



Food and Agriculture  
Organization of the  
United Nations



General Fisheries  
Commission for  
the Mediterranean

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# BLACKSEA4FISH

Activities and achievements  
2020–2021

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Required citation:

FAO. 2022. *BlackSea4Fish - Activities and achievements: 2020–2021*. Rome. <https://doi.org/10.4060/cc2735en>

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ISBN 978-92-5-137121-3

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# THE BLACKSEA4FISH PROJECT

The project involves Bulgaria, Georgia, Romania, the Russian Federation, Türkiye, Ukraine and the European Union. It supports Black Sea countries in fulfilling their objectives with regards to Black Sea fisheries and in turn benefits from their technical and, as appropriate, financial and in-kind contributions.

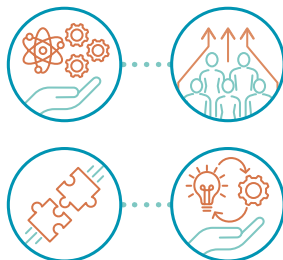


Source: UN, 2022. Modified from Map No. 3877 Rev. 8 United Nations, August 2016.

Established in 2016,



the BlackSea4Fish project contributes to the sustainable management of Black Sea fisheries.



Its focus is to provide scientific and technical support to the GFCM in the region by coordinating priority activities of the Subregional Group on Stock Assessment in the Black Sea (SGSABS) and the Working Group on the Black Sea (WGBS).

The project bridges gaps at the regional level, providing the WGBS with the necessary resources to efficiently execute its priority actions and supporting the implementation of the GFCM 2030 Strategy for sustainable fisheries and aquaculture in the Mediterranean and the Black Sea (GFCM 2030 Strategy).

## BLACKSEA4FISH ACTIVITIES



Support the participation of Black Sea scientists in the SGSABS and other WGBS/ GFCM meetings and activities



Coordinate and support the launch and implementation of relevant strategic activities, such as surveys-at-sea, vessel monitoring systems and related control systems, socioeconomic surveys and bycatch monitoring programmes



Organize ad hoc activities in response to knowledge gaps identified by the WGBS, aiming particularly at improving stock assessments and knowledge on Black Sea fisheries



Promote training opportunities and capacity-building



Develop databases and online tools to support the storage and exchange of relevant data and information



Recruit external experts to address priority topics and carry out ad hoc studies



Manage outreach initiatives and the dissemination of project results



The Black Sea Unit is located in the Burgas International Congress Centre, Burgas, Bulgaria. © GFCM/Hüseyin Özbilgin

## THE TEAM

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The BlackSea4Fish project is implemented by a project coordinator and a team based out of the GFCM Subregional Technical Unit for the Black Sea (Black Sea Unit) in Burgas, Bulgaria. It is supported by the GFCM Secretariat in Rome, Italy and also benefits from ad hoc support from colleagues from the Bulgarian Executive Agency for Fisheries and Aquaculture, which hosts the Black Sea Unit.

The work is regularly discussed at a steering committee composed of national focal points and the European Union and reviewed by the WGBS and the GFCM at its annual session.



**Mr Hüseyin Ozbilgin**, Fishery Officer and BlackSea4Fish Project Coordinator, oversees all BlackSea4Fish activities from the Black Sea Unit.



**Ms Yoana Georgieva**, Fishery Expert, provides expert support to the BlackSea4Fish project in technical matters related to fisheries.



**Mr Rusi Atanasov**, Junior Expert in fisheries and aquaculture, supports activities and workplan implementation.



**Mr Konstantin Petrov**, GFCM Subregional Coordinator for the Black Sea, oversees the functioning of the Black Sea Unit and technical cooperation matters.



**Mr Svetozar Gradev**, Office Assistant, provides administrative support and ensures the operations of the office.



# EXECUTIVE SUMMARY

In 2020 and 2021, the BlackSea4Fish project focused on increasing scientific knowledge to support fisheries management by improving data collection and scientific advice for priority species through scientific surveys, enhanced stock assessments and capacity-building activities. Due to the COVID-19 pandemic, BlackSea4Fish meetings and joint field activities were put on hold in 2020, replaced by online trainings, while select activities were organized at only the national level. In 2021, activities at the national level and online work continued, while meetings resumed in virtual modality.

The project organized workshops on rapa whelk and data gaps and meetings on piked dogfish and red mullet and on data preparation (one for anchovy and one for Black Sea priority species). BlackSea4Fish also provided technical assistance to the anchovy benchmark, SGSABS and WGBS sessions. A sprat otolith exchange exercise was finalized. In line with the research programme for rapa whelk launched by the GFCM (Recommendation GFCM/42/2018/9 on a regional research programme for rapa whelk fisheries in the Black Sea [geographical subarea 29]), the BlackSea4Fish project organized three rapa whelk scientific surveys-at-sea conducted by all Black Sea GFCM contracting parties and cooperating non-contracting parties (CPCs). Pelagic acoustic surveys-at-sea were organized in Turkish and Georgian Black Sea waters. A Black Sea scientific database was initiated, with the aim of improving input data for stock assessment modelling.

