

Republic of Croatia
Ministry of Agriculture
Directorate of Fisheries

Annual Report
on the Croatian National Data Collection Programme for 2016
under Council Regulation (EC) 199/2008,
Commission Regulation (EC) 665/2008
and Commission Decision 2010/93/EU

Zagreb, 31-May-2016

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I. General framework

Republic of Croatia carried out its National Data Collection Programme in 2016 in accordance with the Data Collection Framework (DCF) (Council Regulation EC 199/2008, Commission Regulation EC 665/2008 and Commission Decisions 2008/949/EC and 2010/93/EU). Data collection in 2016 was carried out in accordance with the national data collection programme for 2014-2016 (hereinafter: NP 2014-2016) which was approved by Commission Decision of 25.11.2013 approving the national programme for the collection of primary biological, technical, environmental and socio-economic data in the fisheries sector of Croatia for the years 2014-2016 notified under document number C(2013) 8172. It should be noted that data included in NP 2014-2016 was based on data provided in NP 2012-2013 and it was modified only in regards to derogations requested.

The present document includes the annual report and compliance tables for the reference years 2015 (economic data) and 2016 (transversal and biological data), following the latest Guidelines for the submission of Annual Report on the National Data Collection Programmes under Council Regulation (EC) 199/2008, Commission Regulation (EC) 665/2008 and Commission Decision 2010/93/EU. The report gives an overview of the required and achieved sampling together with deviations from the aim and actions undertaken.

In 2016 implementation year there were no major deviations from NP 2014-2016 to report.

Croatia is actively involved in the Regional Fisheries Management Organisations (RFMOs), namely the International Commission for the Conservation of Atlantic Tunas (ICCAT) for large pelagic and tuna like species and the General Fisheries Commission for the Mediterranean (GFCM) for all the other stocks. All the data collected through DCF was made available to the respective RFMOs. Croatia also actively collaborates with Italy and Slovenia within the Adriatic Sea (GSA 17), with joint surveys, biological data collection, research projects and stock assessments, although there are no bilateral or multilateral agreements *per se*.

In Table I.A.1 a list of current derogations is provided.

Croatia does not have any bilateral and multilateral agreements regarding data collection; therefore such an indication was given in Table I.A.2.

II. National data collection organisation

II.A National correspondent and participating institutes

The national authority responsible for implementing the National Data Collection Programme is the Directorate of Fisheries (DoF) at the Ministry of Agriculture (MA).

DoF coordinates the implementation of the Programme at the national level. In 2016 the Assistant Minister in charge of fisheries issues and implementation of the Programme was Mr Ante Mišura, while the role of national correspondent for the period 2014-2016 was delegated to Ms Ivana Vukov at the Ministry of Agriculture, DoF, Sector for Fisheries Monitoring Centre, fleet management and data collection. Contact details are listed below.

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The participating Institutes are:

The Institute of Oceanography and Fisheries (IOF) is in charge of the implementation of monitoring and data collection programmes in the field of fisheries biology. 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. Mr Nedo Vrgoč, Director, is assigned as contact person for the implementation of the Programme in 2014-2016.

Responsible person: Mr Nedo Vrgoč
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The third participating organization is the Central Bureau of Statistics (CBS) which is maintaining the business register, which is used to identify fish processing establishments for the collection of data. 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 DCF website: In reference to Commission Regulation 665/2008 Article 8(2), the Croatian national website is hosted at the MA DoF website: <http://www.mps.hr/ribarstvo>. A new website is being developed under <http://www.ribarstvo.hr/dcf>, which will be launched in the second half of 2016.

National coordination: During 2016, one national coordination meeting was held between the responsible entities on 28 January 2016 of which the European Commission was notified one month in advance on 29 December 2015. The main outcome of the national coordination meeting was the practical elaboration of the provisions foreseen in the Programme for its implementation in 2016.

The report on the contents of this meeting is presented in Annex I of this document (in Croatian).

II.B Regional and International coordination

II.B.1 Attendance of international meetings

Attendance of international meetings has been indicated in Table II.B.1. All meetings relevant for regional and international coordination were attended.

Researchers studying small pelagic and demersal fish have attended, as planned, GFCM Meeting of SAC on Stock Assessment (SCSA) as well as Working group on stock assessment of small pelagic and demersal species in the Mediterranean. Furthermore, researchers have attended the coordination meetings within MEDITS and MEDIAS working groups as well as Bluefin Tuna Data Preparatory Meeting, Second Meeting of the Standing Working Group to Enhance Dialogue between Fisheries Scientists and Managers and Regional Coordination Meeting for Mediterranean and Black Sea.

Additionally, the Workshop on transversal variables was hosted in January 2015 by the Directorate of Fisheries in Zagreb.

II.B.2 Follow-up of regional and international recommendations and agreements

Croatia is following all relevant regional and international recommendations as is indicated in Table II.B.2.

III. Module of the evaluation of the fishing sector

III.A General Description of the fishing sector

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.

Collection of transversal data for this segment of the fleet started in mid-2015 and first preliminary data were 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.

There were no other relevant changes that had an impact on the implementation of the National programme.

III.B Economic variables

Mediterranean Sea and Black Sea

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

Tables III.B.1 and III.B.2 updated accordingly.

There were no significant deviations to report. Deviations from NP proposal are related to low response rates in some segments, or to overachieving sampling results in other segments. The reasons for this are explained in the related tables.

Fleet segmentation

The results of analyses done on data from 2014 economic data call have shown some issues resulting from inconsistent clustering over the time period with an impact on incomplete/inaccurate time series analyses. Several issues were detected as regards to fleet segmentation and clustering. To tackle this issues Croatia has reviewed the procedures and methodologies for fleet segmentation and clustering in 2014 and 2015. The following issues were tackled:

1. Fleet segmentation procedures: In Croatia fleet segmentation is done on a yearly basis using an SQL procedure which was reviewed in 2014. Several issues connected to data mapping, allocation of fishing time to gears, and aggregation methods were tackled and resolved. For the period 2011-2014 fleet was re-segmented in 2015 and data for the 2015 data call was delivered according to the new segmentation and clustering.
2. Short time series: At the time of data submission in 2014, Croatia hadn't had a long enough time series in order to reach a sound conclusion on stable fleet segments through the observed period. This issue has been resolved prior to economic data call in 2015 by an analysis of fishing activity and primary un-clustered fleet segments, taking into account data for 2011-2014 period and a 4-year methodology. As a result, a conclusion on time stable main fleet segments was made in 2015 which is used throughout the time series and serves also as a basis for clustering.
3. Clustering scheme: Fleet segment and vessel clustering in Croatia is done for two reasons: sampling purposes or reporting purposes for confidentiality reasons. As clustering depends entirely on the activity of vessels, in cases where clustering is needed, vessel activity is reviewed on a vessel to vessel case. In cases where a vessel changes its activity from one year to another inconsistently, it is directly reflected in the clustering. All fleet segments have been clustered on the basis of similarity and can be categorized as "Segments similar to other segments". Similarity is determined on the basis of gears used and adjacent length category.

Estimation procedures

In cases where response rate is inadequate to reach a statistically sound estimation, a simple regression is used to cross-check results or estimate totals. Low response rate is typically a problem of data collection for the small-scale fleet, for which questionnaire return rate is low, data in questionnaires inconsistent, unreliable and sometimes unreadable as in most cases there is no professional accounting. To tackle these issues, considerably more effort was placed into data collection in 2015 for the fisherman involved in small scale fisheries, including direct contact, reviewing questionnaires, cross checking data etc. As a result, in 2015 more complete data sets for 2014 were delivered, with considerably higher quality and more reliable results.

In 2014 and early 2015 the procedure for the estimation of landings value and income was changed, and now represents landings weight*average prices. Amounts of first sales from sales notes and questionnaires are used to cross-check the resulting estimates.

During 2015 Croatia started implementing the national validation and verification system under the National Plan for the Implementation of the Validation and Verification System in Republic of Croatia, approved by the European Commission. This has resulted in corrections of some primary data

in the national DCF database, with a small effect on average prices. Landing value and income for all fleet segments has been calculated according to the validated data.

Catch reporting requirements in Croatia for all vessels less than 10 m LoA are based on monthly catch reports that are particularly suited for passive gears. Small scale vessels for personal needs, that were transferred to the commercial fleet in 2015 also fall under the national requirement. As the current calculation of fishing days slightly exaggerates fishing days for passive gears, the methodology will be harmonized with results of the DCF Workshops on transversal variables I and II in early 2017.

Description of methods and assumptions made for estimation of capital value and capital costs

Capital value and capital costs are determined on the basis of PIM method, for which the Template for the calculation of capital value and capital costs was used. For the estimation of the PCU (Price per Capacity Unit) as reference values were taken average insurance costs. When insurance costs were shown as unknown data or had strange values, second hand market value was used as an alternative.

