms represent a significant channel of placement of catch of small pelagic fish, and in recent years the segment of the processing of anchovies and sardines has grown.

The main target species of the demersal fishery are hake, red mullet, norwegian lobster and musky octopus. They represent a major part of demersal catches, taken mostly by bottom-trawl, but it is important to point out that total catches are not high (for example, catches of species such as pandora – *Pagellus erythrinus*, Norway lobster - *Nephrops norvegicus*, musky octopus – *Eledone spp.*, and deep water rose shrimp - *Parapenaeus longirostris*). The main target species in pelagic fisheries are sardine, anchovy and bluefin tuna, whereby bluefin tuna is by large not landed but captured live for further farming.

It should be noted that most of the commercial fleet is constituted of relatively small vessels with limited engine power (on average 66 kW and 11 GRT). It is estimated that below 5% of total catches come from outside territorial waters, beyond 12 nm. Commercial fisheries are generally categorized as follows:

Demersal fisheries using trawl and bottom longline, involving roughly about 400-500 vessels, some of which are larger vessels capable of going beyond territorial waters.

Pelagic fisheries using purse seine involving roughly 500 vessels, most of which target small pelagics while some of the larger vessels target bluefin tuna during the season (25 May – 25 June)<sup>1</sup>.

Coastal fisheries (or small-scale fisheries) using a variety of gears including gillnets, trammel nets, longline, seines, traps, pots (more than 50 gears specified in the DOF fleet register) with roughly 3,000 vessels belonging to this category.

The Marine Fisheries Act (OG 81/13) distinguishes between commercial and non-commercial fishing. Non-commercial fisheries at sea include sport, recreational fisheries and fishing for scientific purposes. Commercial fisheries encompass commercial fisheries *sensu stricto* and the category of small scale coastal fishery, which is limited in terms of gears and manner of operation. Small scale artisanal fisheries for personal needs, a non-commercial fishery category, ceases to exist with 1 January 2015, and a limited number of authorized holders will pass to the category of small scale coastal fishery. The Fishing Fleet Register of Croatia includes 4270 vessels (according to 2012 data) in the commercial fisheries category, and further some. From the previous category of subsistence fisheries 3500 vessels have entered into the commercial fleet register, following the provisions of the Accession Treaty of Croatia. Given that the vessels have entered into the commercial fisheries category during the period 2012 and 2013, they shall be taken into account in the future revisions of the programme.

#### **2015 Update:**

Pursuant to accession negotiations, the transition process from non-commercial category of small scale fisheries for personal needs to restricted commercial category of small scale artisanal coastal fisheries, ended in April 2015. However, the issuing of the corresponding licences is still ongoing and expected to be finalised in the course of 2016. Due to the characteristics of this fishery category (licence holders are not full-time fishermen, they do not depend on fishing activity and only perform it in very specific places and in very specific times, they use only restricted set and number of passive gears) this fleet is to be included into the PGP segment - Vessels using polyvalent passive gears only. This fleet segment operates with the following fishing gears: gillnets (up to two gillnets not exceeding 200 m of length in total per vessel/licence), traps (up to 3 pieces per vessel/licence), spears (up to two pieces per vessel/licence), bottom longline (up to two pieces not exceeding 150 hooks in total), traps for catching Polychaeta (up to two pieces per vessel/licence) and hand lines.

All licence holders are obliged to submit the catch reports on a monthly basis and are allowed to catch up to 5 kg (+ one capital specimen) per day per vessel.

As Croatia, prior to its accession to the EU, had a very specific problem of having a category of a non-commercial fishery that needed to be registered in the commercial category, pursuant to the regulations in force, this element of the fleet presented a particular challenge. As these vessels' licence holders are not full-time fishermen, nor do they depend on fishing activity and only perform it in very specific places and in very specific times, these vessels were not included in official data collection programme in prior years. Croatia is fully aware that the issue of inclusion of these vessels in future analysis will have to be tackled. All these vessels fall under the polyvalent passive gear segments, but they are not full-time engaged in the fishery and most of them remain inactive.

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<sup>1</sup> Season is depending on the ICCAT Recs.



Croatia is aware of the deficiencies of data stemming from the fact that vessels previously categorized as “small-scale for personal needs” were not included in the analysis. However, due to a prolonged administrative and legislative procedure, the transition process of their full registration ended only in April 2015. Taking into account the above mentioned constraints, Croatia was not able to conduct the required data gathering in order to include relevant data collection in previous years.

Upon entry into the commercial fleet, the vessels previously operating for personal needs are still kept as a ring-fenced category, with specific requirements and constraints. Owners of the licenses for this particular fleet are not envisaged to be beneficiaries of public aid. The catches of this particular fleet element and their possibilities to market the fish as well as the gears allowed are strict and technical measures foresee the possibility to exercise this activity on a very local scale. However, as this has been the traditional category existing prior to the accession, the social needs were of particular concern. With all constraints of the operation of this fleet and their particular social and traditional characteristics, it may not be expected that they are economically viable, and the activity they have does not show indications as to the substantial impact on the resources (given their very sporadic and very limited catches and manner of operation). Albeit their number might indicate importance, this is assessed as a skewed indication since their overall activity does not correspond to the activity of the fishermen that are engaged in full or even half-time fisheries.

Subsequently, collection of transversal data for this segment of the fleet started in mid-2015 and first preliminary data shall be available at the beginning of 2016. Preliminary economic data, for data collected in 2016, shall be available in early 2017. Therefore, transversal data shall be shown in 2016 for reference year 2015, and economic data in 2017 for reference year 2015.

Like other Mediterranean countries, fisheries management is based largely on the use of technical measures including minimum landing sizes, minimum catch sizes, mesh size regulations, closed seasons and areas as well as restrictions on gears, which are aimed primarily at the protection of juveniles<sup>2</sup>. However, regulations are difficult to enforce due to the geography of the country, the large number of fishermen and landing sites as well as limited capacity in terms of funding and human resources. It is necessary to further strengthen the inspection system and control of catch and landing.

### **III.B Economic variables**

Economic variables included in this Programme are collected in accordance with the requirements of the *acquis*.

#### **III.B.1 Data acquisition**

##### **(a) Definition of variables**

Definitions of all economic variables that will be collected are in accordance with Council Regulation (EC) No 199/2008, and Commission Regulation (EC) No 665/2008, and Commission Decision No 2010/93. The following are the definitions of variables that are used in this segment.

**Direct subsidies:** Operating subsidies received from public authorities or the institutions of the European Union which are excluded from turnover, *including* compensations for stopping fishing (temporary cessation), refunds of fuel duty or similar lump sum compensation payments, *excluding* social benefits payments, indirect subsidies, e.g. reduced duty on inputs such as fuel, investment subsidies, and premiums for permanent cessation of the vessels.

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<sup>2</sup> The only stock managed on the basis of quotas (TACs) is the bluefin tuna fishery.

**Other income:** Income classified as other operating income included in company accounts which are excluded from turnover; includes other income from use of the vessel, e.g. tourism, also insurance payments for damage/loss of gear/vessel.

**Imputed value of unpaid labour:** can be relevant in the case of small and medium enterprises managed at family levels. It could be calculated for all individual enterprises which provide the data about unpaid family members engaged in the sector. The calculations will be based on the employment information (number of family members involved in the operation) and the average of “paid labour costs” calculated for the sector.

**For the calculation of national FTE (Full Time Equivalent):** the number of hours/weeks worked during the year will be collected from the enterprises through the economic questionnaire and fishing reports. This parameter will be divided by national annual full-time working hours, which is based on the CBS methodology according to which the working hours in Croatia should be 2084 hours.

**Capital costs:** are to be calculated in accordance with PIM methodology, using methodology proposed in the report of study No FISH/2005/03. The age data is available per each vessel in the Fleet register. The data on the value of physical capital (replacement, insurance and purchase are to be collected through the questionnaire by DoF). The proposed DCF Excel template for the calculation of the capital costs will be used.

**Value of quota and other fishing rights:** refers to the value of rental, lease and sale of fishing rights to use quotas. In Croatia this system applies only to tuna fishing.

**Calculation of fuel efficiency of fish capture:** The data on the consumption of blue diesel is collected on a census basis from all enterprises, using this kind of fuel. This information covers 76% of active vessels and 84% of effort, however additional information on other forms of fuel is to be collected within the questionnaires. The time lag for fuel costs and consumption is 1 year as for economic data collection (the data for 2013 will be collected in 2014). However information on blue-diesel consumption is collected during the same year and available on the monthly basis. The parameter fuel efficiency of fish capture will be calculated in accordance with DCF and STECF recommendations.

The data sources to be used for those data collection are identified in the ST III.B.3.

#### **(b) Type of data collection**

Effort, capacity and catch information is fully covered by DoF and will be collected on the census basis. Other economic variables will be collected by questionnaires; the type of data collection scheme in this case will be stratified random sampling, or probability sample survey as defined in the Guidelines for the submission of NPs.

The type of data collection for each variable is presented in the ST III.B.3.

#### **(c) Target and frame population**

The basis for fleet segmentation and economic data collection is the Fleet register of the 1<sup>st</sup> of January and activity of the vessels during the year. The vessel has to be attributed in accordance with its activity during the year. When the vessel uses certain gear for more than 50% of fishing days, it is attributed to the particular vessel group. When it uses several different gears during the year and it is not possible to attribute it to any of the groups (none gear is used > 50% of fishing days) it has to be attributed to the polyvalent group.

Following STECF plenary recommendations of July 2010 “MS should collect economic and transversal data regarding the fishing fleet for all fishing vessels in the vessel register during the reference year, instead of only collecting data on vessels in the fleet register on the 1st of January in

the relevant reference year“, the Croatian population will be adjusted by the vessels entering the fishery during the reference year (2009 for the first year of implementation), consistent with the data in the Fishery Information System (FIS) administered by DoF (the data is collected from logbooks, fishing reports, landings declarations and sales notes).

All fleet segments identified in accordance with their activity are listed in the ST III.B.1. The frame population is the same as the target population.

There were several vessel groups with less than 10 vessels in each. For the purpose of DCF those groups were clustered in accordance with the length classes (see ST III.B.2). There were also a few vessels with unique fishing techniques. They were attributed to the segments in accordance with the effort during the year and second gear used.

#### **(d) Data sources**

Collection of the economic variables of the Croatian fleet will be based on several major data sources:

- Fishery Information System (FIS) administered by DoF (all transversal variables and volume and value of blue diesel consumed per vessel is collected in the database; information regarding subsidies will be provided by Paying Agency for Agriculture, Fisheries and Rural Development and also stored in FIS) and other local sources;
- Questionnaires for economic data collection.

The information on data sources used to collect each variable per segment is provided in ST III.B.3.

The consistency of information coming from questionnaires and administrative sources will be assured by adding information on volume and value of landings in the questionnaire in order to be able to cross check the information.

#### **(e) Sampling frame and allocation scheme**

##### ***Type of sampling strategy***

The stratified random sampling will be used to collect the data.

##### ***Further stratification within fleet segment***

No additional stratification within the fleet segments is foreseen.

##### ***Determination of sample size for each fleet segment***

In order to estimate the sample size for the collection of economic variables, the variability of GT and kW has been calculated. Coefficient of GT variation has been used as basis to define the sample size of the total fleet. Precision level 2 was defined as a target for the collection of missing economic variables.

The sample was distributed among the relevant strata with the principal objective of minimizing the sampling error to be obtained for the stratification variable. The optimum Neyman allocation, which guarantees a minimum variance for the variable used in the stratification, was used for this purpose.

The sample size for each stratum has been adjusted in accordance with several minimum rules: not less than 10% of each stratum, not less than 5 observations per segment with <50 active vessels assuming the response rate of 50%. The planned sample size of each stratum is presented in the ST III.B.1. According to the distribution of the GT few segments need to be sampled on census basis.

##### ***Sample evolution over time, rotation groups***

It is planned that random samples be used and the sample size adjusted in accordance with the response rate during the implementation. The possibility of using panel with rotation could be evaluated after the first results of the implementation of this NP.

### III.B.2 Estimation

#### ***Estimation methods from sample to population***

The ratio estimators will be used as rising factors to estimate the totals of economic variables for all segments. It is not clear at the moment which variable is better suits as rising factors. Two possibilities could be explored during the first years of implementation:

- value of landings;
- GT days/kW days/GT (kW days for fuel consumption and fuel costs; GT days for other variables, depending on the activity of the vessel; GT variables, depending on the size of the vessel and not depending on the activity of the vessel).

The general formula for the estimation of totals is:

$$X_j = \frac{\sum_{i=1}^n x_i}{\sum_{i=1}^n r_i} * \sum_{i=1}^{n+k} r_i$$

Where:

$X_j$  – estimation of total variable;

$x_i$  – collected variable of the sample;

$n$  – sample size;

$n+k$  – population;

$r_j$  – rising factor.