Work carried out in support of the activities foreseen by the mid-term strategy (2017–2020) towards the sustainability of Mediterranean and Black Sea fisheries included: i) an increased focus on small-scale and recreational fisheries (output 2); and ii) the improvement of bycatch monitoring (output 4), for which the first discard programme was finalized in Türkiye and Ukraine, and the second programme started in 2021. The project also launched a number of initiatives to improve technical capacity in the Black Sea (output 5) through the organization of a series of online presentations and workshops, including hands-on sessions related to scientific advice and the management of resources in the Black Sea.

BlackSea4Fish is expected to play a central role in the context of the GFCM 2030 Strategy, addressing the specific work in the Black Sea under each target and contributing to strategy's objective of consolidating national expertise and scientific capacity to ensure a level playing field across the region.

**BlackSea4Fish launched more than 20 activities to increase regional expertise in stock assessment and improve technical capacity:**



**3 data preparation meetings**



**4 technical meetings**



**2 technical documents**



**5 scientific surveys**



**2 selectivity surveys**



**1 scientific database**



**8 online presentation series**



# SCIENTIFIC ADVICE IN SUPPORT OF FISHERIES MANAGEMENT

During 2020–2021, BlackSea4Fish contributed to a number of initiatives aimed at resolving the data gaps and harmonization needs identified by the SGSABS and thereby to work towards more accurate stock assessments of Black Sea priority species. This work included the organization of the anchovy benchmark, participation in the sessions of the SGSABS and WGBS, coordination of three data preparation meetings (concerning the identification of data gaps, the anchovy benchmark and Black Sea priority species), four technical meetings on piked dogfish and red mullet, discussion of the results of the rapa whelk survey and a demersal surveys data workshop. In addition, to meet the need for fishery-independent data for stock assessments, BlackSea4Fish oversaw the execution of five scientific surveys-at-sea.

## RAPA WHELK RESEARCH PROGRAMME KICKED OFF

Initially considered a marine pest, rapa whelk from the Black Sea is now exported globally and brings in multimillion dollar revenues for the region. As it is currently fished close to its sustainable limit, Bulgaria, Georgia, Romania, Türkiye and Ukraine have joined forces to launch a comprehensive standardized scientific survey-at-sea for the species as part of the research programme established through Recommendation GFCM/42/2018/9. The programme reflects the challenges of managing non-indigenous species and marks the first step towards sustainable management of this important Black Sea fishery resource.

## RAPA WHELK BEAM TRAWL TECHNICAL SPECIFICATIONS

The collection of catch and fishing effort data provides the primary material for a wide variety of statistical applications. Detailed data from regular fishery surveys – on fishing vessels, gear and operations – are a key source of information. It is fundamentally important that these scientific surveys-at-sea are conducted in a harmonized way and use the same sampling methods, so that the raw data collected can be clearly compared and analysed. To this end, in July 2020 BlackSea4Fish began developing technical specifications for rapa whelk beam trawl surveys.



### OBJECTIVE

Define rapa whelk beam trawl technical specifications



### RESULTS

- Rapa whelk survey needs were identified and beam trawl technical specifications were defined.
- A detailed schematic representation of how to set up the beam trawl for surveys was developed.



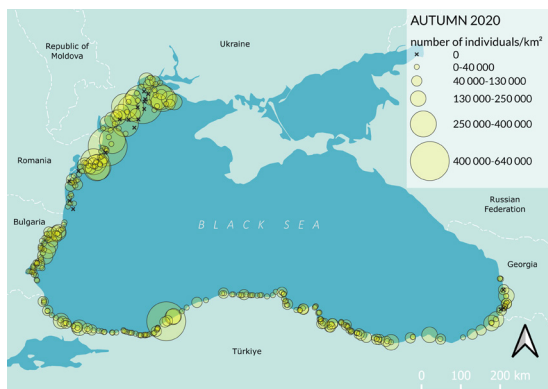
Rapa whelk collected during scientific survey. © GFCM/Istanbul University

## RAPA WHELK SCIENTIFIC SURVEYS Autumn 2020, spring 2021 and autumn 2021

The seventh meeting of the WGBS (Bulgaria, July 2018) advised that a set of initial transitional measures for rapa whelk fisheries, following the precautionary approach, should be implemented. It also set up a research project (2019–2020) to collect data to inform a potential management plan for the fishery. There is a general lack of fisheries-independent surveys covering the regional distribution of the main commercial Black Sea species, including rapa whelk. The primary aim of the survey is to investigate the biology and distribution of rapa whelk in order to generate useful information for assessing stock status.

A range of physical and biological factors (water temperature, continental shelf, river inflows, nutrient concentrations, etc.) could significantly affect the distribution and the density of rapa whelk in the Black Sea, so the intent is to conduct surveys twice a year (spring and autumn) to understand the variations of this resource over time (annual and seasonal) and space.

Figure 1. Sampling stations regularly visited during rapa whelk beam trawl surveys, with circle size representing the abundance of rapa whelk recorded during Autumn 2020 survey



Source: COISPA, Modified from Map No. 3877 Rev. 8 United Nations, August 2016.



### OBJECTIVE

Carry out standardized scientific surveys for rapa whelk in the Black Sea



### RESULTS

- Biological and distribution data for rapa whelk were collected.
- Rapa whelk abundance and length/age composition at sea were estimated.



### LINKS

Click on the titles to visit the link or scan the QR code



Results of beam trawl selectivity for Black Sea rapa whelk

## RAPA WHELK POST-SURVEY WORKSHOP 2–5 March 2021

An online workshop was organized for participants to discuss the main results of the first rapa whelk survey and to share their views on how to resolve problems encountered when compiling raw data.



