

Protocol to collect data at local level PGK

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Description	<p>Following specific protocols for data collection in fisheries and aquaculture at the local level, in Primorje Gorski Kotar have been identified two protocols:</p> <ul style="list-style-type: none"> Local data collection on small coastal fishing - PROTOCOL A Local collection of other data in fisheries and aquaculture – PROTOCOL B
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Author	MYDONIA CONSULTING d.o.o

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Proposed protocol for data collection in fisheries and aquaculture at the local level

Framework for data collection in fisheries and aquaculture at the national level

The European Union fisheries data collection framework was established by Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017 establishing a Union framework for the collection, use and management of data in the fisheries sector and support for scientific advice in relation to common fisheries policy.

National Plan for data collection in fisheries of the Republic of Croatia for 2022-2024. was organized according to the provisions of the Union's multi-year program for data collection, management and use in the fisheries and aquaculture sectors for the period 2022-2024. which was adopted by the Executive Decision of the Commission on establishing the list of mandatory research and thresholds for the needs of the Union's multi-year program for data collection in the fisheries and aquaculture sectors and their management and the Commission's Delegated Decision on establishing the Union's multi-year program for the collection of biological, environmental, technical and socioeconomic data in fisheries and aquaculture sector and for the management of this data.

Data collection in fisheries in the Republic of Croatia in accordance with the provisions of the Common Fisheries Policy of the European Union is carried out by two main institutions:

- Ministry of Agriculture - Directorate for Fisheries
- Institute of Oceanography and Fisheries.

Ministry of Agriculture - The Directorate for Fisheries is the national authority responsible for the implementation of the National Data Collection Program - in Croatia, all administrative duties involved in the fisheries sector, including data collection, monitoring, control and supervision, are taken over by the Directorate for Fisheries of the Ministry of Agriculture. In addition to the central office in Zagreb, the Fisheries Administration has seven field offices within each coastal county (Pula, Rijeka, Senj, Zadar, Šibenik, Split, Dubrovnik). Field offices are responsible for technical and administrative issues related to the issuance, registration and management of licenses (commercial fishing), approvals (sport and recreational fishing) and authorizations, entering data from logs and catch reports into the central database, maintaining the license register and fleet register.

The Directorate for Fisheries coordinates the implementation of data collection at the national level and is responsible for the implementation of the following chapters:

- Section 1b. Other data collection activities
- Section 2.3. Collection of data on diadromous species in fresh water
- Section 3. Data on fishing activity
- Section 5. Economic and social data in fisheries
- Section 6. Economic and social data in aquaculture
- Section 7. Economic and social data in fish processing

The Institute of Oceanography and Fisheries implements monitoring and data collection programs in the field of fisheries biology. It is an institution under the Ministry of Science and Education, covering a wide range of research areas related to the sea, including fisheries.

The scientific activity of the Institute is extremely multidisciplinary, since it covers almost all areas of research. It conducts very complex research in the fields of biological, chemical and physical oceanography, sedimentology, and biology of fisheries and aquaculture.

Basic scientific research is mainly carried out through projects of permanent research activities financed by the Ministry of Science and Education of the Republic of Croatia. Pursuant to the Marine Fisheries Act (Official Gazette 62/17, 130/17 - Aquaculture Act and 14/19), the Institute is responsible for collecting biological data according to the National Fisheries Data Collection Plan in the Republic of Croatia, and is responsible for monitoring the assessment of the effects of all or some forms of fishing on the marine ecosystem.

The Institute of Oceanography and Fisheries is responsible for the implementation of the following parts of the chapter:

- Section 1a: Exam studies
- Section 1b: Other data collection activities
- Section 2: Biological data
- Section 4: Impact of fisheries on marine biological resources

The national website for data collection is <https://podaci.ribarstvo.hr/>.

INFORMATION SYSTEM OF FISHERIES

Data on fleet capacity, fishing effort, catch, landing, fuel consumption and transport and first sale were collected through paper or e-documentation of the Fisheries Information System. The following is information on the legal provisions, the type of data that is collected and for which reports the data is used:

Register of fleet and privileges/approvals

o Legal provisions:

- Regulation on the Register of the Fishing Fleet of the Republic of Croatia (Official Gazette 5/2019)

- Regulation on privileges for commercial fishing at sea and Register of privileges (Official Gazette 116/2017, 29/2018, 75/2018, 38/2019)
 - Regulation on privileges for commercial fishing at sea owned by the state (Official Gazette 34/2019)
 - Regulation on commercial fishing at sea with a bottom trawl (Official Gazette 102/2017, 74/2018, 20/2019)
 - Regulation on commercial fishing at sea with a purse seine gear (Official Gazette 105/2017, 37/2018, 20/2019)
 - Regulation on commercial fishing at sea with purse seine gear (plivaricom palamidarom, plivaricom ciplaricom, plivaricom lokardarom, plivaricom igličarom i plivaricom oližnicom) (Official Gazette 30/2018, 49/2018, 62/2018, 78/2018, 87/2018)
 - Regulation on commercial fishing at sea with shore seines (Official Gazette 30/2018, 49/2018, 78/2018, 54/2019)
 - Regulation on fishing for Thunnus thynnus with plivarica tunolovka, its cultivation and the conditions and criteria for exercising the right to the allocation of an individual purse seine vessel quota (Official Gazette 46/2019)
 - Regulation on fishing for Thunnus thynnus with fishing gear and conditions and criteria for exercising the right to the allocation of an individual fishing quota for purse seine vessel (Official Gazette 20/2019, 77/2019) Ordinance on small-scale coastal fishing (Official Gazette 17/2018)
- Types of data
 - Fleet register:
 - Capacity of fishing vessels expressed in tonnage (GT)
 - Fishing vessel capacity expressed in power (kW)
 - Active vessels
 - Vessels by fleet segment
 - Sailed around PJ
 - Ships by county
 - Authorized vessels
 - Fishing permit:
 - The owner of the vessel
 - Fishing permit holder

- Vessel information
- Fishing gear
- Fishing zones
- Vessel information
- Fishing gear
- Fishing zones
- Use of data:
 - Reports according to the European Commission and ICCAT Annual catch of bluefin tuna by vessels
 - List of tuna fishing vessels
 - List of other vessels (auxiliary vessels) for tuna fishing
 - List of vessels participating in the joint fishing operation in catching the total quota for bluefin tuna
 - List of transshipment ports for bluefin tuna
 - List of landing ports for bluefin tuna
 - List of vessels targeting the swordfish
 - List of authorized ports for FAO-GFCM swordfish
 - Register of the fishing fleet - vessels ≥ 15 meters and vessels < 15 meters and authorized vessels for bottom trawling - trawl)
 - Authorized vessels for catching small bluefish
 - Statistical report of the fishing fleet by vessel type