#### ***Imputation of non-responses/Non-response adjustments***

The same rising factors, which will be used for the estimation of totals will be used to estimate missing variables, in case some variables are missing in the responses. However as the data will be collected by interview the questionnaires are expected to be reasonably complete.

### III.B.3 Data quality evaluation

To ensure the quality of data collected accuracy and variability of the data that will be calculated. The data quality evaluation depends on the data collection scheme. The full list of indicators per variable is presented in the ST III.B.3.

In all cases (census and probability sampling) unit response rate (number of enterprises responded/total sample) and item response rate (response rate per each variable) will be calculated.

The formula is as follows:

$$r_j = \frac{n}{N} * 100 \%$$

$r_j$  - Response rate (per item j);

$N$  – Total number of vessels in the sample;

n – Number of vessels which provided the data (questionnaire/per each variable).

The coverage rate (number of responses/total population) will be also calculated in case of probability sampling survey.

The Coefficient of Variation (CV) will be calculated in the case of probability sampling survey and in the case if census response rate will be below 70%.

The coefficient of variation (CV) is defined as the ratio of the standard deviation  $\sigma$  to the mean  $\mu$ . The calculation formula is:

$$CV = \frac{\sigma}{\mu}$$

### III.B.4 Data presentation

During the implementation of the Programme, data will be collected and processed by the end of each year. The time lag for economic data collection is expected to be 1 year.

### III.B.5 Regional coordination

In this segment, the recommendations of the working bodies of the European Commission were taken into account in the development of this Programme.

No.	RCM recommendation	Responsive actions
1.	STECF plenary recommendations of July 2010 “MS should collect economic and transversal data regarding the fishing fleet for all fishing vessels in the vessel register during the reference year, instead of only collecting data on vessels in the fleet register on the 1st of January in the relevant reference year“	Accepted and followed.
2.	<b>RCM MED &amp; BS 2010</b> Special comments: - The economic subgroup suggests that the opportunity and the necessity to establish fishing agreements with third countries in the Black Sea area/region (GSA 29) be taken into consideration. - The economic subgroup recommends to MS to reinforce the EU legislation, in order to oblige stakeholders to submit the requested information and then to improve the data collection under DCF.	Croatia, as assessing EU country, agrees to the proposal.
3.	The <b>RCMMed&amp;BS 2010</b> recognise that the clustering procedure, when performed, must strictly follow the statistical methodology. The guidance drawn up by SGECA, setting out the different approaches, should be followed. Further work be undertaken at a regional level, through the RCMs.	Followed during the preparation of NP.
4.	The <b>RCMMed&amp;BS 2010</b> recommends that MSs perform checks on the quality of their data and that further work be undertaken before RCMs in order to facilitate the recommended comparability checks within regions.	Will be followed.
5.	In addition to the ToRs proposed by SGECA 2009-02, <b>RCMMed&amp;BS 2010</b> recommends evaluation of the methodological reports and checking of the practice of MSs related to the types of data collection. Furthermore, the subgroup proposes more detailed information on how MSs calculate the quality indicator	The information is presented in the current document.

No.	RCM recommendation	Responsive actions
	(CV) in their NP.	
6.	The <b>RCMMed&amp;BS 2010</b> recommends that clear guidelines should be identified for storage and provision of metadata. The RCMMed&BS recommends SGECA/DCF 2010 that guidance be developed as to what the definition, storage and provision of metadata by MSs should cover.	Croatia is interested in the results of the work.

### III.B.6 Derogations and non-conformities

At the time of preparation of this document, results from the first years of implementation of the DCF in Croatia are not yet available. As there was no economic data collection, matching DCF requirements prior to 2012.-2013. period, problems encountered during implementation and collection of questionnaire based data shall be used in adjustments of the NP in the following years.

The sample size for the fleet survey is defined in accordance with GT variance; however variability of economic indicators could be higher.

### III.C Biological – metier-related variables

#### III.C.1 Data acquisition

##### (a) Codification and naming convention

The metiers presented in ST III.C.1 follow the codification and naming convention adopted in 2009 by the working bodies of the European Commission for the Mediterranean Sea (RCM Med&BS 2009). The MISC metier is further disaggregated at national level, as presented in ST III.C.2.

##### (b) Selection of metiers to sample

The basis for the selection of metiers was 2010 data<sup>3</sup> from the databases (FIS) maintained by the Directorate of Fisheries. This includes detailed data on a vessel basis with catch, effort and value information coming from logbooks, fishing reports and sales notes. Disaggregated data are available on gears, mesh size, fishing zones, time periods and target species.

National legislation adopting the international codes for the fishing gears has entered into force in the beginning of 2011. As a direct consequence, the methodology for the segmentation of fisheries data into metiers will need to be revised in order to settle on a routine that is based on some criteria being pre-identified and parameterised (gear, mesh size, target species, fishing zone and fishing period) and which will characterise each vessel trip in terms of its metiers classification.

#### **Brief description of selected metiers**

While defining the métiers for the needs of the Programme all of defined criteria were taken into consideration. Métiers were determined according to the data from 2010. The following is a brief description of the métiers specified for sampling and implementation of the Programme.

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<sup>3</sup> Due to the recent development of the Fisheries Information System, 2009 data is considered to have the almost complete coverage of fishing activity in Croatia. However, as 2010 data is the most recent complete and validated set of data, it was therefore used as a basis for the selection of métiers and was used to structure the sampling plans.

**OTB\_DEF\_>=40\_0\_0:** bottom trawling for demersal species. The primary target species of this metier are red mullet (*Mullus barbatus*), hake (*Merluccius merluccius*), horned and musky octopus (*Eledone cirrosa* and *Eledone moschata*), Norway lobster (*Nephrops norvegicus*) and deep-water rose shrimp (*Parapenaeus longirostris*). Species composition varies depending on the fishing zone (Annex 1, Figure 1). In fishing zone A (off Istria), octopus and other cephalopods as well as sole (*Solea vulgaris*) and red mullet are particularly important. In fishing zone C which can be considered to be an outer zone, further offshore, hake and Norway lobster dominate the catches to a larger extent. Catches in inner seas (ex. fishing zones E and G) are dominated by hake, red mullet, and octopus, but in the northern area (zone E) Norway lobster is also important while in the southern area (zone G) other species are caught such as anglerfish, rays and sparids. The fishing zone beyond the territorial waters (zones H, I, J, K) are characterised by low fishing activity and catches due to fleet limitations (i.e. small vessels and limited engine power).

**GNS\_DEF\_>=16\_0\_0:** set gillnets for demersal species. This metier is a grouping of various traditional gillnets used in small-scale fisheries. The most important are called *prostica*, *psara* and *bukvara* which are similar but of different mesh sizes. Overall, catches are dominated by hake, bogue (*Boops boops*), horse mackerel (*Trachurus spp.*), picarel (*Spicara maena*), dogfish (*Mustelus mustelus* and *Squalus acanthias*) and mullets (*Mullus spp.*). Species composition varies depending on area and mesh size. Fishing activity is carried out almost exclusively in inner seas. In 2011 the new coding system formally subsumed these gears under the same summary code.

**PS\_SPF\_>=14\_0\_0:** purse seine fishery for small pelagics. The main targets of this metier are sardine (*Sardina pilchardus*) and anchovy (*Engraulis encrasicolus*) with some catches of mackerel and horse mackerel with the purse seine called *srdelara*. A small part of this fishery incorporates the purse seine called *igličara* with the mail target species *Belone belone*. This fishery is carried out in inner seas and territorial waters as a part of traditional fishery.

**GTR\_DEF\_>=16\_0\_0:** trammel nets for demersal species. This metier is a grouping of two main traditional trammel net types used in small-scale fisheries. The type called *listarica* is used predominantly in the Istria area to catch sole (*Solea vulgaris*). The other type is called *poponica* which is used in inner seas to catch various species including cephalopods, scorpion fish, hake, dogfish, and sparids. In 2011 the new coding system formally subsumed these gears under the same summary code.

**MISC:** This is a grouping of different traditional and lesser gears, used almost exclusively in internal waters and only partially in territorial seas. It is a mixture of different gears which could not be attributed to other metiers as per regional classification as they differ in characteristics and target assemblages. Species caught by this metier include a mixture of fish, molluscs, sponges, bivalves and other organisms. At the national level the MISC metier was further stratified per gear used and target species. This has been presented in ST III.C.2. These include:

- **MISC\_SPO/MOL\_\_0\_0:** miscellaneous gears for gathering activities of algae, sponges, molluscs and other species. Main target species are sponges, *Venus verrucosa*, *Arca noae*, *Mytilus galloprovincialis* and other bivalves.
- **MISC\_CEP\_\_0\_0:** harpoon for cephalopods. The main target species are *Octopus vulgaris*, *Sparus aurata* and *Loligo vulgaris*.
- **MISC\_SPF\_>=16\_0\_0:** shore seine in national fisheries called *srdelara* that targets small pelagic species, and in particular *Sardina pilchardus*, *Engraulis encrasicolus* and *Scomber japonicas*.
- **MISC\_DEF\_\_0\_0:** miscellaneous gears for collection of demersal species, mainly *Oblada melanura*, *Mullus barbatus*, *Sarpa salpa* and *Merluccius merluccius*.

- **MISC\_DEF\_>=52\_0\_0:** purse seine targeting demersal fish and mainly *Mugilidae*, *Oblada melanura* and *Sarpa salpa*.
- **MISC\_WOR\_\_0\_0:** great worm harvesting targeting *Polychaeta*.
- **MISC\_DEF\_>=10\_0\_0:** purse seine called *oližnica* for demersal fish.

Ranking by effort selected the following nationally defined metiers for which an exemption is requested:

**MISC\_SPO/MOL\_\_0\_0:** This metier includes a diverse group of activities that are performed in order to gather shellfish and sponges, including hand gathering and gathering with miscellaneous gears. The catches are very small, and the participants dispersed across the Adriatic coast, making it difficult to properly structure the sampling scheme and requiring a specific approach to the issue. Given the constraints in sampling of this metiere, and the disproportionate amount of human and technical resources that would need to be engaged in the scheme, an exemption is requested for 2014. During the implementation of the Programme in 2014 an analysis shall be undertaken on the possibilities of development of a sampling scheme/pilot project to adequately address the issue in the following years.

**MISC\_CEP\_\_0\_0:** Weight and value of the catch of this metier is small and it accounts for only 0.14% of total landings in weight and value according to the statistics derived from the logbook and sales notes data, with varied catch of cephalopods and demersal fish (*Octopus vulgaris*, *Sparus aurata*, *Loligo vulgaris* etc). The catch is done from the coast or with small vessels (impossible to board in order to perform analysis) while the majority of fishermen involved use the gears only as supplementary gears while performing their main fishing activity, catching a few specimens per trip.

For the aforementioned metiers the derogation is requested considering the costs involved in monitoring of these activities which account for negligible catch volumes and value, as well as the fact that the majority of fisherman use these fishing gears as additional gears during their main fishing activity. These metiers were selected per effort alone, and not on catches or value. Given the distribution of the fleet and the fact that most of these metiers are linked with small scale coastal fisheries, the costs of sampling would by far exceed the reasonable limits. Croatia is aware of the necessity to take into account the metiers which were selected as per any of the parameters and shall in the future address this issue. During 2014 the possibilities of development of an adequate scheme/pilot project shall be explored in order to assess the impact and relevance of the metieres and details on the duration of the pilot studies and when the results are to be expected shall be given when revisiting the Programme. It is expected that the pilot studies in the duration of six months shall start in May 2014 and shall cover field sampling and questionnaires regarding the two metieres. The results of the pilot studies are expected by the end of 2014.

**FPO\_DEF\_0\_0\_0:** pots and traps for demersal species. The main target assemblages are crustaceans (*Nephrops norvegicus*) and finfish. This metier was selected per effort alone as well.

**LLS\_DEF\_0\_0\_0:** set longlines for demersal fish. The main target species are *Merluccius merluccius*, *Triglidae* (*Trigla lucerna*, *Aspitrigla cuculus* and *Eutrigla gurnardus*) and *Conger conger*. This metier was selected for sampling by effort (4,7% of total effort), although the catch of this metier is small, as is the value of the catch (0,3% of total landings and 0,3% of total value of landings). Set longlines are used mainly by professional fishermen as a supplementary gear or on board small vessels.

**LHP-LHM\_CEP\_0\_0\_0:** Hand and Pole lines for cephalopods. The main target species are *Octopus vulgaris*, *Loligo vulgaris* and *Sepia officinalis*.

**SB-SV\_DEF\_0\_0\_0:** beach and boat seines for demersal species. This is also a grouping of various traditional beach seine gears in use in the small-scale fisheries. However, the type called *migavica*



dominates with a varied catch composition including picarel (*Spicara spp.*), bogue, horse mackerel, red mullet, and various sparids. The remaining beach seines listed per share in the effort are *girarica* with the main target species *Spicara smaris*, *oližnica* with the main target species *Atherina boyeri* and *igličara* with the main target species *Belone belone*. This fishery is carried out predominantly in inner seas.

