Annex I

MINISTRY OF AGRICULTURE, FOOD AND FORESTRY
EXECUTIVE AGENCY OF FISHERIES AND AQUACULTURE

Commission Delegated Decision (EU) 2019/910 of 13 March 2019 establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sectors.

Commission Implementing Decision (EU) 2019/909 of 18 February 2019 establishing the list of mandatory research surveys and thresholds for the purposes of the multiannual union programme for the collection and management of data in the fisheries and aquaculture sectors.

Bulgarian Work Plan for data collection in the fisheries and aquaculture sectors

2020-2021

Version [1]

[Burgas, Bulgaria - 31 October 2019]

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SECTION 1: BIOLOGICAL DATA

PILOT STUDY 1: RELATIVE SHARE OF CATCHES OF RECREATIONAL FISHERIES COMPARED TO COMMERCIAL FISHERIES

General comment: This Box fulfills paragraph 4 of Chapter V of the Delegated Decision on the multi-annual Union programme.

1. Aim of pilot study

Since in Bulgaria there is neither commercial catch nor recreational fisheries of the species that should be collected for recreational fisheries described in Table 3 of the multi-annual Union programme, we do not plan to conduct a pilot study for the listed species (Eels, elasmobranchs and highly migratory ICCAT species).

Following the recommendation by RCG MED & BS and the requirements under multi-annual Union programme, Bulgaria will establish a pilot study in order to allow assessment of the share of catches from recreational fisheries in relation to commercial catches by Bulgarian fleet in the Black sea.

The aim of the pilot study will be to estimate the number of recreational fishermen in the marine waters in the country, to record their fishing practices, and to collect data for the species and quantitative data of their catches.

Due to the lack of a licensing system for recreational fisheries in the Bulgarian marine waters after results from the pilot study will be developed an application for registration of catch by recreational fishermen in both - marine and fresh waters.

2. Duration of pilot study

The duration of the pilot study will be one or two years depending on administrative burdens in the country and the number of responses and collected data. The pilot study will be conducted by phone and/or online survey. The pilot study is planned to start in 2020 but in case of administrative and funding problems, it may be postponed for 2021.

3. Methodology and expected outcomes of pilot study

The screening survey will be performed through a telephone and/or online survey by a commercial company, which used an ad hoc questionnaire addressed to the households from its database. The questionnaire will be short and simple. The data from the survey will be used for the estimation of the average number of fishermen in each household for one year. These estimates will be used in combination with the available data of national census in order to assess the total number of inhabitants of the country engaged in recreational fishing.

The expected outcome of the pilot project is to understand better the current situation of the recreational fishery in Bulgaria by getting answers to questions like where people have gone fishing during the last year and what equipment was used, how many trips/days/hours were performed, so to determine the level of fishing activity, how many individuals by species were caught and their weight.

For the development of the mobile application, EAFA will engage a company. The aim of the app will be to provide information directly from the recreational fishermen.

(max 900 words)

SECTION 1: BIOLOGICAL DATA **TEXT BOX 1E: ANADROMOUS AND CATADROMOUS SPECIES DATA COLLECTION IN FRESH**

WATER

General comment: This Box fulfills paragraph 2 points (b) and (c) of Chapter III of the Delegated Decision on the multi-annual Union programme

Method selected for collecting data.

None of the species from Table 1E of the multi-annual Union programme regarding the freshwater anadromous and catadromous species is presented in our region. If in future there is registered catch of any of the species, we will update the work plan and include a pilot study.

(max 250 words per Area)

SECTION 1: BIOLOGICAL DATA **PILOT STUDY 2: LEVEL OF FISHING AND IMPACT OF FISHERIES ON BIOLOGICAL RESOURCES**

AND MARINE ECOSYSTEM

General comment: This Box fulfills paragraph 3 point (c) of Chapter III of the Delegated Decision on the multi-annual Union programme

1. Aim of pilot study

Not applicable. The pilot study was conducted in 2017 and from 2018 Bulgaria started a regular programme with observers on board which will continue in 2020-2021.

2. Duration of pilot study

Not applicable.

3. Methodology and expected outcomes of pilot study

Not applicable.