### OBJECTIVE

Process, analyse and visualize the scientific data collected during the first rapa whelk survey



### RESULTS

- File types in line with MEDITS data formats to facilitate data storage and exchange were defined.
- Black Sea experts were trained on how to complete the MEDITS file formats with the collected rapa whelk data, how to perform quality checks (with the RomeBS routine) and how to analyse them to obtain abundance and biomass indices (through the BioIndex routine).
- A detailed analysis of the common survey protocol was also performed with the aim of adapting and tailoring the input data templates and the analysis routines to best represent the data at hand.

## ANALYSIS OF RESULTS OF FIRST RAPA WHELK SURVEY AND DISCUSSION OF SURVEY PROTOCOL 5 May 2021

An online workshop was organized in order to present and discuss the rapa whelk survey results.



### OBJECTIVE

Present and discuss rapa whelk survey results and evaluate possible modifications to the common protocol



### LINKS

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Meeting on rapa whelk surveys results and protocol discussion



### RESULTS

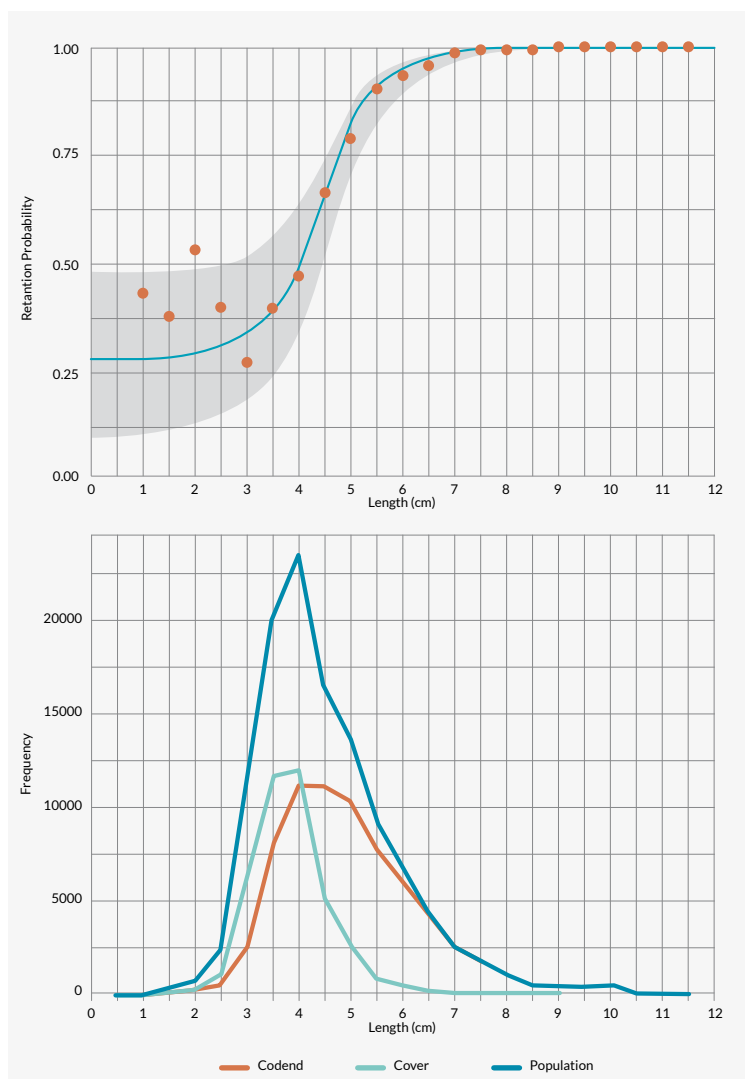
- BioIndex results were presented and major problems encountered in the first survey were discussed.
- An in-depth evaluation of the survey protocol was performed in light of the issues that emerged from the first survey, with a view to adapting the protocol accordingly for use in future surveys.
- The results of the selectivity study conducted following the first survey by the Central Fisheries Research Institute – Trabzon (SUMAE) were presented, and selectivity studies to be carried out by all partners in upcoming surveys were planned.
- The structure of the science short story film on rapa whelk was decided.

## ESTIMATION OF THE SELECTIVITY OF THE RAPA WHELK SURVEY BEAM TRAWL

### Autumn 2020, spring 2021, autumn 2021

During the first rapa whelk survey, carried out in autumn 2020, researchers observed that some small individuals were dropping out of the survey gear. Following that survey, SUMAE researchers conducted 11 selectivity hauls in the southeastern Black Sea to determine the level of escapees. Subsequently, BlackSea4Fish organized a selectivity study across the entirety of the Black Sea, to be conducted during future rapa whelk surveys.

Figure 2. Black Sea rapa whelk 72 mm mesh-size survey beam trawl selectivity curve and length frequency distributions (data pooled from 187 hauls)



Source: GFCM. 2022. Results of beam trawl selectivity for Black Sea rapa whelk. BlackSea4Fish.