**LHP-LHM\_FIF\_0\_0\_0:** Hand and Pole lines for finfish. The main target species are *Diplodus vulgaris*, *Sardina pilchardus* and *Sparus aurata*.

**PS\_LPF\_>=14\_0\_0:** this concerns the larger purse seiners targeting bluefin tuna using individual quotas. The fishing season is restricted to one month per year (25 May – 25 June)<sup>4</sup> and a Regional Observer Programme monitors all vessels under current ICCAT regulations. In general, landings from this metier are not significant, but it should be noted that Croatia operates a BFT fishery which is based on farming activities. In practice, this means that BFT is not landed but transferred live into cages. This metier shall be covered by all relevant monitoring and data collection activities as per ICCAT Recommendation. Given that only a small percentage (less than 5%) of the fish is landed, all measurement shall be based on stereoscopic camera to evaluate the length-weight compositions of the fish. This metiere was selected due to the international obligations and not as per any of the predetermined parameters, and in order to follow ICCAT recommendation (ref. RCMMed&BS 2009 and 2010 agreement) in order to ensure regional coordination in the sampling of BFT PS.

**LLD\_LPF\_0\_0\_0:** Drifting longlines for large pelagic. Although this metier was not selected by the ranking system and it accounts for only 0,04 % of effort and 0,006 % of landings, it is selected for sampling following ICCAT recommendation (ref. RCMMed&BS 2009 and 2010 agreement) in order to ensure regional coordination in the sampling of drifting longlines. The metier is thereafter disaggregated into two metiers defined at level 7, as shown in ST III.C.2 and ST III.C.3:

- **LLD\_LPF\_0\_0\_0 BFT:** Drifting longlines for large pelagic targeting *Thunnus thynnus* - bluefin tuna; and
- **LLD\_LPF\_0\_0\_0 SWO:** Drifting longlines for large pelagic targeting *Xiphias gladius* - swordfish.

It must be noted that catches of bluefin tuna as a target or secondary species must be monitored in detail in order to implement the recovery plan for this species, therefore it is subject to monitoring and control measures in accordance to the Marine Fisheries Act and in line with the provisions of the ICCAT Recommendations. However it should also be noted that Croatia operates under Annex I of the ICCAT Recommendation on the Recovery Plan of BFT, meaning that small tuna is encircled live and towed into farms for further growing. Stereoscopic cameras are used to assess the length-weight ratio on small fish, as per ICCAT Rec provisions. Croatia does not operate albacore fishery, which is why no disaggregation to this metier was suggested.

### **(c) Type of data collection**

All planned sampling is based on a probability sample survey. The use of observers for at-sea sampling has the primary objective of estimating discard rates, as well as collecting data on catches and carrying out length sampling of the retained catch and discards. The choice of sampling scheme 2 when considering the three metiers selected for on-board sampling (OTB\_DEF\_>=40\_0\_0, PS\_\_SPF\_>=14\_0\_0, SB-SV\_DEF\_0\_0\_0) is related to limitations on working conditions on-board. It should be noted that most of the fishing fleet is constituted of relatively small vessels with limited engine power (on average 66 kW and 11 GRT). As a sampling strategy will have to be re-defined in

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<sup>4</sup> as per footnote 2

connection with the implementation of the DCF, it is not possible to determine beforehand what will be optimal value of “x%”.

As per RCMMed&BS 2010 agreement, the following metiers are considered to be the ones where discard sampling is not requested: FPO\_DEF\_0\_0\_0; LHP-LHM\_CEP\_0\_0\_0 and LHP-LHM\_FIF\_0\_0\_0

References are to be provided for the following metieres: GNS\_DEF\_>=16\_0\_0; PS\_SPF\_>=14\_0\_0; GTR\_DEF\_>=16\_0\_0; LLS\_DEF\_0\_0\_0 and PS\_LPF\_>=14\_0\_0. Croatia shall undertake to assess at national level the levels of discards in these metiers in the following years. For all the sampled metiers discards shall be evaluated and sampled as per possibilities of on-board sampling.

The shore-based sampling will be carried out for all metiers, taking into account spatial and temporal stratification.

#### **(d) Target and frame population**

ST III.C.4 summarises the sampling strategy for each metier.

The definition used of the target population is the total number of fishing trips and the frame populations are the sampling units. The sampling frame considers various sampling areas, defined on the basis of observed fishing activity, as well as seasonality, which are generally monthly samples (not including closed fishing seasons), in order to obtain quarterly estimates of the relevant variables.

#### **(e) Sampling stratification and allocation scheme**

To carry out concurrent sampling in the selected metiers, different strategies will be adopted depending on the possibility of gaining access to landing sites and first-sale markets. Sampling scheme 1 will be used for all such sampling.

The sampling unit is the fishing trip, in general has a duration of one day for most metiers.

For OTB\_DEF\_>=40\_0\_0, existing data was used to estimate the quality of data and determine approximate sampling targets, which may need revision during the implementation of the DCF. Allocation of sampling targets according to strata will be based on variability of parameter estimates.

For other metiers, the basic requirement of sampling one fishing trip for each month during the fishing season was used in conjunction with information on activity by area.

ST III.C.5 shows the sampling intensity for length compositions. In some cases, the total number of specimens that need to be sampled in order to achieve the precision levels at a stock level has not been calculated, this is because the information necessary to make that calculation, on the basis of the CV, is not available. This calculation will be made based on the results of the 2012-2013 Programme.

It should be noted that the fishing of tuna in Republic of Croatia is mostly intended for farming, therefore the sampling of métier PS\_LPF\_>=14\_0\_0, in terms of how it is envisaged in the other métiers, is not possible. This whole métier is covered by regional or national observers, and the length-weight relationship as well as the number of fish captured is determined by way of underwater stereoscopic camera, in line with the relevant provisions of the ICCAT Rec. Furthermore, all farming and harvesting activity is covered by national and regional observers. Assessment of length composition will partly be carried out on dead specimens (mortality). It should be noted that Croatia has a very small percentage of landings as it uses the live tuna for farming purposes.

**Fisheries for eels:** Eels are not a target species of commercial fisheries in Republic of Croatia and are therefore not considered relevant for sampling purposes. Total catches of eels in 2009 amounted to less than 100 kg, and mostly as accidental catches on occasional situations. The FYK\_CAT metier was created using the available data on fyke nets which accidentally caught eels, and although the catches are 0.8 tons per metier, it should be noted that some 5% of the figure is attributed to eel.

Given the sporadic character of the accidental catches and non-existence of the fishery, during 2014 the possibilities of development of an adequate sampling scheme shall be explored interviewing fisherman in order to assess the future addressing of the metiere.

### III.C.2 Estimation and preparation of data for end-users

The methodology used for the estimation and raising of discard estimates was the “Workshop on Discard Sampling Methodology and Raising Procedures. Danish Institute for Fisheries Research. October 2003”. For length and age structure of the catches, the reference was “Jardim, E. 1999. Analysis of sardine sampling data - coefficient of variation. Relatórios científicos e técnicos nº 37; IPIMARAs”, which is based on previous work by Flatman (1990; Biological sampling targets and the precision of estimated age compositions. MAFF Direct. Fish. Res., Lowestoft, 21, 65p.).

These methodologies were used to make a statistical evaluation of OTB\_DEF\_>=40\_0\_0 monitoring data, but due to various constraints a number of assumptions had to be made. The results are thus considered to be preliminary. These estimation procedures will have to be refined in the course of implementation.

### III.C.3 Data quality evaluation

A thorough evaluation of data quality has not yet taken place and will have priority during the implementation of this NP. Available data from the monitoring of the OTB\_DEF\_>=40\_0\_0 metier was used to obtain approximate indicators of data quality and sampling targets, but this will need revision. However, for other metiers it was not possible to determine data quality, thus the need for pilot studies to address these issues. Procedures on validation and quality checks will need to be developed.

### III.C.4 Data presentation

The final checked and validated data about métier-related variables will be available to send to and to use in GFCM working groups and other potential end users (i.e. ICCAT, EU, SGMED and RCMMed&BS) with a time lag of one year after data collection. The time lag between collection and presentation of preliminary data will be about three to six months depending on the working group after the first year of implementation. The final checked and validated data will be available to all potential end users

### III.C.5 Regional coordination

Activities to be carried out in cooperation with other European Mediterranean countries will be discussed in the context of the RCM Mediterranean and Black Sea.

In this segment, the recommendations of the working bodies of the European Commission are taken into account in the development of this Programme.

RCM recommendation	Responsive actions
RCMMed&BS recommends all MS to follow strictly the métiers reference list established at the regional level (RCMMed&BS 2009 report). If the combination between gear and target assemblage does not correspond to an identified reference metier of level 6, the national metier must be registered as a Miscellaneous one (Misc.), ranked as the other metiers and described in the NP and the required forms if sorted by the ranking system.	Accepted and followed.
RCMMed&BS recommends all MS to follow strictly the SGRN guidelines in terms of coding and naming conventions and also the reference lists of metiers established by the RCM at the regional level. Technical tables must be filled in English.	Accepted and followed.
RCMMed&BS recommends all MS to complete their national table III.C.1 (in compliance with the Guidelines 2009) to assess the real national and regional importance of each metier identified by MS in	Accepted and followed.

RCM recommendation	Responsive actions
conformity with the DCF regulation.	
For the purposes of ranking métiers to sample, National data on effort, landings and value by métier and fishing ground should be compiled regionally in advance of the next meeting. To enable this, participants from MS should strictly respect the agreed naming conventions of fishing ground, métiers and units of the variables as well as the deadline for submission of the national data.	Accepted and followed.
The RCMed&BS recommends that all the Mediterranean countries that are not performing biological samplings on eel ( <i>Anguilla anguilla</i> ) 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.	Accepted and followed.
RCMMed&BS recommends to strictly following the output of the proposed table made up in the PGMed 2010 for the métiers to sample for discards.	Accepted and followed. In some cases (GNS & GTR & LLS) this will be addressed through pilot surveys to ascertain discard levels.
RCMMed&BS 2009 and 2010 recommendation of level 7 on large pelagic species in accordance with ICCAT recommendation regarding métier LLD_LPF_0_0_0.	Accepted and followed.

### III.C.6 Derogations and non-conformities

In 2014 Croatia applies for derogations for the following métiers listed below.

MISC\_SPO/MOL\_\_0\_0 (this métier belongs to the category MISC): miscellaneous gears for gathering activities of algae, sponges, molluscs and other species. It was selected by effort (4,8 % of total effort) but has a 0,2 % of total landings and 0,2 % of total value of landings and therefore exemption is requested. This métier includes a diverse group of activities that are performed in order to gather shellfish and sponges, including hand gathering and gathering with miscellaneous gears. The catches are very small, and the participants dispersed across the Adriatic. The target species differ significantly from area to area, and therefore monitoring of this métier would be extremely expensive, while the value of the catch is small. Monitoring would likely be more expensive than the catch.

MISC\_CEP\_\_0\_0 (this métier belongs to the category MISC): harpoon for cephalopods. This métier was selected for sampling by effort (3,1 % of total effort), however weight and value of the catch of this métier is small and it accounts for only 0.14% of total landings in weight and value according to the statistics derived from the logbook and sales notes data, with varied catch of cephalopods and demersal fish (*Octopus vulgaris*, *Sparus aurata*, *Loligo vulgaris* etc). The catch is done from the coast or with small vessels (impossible to board in order to perform analysis) while the majority of fishermen involved use the gears only as supplementary gears while performing their main fishing activity, catching a few specimens per trip. A monthly analysis of the small amount of catch per trip is too costly for the analyses to result in relevant conclusions, therefore exemption is requested.

Furthermore, regarding MISC\_SPO/MOL\_\_0\_0 and MISC\_CEP\_\_0\_0 there is no management plan in existence for these very local assemblages, and it is not known how the collected data will be used in the future.

LHP-LHM\_CEP\_0\_0\_0: Hand and Pole lines for cephalopods. This métier was selected for sampling by effort (3,0 % of total effort), but because of small commercial value of landings (0,08 % of total landings and 0,08 % of total value of landings) exemption is requested.

LHP-LHM\_FIF\_0\_0\_0: Hand and Pole lines for finfish. This metier was selected for sampling by effort (1,7 % of total effort) after the disaggregation of MISC, and due to the small commercial value of landings (0,07 % of total landings and 0,07 % of total value of landings) exemption is requested.

Exemption per LHP-LHM\_CEP\_0\_0\_0 and LHP-LHM\_FIF\_0\_0\_0 is requested because fishing activity is conducted on-board small vessels and the majority of fisherman use it as supplementary gear. Since sampling of these metiers is extremely expensive compared to the small catch and value of landings and a monthly analysis of the small volume of catch per trip is too costly for the analyses to result in relevant conclusions, exemption for the metiers is requested.