Catch documentation

- Legal provisions
 - Regulation on the form, content and method of keeping and submitting data on catches in commercial fishing at sea (Official Gazette No. 38/18, 48/18 – correction and 64/18)
- Documentation
 - Catch logbook
 - Catch report
 - Catch report for small coastal fishing
- Types of data

- Catch logbook
- Data on fishing vessel(s) and dates of fishing
- Data on fishing gear
- Data on fishing/fishing operations
- Catch information, Landing/transshipment declaration
- Catch report/Catch Report for the Information about the fishing vessel
- Data on fishing efforts
- Data on catch, discarded catch and landing of fish and other marine organisms
- o Use of data
 - Annual Report on sea Fisheries (DZS)
 - Quarterly report on sea fisheries (DZS)
 - Annual report on catches by fishing area (Eurostat)
 - Annual report on the landing of fishery products (Eurostat)
 - Annual statistical report on the catch of fish, crabs, molluscs, etc., by species and major fishing areas (FAO)
 - Annual statistical report on the catch of shellfish, corals and sponges, by species and major fishing areas (FAO)

Sales and transport

- o Legal provisions
 - Regulations on the conditions and ways of marketing fish and other marine organisms, Official Gazette 154/2008
 - Regulations on the content and form of the sales list and the content of the register of first buyers
 - Regulations on the procedure for weighing fishery products, weighing records, and the procedure and conditions for approving weighing on fishing vessels and in approved facilities
 - Regulations on the content, form and method of delivery of the transport document, NN 140/215
- o Documentation
 - Sales notes
 - Transport document

- o Types of data
 - Sales notes
 - Place of purchase
 - Time of Purchase
 - Species
 - Quantity
 - Value
 - Presentation and preservation
 - Destination
 - vessel
 - Transport document
- o Use of data
 - Calculation of average prices in the first purchase of fish and indicators related to the quantity and value of species of marine organisms
 - Annual economic report on the fishing fleet

Aquaculture

- Legal provisions
 - The Law on Aquaculture ("Official Gazette", 130/17, 111/18)
 - Regulation on the collection of statistical data on aquaculture ("Official Gazette", 13/19)
- Documentation
 - 1) Logbook for:
 - hatchery
 - sea fish (except tuna)
 - shellfish
 - tuna
 - cold water species
 - warm water species
 - 2) Logbook for OPG
 - 3) Report on the number of employees

- Obligated entities for submitting data under points 1) and 3) are all legal and natural persons holders of aquaculture permits, and data under point 2) all natural persons holders of authorization to perform aquaculture activities on family farms
- Data is collected at the level of the aquaculture permit/approval for performing aquaculture activities at OPG, on an annual basis through direct entry into the electronic database of the Ministry of Agriculture, no later than 31.03. for the previous calendar year.

Types of data

- 1) for white sea fish and freshwater fish separately by species:
 - breeding technology
 - breeding volume (for white sea fish and cold-water species)
 - breeding area (for cold-water and warm-water species)
 - number of cages/recirculation pools (pcs)
 - juvenile production (pc)
 - annual losses (mortality, escape, other)
 - sales by country of destination in kilograms and pieces and the corresponding value in the national currency
 - number of planted fish - separated by origin and development stage of planted fish
- 2) for tuna:
 - sales by country of destination in kilograms and corresponding value in national currency
 - annual losses (mortality, escape)
- 3) for bivalves separately by species:
 - breeding technology
 - length of production installations
 - sales according to the country of destination in kilograms or pieces and the corresponding value in the national currency
 - losses
 - unfinished production
- Use of data
 - 1) State Bureau of Statistics (DZS):
 - data on the sale of farmed fish and shellfish (by species): quantity in kg, value in HRK, average price in HRK/kg.
 - data on juvenile production by species (pcs)
 - surface area of carp and trout ponds in exploitation
 - 2) FAO, GFCM (SIPAM), EUROSTAT:
 - production by species separately according to growing medium and growing technology
 - average price by species (in national currency)

- production of juvenile by species (pc)
- number of permanent and seasonal employees in aquaculture (by gender)
- the total number of cages for breeding marine fish
- cage breeding volume in m³
- the total length of breeding lines for shellfish farming
- the number of warm water ponds and their production area in ha
- the number of trout fish farms and their total breeding volume in m³
- the number of planted fish originating from the wild

Fuel consumption in fishing:

- o Legal provisions:
 - Regulation on the application of the Law on Excise, which refers to blue diesel for uses in agriculture, fishing, aquaculture, and to the refund of excise duty paid on unleaded motor gasoline for uses in fishing, Official Gazette 1/2019
- o Documentation:
 - The control of the consumption of blue diesel for purposes in agriculture, fishing and aquaculture after taking over the fuel card is carried out in particular through: 1. the fuel card and 2. the record of buyers of blue diesel who purchase the fuel for further sale. The Financial Agency (FINA) is responsible for controlling the consumption of blue diesel. The Fisheries Administration collects data per vessel on an annual basis for the purpose of statistical reporting.
- o Types of data:
 - Annual consumption of blue diesel at vessel level and higher aggregation levels related to vessel data. Estimation of annual gasoline consumption at the level of the fishing fleet segment.
- o Use of data:
 - Annual economic report on the fishing fleet

BIOLOGICAL DATA

The monitoring and data collection program in the field of fisheries biology includes three independent scientific studies:

- MEDITS – International research of trawling areas of the Mediterranean Sea;
- MEDIAS – Echo-monitoring of the Mediterranean Sea;
- SOLEMON – International survey of common sole in the Adriatic Sea.

In addition to scientific research independent of fisheries, the program includes scientific monitoring of commercial and recreational fishing.

The Ministry of Agriculture, in cooperation with the Institute of Oceanography and Fisheries in Split, is responsible for the coordination and collection of biological, technical and socio-economic data in order to fulfil the obligations of the Republic of Croatia in accordance with the EU Data Collection Framework (en. Data Collection Framework, DCF) regulated by Regulation (EU) 2017/1004, Implementing Decision of the Commission (EU) 2019/909 and Implementing Decision of the Commission (EU) 2019/910 based on Article 25 of the ZRP.