Estimation method for PCU: Averages of second hand market values, insurance costs values and GT (gross tonnage) for each segment were determined. The primary insurance costs were then divided with GT. The PCU represents the averages of all this values for reference year 2014.

Depreciation rates were calculated for hull, engine, electronics and other equipment. For each the calculation method was the same. For each segment averages of second hand market values were calculated and hull, engine, electronics and other equipment and placed in relationship. Each variable which is under depreciation was divided with values of the second hand market, all in their averages and shown as percentages. Averages of percentages for each variable represents share in total investment and placed in PIM tables.

Year of vessel construction was taken into account.

The share of each asset on the total value of the capital is: hull 44%, engine 22%, electronics 8% and other equipment 26% in 2014.

Estimation of direct subsidies

For the estimation of direct subsidies three methods are used as explained below.

All enterprises owning vessels from the fleet population were included in the database of direct subsidies. Direct subsidies represent subsidies for blue diesel, the market compensation and catch. For each company the sum of all subsidies was calculated they had from 2011-2014 and then distributed for each period in referent years. In cases where enterprises had more than one vessel, the amount of subsidies was allocated to vessels based on GT. As subsidies are collected on an enterprise level, and DCF economic data is collected on a vessel level, it proved difficult to merge the two data sets. The estimations were cross-checked by allocating the total amount of subsidies paid to respective fleet segments using the share of landings value of the fleet segment. In the end, three sets of estimations were compared to reach a sound conclusion. Although, the first method is the most accurate, it was not available prior to 2014, as direct subsidies were not collected on vessel level.

Estimation of energy consumption and energy costs

For the estimation of energy consumption and energy cost blue diesel records are used. The register of blue diesel is updated annually on the amount of fuel consumed per vessel. No estimation to determine total are used, as data is on a census basis. In order to estimate energy costs, data is collected both via questionnaires and by using average fuel prices.

Estimation of FTE

For the calculation of FTE the number of hours worked during the year was collected from the enterprises through the economic questionnaire. This parameter was divided by national annual full-time working hours, based on the CBS methodology according to which the working hours in Croatia is 2084 hours.

The questionnaire for the collection of socio-economic variables for the fishing fleet has remained the same as in 2015.

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

Table III.B.3 has been updated accordingly.

Accuracy indicators have to be reported for each fleet segment and for each variable. There are no significant deviations in the achieved accuracy from what was planned in the NP.

III.B.3 Actions to avoid deviations

Whenever possible, cross-checking procedures using different data sources are put into place, in order to ensure better data quality.

III.C Metier-related variables

Mediterranean Sea and Black Sea

III.C.1 Achievements, Results and deviation from NP proposal

There were no significant deviations from NP. Croatia is using ‘Métier Based’ sampling strategy.

Metier ranking procedure

The metier ranking procedure is developed as a module within the Fisheries Information System and maintained by DoF. As Croatia is currently in the process of developing a centralized data base on catch, landing and effort data from various sources (paper logbooks, e-logbooks, fishing reports), the metier identification module needs to be updated. Information used for identification and ranking of metiers is obtained from vessels register data, logbooks, fishing reports and sales notes data on a census basis. However due to the above mentioned system updating, metier identification is done directly from the database. Average values were used for the period 2013-2014, in order to determine metiers, as indicated in Table III.C.1. Two metiers were selected due to reasons other than ranking. PS_LPF_>=14_0_0; LLD_LPF_0_0_0 and Hand and pole lines for large pelagic all due to the BFT as targeted species.

In Table III.C.3 sampled trips by metier are described.

For the metier of bottom trawl (OTB), 93 sampling trips were realised out of 94 planned during 2016. All 28 on board planned trips were realised while at landing site 65 of 66 planned trips were realised

For metier FPO_DEF_0_0_0: traps for catch the crustaceans. Target species of this type of fishing is a decapod crustacean, Norway lobster (*Nephrops norvegicus*) which inhabited muddy sediments in the Adriatic Sea. Majority of catch using this fishing tool is accomplished in inner sea, mostly in fishing zones E and G. This tool was chosen for monitoring within the multiannual national programme for collecting fishery data based on achieved fishing effort in Croatian fisheries. During 2016, observers had made all 6 planned trips on landing sites.

Metier dredges DRB_MOL_0_0_0 was chosen for monitoring within the multiannual national programme for collecting fishery data based on Management plan for fishing with dredges in the Republic of Croatia. During the 2016 observers had made all 6 planned on-board trips and 6 of 4 planned trips at landing sites. Additional trips were made in order to achieve optimal and statistically representative distribution of collected data.

For the metier purse seine nets “srdelara” (PS SPF), altogether, out of 60 planned sampling trips, 74 were realised. On landing places out of 36 planned trips, 49 were done, but without extra costs. On board, out of 24 planned 25 were done. Out of achieved 74 (123% achieved) trips for sampling purposes on purse seine nets for small pelagics, 104 % were achieved on the board and 136% on landing places.

For purse seine net “palamidara” (PS SLPF) out of 4 planned (only landing paces) sampling only 3 were realised due to inability to get in contact/willingness with owners.

For purse seine net “igličara” (PS SLPF) out of 4 planned (only landing paces) sampling none were realised due to inability to get in contact/willingness with owners.

For purse seine net “lokardara” (PS SLPF) out of 8 planned sampling trips only 5 were realised due to inability to get in contact/willingness with owners. On board sampling trips out of 4 sampling all of them were realised, but on landing places out of 4 planned, 1 were realised.

For purse seine net “oližnica” (PS MDPSP) out of 8 planned sampling trips 8 were realised. On landing places out of 6 sampling none were realised, but on board sampling trips out of 2 planned, 8 were realised.

For purse seine net “ciplara” (PS MDPSP) out of 8 planned sampling trips only 5 were realised due to inability to get in contact/willingness with owners. On landing places out of 6 sampling planned, 3 of them were realised, and on board sampling trips out of 2 planned, 2 were realised

Out of 35 planned samples (fishing trips) for set gillnets (GNS), 35 were achieved. Out of achieved 35 samples (100% achieved) for GNS, 166% were achieved on board, and 91% on landing places (since separated commercial catches were analysed on board, these can also be considered as landing samples).

Out of 26 planned trips for trammel nets (GTR), 26 were achieved. Out of 26 samples (100% achieved) for GTR, 400% were achieved on board, and 70% on landing places (since separated commercial catches were analysed on board, these can also be considered as landing samples).

Out of 28 trips for beach seine (SB_SV) 26 were achieved. For SB-SV, out of 26 samples (93%) 12 were achieved on board (120%) and 14 on landing place (78%) (since separated commercial catches were analysed on board, these can also be considered as landing samples). Lower number of achieved SB_SV samples was due to severely reduced number of fisherman which use these gears.

Out of 6 planned samplings for traps for big crabs (FPO) 6 were accomplished and out of 12 planned longline samplings (LLS), all 12 were accomplished (both coastal and open sea longlines). All achieved FPO samples (6 samples – 100%) were done on landing places. All LLS samples (12 - 100%) were achieved on landing places.

Metier PS_LPF_>=14_0_0: There were 28 fishing trips during the sample year and sampling was done on all of them. At sea sampling is done during the transfer to the tugboat cages and while the tuna is transported in those cages to the farms. Since there is no landing of the caught tuna as they are kept alive for further fattening, sampling on shore is done during the transfer of tuna from the transport cages to the stationary ones and for few days after that. This means that the number of sampling trips is dependent on number of fishing operations and transfers during the bluefin tuna fishing season.

Purse seine for bluefin tuna (BFT): Out of planned 19 trips to be sampled at sea 11 were achieved, and out of 40 planned trips to be sampled on shore 17 were achieved. This number of achieved trips correlates with the number of fishing operations and transfers made in the sampling year. Fishing for bluefin tuna is restricted by time and by quantity. There is one-month long fishing season in which certain fishing quota amount cannot be exceeded. During the fishing season, depending on the size of each catch, there is going to be different number of fishing operations where it's possible to sample the caught tuna. Sampling was made on each of these times during this sampling year.

Metier LLD_LPF_0_0_0 BFT: Total of 6 fishing trips were made for this sampling year. Samples were obtained on 4 trips at sea and on 2 trips on shore. This type of fishery in Croatia is scarcely

represented while the catch for each trip goes from none to a maximum of a few individuals. This makes it hard to predict if there is going to be any samples while making the planned fishing trip.

Drifting longlines for large pelagic (bluefin tuna): 5 fishing trips were planned to be sampled on sea and 7 were to be sampled on shore. From this number, 4 fishing trips were made on sea and 2 on shore. Difference between planned and made trips is due to the collection of all of the required samples for the sampling year in those 6 fishing trips.