### **III.D Biological variables – Recreational fisheries**

#### **III.D.1 Data acquisition**

In the Mediterranean and Black Sea, there are three main species/ groups of species for which is needed to collect catch information from recreational fisheries on a quarterly basis, those are: eel, Bluefin tuna and sharks.

Bluefin tuna (*Thunnus thynnus*) is a species caught in recreational fisheries. Following ICCAT demands, a quota is allocated to this recreational fishery. Information on the catch volume is collected on a daily basis and stored on the database for bluefin tuna within FIS. Sampling is planned to be carried out during the annual competitions in accordance with ICCAT regulations.

A questionnaire will be executed during 2014 together with the National Sports Associations in charge of the licence selling in order to identify if some species of shark is being caught. After receiving the results of the questionnaire a formal decision will be taken on whether some sampling procedure for estimation of catches will be needed. As there has been no record or reporting or incidental catches of eels in recreational fishery, and since the areas of distribution of eel in Croatia are highly limited, it is assessed that development of a similar questionnaire for freshwater recreational fisheries associations would present higher burden than the quality of the information to be potentially obtained would justify. Croatia shall consider developing a pilot project in future years to further tackle this issue.

#### **III.D.2 Estimation and preparation of data for end-users**

Bluefin tuna data is collected on a census basis. Information is being submitted to EC and ICCAT working groups.

#### **III.D.3 Data quality evaluation**

The quality of data from competitions in the tuna recreational fisheries is considered first level of accuracy. However, it is necessary to strengthen the system of registration of the catches for BFT made by the recreational fisheries in terms of robustness and data quality control.

#### **III.D.4 Data presentation**

Data will be available as of 2015.

#### **III.D.5 Regional co-ordination**

In this segment, the recommendations of the working bodies of the European Commission are taken into account in the development of this Programme.

<b>No.</b>	<b>RCM recommendation</b>	<b>Responsive actions</b>
1.	RCMMed&BS 2011 considers that sampling of recreational fisheries on eel in marine waters is not necessary, this activity not really being a real targeted practice.	Accepted and followed.

### **III.D.6 Derogations and non-conformities**

Even though sharks are not traditionally caught by recreational fisheries, evidence of any catches will be sought during 2014 with simple questionnaires on the presence of sharks and eels. Pending the results, a decision will be made on whether a derogation will be requested.

### **III.E Biological – stock-related variables**

#### **III.E.1 Data acquisition**

##### **(a) Selection of stocks to sample**

The stocks have been selected on the basis of the corresponding provisions in the Appendix VII (i.e. on an annual or three-annual basis) of the EU Decision 93/2010 as shown in ST III.E.1 ST III.E.2A and ST III.E.2B.

##### **(b) Type of data collection**

The data needed to calculate the parameters will be obtained from specimens collected from a variety of sources such as markets, surveys and on-board sampling. Biological sampling will be carried out by the Institute of Oceanography and Fisheries.

##### **(c) Target and frame population**

The definition used for the target population is the total number of fishing trips, as defined by DCF, and the frame populations are the sampling units. The sampling frame considers various sampling areas, defined on the basis of observed fishing activity, as well as seasonality, which are generally monthly samples (not including closed fishing seasons), in order to obtain quarterly estimates of the relevant variables.

##### **(d) Sampling stratification and allocation scheme**

ST III.E.2A and ST III.E.2B present the long-term planning of sampling of stock-based variables.

#### **III.E.2 Estimation procedures**

The sources of relevant data will be markets, surveys and on-board sampling. A number of specimens will be sampled for each size category, and the hard structures for age reading (in fish species) as well as length, individual weight, sex and state of maturity will be collected from these specimens.

#### **III.E.3 Data quality evaluation**

A thorough evaluation of data quality has not yet taken place and will have priority during the implementation of this NP. CV of age, length, weight, sex, and maturity will be calculated annually in the case of the OTB metier.

#### **III.E.4 Data presentation**

The final checked and validated data about stock related variables will be available to end users (i.e. GFCM working groups, ICCAT, SGMED and RCMed&BS) with a time lag of one year after data collection. The time lag between collection and presentation of preliminary data will be about three to six months depending on the working group after the first year of implementation.

#### **III.E.5 Regional coordination**

Activities to be carried out in cooperation with other European Mediterranean countries will be discussed in the context of the RCM Mediterranean and Black Sea.

In this segment, the recommendations of the working bodies of the European Commission are taken into account in the development of this Programme.

RCM recommendation	Responsive actions
RCMMed&BS recommends to continue the exercise carried out during PGMed 2010 reviewing yearly the sampling figures for metier related variables and to estimate CV at regional level. MS should adjust their NP accordingly to these results.	Accepted.
The RCMMed&BS revised the group 3 species and recommends as agreed in 2008 as minimal list of Group 3 species for the Mediterranean the 11 following species (already present in the MeditS reference list): <i>Aspitrigla cuculus</i> , <i>Citharus linguatula</i> , <i>Helicolenus dactylopterus</i> , <i>Lepidorhombus boscii</i> , <i>Pagellus acarne</i> , <i>Pagellus bogaraveo</i> , <i>Phycis blennoides</i> , <i>Spicara flexuosa</i> , <i>Trigloporus lastoviza</i> , <i>Trisopterus minutus capelanus</i> , <i>Zeus faber</i> .	Derogations requested

### III.E.6 Derogations and non-conformities

The request for derogation of sampling of *Scomber spp*; *Trachurus spp*; *Octopus vulgaris* and *Parapenaeus longirostris* was granted for 2013. In 2014-2016 Croatia plans to collect data for these species and based on the collected data introduce a request for a derogation to STECF for the subsequent years if justified.

Stocks that will not be sampled are highlighted in grey in Table III.E.1. The justification for this is that these species represent less than 10% of the European Mediterranean landings and because landings of these species do not reach the minimum level (200 tonnes). These species are:

*Alopias superciliosus*  
*Alopias vulpinus*  
*Aristeomorpha foliacea*  
*Aristeus antennatus*  
*Boops boops*  
*Carcharhinus plumbeus*  
*Carcharias taurus*  
*Centrophorus granulosus*  
*Cetorhinus maximus*  
*Coryphaena equiselis*  
*Coryphaena hippurus*  
*Dalatias licha*  
*Dicentrarchus labrax*  
*Dipturus batis*  
*Dipturus oxyrinchus*  
*Etmopterus spinax*  
*Galeorhinus galeus*  
*Galeus melastomus*  
*Gymnura altavela*  
*Heptranchias perlo*  
*Hexanchus griseus*  
*Illex spp.*, *Todarodes spp.*  
*Istiophoridae*  
*Isurus oxyrinchus*  
*Lamna nasus*  
*Leucoraja circularis*  
*Leucoraja melitensis*

*Loliginidae, Ommastrephidae*  
*Loligo vulgaris*  
*Loligo vulgaris*  
*Lophius budegassa*  
*Lophius piscatorius*  
*Lophius spp*  
*Merluccius merluccius*  
*Micromesistius poutassou*  
*Mugilidae*  
*Mullus barbatus*  
*Mullus barbatus*  
*Mullus surmuletus*  
*Mustelus asterias*  
*Mustelus mustelus*  
*Mustelus punctulatus*  
*Myliobatis aquila*  
*Nephrops norvegicus*  
*Odontaspis ferox*  
*Oxynotus centrina*  
*Pagellus erythrinus*  
*Penaeus kerathurus*  
*Prionace glauca*  
*Pristis pectinata*  
*Pristis pristis*  
*Pteroplatytrygon violacea*  
*Raja asterias*  
*Raja spp*  
*Raja undulata*  
*Rhinobatos cemiculus*  
*Rhinobatos rhinobatos*  
*Rostroraja alba*  
*Sarda sarda*  
*Scyliorhinus spp*  
*Selachimorpha (Pleurotremata)*  
*Sepia officinalis*  
*Shark-like Selachii*  
*Solea vulgaris*  
*Sparus aurata*  
*Sphyrna lewini*  
*Sphyrna mokarran*  
*Sphyrna tudes*  
*Sphyrna zygaena*  
*Spicara flexuosa*  
*Spicara smaris*  
*Squalus acanthias*  
*Squalus blainvillei*  
*Squatina aculeata*  
*Squatina oculata*  
*Squatina squatina*  
*Squilla mantis*  
*Thunnus alalunga*  
*Torpedo marmorata*



*Triglidae*  
*Veneridae*  
*Zeus faber*

Data from 2009 on which the ranking for stock compositions was made did not allow for separation on all species in some cases, which is why the ranking as well as the species listing specified genus rather than species (i.e. *Lophius spp* – composed of *Lophius budegassa* and *Lophius piscatorius*, *Triglidae* – composed of *Trigla lucerna*, *Aspitrigla cuculus* and *Eutrigla gurnardus*, *Raja spp* – composed of *Raja clavata* and *Raja miraletus*, *Trachurus spp* – composed of *Trachurus trachurus* and *Trachurus mediterraneus* and *Scyliorhinus spp* - *Scyliorhinus canicula* and *Scyliorhinus stellaris*). For *Eledone moschata* and *Eledone cirrosa* a pilot study has been made, on the basis of which the average landing of genus *Eledone* has been distributed among *Eledone moscata* and *Eledone cirrosa*. Croatia plans to address this issue in the future.

Some species have been included for sampling purposes even though their catch is below 200 tonnes annually. This includes *Spicara smaris* which has been included due to its commercial importance and its particular importance in small-scale fisheries.

Stock-related variables will be estimated to a precision level 2 (12.5% CV), which is a non-conformity with the requirement of the DCF of a precision level 3 (2.5% CV) in the case of species that can be aged. The justification for this is that preliminary estimates of sampling targets (OTB) indicate that a precision level 3 would need such high sampling intensity that the costs would be prohibitive, not compatible with a cost-benefit analysis.

### **III.F Transversal variables**

Transversal variables refer to variables that allow the evaluation of fishing capacity, fishing effort and landings and can be expressed in such a way that fits biological and economical components for further analysis.

Information is being collected and a Fisheries Information System has been developed to store and manage all the information. Moreover for vessels with less than 10 meters LOA, national legal framework requests a compulsory completion of fishing reports to be filled in on a trip basis. However, for all vessels with LOA less than 10 meters and using towed gears, the national legislation foresees the completion of logbooks instead of fishing reports.

Transversal variables will be collected for all the vessels included in the Fleet register for the vessels that during the reference year (2009) had more than one day of effort and, for the variables on capacity, for all the vessels included on the fleet registry regardless of the level of activity.

Following the inclusion of a part of the previous subsistence fisheries fleet into the fleet register during 2012 and 2013 all relevant data shall be recalculated in the revision of the programme.

#### **III.F.1 Capacity**

##### **III.F.1 1 Data acquisition**

Data Sources for the calculation of capacity variables are:

- Fleet registry; Providing data on vessels characteristics (engine power (kW), Gross Tonnage (GT), Length Overall (LOA) and Age (year of construction); and
- Fishing licences,
- Logbook and Fishing report.

These three sources will provide the information on the level of activity of each vessel, during the reference year, and will support the classification of the vessels within the Fleet Segment in accordance with the process described under section III.B.1 (C).

For each year a table with fleet universe as of January 1st, characterised in accordance with fleet segment will be stored on the National DCF Database.

**Each variable will be collected from the source and with the methodology identified in the following table.**

Variable	Group of Vessels	Source	Calculation
Number of Vessels	All vessel	Fleet Registry crosschecked with Logbooks and Fishing reports.	Number of Vessels belonging to the same Fleet Segment and LOA Class; Vessels with 0 days of activity in fishing reports and logbooks should be characterised as Inactive. For active vessels, the variable should also be calculated by Métier, the same vessel should be accounted in each métier where operation took place.
Average Age	All Vessels	Fleet Registry	Arithmetic average of the age of the vessels belonging to the same Fleet Segment and LOA Class.
Average Overall Length	All Vessels	Fleet Registry	Arithmetic average of the overall length (LOA) of all vessels belonging to the same Fleet Segment and LOA Class.
Mean vessel's tonnage	All Vessels	Fleet Registry	Arithmetic average of Gross Tonnage of all vessels belonging to the same Fleet Segment and LOA Class.
Mean vessel's power	All Vessels	Fleet Registry	Arithmetic average of Engine Power (kW) of all vessels belonging to the same Fleet Segment and LOA Class.

### **Additional information presented under ST III.F.1.**

#### **III.F.1 2 Data quality evaluation**

As information provided in ST III.F.1, the information is collected under a census approach, thus for the data quality evaluation, the monitoring of the level of coverage will be used to evaluate the possible bias of the estimates.

