

**MINISTRY OF AGRICULTURE AND FOOD  
EXECUTIVE AGENCY OF FISHERIES AND  
AQUACULTURE**



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

**Commission Regulation (EC) No 665/2008 of 14 July 2008**  
laying down detailed rules for the application of Council Regulation (EC) No 199/2008

**Commission Implementing Decision (EU) 2016/1251 of 12 July 2016**  
adopting a multiannual Union programme for the collection, management and use of data in  
the fisheries and aquaculture sectors for the period 2017-2019

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

**2017-2019**

Version [1]

[Burgas, Bulgaria - 31 October 2016]

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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 multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (a) of this Decision.*

**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. If in future there is registered catch of any of the species, we will update the work plan and include a pilot study.

**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 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 multi-annual Union programme and Article 2 of this Decision.*

**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 multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (b) of this Decision.*

#### **1. Aim of pilot study**

The general aim of the pilot study will be to estimate the level of fishing and the impact of fishing activities on the marine biological resources and on marine ecosystems. The specific goals of the study will be specified during the regional meeting between Bulgaria and Romania.

#### **2. Duration of pilot study**

The duration of the pilot study will be two years. Start in 2018, January 1st, and end on 31st December 2019.

#### **3. Methodology and expected outcomes of pilot study**

The methodologies of data collection will be coordinated at Black Sea level between Romania and Bulgaria and will be based on end-user needs. In 2017 the two countries will sign a protocol of collaboration, an agreement that will include data collection methods, frequency, and gears that will be targeted.

*(max 900 words)*

## SECTION 1: BIOLOGICAL DATA

### Text Box 1G: List of research surveys at sea

*General Comment: This Box fulfills Chapter IV of the multi-annual Union programme and Article 2 and Article 7 paragraph (3) of this Decision. It is intended to specify which research surveys at sea set out in Table 10 of the multi-annual Union programme will be carried out. Member States shall specify whether the research survey is included in Table 10 of 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. During the survey 36 mid-water hauls will be carried out in the Bulgarian area. 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

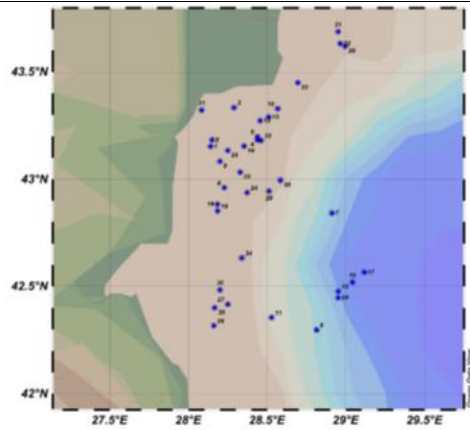


Fig. 1. Research area and plan of the sampling fields for pelagic trawl surveys.

To establish the abundance of the reference species (*Sprattus sprattus*) 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).

The study area in Bulgarian waters will be partitioned into 128 equal in size, not overlying fields, situated at a depth of 10 - 100 m. At 36 of the fields chosen at random, sampling by means of mid-water trawling will be carried out.

Each field is a rectangle with sides 5' Lat × 5' Long and area around 62.58 km<sup>2</sup> (measured by application of GIS), large enough for a standard lug extent in a meridian direction to fit within the field boundaries. The fields will be grouped in larger sectors – so-called strata, which geographic and depth boundaries will be selected according to the density distribution of the species under study. 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**

Not applicable.

**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 an assessment of the stock biomass of turbot (*Scophthalmus maximus*) along the Bulgarian Black Sea coast, estimation of the biomass and density of the reference species by depth strata and study of size/age and sex structure 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. The survey's aim is the collection of biological data of turbot size-at-age structure, distribution, sex ratio, food composition, and by-catch.

To establish abundance and biomass of the reference species *Scophthalmus maximus*, a standard methodology for stratified sampling (Gulland, 1966; Sparre, Venema, 1998; Sabatella, Franquesa, 2004) should be applied. The zones, where trawling will be performed, are presented in Figure 2.