### OBJECTIVE

Find out the length frequency distribution (LFD) of the rapa whelk that escaped or dropped out of the survey gear



### RESULTS

- Researchers from five partner institutes were trained in how to conduct the selectivity study during the SGSABS online meeting on data preparation.
- The rapa whelk beam trawl selectivity study protocol was prepared and distributed to the partners along with the data templates.
- In autumn 2020, SUMAE conducted a selectivity trial with 11 hauls.
- Five partner institutes joined the selectivity study during the spring 2021 and autumn 2021 surveys. In total, 187 hauls were conducted over the two seasons.



### LINKS

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Protocol on Black Sea rapa whelk survey beam trawl selectivity study



Scientific selectivity study of the rapa whelk beam trawl



Anchovy age reading. © GFCM/TAGEM

## INFORMATION FOR STOCK ASSESSMENT OF PRIORITY SPECIES IMPROVED

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The SGSABS benefited from technical work organized by BlackSea4Fish. This included a meeting on data preparation for stock assessment inputs (including for the anchovy benchmark), along with meetings to discuss demersal species survey data, as well as data availability and data quality for piked dogfish and red mullet. In order to collect fishery-independent data, a hydroacoustic survey for anchovy was carried out. In addition, a sprat age reading exchange exercise was finalized.

## BLACK SEA PRIORITY SPECIES – DATA GAPS AND NEEDS

9 July 2020

BlackSea4Fish organized a meeting to identify data gaps and other information required for Black Sea priority species and to determine what work was needed to fill the gaps and address the requirements. The review included the following topics:

1. standardization of scientific survey data (haul-by-haul survey data, acoustic data);
2. landings (fleet segments by gear code and vessel length category, standardization of nominal commercial catch per unit effort);
3. catch-at-age data (length-frequency distributions [LFDs] and age-length keys [ALKs]);
4. biological data (age and length at first maturity, von Bertalanffy growth parameters); and
5. discards (LFDs of discard rates).



### OBJECTIVE

Identify data gaps and other requirements for Black Sea priority species



### RESULTS

- A summary was completed of the data needs and related requirements to be addressed before the next round of stock assessment activities commences (SGSABS).



### LINKS

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Meeting to identify data gaps and needs: Black Sea priority species

### PRIORITY SPECIES

Following consultations with experts and managers, and based on a combination of criteria including socioeconomic importance and conservation concern, the GFCM created a list of Black Sea priority species for which advice should be produced.

#### Pelagic species



European anchovy (*Engraulis encrasicolus*)



European sprat (*Sprattus sprattus*)



Horse mackerel (*Trachurus mediterraneus*)

#### Demersal species



Turbot (*Scophthalmus maximus*)



Whiting (*Merlangius merlangus*)



Red mullet (*Mullus barbatus*)

#### Non-indigenous species



Rapa whelk (*Rapana venosa*)

#### Species of conservation concern



Piked dogfish (*Squalus acanthias*)

## RED MULLET AND PIKED DOGFISH – IMPROVEMENT OF DATA COLLECTION

Prior to 2016, the WGBS had concluded, on a precautionary basis, that the status of piked dogfish (*Squalus acanthias*) in the Black Sea was depleted. The red mullet stock was considered as uncertain, with signs of overexploitation. BlackSea4Fish was asked to investigate possible ways to improve data for piked dogfish and red mullet, particularly in relation to surveys-at-sea, in order to improve future advice on stock status. A first informal meeting was organized to launch a technical discussion among Bulgarian and Romanian experts. The following items were discussed:

- possible ways of adapting, expanding and optimizing existing demersal fishery-independent surveys (e.g. for turbot) so that they can also be used to collect data on piked dogfish and red mullet; and
- an in-depth appraisal of commercial data available for piked dogfish and red mullet (including for bycatch), scrutinizing their quality and identifying issues, biases and gaps, in order to evaluate whether and how they could be improved. For red mullet, this should include consideration of whether it will be possible to use fishery-dependent data to quantify (and, if need be, improve) the issue of misidentification of the two species present in the Black Sea (*Mullus barbatus* and *Mullus surmuletus*).



### OBJECTIVE

Compile all the information available for red mullet and piked dogfish and discuss how to improve data collection



### RESULTS

- A technical proposal was created for possible ways to improve data for stock assessments of both red mullet and piked dogfish in the Black Sea that included the following elements:
  1. organization of a meeting with all Black Sea countries to discuss:
    - an in-depth appraisal of currently available commercial data, including detailed descriptions of data collection schemes and raising methodologies, with a view to improving commercial data collection in all Black Sea countries, including on bycatch;
    - ways of expanding existing demersal fishery-independent surveys to incorporate the collection of data on both species; and
    - the establishment of a common protocol for an entire Black Sea demersal survey, which would include these two species as well as others of importance (e.g. turbot).
  2. based on the outputs of point 1 above, the drafting of a list of resources needed to carry out the actions described above to understand the cost of the work and explore how Bulgaria could effectively contribute to improving data for these two species.
- Red mullet requires its own survey separate from the turbot survey, given the different seasonality of the resource.
- Piked dogfish and turbot surveys could be conducted together, although the existing turbot survey would likely have to be expanded geographically.



### LINKS

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Meeting on piked dogfish and red mullet in the Black Sea



Sprat otoliths. © FAO / Yoana Georgieva

## EUROPEAN SPRAT – AGE READING

To fill the data gaps and meet the harmonization needs identified by the SGSABS to achieve more accurate stock assessments of Black Sea priority species, BlackSea4Fish stressed concerns regarding the consistency of age readings. To address this issue, an otolith exchange exercise for European sprat (*Sprattus sprattus*) was initiated to reveal the consistency of sprat age determinations between different Black Sea experts. In total, 50 otoliths from different seasons/periods were investigated. Including the reference reader, eight experts from five Black Sea countries were involved in this activity. The results were analysed to evaluate the level of agreement between readers and the reference reader, between-reader bias and variability in age determinations.