#### **III.F.2 Effort**

##### **III.F.2 1 Data acquisition**

Data sources for the estimation of the variables on fishing effort are the information coming from logbook and fishing reports. As stated in ST III.F.1 information is collected under a census approach,

regardless of the vessel length. A detailed description of the calculation to obtain the estimation for each variable is presented in the following table

<b>Variable</b>	<b>Group of Vessels</b>	<b>Source</b>	<b>Calculation</b>
Days at sea	Vessel (LOA>10m) Vessels (LOA<=10m) with towed gears	Logbooks	Total days at sea (= days out of port), including days spent travelling into and from fishing zone. Evaluation of number of days should be made taking into account the number of continuous periods of 24h or parts thereof.
Days at sea	Vessels (LOA<=10m) with fixed gears	Fishing report	Total days at sea (= days out of port), including days spent travelling into and from fishing zone. Evaluation of number of days should be made taking into account the number of continuous periods of 24h or parts thereof.
Hours fished	Vessel (LOA>10m) Vessels (LOA<=10m) with towed gears	Logbooks	Sum of all fishing time for the vessels belonging to the same métier and LOA Class. This measure is just applied to trawlers and dredges.
Fishing Days	Vessel (LOA>10m) Vessels (LOA<=10m) with towed gears	Logbooks	Number of calendar days. Calculus should be made by area of operation, fleet segment, Métiers, LOA Class. If one vessel operates in more than one métier in one trip or day, then the fishing day should be accounted for all the métiers for which the vessel deployed fishing effort in that trip/day. If more than one zone occurs during one day, the effort should be allocated to the zone where the vessels deployed most of the effort. For passive gears, fishing days should also account with the days the nets remains fishing while the vessel is in port.
Fishing Days	Vessels (LOA<=10m) with fixed gears	Fishing report	Number of calendar days. Calculus should be made by area of operation, fleet segment, Métiers, LOA Class. If one vessel operates in more than one métier in one trip or day, then the fishing day should be accounted for all the métiers for which the vessel deployed fishing effort in that trip/day. If more than one zone occurs during one day, the effort should be allocated to the zone where the vessels deployed most of the effort. For passive gears, fishing days should also account with the days the nets remains fishing while the vessel is in port.

kW* Fishing days	All Vessel with towed gears	Fleet register; Fishing days	Calculus should be made for each vessel using trawl or dredges, by multiplying vessel power (kW) by the total fishing days.
GT* Fishing days	All Vessel with towed gears	Fleet register; Fishing days	Calculus should be made for each vessel using trawl or dredges, by multiplying gross tonnage (GT) by the total fishing days.
Number of Trips	Vessel (LOA>10m) Vessels (LOA<=10m) with towed gears	Logbook	Calculus should be made accounting with all trips with the purpose of fishing regardless of the attained catch volume.
Number of Trips	Vessels (LOA<=10m) with fixed gears	Fishing Report	Calculus should be made accounting with all trips with the purpose of fishing regardless of the attained catch volume.
Number of Rigs			
Number of Fishing Operations	Vessel (LOA>10m) Vessels (LOA<=10m) with towed gears	Logbook	Count of all fishing operation using Purse Seine by Métier, Fleet segment and LOA Class.
Number of nets/length	Vessel (LOA>10m)	Logbook	Sum of all nets and length of each vessel within each Métier and Fleet segment and LOA Class.
Number of nets/length	Vessels (LOA<=10m)	Fishing Report	Sum of all nets and length of each vessel within each Métier and Fleet segment and LOA Class.
Number of hooks/Number of lines	Vessel (LOA>10m)	Logbook	Sum of number and hooks and lines of each vessel within each Métier and fleet segment and LOA Class.
Number of hooks/Number of lines	Vessels (LOA<=10m)	Fishing Report	Sum of number and hooks and lines of each vessel within each Métier and fleet segment and LOA Class.
Number of pots/traps	Vessel (LOA>10m)	Logbook	Sum of number of pots and traps of each vessel within each Métier and fleet segment and LOA Class.
Number of pots/traps	Vessels (LOA<=10m)	Fishing Report	Sum of number of pots and traps of each vessel within each Métier and fleet segment and LOA Class.
Soaking time	Vessel (LOA>10m)	Logbooks	Sum of total soaking time of each passive gear for each vessel within each métier and fleet segment and LOA Class
Soaking time	Vessels (LOA<=10m)	Fishing report	Sum of total soaking time of each passive gear for each vessel within each métier and fleet segment and LOA Class

Description on each variable source along with the identification of the population and the data collection scheme is presented in ST III.F.1.

### III.F.2 2 Data quality evaluation

Evaluation of data quality will be produced through three distinct levels of implementation:

1. First level is implemented during data input. A set of validation rules, automatically checked by the database on the gears code, dates of the events and volume of catch is run to evaluate data consistency.
2. Second level of data quality evaluation will be performed through automatic routines, after data storage. These routines will look into data submitted and will compare average values on effort coming from a time series for the same vessel or group of vessels which have the same pattern of activity. Also for vessels with a length larger than 15 meters, the cross-checking with information on fishing zone coming from VMS will be assured;
3. The third level of evaluation on data quality is implemented through the monitoring of the level of coverage, and evaluation on the random nature of the vessels for which no information was provided. Therefore assumptions can be made about the presence of bias on the estimates.

After validation of all information, all data on effort will be stored on the DCF Database on a table(s) that suits the segmentation required.

### III.F.2 3 Data presentation

When the National Database completes implementation of the data there will be a lag period of three months from the reference period. During the development of the database, data will be available within a lag period of 6 months.

### III.F.2 4 Regional coordination

In this segment, the recommendations of the working bodies of the European Commission are taken into account in the development of this Programme.

No.	RCM recommendation	Responsive actions
1.	STECF plenary recommendations of July 2010 "MS should collect economic and transversal data regarding the fishing fleet for all fishing vessels in the vessel register during the reference year, instead of only collecting data on vessels in the fleet register on the 1st of January in the relevant reference year".	Accepted and followed.

### III.F.2 5 Derogations and non-conformities

No derogations are requested.

## III.F.3 Landings

### III.F.3 1 Data acquisition

In Croatia, none of the vessels have the capacity to freeze or process on-board. This, together with the characteristics of the fleet (i.e. small vessels with small engine power), determines that 100% of fish are landed fresh or chilled, from fishing trips lasting around one day in most cases but with a maximum duration of three days. The only exception is the BFT purse seine fleet, which do not land the fish but rather transfer it to cages for farming. Their operation is limited to one month, and their trips may last up to 7 days.

Besides landing data coming from logbooks and fishing reports, data from sales notes are also collected. First buyers are obliged to report data on first sale to the DoF. Data are then submitted to the FIS via https access. Information collected under sales notes is aligned with Council Regulation (EEC) No 2847/93 of 12 October 1993 and Council Regulation (EC) No 1224/2009 of 20 November 2009. These data are verified by the DoF.

Sales notes collect data on:

- (1) Vessel identification;
- (2) Landing date;
- (3) Landing port;
- (4) Number(s) of logbook or fishing report sheet;
- (5) Species;
- (6) Commercial category;
- (7) Presentation;
- (8) Conservation;
- (9) Freshness;
- (10) Destiny and
- (11) Fishing zone.

Regarding transfers of BFT to cages for farming, the DoF is collecting all the information in accordance with ICCAT scheme for the BFT fisheries. For the management of BFT a separate database under FIS is in place. All information is being collected allowing the determination of volume and value of catches and transfers into cages.

The estimation of the landing variables will be made in accordance with calculations shown in the following table. Value of landings and live weight of landings can be estimated for all the levels in line with Commission Regulation (EC) no. 665/2008. The merging of sales notes with the landing declaration for all sales notes, allow the same segmentation of the data as for logbooks.

Variable	Group of Vessels	Source	Calculation
Value of landings	All Vessels	Sales Notes; Landing declaration	Sum of the total value by species and trip for each vessel within each Metier and Fleet segment and LOA Class. Total value for each species is the result of total weight landed multiplied by the average price attained in the sales note.
Live weight of landings	All Vessels	Sales Notes; Landing declaration	Sum of live weight of the landing from the application of the conversion factor to processed weight of landing for each species and presentation. If fish presentation is All, then Conversion Factor=1
Prices by commercial species	All Vessels	Sales Notes	Weighted mean of average price by the landing weight obtained by specie and trip.

### III.F.3 2 Data quality evaluation

Data collected from sales notes is automatically cross-checked with landing declarations for the purpose of verification of the rules set out under EU Control Regulation. Rules in place allow the automatic identification of sales notes not submitted as well as values with logbook/landing declaration. When possible, measures are taken to correct wrong values. Incomplete data will not be considered for upload into the DCF Database.

### III.F.3 3 Data presentation

Data will be available with a lag period of three month when DCF Database finished to be implemented. Until then, data will be available within a lag period of 6 months.

### III.F.3 4 Regional coordination

No.	RCM recommendation	Responsive actions
1.	None	

### III.F.3 5 Derogations and non-conformities

No derogations are requested.

## III.G Research surveys at sea

### III.G.1 Planned surveys

Croatian National Programme for 2014-2016 includes two surveys:

- MEDITS, Mediterranean International Bottom Trawl Survey
- MEDIAS, Mediterranean Acoustic Survey

### MEDITS – Mediterranean International bottom trawl survey

The study area of MEDITS is defined as the totality of the trawlable areas off the coasts of partner countries from 10 to 800m depth (Figure 1, Annex II). The first surveys starting in 1994 were conducted along the coasts of Spain, France, Italy and Greece. In 1996 the study area was enlarged to cover almost all of the Adriatic Sea, including Slovenia, Croatia and Albania as partners. Over time there have been successive expansions, including the south of the Alborán Sea (Moroccan contribution) and the waters off Malta, Cyprus and Montenegro.

#### Objectives:

- Estimating abundance indices (by number and biomass) of the main demersal species of commercial interest distributed at a depth of between 10 m and 800m.
- Describe the demographic structure of species of interest to the fishery, together with spatial distribution patterns.
- Undertaking size and biological sampling, including extraction of parts to determine the age of the main species targeted by the fishery.
- Assessment of the impact of fishing activity on the environment.
- Collect oceanographic data (temperature and salinity) from the water column at the sampling stations.

#### Type of sampling to be carried out:

The haul stations are distributed applying a stratified sampling scheme with random drawing in each stratum. The area is stratified by depth limits, using the following bathymetric limits: 10, 50, 100, 200, 500 and 800 metres. In the Adriatic Sea, the target average sampling rate is one station per 200 square miles (compared to 60 square miles in other areas), as the area is considered relatively monotonous in terms of depth. The same positions are visited every year and haul duration is half an hour for depths less than 200 metres and one hour for greater depths. The average catch stratified by trawlable surface area (nm<sup>2</sup>) is considered to be the relative abundance index. A total of 60 stations will be sampled in Croatia.

A list of forty common target species (including fish, molluscs and crustaceans) has been established with reference to their commercial production, their accessibility by bottom trawl and their potential interest as biological indicators in the different areas (MEDITS Instruction Manual 2012). For these species, the total number of individuals, length frequency distribution, sex (including maturity stage)

and total weight are recorded. For all other sampled species, the total number and total weight are recorded after each haul.

Data on temperature, salinity and pressure in each station is also registered.

Data are recorded in electronic format and five standard exchange formats have been defined.

- Type 1. Characteristics of each haul
- Type 2. Catch per haul by number and weight
- Type 3. Biological parameters of each referenced species (size, sex, maturity)
- Type 4. Hauls by stratum
- Type 5. Temperature data

The software ATRIS, improving on the previous DAME software, was recently developed to facilitate the storage and processing of these data.

#### **Gear:**

A standard bottom trawl is used, as defined by the MEDITS protocol. This includes specifications for the material and its rigging from the doors to the codend of the net. The net (GOC 73) is a bottom trawl designed for experimental fishing with scientific purpose, which can be used over the whole depth range and in the various conditions encountered in the whole survey area. The net has a relatively large vertical (3.5 m) and horizontal (21.5 m) opening, a 40 m footrope, a 32.2 m float line and a 20 mm codend mesh size.

Oceanographic data will be obtained with a small-sized CTD SBE-37 attached to the gear.

#### **Vessel:**

In 2012 the Italian research vessel ANDREA will be used for the survey (as was the case in the previous years), and as of 2013 the Institute's research vessel BIOS TWO. This vessel was built in 2009. It is 36m long, 8m wide, has a GRT of 336 and engine power of 895Kw. Although the new vessel shall be used, the preliminary trials were conducted in 2013 and the methodology applied shall remain in line with the one applied thus far. The confirmation of the trials indicate that the continuity shall be fully assured by the application of the methods tested. Before the start of the MEDITS expedition in 2013 an experimental sampling was carried out with scientists from relevant institutions performing the same task in Italy (i.e. laboratory of Dr. Antonello Sala in Ancona (CNR-ISMAR)). The experimental sampling tested the operability of the net used and other equipment on board. All test results indicated that the equipment operates in accordance with the MEDITS's manual. Furthermore, additional activities on intercalibration at the level of the Adriatic shall be undertaken at the beginning of 2014.