(max 900 words)

SECTION 1: BIOLOGICAL DATA

TEXT BOX 1G: LIST OF RESEARCH SURVEYS AT SEA

General Comment: This Box fulfills Chapter I of the Implementing Decision on the multi-annual Union programme. It is intended to specify which reseach surveys at sea set out in the Annex to the Implementing Decision on the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in the Implementing Decision on the multi-annual Union programme or whether it is an additional survey.

Pelagic trawl survey in the Black sea

1. Objectives of the survey

The aim of the pelagic trawl survey in the Black sea is the assessment of the stock biomass of sprat (*Sprattus sprattus*). Furthermore, an analysis of the distribution and abundance of the other species caught as by-catch will be presented.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

Pelagic Trawl survey will be accomplished in spring and autumn quarters each year. The study will be held in the area enclosed between Durankulak and Ahtopol (Bulgaria) with a total length of the coastline of 370 km. Study area encloses waters between 42°05' and 43°45' N and 27°55 and 29°55 E. Bulgarian waters will be partitioned into 128 equal in size, not overlying fields and during each survey 36 random mid-water hauls will be carried out in the Bulgarian area (72 trawls per year). The survey undergoes during the day and the following types of data were collected:

- Coordinates and duration of each trawl
- Sprat total catch weight
- Separation of the by-catch by species
- Composition of by-catch
- Conservation of the samples

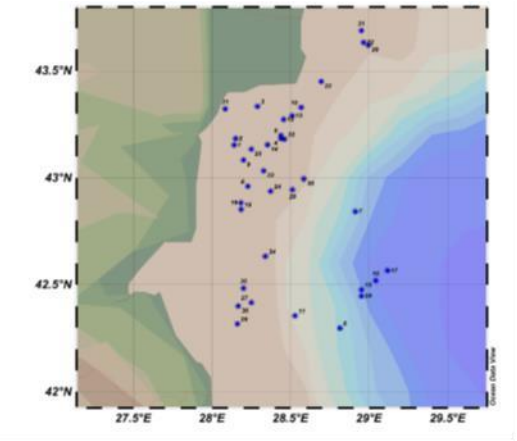


Fig. 1. Research area and plan of the sampling fields for pelagic trawl surveys.

To establish the abundance of the reference species in front of the Bulgarian coast a standard methodology for stratified sampling was employed (Gulland, 1966;). To address the research objectives the region was divided into four strata according to depth – Stratum 1 (15-35 m) Stratum 2 (35–50 m), Stratum 3 (50–75 m) and Stratum 4 (75–100 m).

Each field is a rectangle with sides 5' Lat × 5' Long and area around 62.58 km2 (measured by application of GIS), large enough for a standard lug extent in a meridian direction to fit within the field boundaries. At each of the fields, only one haul with a duration between 30-40 min at speed 2.7-2.9 knots will be carried out. The research survey is included in Table 10 of the multi-annual Union programme.

3. For internationally coordinated surveys, describe the participating Member States/vessels and the relevant international group in charge of planning the survey

Bulgaria and Romania will undertake annually research surveys in their territorial waters and EEZ under their jurisdiction, following common methodology, harmonization of biological data sampling and analysis and harmonization of stock assessment methods. Both countries will follow the methodology already adopted by other EU countries (MEDIAS and MEDITS). The agreement between Bulgaria and Romania is available on the following link: http://dcf-bulgaria.bg/documents for cooperation and partnership.

4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used

Not applicable.

5. Explain where thresholds apply

No thresholds are applicable.

Bottom trawl survey in the Black sea

1. Objectives of the survey

The main goal is the assessment of the stock biomass of turbot (*Scophthalmus maximus*) along the Bulgarian Black Sea coast, estimation of the biomass and abundance of the reference species by depth strata and study of size/age and sex structure, food composition, by-catch, distribution of the stock.

2. Description of the methods used in the survey. For mandatory surveys, link to the manuals. Include a graphical representation (map)

The bottom trawl survey for turbot stock assessment will be conducted in April-May and October-November each year. To establish abundance and biomass of turbot, a standard methodology for stratified sampling (Gulland, 1966; Sparre, Venema, 1998;) will be applied. The indicative zones, where trawling will be performed, are presented in Figure 2.



Fig.2 Indicative map of the surveyed sectors.