In accordance with Art. 8, paragraph 4 of the Law on Sea Fisheries (Official Gazette 62/17, 130/17 and 14/19), the Institute of Oceanography and Fisheries is designated as the competent authority for the collection of biological data within the framework of the data collection plan, including the program of scientific observers for monitoring the economic and recreational fishing at sea for the purpose of monitoring the state of biological resources dependent on fishing.

The program of scientific observers includes activities throughout the year that the Institute of Oceanography and Fisheries has been carrying out continuously since 2012, and includes biological sampling at landing sites and fish markets, as well as sampling of catches, discards and sensitive species at sea.

In accordance with Art. 48 of the Law on Sea Fisheries (Official Gazette 62/17, 130/17 and 14/19), the Ministry of Agriculture by resolution appoints authorized scientific observers for data collection which for this purpose is employed by the Institute of Oceanography and Fisheries in Split.

Data collection is carried out in accordance with the Methodology of Biological Sampling in Commercial and Recreational Fishing at Sea, and the methodology includes:

- Program for monitoring commercial fishing at sea:
- Sampling plan on fishing vessels and landing sites
- Plan for monitoring recreational and sport fishing at sea
- Protocols for observers:
- Protocol for sampling on fishing vessels
- Protocol for sampling at landing points
- Protocol for collecting data on the catch of sensitive and vulnerable species
- Protocol for laboratory processing of samples
- Protocol for entering data into the information system.

SOCIOECONOMIC DATA

In accordance with the established rules on the collection and use of biological, environmental, technical and socioeconomic data of Regulation (EU) 2017/1004 of the European Parliament and of the Council, the Multiannual Program of the Union for the collection of data and their management and use in the fisheries and aquaculture sectors, and the National Plan for the collection of data in fisheries, the Directorate of Fisheries at the Ministry of Agriculture conducts annual collection of socio-economic data in the fishing fleet, aquaculture and fish processing industry.

The Multiannual Union Program for the Collection, Management and Use of Data in the Fisheries and Aquaculture Sectors was adopted in order for Member States to define and plan their data collection activities in national work plans.

In chapter III. the requirements regarding data are prescribed, and they include:

- Data sets
- Biological data on stocks caught in commercial Union fishing in Union waters and outside Union waters and in recreational fishing in Union waters
- Detailed data on the activities of Union fishing vessels in Union waters and outside Union waters
- Social and economic data on fisheries for the purposes of assessing the social and economic performance of the Union's fisheries sector (economic and social variables)
- Social, economic and environmental data on sea aquaculture and optionally on freshwater aquaculture for the purposes of assessing the socio-economic performance and environmental efficiency of the Union's aquaculture sector (social and economic variables).

The obligation to submit the above-mentioned data is prescribed by the Law on Sea Fisheries and applies equally to participants in commercial as well as small-scale coastal fishing and to holders of privileges or valid permits for aquaculture in the reference year as well as to participants in the fish processing industry.

The data collected from the authorized person, derived from the accounting documentation or assessment of the authorized person/owner of the vessel is used, in summary, in the following way:

Collected data for reporting purposes are grouped by fleet segment (combination of the main gear used and vessel length), aquaculture segment (according to the main farming technique used) and fish processing industry segment (main activity and company size). Individual data about the respondent and the authorized person and the vessel are not displayed. From the grouped data, annual reports are prepared for delivery to the end users of the data (European Commission, General Fisheries Commission for the Mediterranean (GFCM) etc.). In case of

incomplete or insufficient quality data for a particular segment, an assessment is formed based on available administrative data and data from the Fisheries Information System.

The report on the fishing fleet contains a special section where the economic and technical indicators collected from the authorities and the biological data on the state of the fish stock collected by scientific institutions are put into relation. Depending on the balance between technical, economic and biological indicators for each segment of the fleet, further measures and distribution of funds are planned within the Operational Program for Maritime Affairs and Fisheries.

Apart from being primarily a legal obligation, the delivery of complete and high-quality data ultimately enables a more precise identification of the needs of the sector, in order to direct the measures of the Operational Program for Maritime Affairs and Fisheries as effectively as possible towards the sustainability of the system in all three components - social, economic and biological. At the same time, the delivery of data is an opportunity for communication and feedback on the effect of the measures implemented so far and a roadmap for further development of the strategy in fisheries.

STUDIES

Scientific research at sea and pilot studies were carried out as part of data collection and prescribed by the Union's multi-year program for data collection, management and use in the fisheries and aquaculture sectors.

Relative share of catch from recreational fishing compared to catch from commercial fishing

1. Objective of the pilot study

The aim of this pilot study is to estimate the share from recreational fishing in relation to the catch from commercial fishing and to obtain indicative data on fishing effort and the qualitative and quantitative composition of the catch, especially in relation to the species listed in Table 3 of the multi-annual program of the Union (eels and crustaceans). In order to achieve this goal, it is necessary to determine the amount of annual catch by species (weight and number).

2. Methodology and expected outcomes of the pilot study

Considering the large number of participants in sport and recreational fishing (more than 70,000 licenses have been issued in recent years), and the problem of direct data collection, data collection for recreational and sport fishing will be conducted through a simple questionnaire that will be distributed to fishermen when purchasing a fishing permit. The data will be collected partly by mail (for those who buy their license in the regional offices of the Fisheries Administration and in sports associations), and partly by means of an e-survey for those who buy their license via online sales. During the research, data will be collected on the type of fishing gear, as well as data on fishing effort and the qualitative and quantitative composition of the catch, with special reference to the species listed in Table 3 of the Union's multi-annual program (eels and crustaceans).

The target population consists of all participants in recreational and sport fishing and includes activities carried out on shore and on vessels. For the species bluefin tuna (*Thunnus thynnus*) and swordfish (*Xiphias gladius*), the collection will be carried out by the Directorate of Fisheries in cooperation with the Institute for Oceanography and Fisheries. Data collection for other species, including eel (*Anguilla Anguilla*) and crustaceans, will be carried out in cooperation with the Fisheries Administration and the Croatian Sports Sea Fishing Association (HSSRM).

Protocol for data collection in fisheries and aquaculture at the local level

Precise and in – time collection of the mentioned data, as well as their complete availability to all stakeholders at the local level, is imperative for the adoption of plans for the rational and sustainable management of marine bioresources. Additionally, a very detailed knowledge of the state of the exploited biological resources, as well as knowledge of the detailed characteristics of fishing, is a prerequisite for the establishment of sustainable fisheries.