Metier LLD_LPF_0_0_0 SWO: For this metier 6 fishing trips were realised with collected samples on 5 fishing trips at sea and 1 fishing trip on shore. Same as with previously mentioned metier, catch for each fishing trip made is unpredictable and low in number, resulting in 0 to few individuals caught when fishing.

Drifting longlines for large pelagic (swordfish): There were 5 fishing trips on sea and 1 trips on shore out of planned 5 trips on sea and 10 trips on shore. The reason for this disparity is same as in above mentioned metier – it was possible to collect all of the required samples during those 6 trips.

Metier LHP_LPF_0_0_0 BFT: Sampling of this metier started in 2016 due to significant increase in catch quota for hand pole fishermen. Planned number of trips is taken from the planned number for year 2017. This metier is not included in the official ICCAT metier list for Mediterranean Sea and Black Sea and hence should be updated. Out of the 39 planned fishing trips, 27 were achieved, of which 15 on shore and 12 on the sea.

Hand and pole lines for large pelagic (bluefin tuna): From the planned 13 fishing trips on sea and 26 fishing trips on shore, 12 and 15 were achieved respectively. Planned number of sampling trips was taken from planned number for year 2017 since this metier is newly included in sampling strategy due to major increase of fishing quota for pole lines catching BFT in 2016. Increased number of achieved sampling trips is expected for 2017, as a second year of BFT hand and pole line metier sampling.

Metiers selected for sampling and sampling strategy are listed in Table III.C.4.

Table III.C.6 – Sampling intensity for length compositions (all metiers combined)

Sardina pilchardus were sampled on board and on landing place. Length was measured on 20298 specimens although it was planned to measure 15000 specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Engraulis encrasicolus were sampled on board and on landing place. Length was measured on 10043 specimens although planned were to be measured on 10000 specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Scomber scombrus were sampled on landing place and on board. Length was measured on 79 specimens although planned were to be measured on 100 specimens but due to inability to take samples only this many were measured.

Scomber colias were sampled on board and on landing place. Length was measured on 1006 specimens although planned were to be measured on 500 specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Mullus barbatus was sampled on board and on landing place. Length was measured on 9.540 specimens although planned were to be measured on 8.000 specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Merluccius merluccius was sampled on board and on landing place. Length was measured on 19.113 specimens although planned were to be measured on 12.000 specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Eledone moschata was sampled on board and on landing place. Length was measured on 2.106 specimens although planned were to be measured on 1.000 specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Eledone cirrosa was sampled on board and on landing place. Length was measured on 394 specimens although planned were to be measured on 500 specimens. Shortfall is over 10%.

Nephrops norvegicus was sampled on board and on landing place. Length was measured on 8.924 specimens although planned were to be measured on 8.000 specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Parapeneaeus longirostris was sampled on board and on landing place. Length was measured on 3.121 of the 2000 planned specimens. Although measurements were outnumbered, there was no additional cost in project for this.

Measurements of both mackerel species, during the 2016 sampling, represented certain problem since they are morphologically very similar species that fishermen never separate. Observers could classify species only during stay on the vessel with additional effort. In total, 483 specimens of *Trachurus mediterraneus* and 1.999 specimens of *Trachurus trachurus* were measured out of the 500 planned specimens for each species on the bottom trawl vessels. There was no additional cost in project for this.

Since the octopus (*Octopus vulgaris*) is rarely found in the bottom trawl catches, to fulfill the criteria of 100 measured specimens, observers needed to collect specimens at landing sites from different vessels and length frequencies were measured in the laboratory.

Spicara smaris was sampled on board (sorted and unsorted) and on landing places. In all 4861 specimens were measured from retained catches, 147 from unsorted and none from discards.

Solea solea was sampled on landing places. Sampling was optional, and 988 specimens were measured.

Though the number of some measured specimens exceeded planned number, it did not affect the financial construction of the project. For species that were not measured according to the NP, additional data of length frequency were collected during scientific surveys at sea (eg: MEDITS/MEDIAS).

Thunnus thynnus was sampled on board and on landing places. This includes transfer of the caught fish for further fattening (there is no actual landing for Bluefin tuna) and usage of the stereoscopic camera for length and weight measurements. 606 specimens out of 606 planned were sampled, including 570 samples from purse seine, 6 samples from drifting longliners and 30 samples from hand and pole lines.

Xiphias gladius was sampled on board and on landing places. 6 specimens were measured out of 6 planned.

III.C.2 Data quality issues

Sampling intensity for length compositions of species (all metiers combined)

Planned sampling intensity for length compositions of species (all metiers combined) was in general achieved and in some cases exceeded. In some cases the planned sampling intensity was not reached (*Scomber scombrus*), since the species was rarely encountered during sampling, and with few individuals. Problem of cooperation with fishermen for on-board sampling is still present.

Due to increased quota for BFT, the sampling was intensified for the relevant metiers. New metiere was introduced LHP_LPF_0_0_0 BFT as it is more relevant for BFT catch.

III.C.3 Actions to avoid deviations

Efforts for improving the collaboration with vessel owners, for allowing on-board sampling.

III.D Recreational fisheries

Mediterranean Sea and Black Sea

Table III.D.1 has been filed in accordingly.

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

Table III.D.1 has been filed in accordingly.

There are no recreational fisheries for tuna in Croatia. Recreational fisheries for bluefin tuna are regulated by national legislation by prohibiting catch of bluefin tuna and allowing only catch and release in 2016. Additionally, a small quota was allocated to recreational fisheries in 2016. Catch was monitored by catch report, required by national legislation. Bluefin tuna is mainly caught in sports fisheries in competitions which are under ICCAT quota and controlled by inspection and national observers. In each sports competition during 2016, the number, weight, length and sex of individuals caught were measured and identified. The quality of data from competitions in the tuna sports fisheries is considered first level of accuracy. Data will be available as of 2017.

DoF DCF data base which is currently under development may be supplemented with the information if it should prove necessary to strengthen the system of registration of the catches for BFT with information on sex and length. However, catch in sports fisheries in terms of robustness and data quality control is managed by DoF via forms prescribed by national legislation for registration of tuna caught in sport fisheries that competition organizers are required to deliver to DoF for each competition. The forms are entered to the DoF database and contain information on the number and weight of individuals caught by gear and area.

Croatia has derogation on sampling of eels and sharks in recreational fisheries.

III.D.2 Data quality issues

There are no data quality issues.

III.D.3 Actions to avoid deviations

There are no significant shortfalls to be reported.

III.E Stock-related variables

Mediterranean Sea and Black Sea

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

There were no significant deviations from NP to report. Table III.E.1 is filled in accordingly. Species landings data is collected under the Control Regulation (1224/2009). Reference period was set in accordance with NP 2012-2013, as NP 2014-2016 did not contain updated data.

Table III.E.3 - Sampling intensity for stock-based variables

Sardina pilchardus were sampled on board for determining weight, age and sex. Age was determined from otoliths on 401 specimens (400 was planned). Weight, as well as sex maturity and sex ratio were measured on 1017 and 1007 specimens (1000 were planned).

Engraulis encrasicolus were sampled on board for determining weight, age and sex. Age was determined from otholits on 400 specimens (400 was planned). Weight, as well as sex maturity and sex ratio were measured on 1042 and 1012 specimens (1000 were planned).

Scomber scombrus were sampled on board for determining weight, age and sex. Age was determined from otholits on 56 specimens. Subsequently, weight, as well as sex maturity and sex ratio were measured on 56 specimens (100 were planned).

Scomber colias were sampled on board for determining weight, age and sex. Age was determined from otholits on 200 specimens. Weight, as well as sex maturity and sex ratio were measured on 219 specimens (200 were planned).

Mullus barbatus was sampled on board and on the landing places for determining weight, age and sex. Age was determined from otholits on 400 specimens. Weight, sex maturity and sex ratio were measured on 812 specimens (800 were planned).

Merluccius merluccius was sampled on board and on the landing places for determining weight, age and sex. Age was determined from otholits on 500 specimens. Weight, sex maturity and sex ratio were measured on 900 specimens (800 were planned). Although measurements were outnumbered, there was no additional cost in project for this.

Eledone moschata was sampled on board and on the landing places for determining weight, sex maturity and sex ratio. A total of 500 specimens were measured out of 500 planned.

Eledone cirrosa was sampled on board and on the landing places for determining weight, sex maturity and sex ratio. A total of 211 specimens were measured out of 300 planned.

Nephrops norvegicus was sampled on board and on the landing places for determining weight, sex maturity and sex ratio. A total of 700 specimens were measured out of 700 planned.

Mediterranean horse mackerel (*Trachurus mediterraneus*) 200 planned individuals were sampled for length, weight, sex and maturity stage determination, of which 100 individuals for age determination.