### OBJECTIVE

Analyse the extent to which the sprat age determinations performed by different Black Sea experts were consistent, by means of a sprat otolith exchange exercise



### LINKS

Click on the title to visit the link or scan the QR code



Otolith exchange exercise–  
Results on sprat



### RESULTS

- Comparison of the results showed considerable inconsistency between readers and the reference reader. The average agreement of the experts' determinations with the real age of the samples (reference reader results) was 36 percent (range 22 percent–55 percent). 100 percent agreement between experts was never recorded.
- Knowing the true age structure of the catch is a crucial condition for adequate stock assessment modelling. As a next step, the aim is to organize a sprat otolith age reading workshop in order to reduce these significant inconsistencies.



Hydroacoustic survey for anchovy. © GFCM/TAGEM

## ANCHOVY – HYDROACOUSTIC SURVEY November 2020 and January 2021

Hydroacoustic surveys for anchovy were carried out in Georgian and Turkish Black Sea waters. The information obtained was crucial for supporting estimates of the status of this species in the Black Sea.



### OBJECTIVE

Conduct hydroacoustic surveys for anchovy (*Engraulis encrasicolus ponticus*) in Georgian and Turkish Black Sea waters, including ground-truthing trawl hauls



### RESULTS

- Estimates of anchovy abundance and length/age composition at sea were obtained.

## ANCHOVY – DATA PREPARATION MEETING 21–22 June 2021

A data preparation meeting in view of the SGSABS benchmark session for Black Sea anchovy was held online from 21–22 June 2021. The aim of the meeting was to collect, collate and discuss all the fishery-independent and fishery-dependent data for Black Sea anchovy available for use during the benchmark session.



### OBJECTIVE

Collect, collate, analyse and discuss the anchovy data needed for the benchmark assessment towards the compilation of a single entire Black Sea dataset



### RESULTS

- Available anchovy data for the Black Sea was subjected to in-depth analysis.
- Data gaps were identified.
- A methodology for the treatment of missing data was proposed.
- Quality checks on the input data by country were carried out.



### LINKS

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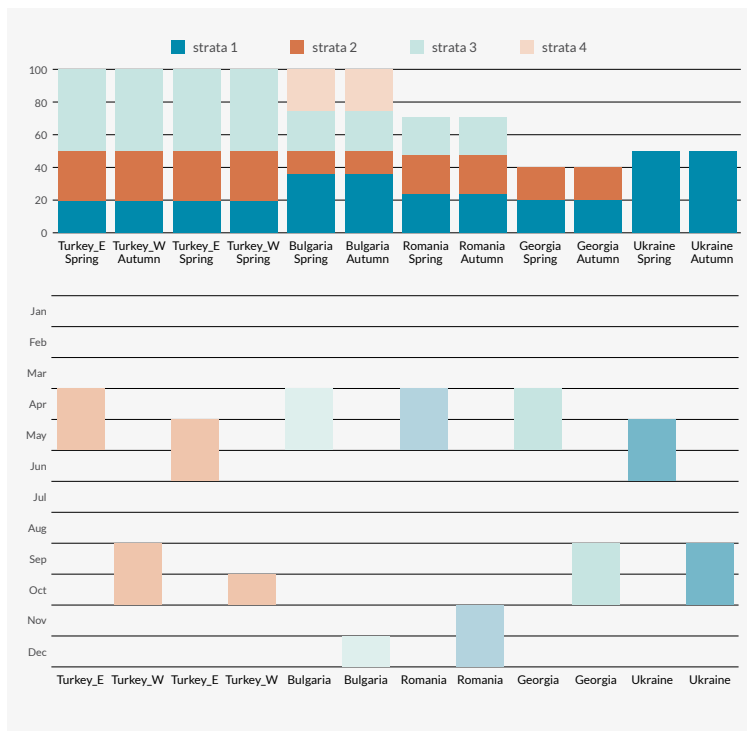


Anchovy Data Preparation Meeting

## DEMERSAL SPECIES SURVEYS DATA WORKSHOP AND DATA PREPARATION MEETING FOR THE BLACK SEA PRIORITY SPECIES 31 May to 4 June 2021

A workshop on Black Sea demersal surveys preceded the annual data preparation meeting for Black Sea priority species, held online from 31 May–4 June 2021. The first two days of the meeting (31 May–1 June) were devoted to an in-depth analysis of the data emerging from existing demersal surveys in Bulgaria, Romania and Türkiye. These data were provided for a number of species in the MEDITS-like data formats, checked for quality using the RomeBS routine and analysed using the BioIndex routine. Results were discussed towards the dual objectives of i) preparing data for the assessments of stock status planned in the SGSABS; and ii) launching discussions towards establishing a demersal survey covering the entire Black Sea by optimizing existing surveys and developing additional ones in countries that do not have any. On the remaining days (2–4 June), issues related to pelagic surveys and fishery-dependent data for the Black Sea priority species (with the exception of anchovy) were reviewed and discussed for the needs of the 2021 meeting of the SGSABS.