Therefore, the data collected at the national level are not fully adequate for describing the situation at the local level, and very often they are not even timely and fully available to local stakeholders. Resource management at the local level requires much more detailed data, which is generally not currently collected.

However, in order to encourage the implementation and establishment of a local database on fisheries and aquaculture, it is necessary to ensure and improve the collection of quality data through technological improvements and improvements in data collection tools as well as platforms for integrated data management as well as to strengthen cooperation between the involved stakeholders and to strengthen awareness of all stakeholders, primarily fishermen, breeders and processors, on the importance of providing quality and complete data through education of the sector on the goals and need for data collection. Likewise, it should be emphasized that the collection of data at the local level is not a legal obligation like the collection of data at the national level.

So, the proposed framework requires certain prerequisites, first of all:

- technological improvements and solutions
- raising awareness of the importance of data collection among fisheries stakeholders.
- good cooperation with partner institutions - Croatian Chamber of Commerce - Fisheries Association HGK (Aquaculture Group, Fishing Group, Fish Processing Group), Croatian Chamber of Crafts - Guild for Fisheries and Aquaculture, etc.
- established database
- established financial framework.

In the Primorje-Gorski Kotar County, it is of particular interest to closely monitor small coastal fishing. There are two basic categories of sea fishing in the Republic of Croatia - commercial and non-commercial. Commercial fishing is the activity of catching marine and freshwater fish and other marine organisms for profit. Within commercial fishing, there is a distinction between commercial fishing in the narrower sense and the new category of small coastal commercial fishing, which is extremely limited in terms of tools and conditions. Fishery products from both types of fishing may be sold, and the difference is in the holder of the permits and the limitation of the amount of catch.

Given that about 945 vessels are registered for commercial fishing in the Primorje-Gorski Kotar County, of which about 40% or about 370 vessels are vessels used in small-scale coastal fishing, it is extremely important to monitor small-scale coastal fishing in detail, and in order to establish sustainable fishing system at the local level.

The database, information and knowledge that should be established at the local level include the recommendations of the document developed within the project ARGOS - D4.2 "Common scheme for the management of fishery activities at local level", i.e. a common framework for data collection at the local level. Likewise, it would include the dissemination of the results of previously implemented projects with the theme of sustainable fisheries, such as the project Adri.SmArtFish – Valorisation of SMAll – scale ARTisanal FISHery of the Adriatic coasts, in a context of sustainability (year 2019 – 2021) who's general aim was to strengthen the role of small coastal fishing. Dissemination of the results is extremely important for the maximum effect of the project on the local and regional community, improvement of work and influence on decision makers.

In this context, the following specific protocols for data collection at the local level have been identified:

- Local data collection on small coastal fishing - PROTOCOL A
- Local collection of other data in fisheries and aquaculture – PROTOCOL B

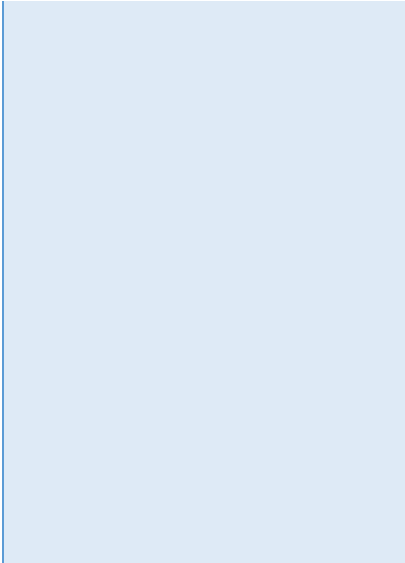
Local data collection on small coastal fishing - PROTOCOL A

	Data Source
<p style="text-align: center;">GENERAL DATA</p> <ul style="list-style-type: none"> • Name and surname <ul style="list-style-type: none"> • Year of birth • Years of experience in fishing <ul style="list-style-type: none"> • Port • Company • Annual income • Other economic activities /if yes, which ones/ <p style="text-align: center;">VESSEL DATA</p> <ul style="list-style-type: none"> • Identification number <ul style="list-style-type: none"> • Engine power • Age • Installation of an automatic identification system /for or against/ <p>NOTICED CHANGE - according to experience, what are the main changes in the last 10 years in relation to:</p> <ul style="list-style-type: none"> • catch composition • quantity and quality of catch (eg average size) <ul style="list-style-type: none"> • new or rare species (which and how often) • problems with dolphins • problems with other fishing sectors <p>TARGET SPECIES - 3 target species of the greatest importance for fishermen's activity - experiential answers</p> <ul style="list-style-type: none"> • How the abundance of this species has changed over the years - oscillation/strong decline/decline/slight decline/stable/slight increase/increase/strong increase <ul style="list-style-type: none"> • Since when this trend was noticed (years) • The largest catch in kilograms and year (approximate) • Largest specimen caught (weight or length) and year (roughly) • Comparison of the abundance of this species in recent decades compared to today - much smaller/smaller/equal/larger/much larger • Opinion on the possible causes of changes in the number of individual species 	<ul style="list-style-type: none"> - Interviews - Surveys

**FISHING ACTIVITIES DURING THE YEAR –
WINTER/SPRING/SUMMER/FALL**

- Used fishing equipment
 - Size of fishing gear.
- Number of fishing days (weekly/monthly/seasonal)
 - Average duration of a fishing trip
 - Average distance travelled per day
 - Average fuel consumption per trip
- Average income (weekly/monthly/seasonal)
 - Main fishing areas
 - Target species
 - Bycatch

MAIN PROBLEMS/COMMENTS



Local collection of other data in fisheries and aquaculture – PROTOCOL B:

	<i>Data</i>	<i>Source</i>
	Processing of all the previously mentioned data collected at the national level and related to the county: - Fisheries information system o Catch documentation o Sales and transport o Aquaculture o Fuel consumption in fishing - Biological data - Socioeconomic data - Studies	- National data collection program in fisheries of the Republic of Croatia
<i>GENERAL DATA</i>	- Recreational and sport fishing data, effort and landing data and assessment of the impact of this activity on stocks	- Official data - Interviews - Surveys
<i>BIOLOGICAL DATA</i>	- Qualitative and quantitative composition of catches by species, - Length frequency distribution (by sex) for key species (including landings and discards and unwanted catches and bycatch of sensitive species) - - Laboratory analyses	- Sampling on board - Sampling at landing sites - Scientific research
<i>SOCIOECONOMIC DATA</i>	Revenues: gross sales by type, business subsidies, investment subsidies and other revenues, Operating costs: personal costs, value of unpaid work, energy costs, food costs and other operating costs, Investments in tangible assets (net purchase of assets) Financial results Production value by type (landed value by type; average price by type) Employment according to gender, age, level of education, etc	- HGK - FINA - HOK - Official statistics - Ministry
<i>SOCIOECONOMIC DATA</i>	Data collection on the role of women in fisheries.	- Official statistics, surveys
<i>SOCIOECONOMIC DATA</i>	Number of injuries and accidents at work	- HZZZ
<i>SOCIOECONOMIC DATA</i>	Number of producer organizations or associations of producer organizations	- HGK - HOK

Other	<ul style="list-style-type: none"> Climate changes Invasive and foreign species Organic and inorganic pollution Microplastics Underwater noise Molecular research 	<ul style="list-style-type: none"> - Scientific database - Official statistical data - Surveys
Other	A list of relevant experts and institutions covering areas and providing technical assistance and services in fisheries and aquaculture (e.g. assessment of new technologies and innovations, business management, compliance with standards, sales and marketing, etc.) as well as general investment information and industry information for entrepreneurs	<ul style="list-style-type: none"> - Croatian chamber of economy - University
Other	Database of research projects with results in fisheries and aquaculture	<ul style="list-style-type: none"> - University
Other	History of fisheries and aquaculture - history of local fishing methods, changes in the structure of tools, fishing methods, fishing effort, and the quantitative and qualitative structure of fishing.	<ul style="list-style-type: none"> - Scientific institutions - Directorate for Fisheries - Available literature - Surveys
Other	<ul style="list-style-type: none"> - a list of approved projects from the Maritime and Fisheries Operational Program 2014-2020 and the Fisheries and Aquaculture Operational Program 2021-2027, including information on vessels that received support under the permanent cessation measure with detailed information on the projects - complete information/reports/annual plans on the activities and results of the implementation of the Operational Program for Fisheries and Aquaculture 2021-2027. - complete information/reports/annual plans on activities and results of implementation of Local development strategies in fisheries 	<ul style="list-style-type: none"> - Ministry of Agriculture - Agency for payments in agriculture and fisheries - FLAGS
Other	<ul style="list-style-type: none"> - Data on concessions for aquaculture, permitted species in cultivation, maximum annual production 	<ul style="list-style-type: none"> - County data base
Other	<ul style="list-style-type: none"> - collection of data on ecological networks and other environmental parameters, 	<ul style="list-style-type: none"> - public institutions

Other

- coverage of the Natura 2000 network area and coverage of other spatial protection measures

The connection of fishing/aquaculture with tourism and related activities - manifestations, events, etc

- Tourist boards

DATA COLLECTION ACCORDING TO IDENTIFIED PROTOCOLS

In addition to the identification of the protocol for local data collection, in the period 2019-2022, within the framework of the ARGOS and Adri.SmArtFish project, a survey was conducted on a sample of 78 respondents, small coastal fishermen in the most important fishing ports in the area of Primorsko – goranska County.

Methodology:

In accordance with the defined protocols, the survey was carried out according to prearranged meetings. The response of fishermen was generally small and they did not show interest and motivation to participate. In 2019, the survey was carried out in such a way that the completed survey questionnaire, if the fisherman did not decide to remain anonymous, it was necessary to certify it with a signature, however, a few fishermen refused to sign the questionnaires, a few did not want to give their name, and a few did not even provide information about the CFR (unique registration number of the vessel). Considering the above experiences, in 2022 the survey was conducted anonymously.

In 2022, a survey of sport and recreational fishermen was also conducted, and for small coastal fishermen, the questionnaire was amended and expanded to include questions related to received grants and forms of assistance that fishermen are interested in, so that the Primorsko – goranska County would gain insight into the needs of fishermen and adapt plans/strategies/budget with them.

The most important results of the first part of the survey conducted in 2019 as part of the Adri.SmartFish project are as follows:

1. General dana

In relation to age, the respondents can be divided into 2 groups, of which:

- 31 respondents aged <50 years, i.e., 51.6%
- 26 respondents aged >= 50 years, i.e., 43.4%
- 3 respondents did not provide information on age, or 5%.

According to the working experience in the fishing sector, the respondents can be divided into 2 groups:

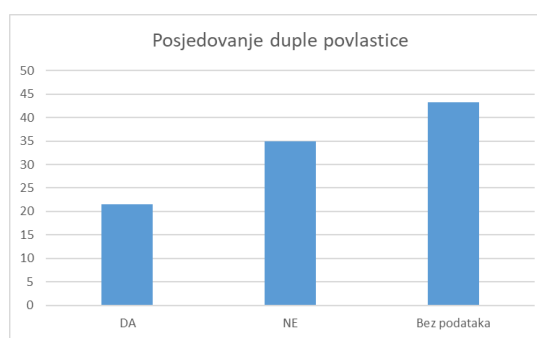
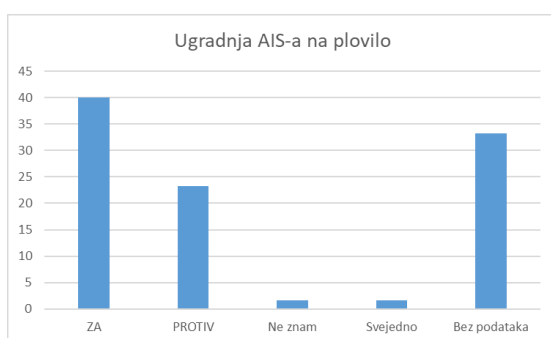
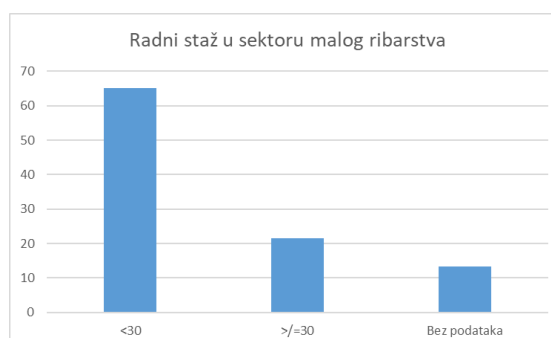
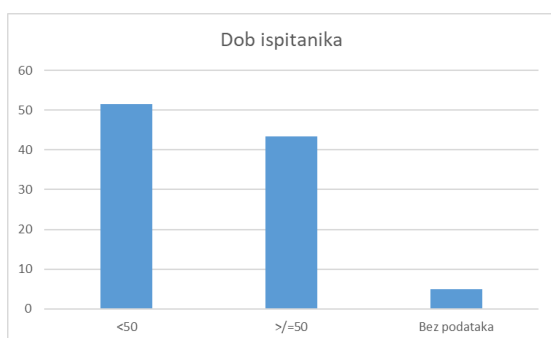
- 39 respondents, i.e., 65% < 30 years of service,
- 13 respondents, i.e., 21.6% >= 30 years of service