Horse mackerel (*Trachurus trachurus*) 200 planned individuals were sampled for length, weight, sex and maturity stage determination, of which 100 individuals for age determination

Octopus (*Octopus vulgaris*) 50 planned individuals for length, weight, sex and maturity stage were sampled

Deep water rose shrimp (*Parapenaeus longirostris*) 500 planned individuals for length, weight, sex and maturity stage were sampled.

Spicara smaris was sampled on board for determining weight, age and sex. Age was determined from otholits on 300 specimens. Weight, maturity and sex ratio were measured on 1435, 500 and 500 specimens respectively.

Solea solea was sampled optionally. In all 119 specimens were used for determining age, maturity and sex.

Thunnus thynnus was sampled on board, in market, during the transfer and using stereoscopic camera to obtain 606 samples for weight and length. For weight at length, length and weight at age 126 individuals were measured, while for sex-ratio and maturity at age 98 of the individuals were sampled. Lower number of sampled individuals (78% of planned number) for sex-ratio and maturity is due to inability to determine the sex of the Bluefin tuna since the caught fish is gutted on board, before landing on shore and there are no other ways to determine sex of the individual.

Xiphias gladius was sampled on board and on the landing places to determine length, weight, sex and age. In some cases determination of sex and maturity was not possible due to fish being gutted in market prior the sampling. Total of 6 individuals was sampled for length and weight measurements, while 2 (out of 4 planned) were sampled for sex and maturity analysis.

III.E.2 Data quality issues

Precision estimates were calculated following the provisions of the DCF (Commission Decision 2010/93/EU section B.B2.4).

III.E.3 Actions to avoid deviations

There are no significant shortfalls to be reported.

III.F Transversal variables

Table III.F.1 updated accordingly with the information collected during the sampling year.

There were no significant shortfalls during data collection.

III.F.1 Capacity

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

There are no significant shortfalls to be reported.

As data was collected under the Control Regulation, DCF data quality achievements have not been reported. Precision estimates were calculated following the provisions of the DCF (Commission Decision 2010/93/EU section B.B2.4).

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

III.F.1.3 Actions to avoid deviations

Not applicable.

III.F.2 Effort

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

Table III.F.1 updated accordingly with the information collected during the sampling year.

There are no significant shortfalls to be reported.

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

As data was collected under the Control Regulation, DCF data quality achievements have not been reported.

III.F.2.3: Actions to avoid deviations

No actions planned.

III.F.3 Landings

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

Table III.F.1 updated with the information collected during the sampling year.

List the deviations (if any) in the achieved data collection compared to what was planned in the relevant NP proposal, and explain the reasons for the deviations.

MS are reminded of the fact that the DCF has no provisions for the exclusion of any part of the vessel population from data collection (by means of thresholds for, e.g., fishing effort, quantities landed, revenues, etc.). If, nonetheless, part of the fleet was excluded from sampling, the reasons for this should be thoroughly explained and justified.

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

As data was collected under the Control Regulation, DCF data values of the accuracy indicators have not been reported.

III.F.3.3 Actions to avoid deviations

No actions planned.

III.G Research surveys at sea

III.G.1 Achievements: Results and deviation from NP proposal

Table III.G.1 is updated with the information collected during 2016.

MEDITS SURVEY 2016

In the Croatian territorial waters MEDITS 2016 survey was performed from 4th of July to 22nd of July on a board of research vessel BIOS DVA (BIOS TWO) of the IOF, Split. Loading and unloading the equipment, preparation of the vessel and boarding took three days in total.

During the MEDITS 2016 survey sampling was performed on a 56 stations out of 60 planned due to bad weather condition and damaged net against obstacle on the sea bottom. All 56 valid hauls were made in different depth strata (10-50m; 50-100m; 100-200m; and 200-500m) in the Croatian territorial waters (Figure 1). Operating performance of the new nets, such as vertical and horizontal openings, geometry, bottom contact etc. were tested prior the survey. The bottom water temperature was recorded by a Star-Oddi temperature sensor (Temperature/Depth). The sensor was used in 54 hauls.

No other measures of environmental variable were recorded.

Marine litter were collected and classified according to MEDITS protocol.

A total number of 335 taxa were identified, subdivided as follows: Osteichthyes 84 species plus 1 taxon at genus level; Elasmobranchs 11 species, Crustaceans 11; Cephalopods 19 species plus 2 taxa at genus level, and 211 taxa belonging to other Faunistic categories.

The total number of classified individuals belonging to the MEDITS reference list was 77 560.

The total number of sampled individuals for length distribution was 24.169.

The total number of sampled individuals for sex, maturity and weight was 8.949.

The total number of samples of hard tissues (otolith pairs) collected for ageing by target species were *M. merluccius* 263, *M. barbatus* 230, *T. trachurus* 100 and *T. mediterraneus* 23. The samples were collected by sex and size according to the protocol. Significant discrepancies reading the otoliths were encountered among readers due to uncertainty of false growth rings determinations.

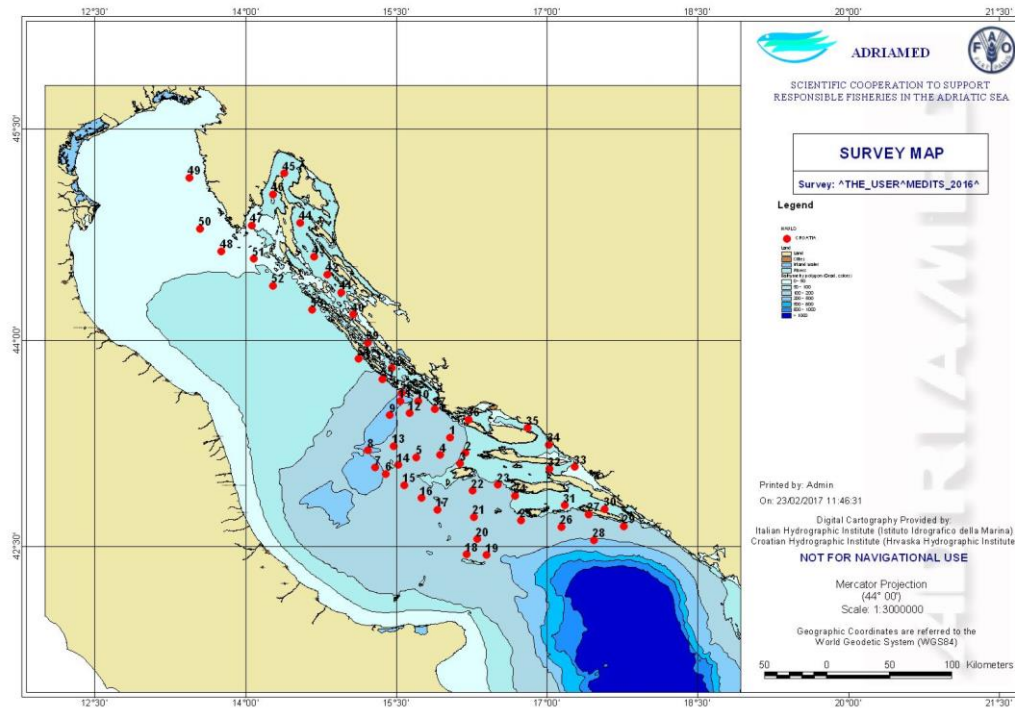


Figure 1. Map position of MEDITS 2016 sampling stations in Croatian territorial waters (GSA 17)

Table 1. The list of G1 and G2 reference species caught during MEDITS 2016 survey in Croatian territorial waters (GSA 17)

Faunistic category	Code name	Specimens caught	Specimens measured	Percentage of measured specimens
	ASPICUC	232	232	100%
	BOOPBOO	731	602	82%
	CITHMAC	486	471	97%
	DIPLANN	341	203	60%
	ENGRENC	7768	1428	18%
	EUTRGUR	26	26	100%
	HELIDAC	113	112	99%
	LEPMBOS	76	74	97%
	LOPHBUD	19	16	84%
	MERLMER	2826	2254	80%
	MICMPOU	1021	550	54%
	MULLBAR	7968	3795	48%
	MULLSUR	12	12	100%
	PAGEACA	245	245	100%
Bony fish	PAGEBOG	81	80	99%
	PAGEERY	1035	694	67%
	PHYIBLE	76	76	100%
	SARDPIL	10371	2005	19%
	SCOMPNE	4	3	75%
	SOLEVUL	1	1	100%
	SPICFLE	2684	1421	53%
	SPIC SMA	674	390	58%
	TRACMED	301	246	82%
	TRACPIC	11	8	73%
	TRACTRA	3045	1858	61%
	TRIGLUC	6	5	83%
	TRIPLAS	67	66	99%
	TRISCAP	632	595	94%
	ZEUSFAB	62	62	100%
	DASIPAS	2	2	100%
	MUSTMED	7	7	100%
	MUSTMUS	12	12	100%
	MYLIAQU	19	19	100%
	RAJACLA	18	15	83%
Elasmobranchs	RAJAMIR	81	76	94%
	SCYOCAN	494	494	100%
	SCYOSTE	6	6	100%
	SQUAACA	18	18	100%
	TORPMAR	7	5	71%
	ELEDCIR	124	123	99%
	ELEDMOS	397	397	100%
	ILLECOI	3836	1834	48%
Cephalopods	LOLIVUL	869	383	44%
	OCTOSAL	1	1	100%
	OCTOVUL	10	9	90%
	SEPIOFF	8	5	63%
Crustaceans	NEPRNOR	148	148	100%
	PAPELON	13085	3063	23%

MEDIAS SURVEY 2016.