Figure 3. Sampled depth strata and temporal alignment of the demersal trawl surveys conducted in Black Sea countries



Source: GFCM. 2022. Review of the integration of Black Sea demersal surveys. BlackSea4Fish.



### OBJECTIVE

Analyse the fishery and biological data of the Black Sea demersal priority species: prepare data for assessment work and start discussions towards establishing a demersal survey covering the entire Black Sea



### RESULTS

- All available data necessary for stock assessment modelling were collected.
- The quality of the data was analysed and data gaps were identified.
- The presentation of an R-script was compiled ad hoc for the diagnosis of input data and stock assessment results.
- The process of creating and implementing a common demersal survey protocol for all Black Sea countries was initiated.



### LINKS

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Demersal surveys data workshop and Data preparation meeting for Black Sea priority species



Review of the integration of Black Sea demersal surveys



Small-scale fishing in Trabzon, Türkiye. © GFCM/Claudia Amico

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## IMPROVED KNOWLEDGE OF SMALL-SCALE AND RECREATIONAL FISHERIES

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A comprehensive regional survey on the socioeconomic characteristics of fisheries in the Mediterranean and the Black Sea, with a particular emphasis on collecting robust data on the impacts of small-scale fisheries (SSF), was finalized in two countries. The Small-Scale Fishers' Forum (SSF Forum) was also launched in 2020, with a series of workshops addressing a variety of themes reflecting the priorities highlighted in the Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea (RPOA-SSF). Further information on recreational fisheries was gathered by using the *Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea* (Grati et al., 2021) at a pilot site in Türkiye.



Fish market stand in Bulgaria. © GFCM/Claudia Amico

## GFCM SOCIOECONOMIC SURVEY INITIATIVE

Socioeconomic surveys covering the full national fleets and following a harmonized regional methodology contained in the *Handbook for fisheries socio-economic sample survey – principles and practice* (Pinello, Gee and Dimech, 2017), with related questionnaires adapted to national specificities and needs, supported countries in fulfilling their data reporting requirements.



### OBJECTIVE

Support the compilation of accurate, timely and complete socioeconomic data on fisheries in the region to enhance the formulation of scientific advice



### RESULTS

- Sample surveys were conducted in Türkiye and Ukraine, with targeted assistance provided toward survey design and data quality control, processing and analysis.
- More accurate and complete socioeconomic data were submitted for all fleet segments from participating countries to Task VI of the GFCM Data Collection Reference Framework (DCRF).
- Additional information was collected – such as the destination of catch at first sale, demographic characteristics of fishers, and more – that could shed further light on the socioeconomic characteristics of fisheries in the region, particularly of the SSF fleet segment group.

## SSF FORUM

The SSF Forum was established as a place for small-scale fishers and fish workers from the Mediterranean and Black Sea region to come together, share knowledge and exchange best practices to build capacities on common issues and jointly identify opportunities and alternative scenarios for managing their resources. It launched in 2020 and each year offers a series of workshops covering a variety of priority topics.



### OBJECTIVE

Build the capacities of small-scale fishers and fish workers, share knowledge and promote the exchange of best practices through the organization of SSF Forum workshops



### RESULTS

- The SSF Forum workshop “Collaborative science, local ecological knowledge, climate change and environmental impacts of fishing” (November 2020), which involved participation from Türkiye and Bulgaria, offered an opportunity to hear directly from fishers on how to encourage fisher engagement in scientific research, develop a common language for fishers and scientists and ensure effective communication and reporting of study results.

## RECREATIONAL FISHERIES

BlackSea4Fish supported the implementation of harmonized sampling and survey monitoring schemes for recreational fisheries in one Black Sea pilot case study, in line with the *Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea* (Grati et al., 2021).



### OBJECTIVE

Enhance knowledge on recreational fisheries by piloting the GFCM handbook’s methodological framework in one Black Sea case study



### RESULTS

- The pilot study successfully developed a statistical picture of recreational fishers on the Turkish Black Sea coast and collected data to assess the impacts of recreational fishing activity.
- It also contributed to establishing a list of species of interest to recreational fisheries in the Black Sea.

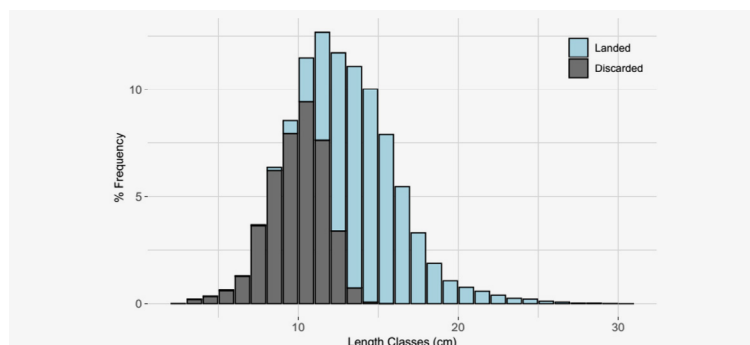


Vulnerable species found in mid-water trawl catches in Ukrainian waters. © GFCM/BlackSea4Fish project

## DISCARDS AND BYCATCH OF VULNERABLE SPECIES BETTER MONITORED

With the aim of improving knowledge on bycatch rates in the Black Sea, field work was conducted through the GFCM discards monitoring programme, collecting data on-board and at landing sites in line with the standards included in the handbook *Monitoring discards in Mediterranean and Black Sea fisheries: Methodology for data collection* (FAO, 2019). A collaboration with the CeNoBS project (Support Marine Strategy Framework Objective implementation in the Black Sea through establishing a regional monitoring system of cetaceans [D1] and noise monitoring [D11] for achieving Good Environmental Status), gathered further information on the incidental catch of vulnerable species, particularly of the harbour porpoise (*Phocoena phocoena*), which is often bycaught in turbot fisheries. The work was carried out in line with the guidelines provided in the handbook with a view to identifying ways to mitigate impacts.