- 8 respondents, i.e., 13.4%, did not provide information on work experience. The respondents' annual income from fishing ranges from HRK 0.00 to HRK 400,000.00. For most respondents, fishing is not the only economic activity.

24 respondents, or 40%, would agree to the installation of an AIS device on a vessel for the purpose of scientific monitoring of fishing activity. 14 respondents or 23.3% are against the installation of such a device on a vessel. 20 respondents, or 33.3%, did not answer this question. 1 respondent, or 1.6%, does not know, and 1 respondent, or 1.6%, does not care.

To the question about having a double privilege, 26 respondents, or 43.3%, did not give an answer, and of the remaining respondents, 13 respondents, or 21.6%, have a double privilege, and 21 respondents, or 35%, do not have a double privilege.

The vessels mostly date from the 90s and earlier years, their length ranges from 4.20 - 11.50 m, and engine power from 3.67 - 158.08 kW.



2. Observed changes

Regarding the observed changes over the last 10 years in relation to the composition of the catch, the respondents who spoke on this issue mostly agree that the changes are big. They

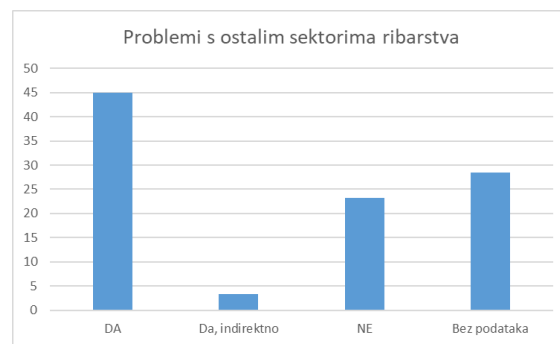
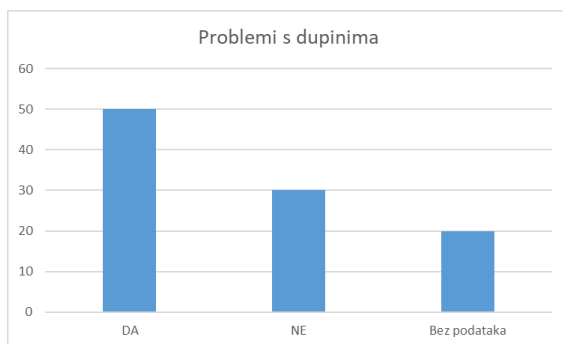
note that certain species no longer exist, some are less common, while some are much more common.

Regarding the quantity and quality of the catch, the respondents mostly agree that the catch is smaller and the quality is weaker. Respondents most often cite overfishing and climate change, as well as electronics on ships (GPS devices) as the cause of this. One respondent states that the question is relative and that the tool he works with plays a big role. A few claim that fish appear in cycles and their condition varies accordingly.

Of the rare, or invasive, species, the interviewees most often mention arrowroot. Of the other species, the interviewees mentioned: barracuda, shearwater, grouper, canoe, muskrat, gossamer, sea lizard, blue crab, jackdaw, ostrich, moray eel, lamprey, swordfish, and an increase in the number of mammals and tuna.

Out of 60 respondents, 48, or 80%, answered the question about problems with dolphins. 30 out of 48 respondents, i.e. 62.5%, who answered this question, agree that dolphins cause great damage to business because they destroy nets. In addition to dolphins, darters cause damage, and 1 respondent also mentions eels.

Regarding the problems with other sectors of fishing, the majority of respondents answered in the affirmative (27 respondents, or 45%) and most often mentioned trawlers, purse seiners and sports fishermen. Two respondents, or 3.3%, had no problems personally, but mentioned them as an indirect problem. 14 respondents, or 23.3%, had no problems with other sectors of fishing.

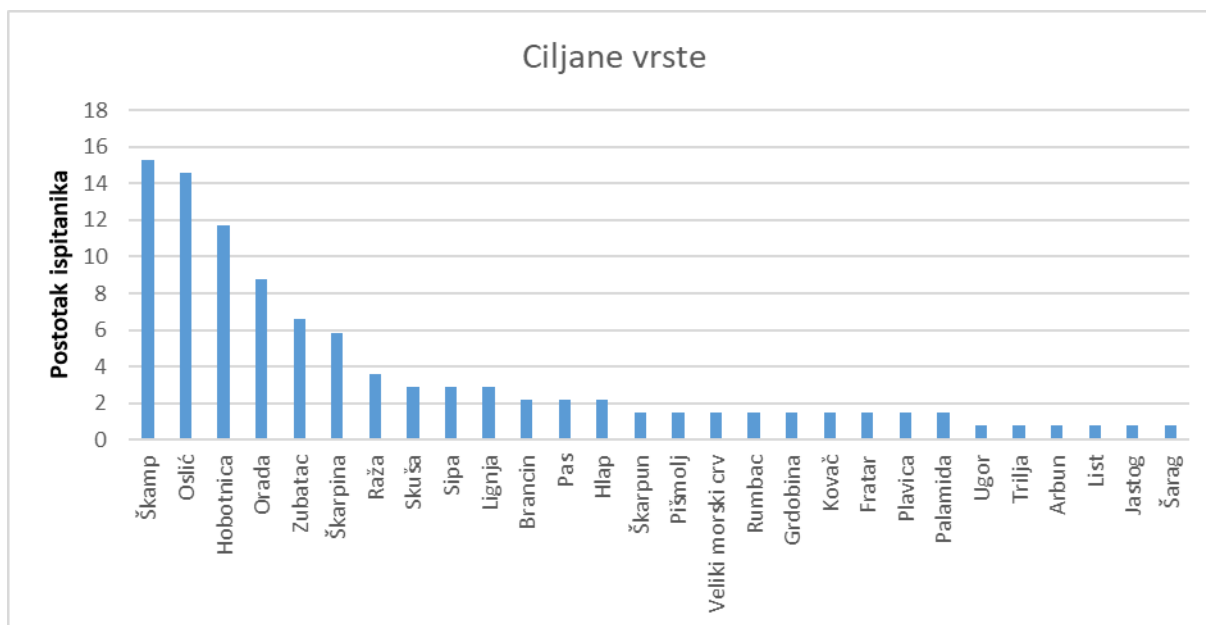


3. Target species

58 respondents, or 96.6%, answered this question.