In the territorial waters and protected ecological fishery zone (ZERP) of Croatia MEDIAS 2016 survey was performed during September in the eastern part of GSA 17 (Figure 2). It was 4th acoustic survey in eastern part of GSA 17, carried out after accession of Croatia to EU, and collecting data within DCF. It was performed with research vessel BIOS DVA of the IOF, Split.

During this survey, acoustic data has been collected with calibrated scientific echo sounder (SIMRAD EK60, operating frequency: 38 kHz) within 1,494 EDSU, covering entire survey area of 13.578 nmi² as planned. Acoustic data for stocks abundance analyses have been collected during daytime only. In total, 30 vessel days were used.

Fish sampling by mid-water trawl aimed to identify echo traces, have been performed 64 times, obtaining 62 hauls with catch. During hauls, operating performance of the trawl (vertical opening, position of trawl within water column) has been monitored by SIMRAD ITI net sensors. Qualitative and quantitative analyses of collected fish samples were performed eventually. The total number of sampled individuals of anchovy and sardine for length analyses was 16,755 and 7,582 respectively. In addition to detailed analyses of all target species, other pelagic species (OPS group) were also analyzed according to the protocol.

Oceanographic properties of the survey area were analyzed and described on the basis of 92 CTD vertical profiles (<http://jadran.izor.hr/roscop/>) (Figure 3).

Based on acoustic data collected, abundance and spatial distributions of anchovy and sardine stock within survey area were analyzed (GIS maps). With the aim to estimate abundance of target species, TS equations based on 20 log has been used in accordance with MEDIAS Steering Committee agreement as follows:

anchovy: $TS = -74,6 + 20 \log L;$

sardine: $TS = -72,6 + 20 \log L.$

The samples for laboratory analyses were collected by size groups according to the protocol. Laboratory analyses on detailed biologic characteristics (age, maturity, sex) on both target species (anchovy and sardine) were made. The total number of sampled individuals for laboratory analyses of sex composition, maturity and individual weights was 2,396. The total number of samples of hard tissues (otolith pairs) collected for ageing, as well as samples for sex and maturity analyses, by target species were: anchovy 1,357, and sardine 1,039, with aim to describe age composition of target species assemblages within study area (Figure 4). However, during the meetings of AdriaMed Study Group on intercalibration of anchovy otolith reading (Split, 17-19 January 2017) and ICES workshop on age reading of European anchovy (WKARA2 - San Sebastian, 28 November to 02 December 2016), some discrepancies reading the anchovy otoliths were encountered among readers due to uncertainty of false growth rings determinations. Repeated reading of previously analyzed anchovy otoliths from 2013, 2014, 2015 and 2016 is under way. Currently, with aim to increase accuracy of age readings, we participate in ICES otolith exchange for otolith reading of sardine as a preparatory phase for future age reading standardization workshop.

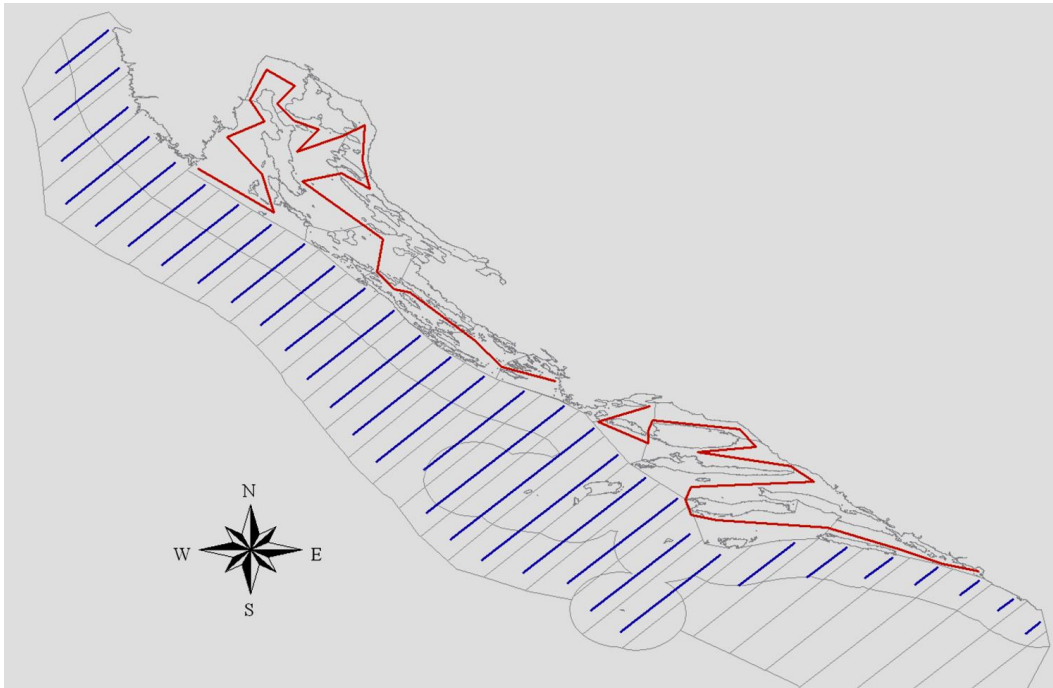


Figure 2. Map of acoustic transects in eastern part of GSA 17 as planned in DCF-MEDIAS 2016 survey. Blue transects in open sea and red transects in inner sea.



Figure 3. The spatial position of the CTD stations at which the measurements were made during the echo-monitoring DCF MEDIAS (August-September, 2016). Source: <http://jadran.izor.hr/roscop/>.

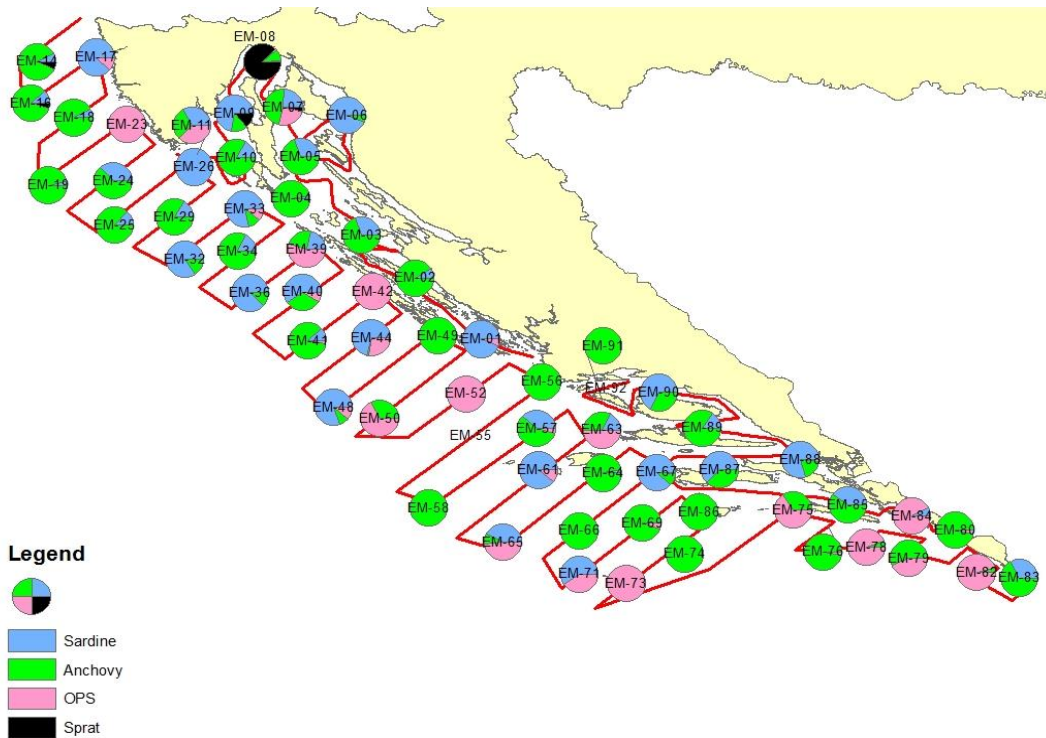


Figure 4. The spatial distribution of sampling and composition of catches achieved with the pelagic trawl along acoustic transects in late August and September 2016.