Figure 4. Length-normalized frequency distribution of whiting in Turkish demersal trawling in geographical subarea 29



Source: GFCM. 2020. *Discards Monitoring Programme. Final report of the results of first year of activity.* BlackSea4Fish. Internal document.



### OBJECTIVE

Collect data on discards and incidental catch of vulnerable species and start working towards mitigation solutions



### RESULTS

- The first phase of the discard programme was finalized in Türkiye and Ukraine and the data analysed; the second phase is ongoing.
- Contributions were made to the CeNoBS project by participating in its advisory board and providing training on the standard methodology for the collection of data on incidental catches of vulnerable species.
- Assistance was provided in the development of a concept note for a pilot project to assess cetacean bycatch in Black Sea turbot fisheries and to test mitigation measures.



Hauling in catch during a rapa whelk beam trawl survey in Türkiye. © GFCM/SUMAE

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## COOPERATION, OUTREACH AND WIDELY DISSEMINATED RESULTS

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A number of initiatives were launched to target regional expertise in stock assessments and models and in response to the need to scale up technical capacity in the Black Sea, a requirement often underlined by the WGBS. In this regard, a series of online trainings and presentations were organized, and the infrastructure and start-up data for the launch of a scientific database for the Black Sea were finalized.

## BLACK SEA SCIENTIFIC DATABASE

A scientific database of experts, publications and stock assessment input data (including life history/biological information) for Black Sea priority species has been repeatedly requested by the WGBS, with the main aim of guaranteeing the quality of stock assessment input data. Work on constructing this database has begun; when operational, it will boast the additional benefit of being useful to experts in important related fields and for disseminating Black Sea scientific work to a greater audience. The vision of BlackSea4Fish is of an interactive database that experts can access and update. This would improve the quality and quantity of the information and give the experts ownership over the process, possibly leading them to more actively keep it up to date. Ultimately, the information contained in this database will include all stock assessment input data and will be publicly consultable online.



### OBJECTIVE

Construct a Black Sea scientific database including information on the biology of its fish species, experts working in the Black Sea region and published fisheries literature



### RESULTS

- The following information was collected for the database:
    - **Experts**  
More than 200 experts from the region were identified and listed according to the following topics:
      - fisheries biology
      - population dynamics
      - fish biology
      - stock assessment
      - fisheries technology
      - fisheries oceanography
      - fisheries acoustics
      - fish ecology

The condition for inclusion in the database is that the expert has written or co-written at least one publication of relevance to the Black Sea
  - **Literature**  
A literature review was performed, and more than 800 publications related to Black Sea fisheries were listed. Once the database is up and running, the intention is to send this list to the experts to update it further, as well as to other as yet unlisted experts, in order to broaden the scope of information available.
  - **Data**  
Initial data is included on the life history parameters of Black Sea priority species (e.g. size, growth and maturity). In the future, these data will be expanded to contain all stock assessment input data.
- A platform was constructed for the Black Sea scientific database.
- Information collected was entered, and activities related to the launch of the database were prepared.



Pelagic trawl catch in Bulgaria. © GFCM/Claudia Amico

## CAPACITY BUILDING

A pool of Black Sea experts in fisheries and fisheries-related sciences is crucial to backstop many of the activities performed through the BlackSea4Fish project. A number of initiatives were launched to target the uneven regional expertise in stock assessment and modelling and in response to the need to scale up technical capacity in the Black Sea, a requirement often underlined by the WGBS.

## STOCK ASSESSMENT TRAININGS

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Online and, at the very beginning of 2020, in-person capacity-building activities were provided to Black Sea experts on the following topics under the philosophy of training future trainers:

- the theory, use and settings of the SAM state-space stock assessment model;
- the theory, use and settings of the Stock Synthesis (SS3) integrated assessment model;
- the theory, use and settings for the estimation of reference points;
- hands-on operational training on extended survivor analysis (XSA) through the involvement of external stock assessment experts (including external reviewers) in data preparation and stock assessment meetings; and
- the quality control and data analysis of data collected through standardized scientific surveys-at-sea.

## ONLINE PRESENTATION SERIES

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A series of eight online technical presentations on fisheries-related topics of specific interest to the Black Sea were organized in order to provide regional experts with the opportunity to advance their knowledge and exchange ideas on specific technical issues related to advice and the management of resources and to scale up technical capacity. They are described below.