Respondents were supposed to name up to 3 target species significant for their activity, however, some respondents catch only one species and the total number of responses is 137.

The most significant types for the respondents' activity are as follows in the following graph:



4. Winter/spring/summer/autumn

Part of the respondents do not fish throughout the year, but are engaged in other activities - most often tourism.

Most respondents use the same tools throughout the year. The represented tools are: different types of tops, different types of nets, long lines, lines, hooks. The size and number of tools is prescribed by law.

- The number of fishing days in winter is an average of 15 days per month.
- The number of fishing days in spring is an average of 20 days per month.
- The number of fishing days in summer is an average of 25 days per month.
- The number of fishing days in autumn is an average of 20 days per month.

The duration of the fishing trip varies from respondent to respondent and is from 1 to 48 hours. However, the duration of a fishing trip of an individual respondent mostly does not differ in relation to the seasons.

The average distance travelled per day varies from respondent to respondent and amounts to 2-60 nautical miles. However, the average distance travelled per day by an individual respondent mostly does not differ in relation to the seasons.

Average fuel consumption per trip also varies from respondent to respondent and amounts to 2-100 litres.

The income of an individual fisherman is linked to the number of fishing days, that is, it varies depending on the season. In general, respondents make the lowest income during the winter.

- Income in winter is from HRK 1,000.00 to HRK 25,000.00 per month
- Income in the spring amounts to HRK 2,000.00 - HRK 35,000.00 per month
- Income in the summer amounts to HRK 3,000.00 - HRK 40,000.00 per month
- Income in the fall amounts to HRK 2,000.00 - HRK 30,000.00 per month

The majority of respondents conduct their activity in fishing area E: subzone 1. A few respondents mention fishing area E: subzones 3, 4, 6 and fishing area F.

The target species differ from respondent to respondent, depending on the tool used by the respondent, with minor differences with respect to the season/season (hunting grounds).

5. Main problems

From the collected opinions of respondents, small coastal fishermen from the area of Primorsko Goranska County, the main problems and comments can be determined:

- absurd/illogical rules by the administration and too much administration: the regional self-government must support fishing more, enable the registration of new tools, increase the engine power and length of the vessel, refund the funds spent on tools, co-finance modern equipment, remove restrictions related to permits
- economic unprofitability, unstable price of fuel and fish, expensive fishing gear and way of taxing fisheries, dolphins do great damage
- too many users and activities in a small area and overfishing, poaching, illegal sales: introduce different protection mechanisms - protection of fish during spawning, compliance with controls on the minimum size for catch, establishment of hatcheries, construction of artificial reefs, regulation of tools and period of closure, trawls and purse seines (ban them or move them away), make a study of the Velebit channel where trawling has not been done for approx. 25 years, recreation for foreigners (sport fishermen) yes, but the "catch and release" system, greater/more efficient control of all participants in fishing and fishing tools, equalizing penalties for sport fishing and legal entities, include fishermen in the decision-making system on the way to protect and restore the fish stock, application of the ZERP (Protected Ecological Fishing Zone)

- labour shortage: incentives for employment, promotion of fishing within the educational system (from kindergarten) there is no organized purchase of fish or adequate infrastructure,
- small fishermen have to sell fish by themselves: build adequate infrastructure - fishing ports, purchase stations, access points, tool storage facilities, containers

Results

The most important results of the second part of the survey conducted in 2022 as part of the ARGOS project are as follows:

1. General data

100% of respondents are male, and in relation to age, the average age of respondents is 50.8 years, with 59% of respondents aged \geq 50 years, and the rest between 40 and 50 years old. The organizational form of the company is a craft in 100% of respondents.

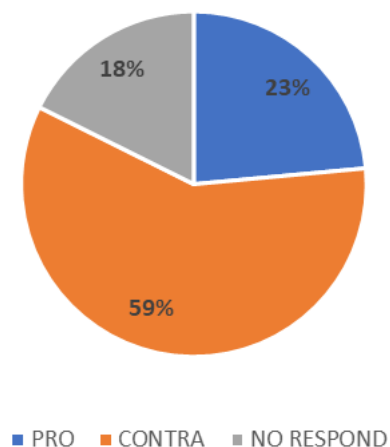
The average length of service in the fishing sector is 27.6 years, and almost 50% of respondents have more than 30 years of service in the fishing sector.

The respondents' annual income from fishing ranges from HRK 68,000.00 to HRK 250,000.00, with the fact that 23% of the respondents did not provide information on the annual income.

For 36% of the respondents fishing is not the only economic activity and they mentioned tourism, catering, beekeeping, passenger transport as other economic activities.

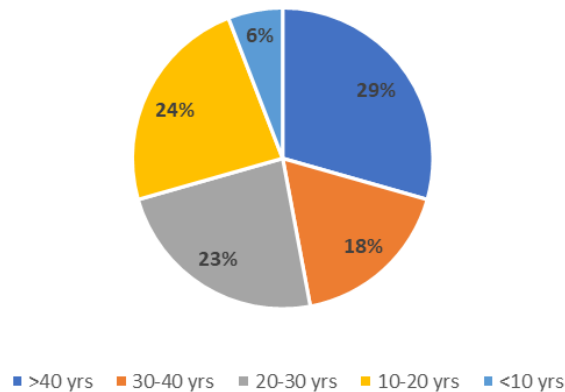
23% of respondents would agree to the installation of an AIS device on a vessel for the purpose of scientific monitoring of fishing activity, while the rest were against the installation of such a device on a vessel. 17% of respondents did not answer this question.

Installation of AIS on the vessel



Most of the vessels date from the 1990s and earlier, and the engine power ranges from 7 to 240 kW.