The surveyed region of the Bulgarian coast is divided into four strata, depending on the depth – Stratum 1 (15 - 35 m), Stratum 2 (35 - 50 m), Stratum 3 (50 - 75 m) and Stratum 4 (75 - 100 m). For the purpose of turbot abundance and biomass assessment, the surveyed territory is divided into 143 squares, each of them with sides 5 x 5 Nm, area 25 Nm^2 (or 85.8569 m^2) (Fig.3).

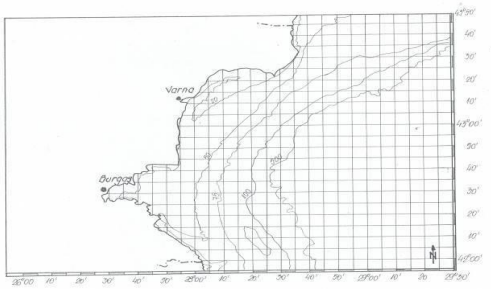


Fig.3. Grid lines used for calculations of the area.

The sampling is carried out at randomly chosen fields (rectangles), situated at a depth of 15-100 m. Each rectangle is with sides 5'Lat × 5'Long, while the total area is 62.58 km^2 (measured by GIS). Each field is marked with letters and digits for better distinction (Fig.4).



Fig.4 Map and scheme of the fields used in the sampling design.

The seabed area covered during a single haul represents a basic measurement unit, considered representative, as turbots do not aggregate in dense assemblages. The duration of each haul is 60 min. at the trawling speed of 2.2-2.6 knots.

3. For internationally coordinated surveys, describe the participating Member States/vessels and the relevant international group in charge of planning the survey.

Bulgaria and Romania will undertake annually research surveys in their territorial waters and EEZ under their jurisdiction, following common methodology, harmonization of biological data sampling and analysis and harmonization of stock assessment methods. Both countries will follow the methodology already adopted by other EU countries (MEDIAS and MEDITS). The agreement between Bulgaria and Romania is available on the following link: http://dcf-bulgaria.bg/documents for cooperation and partnership.

4. Where applicable, describe the international task sharing (physical and/or financial) and the cost sharing agreement used.

Not applicable.

5. Explain where thresholds apply

No thresholds are applicable.

(max 450 words per survey)

SECTION 2: FISHING ACTIVITY DATA

Text Box 2A: Fishing activity variables data collection strategy

General comment: This Box fulfills paragraph 4 of Chapter III of the Delegated Decision on the multi-annual Union programme. It is intended to describe the method used to derive estimates on representative samples where data are not to be recorded under Regulation (EU) No 1224/2009 or where data collected under Regulation (EU) No 1224/2009 are not at the right aggregation level for the intended scientific use.

1. Description of methodologies used to cross-validate the different sources of data.

Bulgaria stores the data as primary, aggregated and metadata. The distant access to the database is available for the data received from logbooks, sales notes and fleet vessel register and aquaculture production. Different modules in the Information Statistical System of EAFA perform different crosschecks of the data mainly to ensure the data quality from the logbooks, first sale notes, take over declaration and transport declaration. It is carried out to trace the fish quantity from the fishermen or aquaculture producer (both obliged to fill a logbook) to the market passing through processing industry.

2. Description of methodologies used to estimate the value of landings.

The information contained in the fishing logbooks of fishing vessels is verified at the time of landing.

All fishermen involved in the landing and marketing of fish and fishery products are required to declare the quantities landed, transhipped, offered for sale or purchased. All fishing vessels have an obligation to keep a fishing logbook and the fishermen shall complete a landing declaration, indicating specifically all quantities of each species landed.

3. Description of methodologies used to estimate the average price (it is recommended to use weighted averages, trip by trip)

Every sale of fish and fish products is accompanied by a mandatory filing of sales notes. The sales notes contain information about the price per kilogram. All the information from the sales notes is introduced into the information system of EAFA and is connected with the landing declarations. In calculating the average price are excluded the values that are tremendously low or extremely high if any.

4. Description of methodologies used to plan collection of the complementary data (sample plan methodology, type of data collected, frequency of collection etc)

If any complementary data is needed, it can incorporate into the sales notes or in the annual questionnaire for economic statistics, which is mandatory for each vessel.