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

There are no apparent shortfalls or deviations to report.

III.G.3 Actions to avoid deviations

Not applicable.

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

IV.A Collection of data concerning the aquaculture

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

Collecting economic data in Croatia covers marine and freshwater aquaculture. Marine aquaculture consists out of 2 segments with three or more enterprises including in one each segment and freshwater aquaculture with 4 segments in 2015. All together there are seven freshwater segments and five marine. By the NP population was defined according to EUROSTAT definition under NACE Code 03.2 “Aquaculture” and this data has 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 one enterprise for DCF purpose. Final population for data collection is different from the NP because DoF register contains some license holders that are not active producers. During the process of data collecting it came clear that some of our biggest and most important aquaculture producers are not register by the NACE Code 03.2 “Aquaculture”. Since they are an important part of aquaculture, they were included in final population. Data from these companies could affect segment result since their “Other income” is higher than “Turnover” attributed to aquaculture. Some other results from segments that contain such companies may appear with

strange values for some variables.

Segmentation was made based on species and technique. Since a large number of enterprises are producing more than one species, additional segmentation was made based on the value of production attributed to one species. An exception was made in the shellfish farming. It was planned that additional segmentation will be made based on the result of data collection, and that shellfish farms will be separated on oyster and mussel farms. At the end of data collection we concluded that all shell fish farms are growing both oysters and mussels. Almost all of them have more than 50% of turnover attributed to mussel production, and only few of them to oysters. Since in the cases of those who should be segmented in the oyster segment, value of production is not significantly over 50%, and it can vary from year to year, for the statistical and practical reasons all shellfish farms are segmented as Mussel long line. Other segments that were not predicted in the NP are mostly consisting out of few smaller companies in fresh water aquaculture.

Some of the segments, like Mussel long line, are data poor because most of the companies are small-scale family business with bad or no financial accounts at all. Some others have production only for local sale, or a restaurant owned by the same enterprise.

On the other hand, in this year's questionnaires in aquaculture, are placed new fields in order to get more accurate data. Fields that are added are: "Share of aquaculture in total revenues" shown in percentages, "Home production of fish feed (YES / NO)", "Share costs of aquaculture in total costs" shown in percentages. Also, in the Sale in the reference year table, values of a ton in weight have been changed.

In general, aquaculture data for year 2015 are more relevant than years before since farm owners are now introduced with data collection and methodology they need to use to get precise data from financial and business paperwork necessary to running companies.

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

All information's are presented in tables IV.A.3 with the values of the accuracy indicators.

We collected data for all segments by a census, except shellfish farm, where collecting was made on probability sampling. As opposed to the planned in NP, all shellfish farms are segmented as Mussel long line.

Data collection was conducted by phone contact with subjects, introducing them with the data collection, and sending questionnaires together with guidelines by post or email. To ensure data consistency for all segments, together with each variable defined in guidelines it was given the link to accounting code in balance sheets. The subject was given 7-10 days to prepare documentation for data collection. Later than representative of DoF would arrange a visit to farm office or accounting office to check and collect requested data. For some cases where it was not possible to ensure direct contact or visit, the subjects answered the questioner with telephone consultation and send it to DoF by email.

For cross-checking, data from the Croatian Financial Agency was used, which is mostly connected with the balance sheet, but only for companies who had to deliver their data due to their size category or net profit.

Some variables were collected from DoF database and subsidies register like proposed in NP, but some were taken from questionnaires although it was planned to use DoF data. It was determined that DoF register is not complete and not suitable for this purpose. Some other, like subsidies were a combination of DoF register and questionnaires.

For the sake of data collecting and processing in the next years, web module will be developed, while at this moment all collected data are in Excel file.

For Mussels longline, Sea bass and Sea bream combined and Trout on growing estimation of total were made based on the company average values from the available data from questionnaires. That was deviation from the NP but also only available method since rising factor from DoF database was not available. All data sources are presented in Table IV.A.3.

One of the main problems is low response and cooperation. This is especially recognized in the shellfish segment where it will be necessary to put an extra effort in future collecting data from small-scale companies through this year there is fewer problems less than last year with an initial collection.

IV.A.3 Actions to avoid deviations

Additional attention will be made on collecting data, especially on small-scale companies in marine aquaculture, so as in freshwater aquaculture. Since in Croatia there are different levels of enterprises legal registration with different accounting methods, it came clear during data collecting that is necessary to adjust guidelines for each of them. Solution could be making two different questionnaires with different approach. The first one, for small-scale companies, tailored to their business activities and the way of leading accounting records. Therefore, comprehensive insight to their activities and use of their knowledge in creating actions to should be considered. Other for larger companies where it is easier to respond to inquiries and requests submitted to them.

IV.B Collection of data concerning the processing industry

Collection of socio-economic data for the fish processing industry in Croatia covers all enterprises for which the main activity is fish processing. In the NP 2014-2016, the population was defined according to EUROSTAT definition under NACE Code 102, and it was based on information from 2011. Since the Croatian NP 2014-2016 did not incorporate updated data.

As data from the Business Register is not necessarily updated, data from the Register of approved establishments, maintained by MP, the Veterinary Directorate, was taken into account when defining the population for reference year 2015.

Croatia had 51 enterprises with fish processing as the main activity; about half of them had delivered data through questionnaires. Croatian fish processing industry is divided into 3 segments in 2015 as well as the year before. Segmentation is made depending on the number of employees; fewer than 10 employees, from 11 to 49, from 50 to 249, and more than 250 employees. Most of the data and additional information were collected through DCF collection and some from FINA (Croatian Financial Agency). Balance sheets were used for cross-checking of data from questionnaires. DCF data was collected through the questionnaires sent to the companies' accountants.

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

Since the socioeconomic data collection on processing industry is still in its beginning, problems related to data collection as well as low response rates are still present. However, data quality is at a higher level than in the previous year. In the questionnaires some changes were made to enable better processing of data; such as extra fields that show the percentage of revenue/cost of the fish processing industry in relation to the total amount of each variable.

The main problem has come up during the determination of the population and harmonization of the processing industry population coming from different sources. We have determined that the business register that the CBS is maintaining and which we used to find fish processing establishments for the data collection, needs to be harmonized with the list of veterinary facilities approved for fish processing. The reason for that is that, like in aquaculture, some large companies that process fish are not registered for fish processing as the main activity. Another problem is that lots of registered companies do not exist anymore and cannot be contacted. Some companies did not submit any financial reports, so due to the lack of data, they were classified in NP as companies with <10 employees. Moreover, some registered and contacted companies with various activities stated they have not done any processing in 2015.

Data collection was conducted by phone contact with subjects, introducing them with the data collection, and sending questionnaires together with guidelines by post or email. In the case of processing industry, it is not necessary to visit subjects since most companies have an accounting service and have much better data than some aquaculture segments or the small-scale fishing fleet. The

exact size of the active population was determined only after data collection for 2015 had finished, since all companies that have fish processing as main or as part of their activities were contacted.

Balance sheets, coming from CBS, were complemented by the DoF questionnaire. In order to ensure the consistency of data coming from different data sources cross checking indicators were used, e.g. volume and value of production collected by DoF and CBS. For enterprises with less than 10 employees, which are not covered by the CBS survey, all the data was collected through the DoF questionnaire.

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

Not applicable. Data for all segments was collected by a census. From total and frame population number, planned sample rate was 100%.

As proposed in NP, data collection was performed thru questionnaires made for this purpose. Each subject was contacted directly by phone and introduced with the Programme. After that questionnaires were sent by email together with guidelines. To ensure data consistency for all segments, together with the definition of each variable in guidelines, a link to accounting codes in balance sheets was given, the same as with aquaculture. After that, the subject was given 10-14 days to prepare documentation for data collection. For those who did not send questionnaires back to DoF, a new deadline was given with strict instruction to send in next 7 days.

All questionnaires were checked by DoF employees and all strange or unknown data were reviewed. In some cases, respondents are asked to clarify some numbers or information they sent. In cases when data collection was not possible directly from a visit, questionnaires were filled with telephone consultation and send to DoF by email. Also, some data collection was made through balance sheet and profit and loss accounts. Those financial reports are available for public at FINA (Croatian Financial Agency).

It is important to say that enterprises often refuse to send data, especially when DoF employees do not have an opportunity to visit them or if they believe that there are no advantages for them after they send data.

IV.B.3 Actions to avoid deviations

A new type of questionnaire should provide data that maximum correspond to the actual operation of enterprises in the fish processing industry. Many companies whose main activity is processing, have also many other activities, as well as case aquaculture. In this manner, data placed in questionnaires are actually balanced. An agreement between the Ministry of Agriculture and the CBS is in preparation in order to regulate delivery of Eurostat statistics data on the processing industry pertaining to the Eurostat structural business statistics variables. Data coming from CBS can however only be used in cross-checking procedures since DCF data call deadlines are usually well before the CBS data availability.