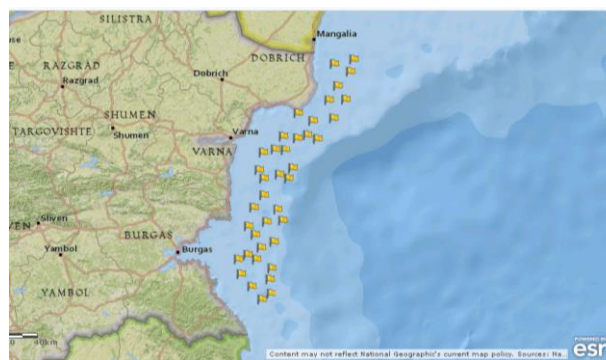


Fig.2 Map of the surveyed sectors.

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<sup>2</sup> (or 85.8569 m<sup>2</sup>) (Fig.3).

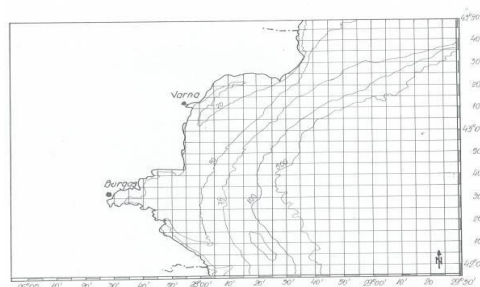


Fig.3. Grid lines used for calculations of the area.

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<sup>2</sup> (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 turbot do not aggregate in dense assemblages (Martino, Karapetkova, 1957). The duration of each haul is 60 min. at the trawling speed of 2.2-2.6 knots.

On the vessel board, the absolute and standard length, as well as the individual weight of each specimen will be measured in order to determine the size and weight structure of the turbot stock and to estimate the share of specimens with length below the allowable fishing length in the catches.

**Swept areas method**

To determine the relative biomass of the reference species (*Scophthalmus maximus*), the “swept area method” was applied. According to this method, trawl sweeps a well-defined path, the area of which is the length of the path times the width of the trawl, called the “swept area” or the “effective path swept”, thus the swept area can be estimated from equation:

$$a = D \cdot hr \cdot X2$$

$$D = V \cdot t$$

V is the velocity of the trawl over the ground when trawling, t is the time spent trawling, hr is the length of the head-rope. X2 is that fraction of the head-rope length, hr, which is equal to the width of the path swept by the trawl, the “wing spread”, hr\*X2, D-distance covered. 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).

**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 multi-annual Union programme and Article 2, Article 4 paragraph (2) point (b) and Article 5 paragraph (2) of this Decision. 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 exchange systems for data are still under development. 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 an 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 multi-annual Union programme and Article 2, Article 4 paragraphs (1), (2) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Tables 5(A) and 6 of 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 will 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 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 obligatory 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 multi-annual Union programme and Article 2 and Article 3 paragraph (3) point (c) of this Decision. It is intended to specify data to be collected under Table 6 of the multi-annual Union programme.*

**1. Aim of pilot study**

Not applicable. The social data on employment by education level and employment by nationality will be included in 2018 in the survey which the agency conduct annually.

**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 multi-annual Union programme and Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Tables 6 and 7 of 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 multi-annual Union programme 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 aquaculture enterprise. The social data on employment by education level and employment by nationality will 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 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. Questionnaires for the aquaculture sector were updated in 2014 and again in 2015. Measures were taken on raising the awareness of the owners or managers of farms about their obligation to submit the questionnaires 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 multi-annual Union programme and Article 2 and Article 4 paragraph (3) point (d) of this Decision. It is intended to specify data to be collected under Table 8 of the multi-annual Union programme.*

#### **1. Aim of pilot study**

The data regarding the Environmental variables for the aquaculture sector can be collected via questionnaire, like the other variables. Each producer should keep records about the medicines or treatments administered and mortalities. There is no need of special pilot study since the data can be 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 footnote 6 of paragraph 1.1(d) of Chapter III of the multi-annual Union programme, Article 2, Article 4 paragraphs (1) and (5) and Article 5 paragraph (2) of this Decision. It is intended to specify data to be collected under Table 11 of the multi-annual Union programme.*

