MINISTRY OF AGRICULTURE

INSTITUTE OF OCEANOGRAPHY AND FISHERIES

Final report on Pilot Study 2

Level of fishing and impact of fisheries on biological resources and marine ecosystem

15th March 2021

EUROPEAN UNION

Operativni program ZA POMORSTVO I RIBARSTVO

PROGRAM PRIKUPLJANJA PODATAKA U RIBARSTVU RH

Contents

1. Objectives. Aim of the pilot study

Pilot Study 2: Level of fishing and impact of fisheries on biological resources and marine ecosystem was conducted in accordance with the Croatian Work Plan for data collection in the fisheries and aquaculture sectors.
The aim of this study is to collect the data to assess the impact of Union fisheries on marine ecosystems in Union waters and outside Union waters. Data for estimating the level of fishing and the impact of fishing activities on marine biological resources and on marine ecosystems shall be collected based on end-user needs.

2. Duration, including if extended during 2020-2021

From 2017 observers on-board are being used also to monitor incidental by-catch. Pilot study was conducted in the period from 2018 to 2020.

3. Clear description of the geographical area of application

Pilot study was conducted in the Croatian territorial sea.
FAO Fishing Area: Adriatic (Division 37.2.1)
GFCM Subarea: GSA 17 – Northern Adriatic Sea

4. Materials and methods

It is important to note that the pilot study was conducted by immediate incorporation into regular sampling programme for commercial fisheries. There was no separate pilot programme conducted.

Incidental by-catch of all birds, mammals and reptiles and fish protected under Union legislation and international agreements, including the species listed in Table 1D, including absence in the catch, will be monitored during scientific observer trips on fishing vessels and by the fisherman themselves through logbooks.

Pilot study 2 was carried out according to RCG MED&BS 2017 Recommendation 5: Pilot studies on incidental catch of vulnerable species.

Following the 2016 Recommendation of the RCG Med&BS-LP on pilot studies for the assessment of incidental catches of birds, mammals, reptiles and fish, the planned monitoring programme of the GFCM on the incidental catch of vulnerable species, shall be followed carrying out the following pilot studies:

- 2018: Pilot study for assessing incidental catches of vulnerable species from bottom trawlers
- 2019: Pilot study for assessing incidental catches of vulnerable species from longlines
- 2020: Pilot study for assessing incidental catches of vulnerable species from set nets (gillnets).

The guidelines for monitoring incidental catch of vulnerable species and processing the collected data, will be based both on the outputs of the EU MARE/2014/19 project for the Med&BS, and the GFCM guidelines on incidental catch (FAO, 2019). Data to be collected will include: identification of species, number and weight (when possible) of individuals, gear specifications, location and timing of catches.

4.1. Fishing effort and monitoring/sampling effort. Effort coverage through observers on board and/or other methods (such as, but not only, cameras or self-sampling)

The Institute of Oceanography and Fisheries carried out sampling on-board fishing vessels by scientific observers employed specifically and exclusively for this purpose.

Observer coverage for each metiere is reported in Annual Reports for each year.

Cameras are used only in PFT-PS metiere (stereoscopic cameras) to increase sampling coverage.

4.2. Fleet selection and vessel selection with observers on board coverage

On board sampling is carried out during fishing activities according to the National Fisheries Sampling Plan. The selection of métiers was made by cumulative analysis of the annual catch, the value of the annual catch and the fishing effort based on reference years

(1) Spatial and temporal dynamics of sampling is determined according to the National Fisheries Data Collection Program in the Republic of Croatia for each selected métier.
(2) The vessels on which the sampling will take place in each fishing zone selected for sampling shall be selected at random from the list of active vessels (based on a métier) and the owner / captain shall be contacted for the embarkation arrangement. If it is possible to receive observers on board (depending on the size of the vessel, number of crew, planned duration of fishing, weather conditions, etc.) observers arrange arrival to the vessel in agreement with the captain / owner (time and port of embarkation).
(3) During on board sampling on a fishing vessel, there is (at least one) scientific observer for data collection from the Institute of Oceanography and Fisheries, Split.
(4) The method and area of fishing within each selected fishing zone shall be in accordance with normal fishing practice and observers shall not participate in this part of the fishing process, but shall record all metadata on fishing activity (start and end of activity, coordinates, speed, technical characteristics of fishing gear, etc.).

4.3. Sampling protocol / observer manual

The collection of data on incidental catches of sensitive and vulnerable species is based on the methodology described in the GFCM protocol “Monitoring of incidental catches of vulnerable species in Mediterranean and Black Sea fisheries” (FAO, 2019).

The most accepted classification of the category of sensitive and vulnerable species is based on the Red List of Endangered Species of the International Union for Conservation of Nature (IUCN). The IUCN Red List classifies species into several categories, such as "near endangered", "vulnerable", "endangered" or "critically endangered". The species is categorized as ‘vulnerable’ according to defined criteria such as population decline, declining geographical distribution, or likelihood of extinction in the wild. Thus, vulnerability can be caused by habitat loss or direct mortality as a result of human activities. The IUCN categorized the taxon as vulnerable when the best available evidence indicates that it is likely to face a high risk of extinction in the wild in the medium term unless circumstances threatening its survival and reproduction improve (IUCN, 2017).