#### **Dates:**

The survey will be carried out in the time period from May to July as defined in the MEDITS Instruction Manual (version 6, 2012) with a total estimated duration of 25 days.

#### **Scientist in charge:**

The scientist in charge is Dr. Nedo Vrgoč of the Institute of Oceanography and Fisheries (IOF).

#### **Participating Institutions:**

The Institute of Oceanography and Fisheries is responsible for carrying out the MEDITS survey in Croatian waters, while the studies in GSA 17 are coordinated with those in Italy (Fano) and Slovenia.

### **MEDIAS - Mediterranean Acoustic Survey**



The Mediterranean Acoustic Survey (MEDIAS) is a recent effort, initiated in 2008, to coordinate the acoustic surveys carried out by Member States. This involves Greece, France, Italy, Malta, Spain and Slovenia. Representatives from Bulgaria and Romania participate also in this coordination as well as Croatia (as an observer). The objective of this coordination is to establish and improve on a common protocol as well as for the optimisation of survey design, thus enabling a comparison of results across national surveys.

**Objectives:**

The objective is to obtain abundance indices of the main pelagic stocks present in this area of commercial interest; anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) in particular.

**Type of sampling to be carried out:**

The sampling design consists of 30 radials, perpendicular to the coast and to the bathymetry, which cover the whole of the continental shelf from 43° to 223° between depths of 20 and 200 m up to the mid-line with Italy, and randomly positioned transects in the channel area (inner sea). The surveyed area is approximately 13,580 NM<sup>2</sup> (Figure 2, Annex II).

The aim will be to fish from stations during the day, while identifying the echo traces or strata detected by the echo sounder. Fishing will also be carried out at night, when the schools of pelagic fish disperse and ascend to the surface (diel migration), in order to compare the results of both day and night fishing operations and the exactness and precision of those operations as samplers. The acoustic data will be taken at an average speed of 9 to 10 knots (nm/h) and the fishing operations will be carried out at a speed of between 3,5 and 4,5 knots. The duration of the haul will be determined by the success in identifying the echo traces or strata. The number of fishing operations will be the maximum that can be carried out in order to ensure proper identification of the echo traces or strata detected during the survey.

Sampling of the target species (anchovy - *Engraulis encrasicolus*, sardine - *Sardina pilchardus*, sprat - *Sprattus sprattus*) will consist in determining the size frequency distribution of all the pelagic species detected so as to ascertain their mode or modes and their size-weight ratio. Biological sampling of the most important species will also be carried out, such as removal of otoliths to establish age, determine states of maturity, sex ratio, etc.

The determination of the distribution of length frequencies and the analysis of length and weight ratio will be carried out for any other accompanying pelagic fish species. Sampling of environmental variables will also be carried out: temperature, salinity, oxygen, plankton communities, etc.

**Gear:**

Acoustic sampling will be carried out using an EK-60 scientific echo sounder made by SIMRAD and equipped with the working frequency of 38 kHz. The 38 kHz frequency will be used to estimate the abundance indices (number of individuals and biomass) of each of the pelagic species detected during the survey, taking into account their size frequency and corresponding TS (Target Strength). Additional frequencies (120 kHz) will be used to optimise objective identification of the various pelagic species by designing and applying specific algorithms.

In order to standardize the collected data, the pelagic fishing gear to be used as the sampler for catching and identifying the pelagic species detected is the same type of pelagic trawl used in the echo-monitoring study in the western part of the Adriatic Sea (Italy), sailing at 3.5 to 4.5 knots and equipped with a SIMRAD FS20/25 Net Sounder. Acoustic sampling will be carried out during daylight hours, obtaining sA or NASC (Nautical Acoustic Scattering Coefficient) values in m<sup>2</sup>/mn<sup>2</sup>. The sampling unit in question or EDSU (Elementary Distance Sampling Unit) is the nautical mile. The echograms are digitally stored in binary files formed by the datagrams of the EK-60 scientific sounder (\*.raw). The data are duly geo-referenced for subsequent processing. The SonarData Echoview

programme (Myriax Ltd) will be used to read the echograms, which will enable the various echotraces to be identified with the aid of the identification hauls made.

**Vessel:**

The BIOS TWO will be used for the survey. The vessel was built in 2009 and carried out its first survey in September 2009, for the purposes of the first study for MEDIAS in a complementary national echo monitoring (Project PELMON).

**Dates:**

Surveys will be carried out in the period from summer to early autumn following an internationally agreed MEDIAS protocol.

**Scientist in charge:**

The scientist in charge is Dr. Vjekoslav Tičina of the Institute of Oceanography and Fisheries (IOF).

**Participating institutions:**

The Institute of Oceanography and Fisheries is responsible for carrying out the MEDITS survey in Croatian waters and Ecological and Fishery Protection Zone (EFPZ) of Republic of Croatia.

**III.G.2 Modifications in the surveys**

The MEDITS survey will be carried out according to the international protocols. The MEDITS working group has, in its last meeting, raised the issue of possible changes in maturity scales (harmonisation) and a sorting all catches by haul (not only reference species), as required by the DCF (MEDITS meeting report, 15-16 June 2010, Split). This may be adopted in the near future at the international level.

The MEDIAS survey was carried out for the first time in 2009. Future surveys will follow the methodologies and protocols agreed by the MEDIAS steering committee (the latest meeting was held in 25-26 March 2010 at Cap Granitola).

**III.G.3 Data presentation**

The data from the surveys will be available to end users with a six months time lag after each of the surveys. All the data will be presented to the two annual coordination meetings MEDITS and MEDIAS.

**III.G.4 Regional coordination**

Croatia participates actively in both MEDITS and MEDIAS working groups and has adopted recommendations made by these coordinating groups.

RCM recommendation	Responsive actions
RCMMed&BS discussed possible implications of sorting all the catches (not by sub-sampling) by haul, but did not have the necessary information to assess the implications in terms of working organization.	Pending the gathering of information by participating countries and a decision to be taken by RCM

**III.G.5 Derogations and non conformities**

No derogations are requested and non-conformities were not identified.

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

## IV.A Collection of aquaculture data

### IV.A.1 General description of the aquaculture sector

The Croatian aquaculture sector is represented by both freshwater and marine aquaculture.

The production of **marine aquaculture** includes:

- *Fin fish* breeding, using cages in coastal protected waters, with a total number of 29 enterprises with 49 licensed production units. There is one big hatchery in the sector, producing sea bass (*Dicentrarchus labrax*), sea bream (*Sparus aurata*) fry for local market and few small ones with their own growing facilities, also selling part of their fry on the market. The total production of white fish aquaculture was 5,000 tonnes of seabass, seabream and other white fish in 2009;
- *Bluefin tuna* (*Thunnus thynnus*) farming in off-shore cages where tunas of 8 to 10 kg are raised to market size (more than 30 kg) mostly for export to Japan. In 2010 there were 6 tuna farms with 10 licensed production units. The total production of 4,200 bluefin tuna in 2009 (accounts for roughly half of the total value of fish exports in value);
- *Shellfish* breeding on long lines, is undertaken by 112 small shellfish farms (mostly individual family business) with about 268 production units, which produced 2,100 tonnes of oyster (*Ostrea edulis*) and mussels (*Mytilus galoprovincialis*) in 2009;
- *Other fish production*, including one enterprise with 2 licensed production units, started in 2010 to breed trout (*Oncorhynchus mykiss*) in cages.

**Freshwater aquaculture:** There are 49 enterprises/crafts involved in freshwater aquaculture, producing mostly carp and trout. However more production units are licensed for aquaculture and some enterprises has more than 1 production units: 28 units are specialized in carp productions (mostly ponds; 2 units with carp production in cages in accumulation lakes) and 28 in trout production (tanks); 10 units have hatchery licences for market supply (restocking) the rest are importing the juveniles for growth, or have their own maternity facilities.

There were 9,530 ha of carp ponds and 50,629 m<sup>2</sup> of trout fish ponds in 2009. Total freshwater aquaculture production was about 5,000 tones, where common carp (*Cyprinus carpio*) and trout (*Oncorhynchus mykiss*) production was almost equal and represented almost 81% of total freshwater aquaculture production. Additionally 12% of total volume of production was silver (*Hypophthalmichthys molitrix*) and bighead carp (*Hypophthalmichthys nobilis*) production.

Collection of data for fresh water species is not mandatory. However, Croatia intends to collect the data for the entire aquaculture sector including freshwater aquaculture on an annual basis.

General description of the aquaculture sector in relation to DCF segmentation is presented in the ST IV.A.1. There are some facilities, which are single in each particular cell of aquaculture segmentation matrix, e.g. there is one enterprise with eel (*Anguilla anguilla*) recirculation system, there is one small producer, producing carp in cages in the lake and one mostly producing silver mullet (these enterprises will be clustered with on growing carp producers), some carp and trout producers are hatching and rearing carp and trout in their own facilities (such activity is marked as combined production in the ST IV.A.1, how ether in the ST IV.A.2 all enterprises are listed as on growing producers).

Croatia intends to collect economic data from the aquaculture sector in accordance with DCF segmentation in 2014. The data collection of aquaculture production started recently. There was no separation of shellfish farms, mussels and oysters producers before, so at the moment of the preparation of the NP it was not clear how many oyster and mussel producers there were in the

shellfish farms. The segmentation in the ST IV.A.2 (long line: shellfish) may be updated during the collection of more precise information in 2014 and during the preparation of technical report.

## **IV.A.2 Data acquisition**

### **(a) Definitions of variables**

Following are more detailed definitions of variables used in this section.

**Other income:** Income classified as other operating income included in company accounts which exclude turnover; income coming from other activities than aquaculture, e.g. licensing for recreational fishery in the ponds.

**Input value of unpaid labour:** Relevant in the case of small and medium enterprises managed at family levels, common in shellfish farming in Croatia. It will be calculated for all the individual enterprise which provides the data about the unpaid family members engaged in the sector. The calculations will be based on the employment information (number of family members involved in the operation) and the average of “paid labour costs” calculated for the sector.

**Depreciation of capital:** Calculated from account information (depreciation of capital during the year) and collected through the economic questionnaire for aquaculture.

**Financial costs, net:** Income, coming from financial activity of the enterprise, minus financial costs.

**Extraordinary costs, net:** Extraordinary, unexpected, incomes, which are excluded from income, minus extraordinary, unexpected costs, excluded from other cost items.

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

The data will be collected on an annual basis for the previous financial year.

### **(b) Type of data collection**

For most of the aquaculture segments, defined in ST IV.A.1 there are only a few enterprises where the activity is shared, e.g. farming with hatching or enterprise, farming sea bass, sea bream in the cages and also rearing eel. Those small activities are clustered in accordance with the main activity of the enterprise or fish species farmed.

The data for almost all aquaculture segments are to be collected on census basis. However the data collection scheme is different for shellfish farms. The shellfish farms are small enterprises, usually run by older people and the accountancy there could be poor. So the data collection scheme for the first years of data collection from this segment will be probability sampling.

### **(c) Target and frame population**

The population to be considered for the data collection is defined according to EUROSTAT definition under NACE Code 03.2 “Aquaculture”, the data been updated by the license register of DoF, which consists of all licensed aquaculture units. In the case where one aquaculture enterprise is using several licenses, it has been considered as 1 enterprise for DCF purpose. But current data collection for aquaculture production statistics is set by unit/license level. That means it is more precise than DCF requirement, where the statistical unit is defined as “enterprise”. For this purpose additional questionnaires, based on enterprise level will be completed for missing economic data collection. The

existing data collection forms will be expanded to collect additional information on employment, livestock and feed costs (unit basis).

The description of population and each segment is presented in the ST Table IV.A.2. The number of enterprises in main segments is listed there, including type of data collection, population and sample number. The license information is used as basis for segmentation.

#### **(d) Data sources**

There are several forms to collect information from the aquaculture units at the moment:

- marine aquaculture: logbooks;
- freshwater aquaculture: form for fresh water aquaculture units.

The institution, managing current data sources is Directorate of Fisheries. As most of the information is missing at the moment, questionnaires are to be used for the missing data collection. The information will be collected by DoF in 2013. Data sources for each variable are also identified in the ST IV.A.3.

#### **(e) Sampling frame and allocation scheme**

The description of sampling frame and allocation scheme is relevant only for shellfish farms, as for other segments census is used for data collection

##### *Type of sampling strategy*

The random sampling will be used to collect the data.

##### *Further stratification within sector/segment*

For the first year of implementation there will be no stratification within the segment. However in the future shellfish farms could be stratified by species (mussels and oysters). The stratification could be based on the number of volume of production of mussels and oysters.

##### *Determination of sample size*

The sample size was defined in accordance to the variance of total capacity of all enterprises in the population of shellfish farm. The target was to get a precision of Level 2 of DCF, at the confidence interval of 95%. The results of calculations are presented in the ST Table IV.A.2.