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

All of the economic and all of the social variables indicated in Table 11 of the multi-annual Union programme according to the sector segmentation of Table 3C of the Bulgarian work plan will be collected by annual questionnaires. The annual questionnaire for processing industry is not mandatory yet. The social data on employment by education level and employment by nationality will be included in the survey. 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 not mandatory yet. The social data on employment by education level and employment by nationality will be 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**

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

#### **4. Description of methodologies used for estimation procedures**

Some enterprises don't provide replies to the survey, and they are estimated from the enterprises that have provided questionnaires 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. Questionnaires for the processing sector were updated in 2015. 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 fulfills Article 3, Article 4 paragraph (4) and Article 8 of this Decision and forms the basis for the fulfilment of paragraph 2 point (a)(i) of Chapter III of the multi-annual Union programme. This Table refers to data to be collected under Tables 1(A), 1(B) and 1(C) of 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 (*Psetta maxima*), Anchovy (*Engraulis encrasicolus*), 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 GFCM-DCRF Annex A.3; Red mullet (*Mullus barbatus*) is chosen because the average landings for the reference period are 406 tons. Data collection method will be from landings. Métiers selected through ranking procedure over the period 2013-2015 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 fulfill the sampling obligations according to Table 1A and to understand the catch compositions of the important fisheries in these regions 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, piked dogfish, horse mackerel, will be collected from main landing ports directly from the landings of fishing vessels. For aging 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 weekly as the data collection will cover the biggest landing ports (Varna, Burgas, Balchik, Sozopol, Nessebar) in northern and southern part of the coast. Each sample will be consisted 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,  $CV = 0.20$ .

Variables concerning individual information on age, length, weight, sex, maturity and fecundity of the stocks will be collected according to the Appendix VII of the 2010/93/EC Commission Decision because there is no similar table in the multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019.

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

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-age-length-key.

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

The stock-related variables will be estimated with a precision level 3 based on the old regulation, since it is not specified in the new one.

Sample sizes were calculated for selected list of species. CVs for maturity-at-age and size-at-age for all sampled species will be calculated annually at the GSA level.

Landings of turbot occur from July to March. From 1st of April until the 31 of June there is a catch ban during the reproduction season. The regional turbot landing distribution for 2014 is about 78.81% for the northern part of the Black sea coast (49.55% for Varna, 14.84% for Kavarna, 12.43% for Balchik and 1.99% for Shabla), and 21.19 % for the southern part of the coast (7.82% for Nesebar, 5.35% for Zarevo, 4.29% for Sozopol, 3.73% for Pomorie). This 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 occur twice a year (December-July) from landings at least 4 ports directly by docked ships.

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 June and 50 in December. The fish will be weighed, the length measured, and the otoliths extracted for age determination in male and female separately.

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. *Rapana venosa* is the main species, caught by bottom trawling activities. This is a non-native species of the Black Sea fauna, that invaded the sea during 40-s. Since 90-s has begun the period of economic exploitation of the Rapa whelk. The intensity of Rapa whelk feeding and reproduction depends on the temperature, as through the cold months the snails are inactive and are usually buried in the bottom sediments, then the reproduction proceeds between June - August. Thus, the fishing season takes place from late April till the end of September/early October. Some of the key ports for *Rapana* landings include Varna, Kavarna, and Durankulak. Random samples of *Rapana venosa* will be collected from landings, according to the requirements for representativeness of the results and aiming 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 species biological parameters, the following metric characteristics will be used: length (L, cm), medium length (ML, cm), weight (W, gr);

The samples collection will be carried out every two months during the active fishing season (6 days per each two months' period); the data collection programme will involve the 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 meat/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,  $CV = 0.20$ . During 2017 a pilot project on evaluation of discards in the Rapana whelk fishery will be established, in order to evaluate the impact on juveniles of turbot and dogfish.

So far in Bulgaria there were no observers on board of fishing vessels. We will start the sampling on board by January 2018(except the sampling in the Rapana whelk fishery, which will start in 2017). In 2017 we will contract relevant biologists and give them some time to investigate the matter and if necessary to visit other countries that have more experience than us in this area. During the next year, we will design appropriate sampling plan aiming at collecting the needed biological information.

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).

(max 900 words per Region)