(max 900 words per Region)

SECTION 3: ECONOMIC AND SOCIAL DATA **Text Box 3A: Population segments for collection of economic and social data for fisheries**

General comment: This Box fulfills paragraph 5 points (a) and (b) of Chapter III of the Delegated Decision on the multi-annual Union programme. It is intended to specify data to be collected under Tables 5(A) and 6 of the Delegated Decision on the multi-annual Union programme.

1. Description of methodologies used to choose the different sources of data

All of the economic variables indicated in Table 5A according to the sector segmentation of Table 5B and according to the supraregions as defined in Table 5C and all of the social variables as indicated in Table 6 will be collected by annual questionnaires. The annual questionnaire for economic variables is mandatory for each vessel. The social data on employment by education level and employment by nationality were included in the questionnaire, which is the only source of information regarding all the economic and social variables.

2. Description of methodologies used to choose the different types of data collection

The only type of data collection of economic and social data that EAFA uses is directly from survey via questionnaire.

3. Description of methodologies used to choose sampling frame and allocation scheme

EAFA uses census survey type and since the questionnaire is mandatory all segments are covered.

4. Description of methodologies used for estimation procedures

If some part of the economic variables is missing in the replies to the survey, they are estimated from the sample to active vessels in the fleet segment to provide comparable estimates of the fleet segment level.

5. Description of methodologies used on data quality

According to the Bulgarian legislation at the beginning of each year (before March 31), the owners of fishing vessels or their representatives are required to complete a questionnaire and to ensure accuracy and quality of data by their signatures.

(max 900 words per Region)

SECTION 3: ECONOMIC AND SOCIAL DATA

Pilot Study 3: Data on employment by education level and nationality

General comment: This Box fulfills paragraph 5 point (b) and paragraph 6 point (b) of Chapter III of the Delegated Decision on the multi-annual Union programme. It is intended to specify data to be collected under Table 6 of the Delegated Decision on the multi-annual Union programme.

1. Aim of pilot study

Not applicable. The social data on employment by education level and employment by nationality started in 2018. The variables were included in the questionnaire for economic data.

2. Duration of pilot study

Not applicable.

3. Methodology and expected outcomes of pilot study

Not applicable.

(max 900 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

Text Box 3B: Population segments for collection of economic and social data for aquaculture

General comment: This Box fulfills paragraph 6 points (a) and (b) of Chapter III of the Delegated Decision on the multi-annual Union programme. It is intended to specify data to be collected under Tables 6 and 7 of the Delegated Decision on the multi-annual Union programme.

1. Description of methodologies used to choose the different sources of data

All of the economic variables indicated in Table 7 of the Delegated Decision on the multi-annual Union programme and all of the social variables in Table 6 will be collected by annual questionnaires. The annual questionnaire for economic variables is mandatory for each aquaculture enterprise. The social data on employment by education level and employment by nationality were included in the survey in 2018. The only source of information regarding all of the variables is the questionnaire.

2. Description of methodologies used to choose the different types of data collection

The only type of data collection of economic and social data that EAFA uses is via questionnaire.

3. Description of methodologies used to choose sampling frame and allocation scheme

EAFA uses census survey type and since the questionnaire is obligatory all registered aquaculture enterprises are covered.

4. Description of methodologies used for estimation procedures

If some economic variables are missing in the replies to the survey, they are estimated from the sample to active aquaculture farms, which are registered in the agency.

5. Description of methodologies used on data quality

One of the main objectives of Bulgaria was to increase the collection and quality of the statistical data about the aquaculture farms. The questionnaire for the aquaculture sector is updated when needed, according to the needs of the end-users. Measures were taken on raising the awareness of the owners or managers of farms about their obligation to submit the questionnaire and in 2014 we achieved 100% answers from respondents.

According to the Bulgarian legislation at the beginning of each year (before January 31), the owners of farms or their representatives are required to complete a questionnaire and to ensure accuracy and quality of data by their signatures.

(max 1000 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

Pilot Study 4: Environmental data on aquaculture

General comment: This Box fulfills paragraph 6 point (c) of Chapter III of the Delegated Decision on the multi-annual Union programme. It is intended to specify data to be collected under Table 8 of the Delegated Decision on the multi-annual Union programme.