Collecting data on incidental catches of vulnerable species (e.g. quantities, composition, biological data, place of catch, fishing gear and time of catch) is key to understanding the nature and scope of this problem in order to develop and implement appropriate management measures to protect vulnerable and vulnerable species.

According to the GFCM protocol, a wider range of taxa is used to assess the impact of incidental catches of vulnerable and vulnerable species compared to those included in this category according to the IUCN Red List:

- vulnerable species listed in the "Data Collection Reference Framework (DCRF)" in Annex II (vulnerable or endangered species) and Annex III (regulated species) under the Convention on the Protection of the Marine Environment and the Coastal Regions of the Mediterranean (Barcelona Convention), 2018).
- other species that are considered protected and endangered (especially some sensitive or rare cartilage species).
- benthic species that form sensitive ecosystems.

The sampling plan is based on a standard fisheries data collection scheme according to the National Data Collection Framework defined for each métier. The main source of data is sampling at sea, followed by sampling at landing sites.

The task of observers on fishing vessels in case of catch of sensitive or vulnerable species is:

- Obtain reliable information on the interaction of vulnerable species with specific fishing gear
- Identify the individual to the level of species (if possible) or genus / family / group
- Record the condition of the species (alive / injured / dead)
- Record the number and weight (or estimate) of each such species caught during each fishing operation and the geographical position or approximate location
- Collect biological data (length, sex, weight, etc.) if possible
- Collect information on the characteristics of fishing gear (e.g. type of net, length of net, mesh size, number of hooks, bait, duration of fishing operation, etc.)
- Collect data on vessel characteristics

Observers pay special attention if the animal is caught alive and, in agreement with the crew, and do everything in their power to return the animal to the sea unharmed. This is especially true for marine mammals, sea turtles, birds, and cartilage fish. If necessary, they contact the relevant authority services in-charge for further reception and treatment of the animal (Veterinary Service, Institute for Nature and Environmental Protection, Emergency Call Service (112), etc.) and carry out further procedures in coordination with them.

4.4. Inclusion of excluder or deterrent devices, etc.

Not applicable.

5. Expected outcomes and results obtained

5.1. Achievement of the original expected outcomes

Pilot study for assessing incidental catches of vulnerable species from bottom trawl fisheries was carried out in 2018 on 33 on board and 72 landing sites by scientific observers.

As was planned in the WP the Pilot study for assessing incidental catches of vulnerable species from longlines was carried out in 2019. Pilot study has been conducted throughout 2019 on 43 boarding sites by scientific observers during on board monitoring of commercial longliners.

During 2020 Pilot study for assessing incidental catches of vulnerable species from set nets (gillnets) was carried out on 37 boarding sites.

Furthermore, in 2020 sampling program for assessing incidental catches of vulnerable species was extended to cover all selected metiers (PS_SPF, PS_LPF, LLD_LPF, LHP_LPF, OTB, DRB, FPO, GNS, GTR, LLS, SB_SV).

The sampling methodology was according to the National Work Plan and GFCM protocol (Monitoring incidental catch of vulnerable species in the Mediterranean and the Black Sea - Methodology for data collection). All collected data and metadata are stored in the IOF database. Collected data was processed and transmitted to the end user (ICES WGBYC) as it was requested in 2019 and to GFCM according to DCRF Task on Incidental Catch.

5.2 Deviations from planned with justification

There was no deviations in comparison to National work plan.

5.3 Difficulties encountered

The problem of cooperation with fishermen is present in all metiers. There is a need to educate fishermen about the purpose of recording incidental catches and additional motivation to ensure good and continuous cooperation for scientific monitoring.

Specifically, for BGF REC metier - Unidentified species of sharks. When they are caught on the hook during the competition, they are soon released alive by cutting the line making it hard to identify. Most of these releases are recorded, as competitors have to declare fish on a hook and eventual subsequent release.

5.4. Lessons learned

Further training of scientific observers is needed to ensure appropriate handling and identification of vulnerable species and benthic organisms.

National legal framework needs to be adapted to incorporate conditions and code of conduct for scientific observers in regards to monitoring of vulnerable species and relevant national, GFCM and ICCAT provisions.

6. Inclusion into regular sampling or not with justification

Incorporation of the results into regular sampling will be in accordance with the recommendations of relevant expert groups under RCG Med & BS, RCG LP and relevant RFMOs (GFCM and ICCAT).

The results of monitoring of commercial fisheries in 2018/2019 will be compared to MEDITS sampling results in order to improve the sampling methodology for commercial fisheries.

For the preparation on the Annual Work Plan 2022-2024, an evaluation of sampling effort in correlation to fishing effort will be carried out. Where needed, sampling effort will be increased in order to increase coverage of fishing effort through observers on board. Similarly, sampling areas will be adapted to ensure adequate sampling of vulnerable species.

7. References

IUCN. 2017. IUCN Red List of Threatened Species. Version 2017-3. www.iucnredlist.org/

GFCM, 2018. GFCM Data Collection Reference Framework (DCRF). Version: 20.1 (2018 DCRF manual v. 20.1.)

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