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

V.1 Achievements: Results and deviation from NP proposal

Table V.1 was updated accordingly.

Croatia samples and analyses the target species according to the MEDITS protocol. Observations on these species are the total number of individuals, length frequency distribution, sex (including sexual maturity stage) and total weight. The characteristics of each kind of observation are specified in the common manual of protocols. For all the other sampled species of fish, crustacean and mollusc, only the total number and total weight are reported for each haul.

For the calculation of the ecosystem indicators only data from MEDITS survey are available. The MEDITS survey performed in Croatian territorial waters is restricted to GSA 17. As the Adriatic Sea is restricted to GSA 17 and 18 the calculation of the ecosystem indicators should be performed on the regional level, covering at least GSA 17. All indicators and other results can only be calculated through the MEDITS data at a regional level.

Discarding rates are calculated from logbooks and observer's trips with the fishermen.

In Croatia, VMS data is collected exhaustively from all authorised purse seiners and demersal trawlers, including all other vessels over 12 m LoA. Currently e-logbook and VMS devices are being installed to all remaining purse seiners and trawlers that have not originally been included in the equipping of vessels above 12 m LoA. VMS base is starting to be used in order to analyse VMS and e-logbook effort data.

V.2 Actions to avoid deviations

There were no shortfalls in the achieved data collection.

VI. Module for management and use of the data

VI.1 Achievements: Results and deviation from NP proposal

Table VI.1 is updated with the information on data transmission to end-users.

As Croatia has joined the EU on 1 July 2013, and data collection begun comprehensively in 2013, as for the biological and transversal variables, 2013 was the first referent year available for data transmission. Additional effort was made in order to validate landings and effort data from 2012, which were also made available, although it meant an additional commitment, in order to facilitate stock-assessments and analysis of economic performance.

However, this is related particularly related to survey data. Croatia started MEDITS data collection under DCF as of 2013. Before this period all surveys were done as a part of the Italian programme (as collaborative project between the Institute of oceanography and Fisheries and Laboratory of Marine Biology in Fano - Italy). Therefore, all collected data are stored in the Italian partner's database.

In order to be able to provide data for the first official data call for PGMED and RCM MED&BS in 2016, procedures were developed to extract data from the national database in the required formats. Since this was a first exercise, more time was needed than limited by the data call deadline. Although the submission was somewhat delayed, there were no consequences on the results of the working group.

VI.1.1 Management of data

A central National Data Collection Database is being developed since 2012 with the structure designed to be 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 relation to the database that contains the primary/detailed data, there is a database for the storage of final aggregated data - in standard EU formats, that are integrated in the national DCF DB structure.

DoF is institution in charge of the national management of data collected under DCF and for the development and management of national database on economic and transversal modules. A detailed description of the database and related procedures is provided in Annex II. During 2016 and beginning of 2017, linking of central DoF and biological database maintained at IOF is planned.

All national formats have been structured to standardized EU formats. As of 2014 and beginning of 2016, national formats have been fully mapped to EU formats so as to comply with FAO, GFCM Task 1, DCF and Master Data Register formats, which has been a difficult and time consuming task.

During 2016 Croatia started implementing the national validation and verification system under the National Plan for the Implementation of the Validation and Verification System in Republic of Croatia, approved by the European Commission. This has resulted in corrections of some primary data in the national DCF database, with a small effect on average prices. Landing value and income for all fleet segments has been calculated according to the validated data. In late 2016 the upgrading of the overall national FIS (Fisheries Information System) began, so as to comply with the national plan Valid.

Catch reporting requirements in Croatia for all vessels less than 10 m LoA are based on monthly catch reports that are particularly suited for passive gears. As the current calculation of fishing days slightly exaggerates fishing days for passive gears, the methodology will be harmonized with results of the DCF Workshops on transversal variables I and II in early 2017. Small scale vessels for personal needs that were transferred to the commercial fleet in 2015 were included in the DCF population for 2015 and fall under the national requirement of catch reporting.

VI.1.2 Data transmission

Detailed explanations on other specific end-user issues related to data transmission in 2016 are provided as comments in the JRC IT platform on Data Transmission.

VI.2 Actions to avoid deviations

There were no apparent shortfalls to report.

VII. 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
JRC	Joint Research Centre
LOA	Length over All
LOA	Length Overall
MA	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

VIII. Comments, suggestions and reflections

In regards to the evaluation of the Annual Report for 2016 it is important to emphasize that the NP 2014-2016 represents a modified NP 2012-2013, for which the data for 2011 was used. The modification of NP 2014-2016 relates only to derogations, while data had not been updated.

At the Workshops on transversal variables I and II, held in 2015 and 2016, it was concluded that DCF is not fully aligned with the coding in the latest Master Data Register lists available for the Control Regulation or the FAO code list. As most MS use control data for transversal variables, additional effort may be done in order to align the coding lists. This is important as discrepancies between the two lists create an additional burden to the MS, with implications also on funding as mapping procedures must be set to align the codes. For example, traditional Croatian gears which fall under the FAO category MIS (miscellanea) could not be included as such in the data call tables as the code is not available in the data call coding list, therefore NK for unknown had to be inserted.

Additionally, there is a need to further describe and give guidelines to MS as to calculation of effort variables for passive gears, in order to harmonize reporting across MS.

In regards to aging techniques, significant discrepancies reading the otoliths were encountered among readers due to uncertainty of false growth rings determinations. Additional exercise for harmonization of reading the otoliths for *E. encrasicolus*, *M. merluccius*, *M. barbatus*, *M. surmuletus*, *T. trachurus* and *T. mediterraneus* among readers is strongly advisable.

Cooperation with JRC, in terms of JRC data quality reports, has greatly aided in improving the establishment of a data validation system and improved data quality in general.

Overall, we find it difficult to comply with all requirements and data call obligations, therefore we support the development of a database and central access point for end-users.

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X. Annexes

Annex I. Report on the content of the national co-ordination meeting in 2015

Annex II. Description of the database and related procedures

Annex I. Report on the content of the national co-ordination meeting in 2016 (in Croatian).

MINISTARSTVO POLJOPRIVREDE

UPRAVA RIBARSTVA

Služba za Ribarski monitoring centar i prikupljanje podataka

Zagreb, 28. siječnja 2016. godine

- I N T E R N O -

PREDMET: Izvještaj s nacionalnog koordinacijskog sastanka u sklopu Nacionalnog programa za prikupljanje podataka u ribarstvu u 2016., 28. siječnja 2016. godine

DATUM I MJESTO ODRŽAVANJA

28. siječnja 2016. godine, 11:00 – 16:00h

Institut za oceanografiju i ribarstvo, Split

PRISUTNI

MP/UR: Marin Mihanović, Vedran Kolarić, Ivana Vukov

IOR: Nedo Vrgoč, Josip Poljak, Igor Isajlović, Vjekoslav Tičina, Vanja Čikeš Keč, Barbara Zorica, Jakov Dulčić, Branko Dragičević, Robert Grgičević, Leon Grubišić, Damir Ivanković

Nacionalni koordinacijski sastanak održao se u okviru provedbe Nacionalnog programa prikupljanja podataka u ribarstvu Republike Hrvatske u 2016. godini. Sastanku su uz predstavnike Uprave ribarstva, g. Vedrana Kolarića i g. Marina Mihanovića, prisustvovali predstavnici Instituta za oceanografiju i ribarstvo u Splitu zaduženi za pojedine sekcije Programa, financije te ravnatelj Instituta kao odgovorna osoba za provedbu biološkog dijela Programa. Glavne teme sastanka bile su vezane uz financije i provedbu Nacionalnog programa prikupljanja podataka u 2015. godini (u daljnjem tekstu: Program) u sklopu Okvira za prikupljanje podataka EU (*Data Collection Framework*, DCF). Ključne teme rasprave bile su opće informacije i sastanci u 2016. godini, povratne informacija Europske komisije na primljeni Godišnji izvještaji i druge izvještaje, planiranje provedbe u 2015. godini i druga koordinacijska pitanja. Poseban naglasak dan je na informacije o legislativnom procesu i pripremi za implementaciju revidirane DCF uredbe te pripremi Operativnih programa za 2014.-2020. godinu. G. Vrgoč, direktor Instituta za oceanografiju i ribarstvo, odgovoran za provedbu Programa u biološkom dijelu, uvodno je pozdravio i predstavio prisutne. Sastanku su sudjelovali voditelji pojedinih sekcija programa, voditelj MEDITS-a g. Igor Isajlović, voditelj MEDIAS-a g. Vjekoslav Tičina, suvoditeljice programa za malu plavu ribu gđa Vanja Čikeš Keč i gđa Barbara Zorica, voditelji uzorkovanja priobalnih metiera i varijabli stoka u sekciji A2 – g. Jakov Dulčić, g. Branko Dragičević i g. Robert Grgičević, voditelj uzorkovanja za veliku pelagičku ribu i tunu g. Leon Grubišić te g. Damir Ivanković, zadužen za razvoj baze podataka u biološkom dijelu. G. Josip Poljak, voditelj računovodstva, sudjelovao je u uvodnom dijelu sastanka, u dogovoru oko financijske konstrukcije Programa. Kao predstavnici Uprave ribarstva sudjelovali g. Marin Mihanović radi usklađivanja s potrebama za planove upravljanja, gđa Ivana Vukov, nacionalni korespondent za prikupljanje podataka te g. Vedran Kolarić, radi dogovora oko financijske konstrukcije Programa.