### **State-space assessment models (SAM)**

6 July 2020, presented by Niels Hintzen

### **Black Sea rapa whelk survey protocol**

21 July 2020, presented by Bohdan Hulak, Nuri Başusta and Murat Dağtekin

### **Multispecies modelling of Black Sea resources using mass-balance models (Ecopath with Ecosim, EwE)**

12 November 2020, presented by Ekin Akoglu and Yoana Georgieva

### **Biological reference points**

8 December 2020, presented by Niels Hintzen

### **Data-limited stock assessment models**

22 December 2020, presented by Nazli Demirel, Giuseppe Scarcella and Yevhen Leonchuk

### **Monitoring discards in Mediterranean and Black Sea fisheries**

30 November 2021, presented by Paolo Carpentieri

### **Size selectivity of towed fishing gear**

7 December 2021, presented by Hüseyin Özbilgin

### **Bycatch reduction in towed fishing gear**

15 December 2021, presented by Gökhan Gökçe



### **LINKS**

*Click on the titles to visit the link  
or scan the QR code*



BlackSea4Fish  
Presentation Series



Fisher on a pelagic trawler in Nessebar, Bulgaria. © GFCM/Claudia Amico

## DISSEMINATION AND OUTREACH

Presentation of GFCM activities in the Black Sea, together with BlackSea4Fish achievements and ongoing work, at events including:

- Searica Conference (22 April 2021, online)
- Black Sea Advisory Council meetings (24 February, 16 March, 12–13 May, 28 September and 23 November 2021, online)
- Common maritime agenda for the Black Sea meetings (2020 and 2021 meetings, online)
- DGMARE-BSEC-ICBSS online workshops (2 October 2020, online)
- Workshop on “How has the Covid-19 pandemic affected Blue Economy in the Black Sea Region – the fisheries and aquaculture sector: Challenges and potential response actions” (16 June 2020, online)
- Workshop on “Black Sea projects on coastal and maritime tourism, maritime transports, fishery and aquaculture, digitalization: gaps and opportunities” (2 October 2020, online)
- Black Sea Days 2020 and 2021 (29 October 2020 and 28 October 2021, National Institute for Marine Research and Development, Romania and online)
- Update of the BlackSea4Fish website pages



### LINKS

*Click on the titles to visit the links or scan the QR codes*



Five things to know about rapa whelk



How an invasive sea snail triggered cooperation in the Black Sea

# REFERENCES

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**FAO.** 2019. *Monitoring discards in Mediterranean and Black Sea fisheries: Methodology for data collection*. FAO Fisheries and Aquaculture Technical Paper No. 639. Rome. <https://www.fao.org/3/ca4914en/ca4914en.pdf>

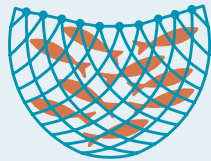
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**Grati, F., Carlson, A., Carpentieri, P. & Cerri, J.** 2021. *Handbook for data collection on recreational fisheries in the Mediterranean and the Black Sea*. FAO Fisheries and Aquaculture Technical Paper No 669. Rome, FAO. <https://www.fao.org/3/cb5403en/cb5403en.pdf>

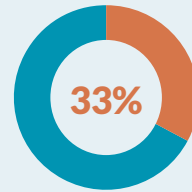
**Pinello, D., Gee, J. & Dimech, M.** 2017. *Handbook for fisheries socio-economic sample survey – principles and practice*. FAO Fisheries and Aquaculture Technical Paper No. 613. Rome, FAO. <https://www.fao.org/3/i6970e/i6970e.pdf>

# BLACK SEA FISHERIES OVERVIEW\*

## Landings from capture fisheries



**387 800 TONNES**

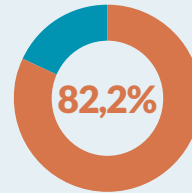


**33% OF GFCM AREA OF APPLICATION**

## Black Sea fleet



**9 229 VESSELS (GSA 29 ONLY)**

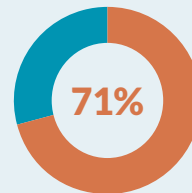


**82,2% SMALL-SCALE FISHERIES**

## Employment on board vessels



**22 760**

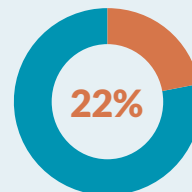


**71% SMALL-SCALE FISHERIES**

## Revenue from capture fisheries



**USD 245 MILLION**



**22% SMALL-SCALE FISHERIES**

\* These figures are based on FAO. 2020. *The State of Mediterranean and Black Sea Fisheries 2020*. General Fisheries Commission for the Mediterranean. Rome. <https://doi.org/10.4060/cb2429en>

# BLACKSEA4FISH

## 2020–2021

This booklet presents the activities and achievements of the BlackSea4Fish project in 2020–2021. Established in 2016 and implemented by the GFCM, the BlackSea4Fish project contributes to the sustainable management of Black Sea fisheries by providing scientific and technical support to the countries in the region.

In 2020 and 2021, BlackSea4Fish focused on increasing scientific knowledge to support fisheries management by improving data collection and scientific advice for priority species through scientific surveys, enhanced stock assessments and capacity building. Due to the COVID-19 pandemic, BlackSea4Fish meetings and joint field activities had to be put on hold in 2020 and were replaced by online trainings, with select activities organized at only the national level. In 2021, activities at the national level and online work continued, while meetings resumed in virtual modality.

The project organized three data preparation meetings, four technical meetings, two technical documents, five scientific surveys, two selectivity studies, one scientific database, and eight online presentation series.



### General Fisheries Commission for the Mediterranean

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Rome, Italy

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