1. Aim of pilot study

The data regarding the Environmental variables for the aquaculture sector is collected via questionnaire, like the other variables. Each producer should keep records about the medicines or treatments administered and mortalities. There is no need for a special pilot study since the data is included in the annual questionnaire. **2.**

Duration of pilot study

Not applicable.

3. Methodology and expected outcomes of pilot study

Not applicable.

(max 900 words)

SECTION 3: ECONOMIC AND SOCIAL DATA

Text Box 3C: Population segments for collection of economic and social data for the processing industry

General comment: This Box fulfills paragraph 1.1(d) of Chapter III and Table 10 of the Delegated Decision on the multi-annual Union programme. It is intended to specify data to be collected under Table 10 of the Delegated Decision on the multi-annual Union programme.

1. Description of methodologies used to choose the different sources of data

All of the economic and social variables indicated in Table 10 of the Delegated Decision on the multi-annual Union programme according to the sector segmentation of Table 3C of the Bulgarian work plan will be collected by annual questionnaire, which is mandatory. The social data on employment by education level and employment by nationality were be included in the survey in 2018. The only source of information regarding all of the variables is the questionnaire.

2. Description of methodologies used to choose the different types of data collection

The annual questionnaire for economic variables is mandatory for all registered processing enterprises. The social data on employment by education level and employment by nationality were included in the survey in 2018. The only source of information regarding all of the variables is the questionnaire.

3. Description of methodologies used to choose sampling frame and allocation scheme

EAFA uses census survey type and required questionnaires by all registered fish processing enterprises.

4. Description of methodologies used for estimation procedures

If some economic variables are missing in the replies to the survey, they are estimated from the sample to active processing farms in the segment.

5. Description of methodologies used on data quality

One of the main objectives of Bulgaria was to increase the collection and quality of the statistical data about the processing industry. The questionnaire for the processing sector is updated when needed, according to the needs of the end-users. Measures were taken on raising the awareness of the owners or managers of enterprises about the need to receive the questionnaires.

At the beginning of each year, the owners of enterprises or their representatives are asked to complete a questionnaire and to ensure accuracy and quality of data by their signatures.

(max 1000 words)

SECTION 4: SAMPLING STRATEGY FOR BIOLOGICAL DATA FROM COMMERCIAL FISHERIES

Text Box 4A: Sampling plan description for biological data

General Comment: This Box forms the basis for the fulfilment of paragraph 2 point (a)(i) of Chapter III of the Delegated Decision on the multi-annual Union programme. This Table refers to data to be collected under Tables 1(A), 1(B) and 1(C) of the Delegated Decision on the multi-annual Union programme.

Description of the sampling plan according to Article 5 paragraph (3) of this Decision

Target species for sampling are Sprat (*Sprattus sprattus*), Turbot (*Scophthalmus maximus*), Anchovy (*Engraulis encrasicholus*), Piked dogfish (*Squalus acanthias*), Horse mackerel (*Trachurus mediterraneus*), from Group 1 species in GFCM-DCRF Annex A.1; Whiting (*Merlangius merlangus*) and Rapa whelk (*Rapana venosa*) from Group 2 species in GFCM-DCRF Annex A.2; (*Raja clavata*) from Group 3 species in GFCMDCRF Annex A.3; Red mullet (*Mullus barbatus*) is chosen because the average landings for the reference period are 617 tonnes. Data collection method will be from landings and by observers on board. Métiers selected through the ranking procedure for the Black Sea were GNS_DEF_360-400_0_0, OTM_MPD_>=13_19_0_0 and FPO_DEF_0_0_0. Instead of vessels using pots and/or traps, we plan to sample vessels using active and passive gears and vessels using beam trawls, because their presence in the Bulgarian fishing fleet is much more significant in terms of landings weight and value.

In each métier, some vessels will be randomly selected. Table 4C lists all fleet segments operating in Bulgarian EEZ, 3 of them have average landings > 200t. The sampling frames for biological data are described in Table 4B. The approach is an opportunistic randomized PSU selection and not fully probability-based due to the low number of vessels within one segment. The sampling frame is designed to fulfil the sampling obligations according to Table 1A and to understand the catch compositions of the important fisheries in this region qualitatively and quantitatively.