Annex I. Description of the database and related procedures

NATIONAL DATA COLLECTION SYSTEM

The national DCF database is fully in line with the Master Data Register, FAO, DCF (separate for economic and effort) and GFCM Task 1 with established mapping procedures to ensure compliance to all coding lists.

The data collection preparation process

- Before retrieval of data, quality control procedures are performed to ensure the quality of collected data before its use. Such procedures include validation and verification of primary data from logbooks, fishing reports, sales notes, economic questionnaires etc. Although Control data, used as transversal variables, is continuously validated during the year, separate quality reports are used to accomplish this task after data has been collected and stored in the data base.

Other tasks during this process include the following:

- Resolving issues related to last year's JRC quality check and other identified issues.
- Determining the average species prices according to sales notes data.
- Updating metadata (fuel prices, euro exchange rate, denominator for natFTE calculation etc.) with most recent information.
- Updating code lists of species, gears etc. in relation to the data-call formats.
- Updating of specifications on calculation procedures according to changed variable definitions or calculation methodologies.
- Defining data sources for each variable, and the conditions for data withdrawal.
- Defining the population of vessels from the fleet register.
- Validation and verification of primary data after fleet segmentation procedures have been finalized, to check for outliers within fleet segment data for each variable. Separate reports are used to facilitate this task.

This process lasts around two months and is accomplished prior to the data-call announcement.

Retrieval and storage of primary data

- The basic data necessary to generate reports can be generated from the current production data, or partially copied from one of the previous data calls. It is necessary to determine the referent years being addressed by the data call and in which way portions of the underlying data will be generated. In case of DCF corrections after submission of data, usually it is necessary to re-retrieve only the data related to the logbook and fishing reports and reports (to include most recent data).

Data retrieval and storage of basic data include the following:

- Storage of data on the new data call
- Retrieval and storage of data on the population (the vessels that were part of the fishing fleet in the referent year)
- Retrieval and storage of the catch data
- Generation and storage of effort data
- Retrieval and storage of sales notes data
- Retrieval and storage of data on blue diesel
- Retrieval and storage of data from the economic survey module

Fleet segmentation and clustering procedures

- Fleet segmentation and clustering procedures are done after data retrieval, and according to detailed and documented specification rules.
- On the basis of determined fleet segments, the procedure for determining sample sizes is carried out.
- Based on the basic data on the population and data on the use of fishing gears retrieved and stored in the first phase, a segmentation of the fishing fleet is performed. The segments represent the division of vessels in the fleet according to common properties (used gears, the length of the vessel, vessel's activity, possession of engine etc.). The mode of the fleet segmentation depends on the purpose of the data call - DCF segmentation is done in a different way from the GFCM segmentation.
- In case corrections of data call reports are needed, or data on certain referent years are reviewed and updated, for which reports are generated in the previous data call, there may be a need to copy previously defined segments.

Reporting

- After fleet segmentation, the basic data is aggregated and displayed at the level of the obtained segments - the list of reports and the definitions of certain variables for each report are specified within the national DCF GFCM specification documentation.

System hierarchy

The main Data Collection directory contains the following elements:

- "General" directory – Contains documents related to the Data Collection System, it is not related to a specific data call. Includes the most recent DCF-GFCM specification. The specification gives detailed descriptions of variables, their names, codes, units, data sources, calculations, related raising factors, estimation calculations, methods of aggregation etc., per data call and end-user.
- Data call directories:
 - o the naming convention for directories: dc_DATA CALL ID - PURPOSE YYYYMM [- ADDITIONAL INFORMATION]
 - *DATA CALL ID* – a two-digit ID Data call, which corresponds to the ID of the given data call table dbo.data_call on GRDOBINA.DCF_GFCM database
 - *PURPOSE* – DCF, GFCM Task 1 etc.
 - *YYYYMM* – year and month of the period of delivery of reports
 - *ADDITIONAL INFORMATION* – optional additional information about the data call
 - o npr. “dc_02 – DCF 201503 – correction”
 - o Data call directories contain:
 - “00_general” directory, in which there are supporting documents related to the data call (DCF GFCM specification valid for the data call, template table, supporting documents)
 - Directories with scripts related to a particular phase of the process, which are double-digit numbered in the order of execution and the designated purpose and date of commencement of work at this stage: RB_PURPOSE_YYYYMMDD (eg. 02_retreival_raw_data_20150401)
 - Within a single directory with scripts, scripts are also numbered in the order of execution, if it is necessary to indicate the order

- Segmentation results are stored in a separate folder that is inside the directory with scripts related to the phase of segmentation of the fleet.
- Finished reports are stored in a separate directory ("Reports") which is located within the directory with scripts related to the phase of generating of reports, and are numbered and marked with the date of generating: RB - name of the report - YYYYMMDD (eg. "2 - dcf_FishEnt - 20150413")GRDOBINA.DCF_GFCM baza.

Code Directories

dbo.gear_mapping

- Basic information on national gears and corresponding DCF and GFCM codes and categories

dbo.species_mapping

- Basic information on species and corresponding DCF and GFCM codes and categories

dbo.classes_lenght

- List of vessels length categories with associated DCF and GFCM names

dbo.dcf_segments

- List of DCF segments with names and corresponding gear and length categories

dbo.dcf_gears_fao_id

- List of DCF FAO gear codes and related DCF gear categories

dbo.dcf_categories_gears

- List of IDs of DCF gear categories with names

dbo.dcf_target_assemblages

- List of IDs of DCF species target assemblages with descriptions

dbo.gfcm_segments

- List of GFCM segments with names

dbo.gfcm_gear_id

- List of GFCM gear codes and corresponding GFCM gear categories

dbo.gfcm_classes_gears

- List of IDs of GFCM gear classes with associated names

dbo.gfcm_target_assemblages

- List of IDs of GFCM species target assemblages with names

dbo.calendar

- Used to generate the list of days that are between two dates, setting quarter for particular dates etc.)

Basic data for the year and data call

dbo.data_call

- Basic information about a particular data call - ID, date, purpose

dbo.years

- List of processed years for each data call, with basic information

dbo.population

- List of vessels in the population for a year and a data call, with basic information (part of the data is pulled from the fleet register, a part of the data is subsequently generated during the process of the reach of the raw data and segmentation)

dbo.dcf_use_of_gear_per_category

- List of used DCF gear categories for the year, data call and vessel, with data on the number of fishing days, the percentage of use of each gear and main gear category per vessel

dbo.dcf_primary_segments

- List of populated primary DCF segments for the year and data call, with basic information

dbo.dcf_clustering_of_segments

- List of populated primary DCF segments for the year and data call, with accompanying DCF cluster / final segment

dbo.dcf_final_segments

- List of populated final DCF segments for the year and data call, with basic information

dbo.gfcm_use_of_gears

- Data on the percentage of gear use and number of fishing days for certain GFCM effective segments, for the year, data call and vessel

dbo.species_average_prices

- Average prices of species, for a year, data call and vessel (prices are generated from sales notes data)

The raw data for the year and data call

dbo.fishing_trips

- List of items with the raw data on fishing trips for the year, data call and vessel (data are pulled from the logbooks and fishing reports)

dbo.fishing_effort

- List of items with the raw data on fishing effort for the year, data call and vessel (data are pulled from the logbooks and fishing reports)

dbo.catch

- List of items with the raw data on catch for the year, data call and vessel (data are pulled from the logbooks and fishing reports)

dbo.landing

- List of items with the raw data on landing for the year, data call and vessel (data are pulled from the logbooks and fishing reports)

dbo.discard

- List of items with the raw data on discard for the year, data call and vessel (data are pulled from the logbooks and fishing reports)

dbo.sales

- List of items with the raw data on sales for the year, data call and vessel (data are pulled from sales notes)

dbo.fuel_consumption

- List of items with the raw data on the consumption of blue diesel for the year, data call and vessel (data are pulled from the system of blue diesel)

dbo.economic_data

- Raw data from the concluded economic survey questionnaires for the year, data call and vessel