##### *Sample evolution over time, rotational groups*

It is not clear at the moment what would be the sample rate if the variance of value of production would be used to determine the sample size for shellfish farms, it is also not clear what will be the response rate, as there is no economic data collection at the moment. It is planned to sample all shellfish farms during the first years of implementation to check the response rate and availability of data in all shellfish farms. So each year different enterprises will be sampled.

### **IV.A.3 Estimation**

#### ***Estimation methods from sample to population***

The ratio estimator, based on the value of production, collected by DoF on census basis will be used as a rising factor to estimate the totals of most economic variables for shellfish farms. However the capacity of production will be used to estimate capital value.

$$X_j = \frac{\sum_{i=1}^n x_i}{\sum_{i=1}^n r_i} * \sum_{i=1}^{n+k} r_i$$

Where:

$X_j$  – estimation of total variable;

$x_i$  - collected variable of the sample;

$n$  – sample size;

$n+k$  – population;

$r_i$  – raising factor;

### ***Imputation of non-responses/Non-response adjustments***

In the case of census, when response rate is less than 100% of the population, the missing information will be derived from the sample, taking into consideration the value of production of the missing enterprises (which is covered by 100% by DoF records) and sample. The calculations will be as follows:

$$X_j = \frac{\sum_{i=1}^n x_i}{\sum_{i=1}^n y_i} * Y_j$$

where:

$X_j$  – missing variable information about the enterprise;

$x_i$  – collected variable of the sample;

$n$  – sample size;

$Y_j$  – value of fish production of the enterprise;

$y_j$  – value of fish production of the sample.

### **IV.A.4 Data quality evaluation**

To ensure the quality of data collected, indicators of the accuracy and variability of the data will be produced. The Data quality evaluation depends on the data collection scheme.

In all cases (census and probability sampling) unit response rate (number of enterprises responded/total sample) and item response rate (response rate per each variable) will be calculated.

The coverage rate (number of responses/total population) will be calculated for probability sampling survey.

The Coefficient of Variation (CV) will be calculated in the case of probability sampling survey and in the case if census response rate will be below 70%.

The full list of indicators per variable is presented in the ST Table IV.A.3.

### **IV.A.5 Data dissemination and presentation**

In 2014 the economic data for 2013 will be collected and processed by the end of the year. The time lag for economic data collection is expected to be 1 year.

There could be some problems regarding small segments. In that case for the purpose of data provision they will be clustered with similar segments, e.g. carps in the cages with on growing carp.

#### IV.A.6 Regional coordination

No.	RCM recommendation	Responsive actions
1.	None	

#### IV.A.7 Derogations and non-conformities

There could be problems with the coverage of the population, as time is needed for respondents to prepare the data and learn how to fill in the papers and in some cases update their accounting system to be able to provide information.

The data collection of aquaculture production started recently. There was no separation of shellfish farms between mussel and oyster producers before, so at the moment of preparation of NP it was not clear how many oyster and mussel producers there were in the shellfish farms. The segmentation in the ST IV.A.2 (long line: shellfish) is expected to be updated shortly.

#### IV.B Collection of data concerning the processing industry

The Croatian fish processing sector used to consist mostly of canning factories, but after 1990 structural changes occurred. Most of the canning factories have now been closed as they lost their main market and the fish processing sector changed its orientation towards the production of salted, frozen fish and marinated products.

According to the Register of Business entities<sup>5</sup>, there are 75 enterprises engaged in fish processing, of which 70 are active. 43 companies provided financial reports for 2009 and could be segmented in accordance to the number of employees. Of these, 21 employed 10 or less employees (micro-enterprises), 12 employed 10-49 people, 9 had 50-249 employees and 1 employed more than 250 employees.

Croatia is aware of the necessity to collect data on employment by gender. Since no disaggregation at this level is available from the CBS data for fishery industry (including processing and aquaculture), data on this element shall initially be collected by way of a questionnaire for initial assessment. Corrections and further work shall be performed in future years.

##### IV.B.1 Data acquisition

###### (a) Definitions of variables

All data concerning the processing industry is to be collected in accordance with the requirements of DCF.

**Other income:** Income classified as other operating income included in company accounts which are excluded from turnover; income coming from other activities, then fish processing.

**Imputed value of unpaid labour** could be calculated for all enterprises which provide the data about unpaid family members engaged in the sector. The calculations will be based on the employment

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<sup>5</sup>Could be found at: [www.biznet.hr](http://www.biznet.hr)

information (number of family members involved in the operation) and the average of “paid labour costs” calculated for the sector.

**Depreciation of capital** will be collected from the income-costs reports.

**Financial costs, net:** income, coming from financial activity of the enterprise minus costs of financial activity. Will be collected through the economic survey from company accounts (income-costs reports) and calculated.

**Extraordinary costs, net:** Extraordinary, unexpected, incomes, excluded from income, minus extraordinary, unexpected costs, excluded from other cost items.

**Debt:** financial assets created when creditors lend funds to debtors, either directly or through brokers, which are either evidenced by non-negotiable documents or not evidenced by documents; short-term loans plus long-term loans of the company by the end of the financial year.

#### **(b) Type of data collection**

Census (A), which attempts to collect data from all members of a population, will be applied.

#### **(c) Target and frame population**

According to the DCF the population for collection of the data regarding fish processing has to be defined by Business register. Enterprises whose main activity is defined according to the Eurostat definition under NACE Code 10.20: “Processing and preserving of fish, crustaceans and molluscs” has to be surveyed.

The target population is presented in the ST IV.B.1.

Due to lack of employment data, several assumptions been made to fill in the ST IV.B.1:

- data on employment coming from CBS been used to segment the fish processing industry;
- those enterprises, which were in the Business register (main activity defined under NACE Code 10.20) lacking employment data, been attributed to the companies with <10 employees;

#### **(d) Data sources**

There are several data sources to be used for collection of data from fish processing industry:

- information collected by CBS for Structural business statistics;
- information, collected by Paying Agency for Agriculture, Fisheries and Rural Development;
- information, collected by DoF through the economic questionnaires, complimenting CBS information.

Information on data sources used to collect each variable is presented in the ST IV.B.2. The individual information, coming from CBS will be complemented by the DoF questionnaire.

In order to ensure the consistency of data coming from different data sources cross checking indicators will be used, e.g. volume and value of production will be collected by DoF and CBS. For some enterprises, which are not covered by CBS survey, all the data will be collected through the DoF questionnaire.

#### **(e) Sampling frame and allocation scheme**

As data are to be collected on Census basis a description of the sampling frame is not relevant.

### **IV.B.2 Estimation**



In the case, when response rate is less than 100% of the population, the missing information will be derived from the sample, taking into the consideration the value of production of the missing enterprise and in the sample. The calculations will be as follows:

$$X_j = \frac{\sum_{i=1}^n x_i}{\sum_{i=1}^n y_i} * Y_j$$

where:

$X_j$  – missing variable information about the enterprise;

$x_i$  - collected variable of the sample;

$n$  – number of responders;

$Y_j$  – value of fish production or income of the enterprise;

$y_j$  - value of fish production or income of responders.

In the case then information on volume or value of production for particular enterprise is not available employment will be used as basis for estimation.

### IV.B.3 Data quality evaluation

To ensure the quality of data accuracy and variability indicators of the data will be collected.

Unit response rate (number of enterprises responded/total sample) and item response rate (response rate per each variable) will be calculated for all segments.

Additionally the Coefficient of Variation (CV) will be calculated in the case where census response rates are below 70%.

The information about planned data quality indicators and methods used to collect the data is presented in the ST IV.B.2.

### IV.B.4 Data dissemination and presentation

In 2014 the data concerning the fish processing industry of 2013 will be collected and processed. The time lag for economic data for the fish processing industry is expected to be 1.5 year.

### IV.B.5 Regional coordination

No.	RCM recommendation	Responsive actions
1.	None	

### IV.B.6 Derogations and non-conformities

Problems concerning the response rate and coverage could arise during implementation. All those problems will be documented and presented in the Annual Report.

During the preparation of NP several assumptions been used to define the population of the fish processing industry. The final estimates of the population of fish processing industry will be provided in the AR. The ST will be adjusted accordingly.

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

#### **Indicators 1 to 4:**

The surveys MEDITS and MEDIAS will be the primary source of data for indicators 1 to 4: 1) Conservation status of fish species, 2) Proportion of large fish, 3) Mean maximum length of fish and, 4) Size at maturation of exploited fish species. For demersal species these four indicators will be calculated based on data collected in the surveys to be carried out, while for pelagic species the indicators will be calculated based on data collected within MEDIAS.

There is a similar and overlapping initiative already underway, which was agreed in the context of MEDITS<sup>6</sup>. Various population and community indicators, matching the ones proposed by the DCR guidelines, were adopted and produced. The criteria for selecting the indicators to measure fishing impacts on the population and community levels were that a) they should be easily and reliably (high precision) calculated with the available MEDITS survey data and b) the direction of change under the impact of fishing should be known. According to these criteria, four indicators of population state (intrinsic population growth rate, total mortality, mean length and length at maturity) and five indicators of community state (total abundance, total, biomass, mean individual weight, mean individual length, and the proportion of large individuals across all species) were selected.

#### **Indicators 5 to 7: (5) Distribution of fishing activities; (6) Aggregation of fishing activities and (7) Areas not impacted by mobile bottom gears**

These indicators will be based on VMS data which is reported for every vessel of 15 m LOA or longer. Information on vessel position is reported each 15 minutes or 2 hours, depending on whether communication is by GPRS or Satellite, and stored in a dedicated database within the Fisheries Information System (FIS). Information is available for the purpose of the Data Collection Framework.

In order to produce information on a metier basis, a mid-term table with vessel positions by trip will be produced. These tables will contain basic information on vessel/trip identification in order to enable merging with VMS data.

The merging of both tables will allow the attribution of one or more than one metiers to each vessel/trip and the posterior data aggregation for the calculation of the indicator. If one trip has more than one metier assigned, than positions will be repeated as many times as the metiers assigned to that fishing trip.

The results on the indicators will be available one year after the beginning of implementation.

#### **Indicator 8: Discarding rates of commercially exploited species**

Data collected through biological sampling at sea by observers (referring to section III.C) will be used to estimate indicator no. 8 (discarding rates of commercially exploited species). These data will be used to evaluate the selectivity for each gear and its impact on the ecosystem.

#### **Indicator 9: Energy efficiency of fish catches**

Current indicator derives on information collected under section III.B and section III.F and the indicator results on the ratio from fuel cost and value of landings.

The value of landing will be estimated for each three month by metier, as total value of landed fish expressed in live weight.

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<sup>6</sup> MEDITs 2007. Assessment of indicator trends related to exploited demersal fish populations and communities in the Mediterranean. DCR MEDITs working group. Nantes-France, 15-18 March 2005 and Kavala-Greece, 2-6 April 2006.

The estimation of the quarterly fuel cost by metier will be performed following guidelines set up by STECF on the quarter estimation. The estimation of quarter fuel cost will be obtained through a proportional allocation to the quarter effort, deployed by each metier.

Although information coming from blue diesel has a monthly aggregation, for the remaining vessels information will be collected by questionnaires on an annual basis.

It should be remembered that fuel cost is one of the most important factors in the fleet's operating costs, a factor emphasised by the continual increase in the price of diesel oil. Calculation of fuel cost provides a relevant indicator that enables a comparison to be made both of the different energy efficiencies of various species (involved in their capture) and of the different types of gear in relation to the same species.

The results on the indicators will be available one year from the beginning of the implementation.

Detailed information on data sources per each indicator is presented under ST III.B.1. Indicators to measure the effects of the fishing sector on the marine ecosystem are presented in ST V.1.

## **VI. Module for management and use of the data**

### **VI.A Management of the data**

Currently two institutions are in charge of data collected under DCF. Those institutions are the DoF and the IOF, therefore primary data is scattered between the two main databases, as follows:

#### **Transversal and socio-economic Data:**

Data stored and managed under the DoF Fisheries Information System (FIS). FIS is a multidisciplinary relational database consisting of several inter-related databases. FIS runs on an SQL server 2005 database with GIS ESRI tools allowing for the analysis of spatial data. FIS is comprised by:

- 1) National persons register and legal entities database,
- 2) Fishing register database,
- 3) Fish sales database,
- 4) Aquaculture database,
- 5) Blue diesel database,
- 6) VMS database,
- 7) Fisheries inspection database (under development),
- 8) Fishing permits database (sports and recreational fishery), and
- 9) Administration.

#### **Biological Data:**

Currently used for storage of data covering the fishing sector, IOF is using three main databases: a) an Excel database to store data collected under monitoring programmes for demersal trawl fisheries and two databases (DAME and ATRIS) for the storage of data collected under MEDITS and MEDIAS research surveys, respectively.

Aside from the previous databases, IOF has an ORACLE database, Marine Environmental Database of the Adriatic Sea (MEDAS) that will be further developed to receive, store and manage data collected under DCF.