Random draw from the vessel at the landing port which landed at the day in which the samples will be collected. Samples from sprat, red mullet, whiting, anchovy, picked dogfish, horse mackerel, will be collected from main landing ports directly from the landings of fishing vessels. For aging the otoliths will be extracted. In the case with red mullet scales will be used where is necessary. No aging for piked dogfish will be performed. Means and standard deviation of total length and weight will be estimated. The samples collection for the pelagic species will be carried out in order to cover the biggest landing ports (Varna, Burgas, Balchik, Sozopol, Nessebar) in the northern and southern part of the coast. Each sample will consist of a specific number of individuals. Length-weight relationships will be presented. The distribution of targeted species numbers, length and weight characteristics among ports and fishing vessels will be reported. Precision will be evaluated, based on the coefficient of variation, CV = 0.20.

Stock-related biological variables will be collected from both onboard(during landings) and market sampling.

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

Length: Length distributions are obtained from random samples.
Weight: Individual weights are recorded for all fish that are aged. A length-weight relationship is fitted to estimate weight-at-length and weight-at-age is estimated from this using an age-length-key
Sex: Sex-at-age is estimated using a sex-age-length-key
Maturity: Maturity-at-age is estimated using a maturity-age-length-key or, if appropriate, a sex-maturity-agelength-key.

Landings of turbot occur from July to March. From April until June there is a catch ban during the reproduction season. The regional turbot landing distribution is about 75% for the northern part of the Black sea coast, and around 25 % for the southern part of the coast, which determines that the samples will be collected more intensively in the northern part of the Black sea. The total length and weight data collection will be performed in 3 or 4 of the quarters depending on the ban and cover at least 4 ports.

The total length and weight sampling will be based on the spring-summer collection on at least 100 individuals and in the autumn-winter collection on at least 300 individuals.

The length and weight structure distribution and the weight-length relationship will be calculated separately for male and female individuals.

Market sampling is an essential source of data for age-based finfish stock assessment. The age sampling data will be based on fish purchase twice a year – a total of 100 individuals will be investigated - 50 in the first half of the year and 50 in the second half.

Age distribution at total length and weight will be estimated for male and female separately as well as sex ratio at age and sex ratio at length. Additionally, other biological parameters such as fecundity at length and fecundity at age and GSI, % will be presented for females (at least 20 individuals) sampled close or during the breeding season (February-May) too.

The data collection method for Rapa whelk (*Rapana venosa*) will be from landings. The samples will be collected from fishing boats, that use beam trawls for Molluscs fishing. The fishing season takes place from late April until the end of September/early October. Random samples of *Rapana venosa* will be collected from the main ports for Rapa landings, according to the requirements for representativeness of the results and aims to characterize the species development during the active season. To establish the rapa whelk size-weight composition, between 20 – 60 samples (x 100 individuals each) will be collected; additionally, 10 samples x 100 individuals will be analyzed for estimation of the meat/shell ratio. The main sampling ports will include – Varna, Kavarna, and Nessebar (or another one), depending on the landings dynamics throughout the fishing season. We will aim to collect samples from the northern and southern regions, in order to assess the differences in rapa whelk population parameters among the main fishing zones. To determine the specific biological parameters, the following metric characteristics will be used: length (L, cm), medium length (Ml, cm), weight (W, gr);

The collection of the samples will be carried out every two months during the active fishing season (6 days per every two months' period); the data collection programme will involve minimum three ports with the largest recent landings - encompassing northern and southern coastal regions. The length and weight measurements will include all collected individuals (minimum 2000 individuals), and the ratio between meet/shell will be established for randomly chosen 10 samples (X100 individuals each). The length-weight relationship will be

presented. The distribution of rapa whelk numbers, length and weight characteristics among ports and fishing vessels will be reported. Precision will be evaluated, based on the coefficient of variation, CV = 0.20.

The precision of sampling program will be based on the requirements of following reports: “Sampling Calculation and Methodology for Fisheries Data” (WKSCMFD) (ICES 2004); SGPIDS report (ICES, 2011a), Report of the Study Group on Practical Implementation of Discard Sampling Plans (SGPIDS).

The sampling design documentation is available in the reports for biological sampling on the following link: http://dcf-bulgaria.bg/documents/.

(max 900 words per Region)