Currently MEDAS comprises the following main features/parts:

- Referral database - Thematic databases (physical oceanography, chemical oceanography, biology, fisheries)
- State of marine environment, aquaculture and fisheries indicators database (in Croatian language)
- Sea bathing water quality on beaches in the Republic of Croatia
- Trawl survey photo documentation
- Measuring of the Marine Coastal Current of the North Adriatic by HF Radars

In order for MEDAS to fit the needs of storage, management and handling of biological data, the following features will be developed:

1. Module for integration of the Métier based variables. This module will store data collected under port sampling programme. Former data collected within DemMon, PelMon and Coastal Fisheries Programmes will be organised and uploaded to current module.
2. Module for integration of stock based variables – Module to store information collected on board, measures on individual basis. Along with information collected in port, information collected on board during previous years will be uploaded and recovered to be stored on the new module.
3. Module for integration of data collected under research surveys in accordance with data formats foreseen under ATRIS.
4. Metadata information – Set of information with all the details on the sampling procedures, sampling frame for each sampling protocol, sample dimension, precision level for each variable estimated and information on each variable segmentation and aggregation and standard report dimensions.
5. International codes – Harmonised codes relating to national codification on species, gears, fishing areas, etc with EU codes set out under a data collection framework.

In order, for both involved institutions, to use the same primary data on capacity, effort, and geographical distribution of the origin of the landings a flow of information in a standardised and parameterised way, is foreseen. This flow of information will be supported by a **National Data Collection Database**.

A **National Data Collection Database** is being structured and designed in accordance with rules laid down by DCF legislation [Council Reg. 199/2008, Articles 13-17; Commission Regulation 665/2008, Article 8; Commission Decision 2010/93 /EU, Annex Chapter VI.A]. In addition to this database on primary/detailed data, is a Data Warehouse (DW) for the storage of final aggregated data - in standard EU formats that will also be integrated in the national DCF structure.

DoF will be the institution in charge of the national management of data collected under DCF and for the development and management of national database.

The database will be the basis of all of the system architecture. It will receive data from distinct data sources (DOF; IOF; PAAFRD and DoF/FIS) through procedures for data transfer, via FTP. Procedures for upload of data into proper tables will be in place. For each data transaction, a journal will be produced and stored. A copy of the original file will also be stored on a proper backup assuring the maintenance of original data in a safe and secure way.

The main features to be held on **DCF database** comprises:

- Primary validated data for transversal and socio-economic variables. Along with primary data checked and validated, also annual (as of January 1st) information for each population universe (Fleet, Aquaculture enterprises and Processing industry enterprises) will assure the

basis for further calculations and data merging such as merging needed for the estimation of environmental indicators 5-7 and 8 as well as to cross transversal data with biological data;

- Metadata on the process for the estimation of socio-economic variables;
- Detailed data for biological variables - For the purpose of exchange information with DoF, primary data will be analysed and only the final detailed data estimate will be stored on the National DCF database;
- Detailed data for research surveys;
- Detailed data for environmental indicators;
- Decoding according to EU codification standards (updated codification tables). This tables will be the basis for data codification for all the institutions producing data to be stored in the National DCF Database;
- Definition and maintenance of data dimensions (based on: time and geographic attributes, species, vessel LOA, fishing technique, fleet segment, métier) for data aggregation;
- Storing all information regarding data exchange and upload, and copy of original files exchanged;
- Data basis for DW querying and reporting.

#### **Data Warehouse - DW**

- Provide a transparent, consistent and homogeneous data basis of aggregated data already validated and encoded;
- Enable end-users with granted access to make consultations on data wherever they are;
- Provide a range of standard reports, compliant with formats set up with EU/STECF and GFCM, enabling effective time use to produce national results and the guarantee of the quality of the data that needs to be transmitted. This new system structure, composed by a national database for primary and detailed data, along with a repository module, such as a Data Warehouse (DW), for aggregated data will allow assuring all levels of compliance, as follows:

The use of DW along with the database will allow the users, among many other features, to:

1. Access (web secure) all data (primary, detailed and aggregated data), dependent on the level of level of granted to each kind of user;
2. Download / export data from queries and reports.

This system architecture will also allow the fisheries administration to efficiently produce the necessarily outputs in answer to STECF and ORGP such as GFCM, assuring coherent data, harmonized codification and a high standards of data quality. For this purpose a new database for the storage of harmonized and validated detailed data, DCF database, within FIS must be developed. Above of this database on primary/detailed data, a Data Warehouse for the storage of final reports on the standard EU formats must be developed.

National Database Structure within FIS and new features to be held in MEDAS will be developed during 2013 and 2014.

#### **VI.B Use of the data**

National database Structure will allow access to all types of registered users.

1) One generic access online via the web (through the web server), using a standard browser as client software. This access should be granted via a https secure protocol for the registered users. Amongst registered users, at least two distinct typified groups of end users should be created, distinguishing the access to final data, stored under DW and also to aggregated data stored under main database (typically the level of access to partners and EC).

2) One online access via ftp typically used for the purpose of uploading/downloading data to support data exchange between the Croatian partners for DCF.

The DCF budget includes staff time for data inputs, quality of data, data processing, data retrieval and production of aggregated data for the assessment working groups. Staff time to scientific analysis of that data was also included.

## VII. Follow-up of recommendations of professional services of the European Commission and STECF recommendations

- Review of Guidelines for the National Programs and Technical Reports under the Data Collection Framework, STECF SGECA/SGRN 09-03 report, Ispra, 19-21 October, 2009;
- Quality aspects of the collection of economic data - methods of calculation of the indicators and sampling strategies, STECF-ECA-0902 report, Barcelona, 11-14 May 2009;
- Evaluation of 2009 Annual Reports related to the Data Collection Framework, STECF-SGRN-10-02 report, Hamburg, 5-10 July, 2010;

## VIII. List of derogations

The following table summarises the derogations requested in this NP:

Title	NP Proposal section	Derogation approved or rejected	NP year of approval or rejection of past requests for derogations
Derogation on economic variables	III.B.6	a	2013
Derogation on biological - metier-related variables	III.C.6 - Biological - metier-related variables for the following metiers: FPO_DEF_0_0_0 LLS_DEF_0_0_0 MISC_SPO/MOL__0_0_0 MISC_CEP__0_0_0 LHP-LHM_CEP_0_0_0 LHP-LHM_FIF_0_0_0	a	2013
Derogation on biological variables - recreational fishery (sharks and eels)	III.D.6 - Biological variables – Recreational fisheries	a	2013
Derogation on biological - stock-related variables	III.E.5 and III.E.6 - Biological - stock-related variables	a	2013
Derogation on transversal variables (time lag)	III.F Transversal variables	a	2013
Derogation on economic variables	III.B.6		2014
Derogation on biological -	III.C.6 - Biological -		2014

metier-related variables	metier-related variables for the following metiers: MISC_SPO/MOL___0_0 MISC_CEP___0_0 LHP-LHM_CEP_0_0_0 LHP-LHM_FIF_0_0_0		
Derogation on biological variables - recreational fishery (sharks and eels)	III.D.6 - Biological variables – Recreational fisheries		2014
Derogation on biological - stock-related variables	III.E.5 and III.E.6 - Biological - stock-related variables		2014

Derogations are further specified in standard tables I.A.1.

## IX. List of acronyms and abbreviations

AR	Annual Report
BFT	Bluefin tuna
CBS	Central Bureau of Statistics
CV	Coefficient of Variation
DemMon	Monitoring Programme for Demersal trawl fishery
DoF	Directorate of Fisheries
DCF	Data Collection Framework
DW	Data Warehouse
EC	European Commission
EU	European Union
FIS	Fisheries Information System
FFPP	Fresh Fish Processing Plant
FTP	File Transfer Protocol
GSA	Geographical Sub-areas
GDP	Gross Domestic Product
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOF	Institute of Oceanography and Fisheries
LOA	Length Overall
MINAGRI	Ministry of Agriculture
MEDAS	Marine Environmental Database of the Adriatic Sea
MEDIAS	Mediterranean Acoustic Survey
MEDITS	Mediterranean International Trawl Survey
MS	Member State
NACE	Statistical classification of economic activities in the European Communities.
NP	National Programme
PAAFRD	Paying Agency for Agriculture, Fisheries and Rural Development
PelMon	Monitoring Programme for Purse seine fishery for small pelagics
PP	Processing Plant
RCMMed&BS	Regional Coordination Meeting for the Mediterranean and Black Sea
SGECA	Subgroup on Economic Assessment
SGRN	Sub-Group on Research Needs
ST	Standard Table
STECF	Scientific Technical and Economic Committee for Fisheries
VMS	Vessel Monitoring System



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RCM MED&BS 2012 Report of the 9th Regional Coordination Meeting for the Mediterranean and Black Sea, Madrid, 23 – 27 July, 2012.

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STECF-SGRN-10-02. Evaluation of 2009 Annual Reports related to the Data Collection Framework, report, Hamburg, 5-10 July, 2010.

Report of the 9<sup>th</sup> Liaison Meeting, Brussels, 24 – 26 September, 2012.

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Council Regulation (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community Framework for the collection, management and use of data in fisheries sector for scientific advice regarding the Common Fisheries Policy.

Commission Regulation (EC) 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.

Commission Decision (EC) No 2008/949/EC of 6 November 2008 adopting a multiannual Community programme pursuant to Council Regulation (EC) 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 Decision (EC) No 2010/93/EC 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.

Commission Regulation (EC) No 1078/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 861/2006 as regards the expenditure incurred by Member States for the collection and management of the basic fisheries data.

# XI. Annexes

## ANNEX I



Figure 1: Croatian Fishing Zones

Source: Ordinance on boundaries of the fishing sea of Republic of Croatia (OG 144/05)

## ANNEX II

### MEDITS

Geographical area:

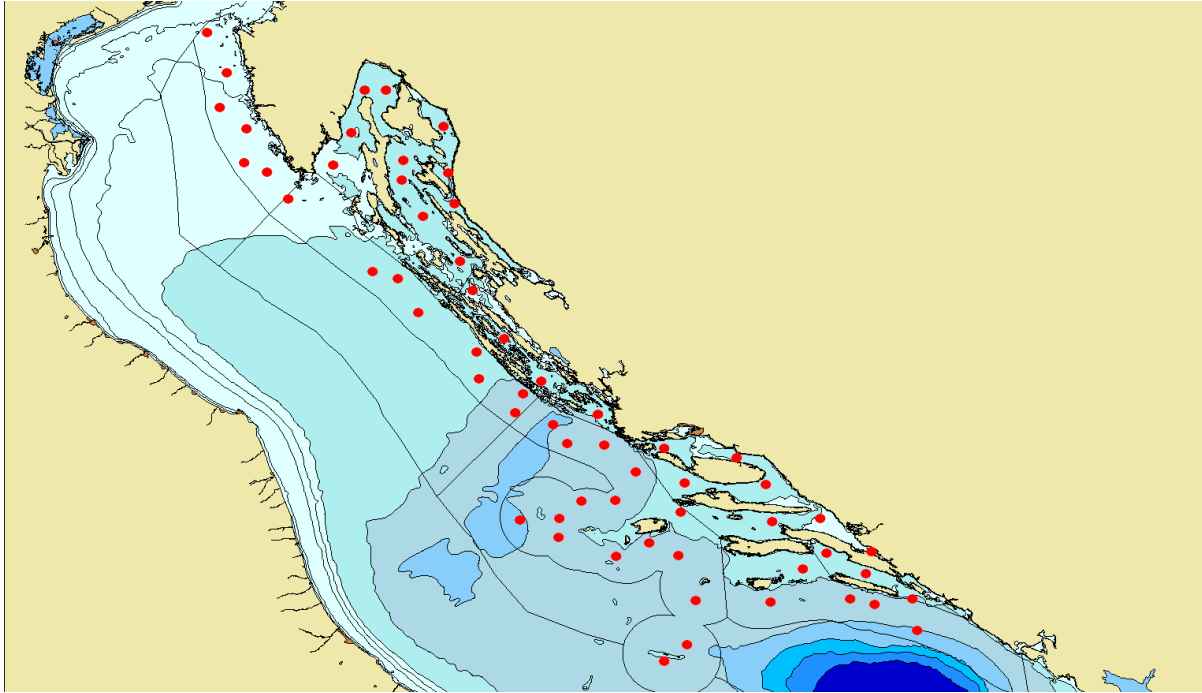


Figure 1. Study area of the MEDITS trawl survey in Republic of Croatia.

## MEDIAS

### Geographical area:

FAO area 37, Division 2.1 (Northern Adriatic) GSA 17.



Figure 2. Acoustic Survey Design in the Eastern Adriatic Sea (Croatian waters). – i.e. Eastern part of GSA 17: 30 parallel transects in the open sea area in 43°-223°direction up to mid-line, and randomly positioned transects in channel area (inner sea).

## **ANNEX III – Standard tables**