The age of the vessel

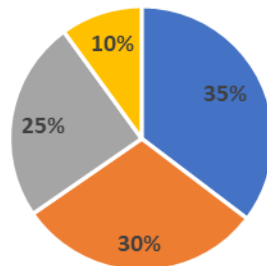


2. Subsidies

A 95% of the respondents were beneficiaries of grants from the EU or other sources in the last three years.

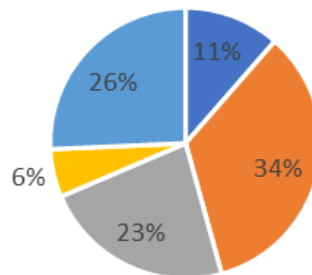
As a source of funding, 38.8% of respondents indicated the European Maritime and Fisheries Fund, through the LAGUR tender, 33% the European Maritime and Fisheries Fund, through the Ministry of Agriculture tender, 27% indicated the rest, while 11% indicated multiple sources of funding. Not a single respondent mentioned problems in the implementation of the support.

SOURCE OF FUNDING



- European Maritime and Fisheries Fund (EMFF) - FLAG tenders
- European Maritime and Fisheries Fund (EMFF) - national tenders
- Other
- Multiple sources of financing

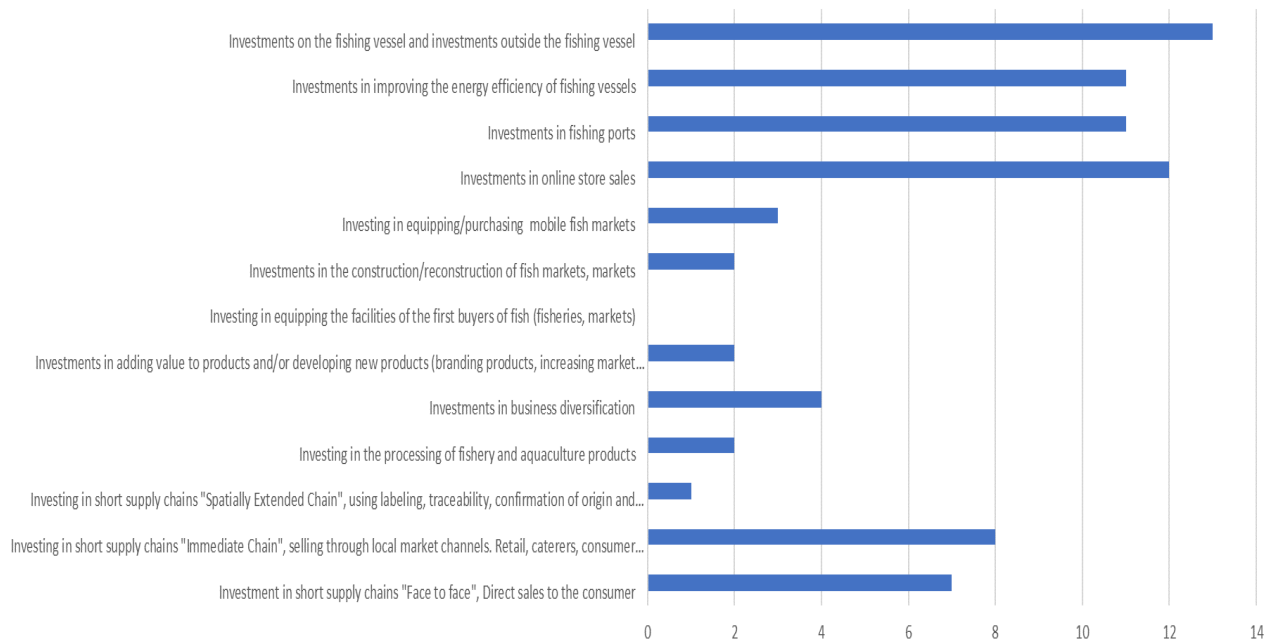
According to respondents, users do not apply for grants because of following reasons:



- Intensity of the approved aid
- Administrative burden
- Impossibility of pre-financing the investment
- Investment eligibility conditions
- Too long procedure

Respondents believe that following investments are currently necessary to improve the current state of the fishing and aquaculture economic sector and related activities, and which should be co-financed through public tenders:

- Investment in short supply chains "Face to face", Direct sales to the consumer
- Investing in short supply chains "Immediate Chain", selling through local market channels. Retail, caterers, consumer cooperatives, institutions (schools, kindergartens, homes for the elderly, hospitals...) in the local area.
- Investing in short supply chains "Spatially Extended Chain", using labeling, traceability, confirmation of origin and certification programs (label of origin, quality, authenticity...)
- Investing in the processing of fishery and aquaculture products
- Investments in business diversification
- Investments in adding value to products and/or developing new products (branding products, increasing market competitiveness of products)
- Investing in equipping the facilities of the first buyers of fish (fisheries, markets)
- Investments in the construction/reconstruction of fish markets, markets
- Investing in equipping/purchasing mobile fish markets
- Investments in online store sales
- Investments in fishing ports
- Investments in improving the energy efficiency of fishing vessels
- Investments on the fishing vessel and investments outside the fishing vessel



Regarding the forms of assistance, apart from co-financing, 88% of respondents indicated that information on current and future tenders for grants from national and EU funds and professional assistance in the preparation of projects for grants is interesting for their business. 10% of respondents are also interested in education and the organization of professional lectures.

3. Observed changes

Regarding the observed changes over the last 10 years in relation to the composition of the catch, the respondents who answer this question mostly agree that the changes are significant.

They note that some species are dying out, the reduction of certain species, they generally state that there are fewer fish and that the fish are smaller, the quality is decreasing, there are fewer blue fish, while about 25% of respondents state that the composition of the catch has been approximately the same in the last 10 years.

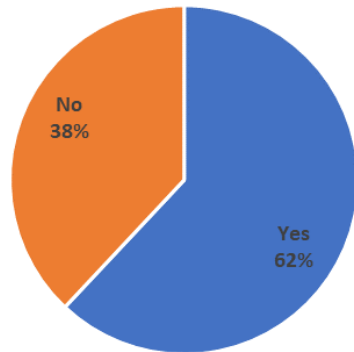
Regarding the quantity and quality of the catch, the respondents mostly agree that the catch is smaller and the quality is weaker.

Of the rare, or invasive species, the interviewees mention bluefish, Mantis shrimp, blue crab, and grey triggerfish.

62% of respondents state that they have problems with dolphins and that they cause great damage to business because they destroy nets, eat fish, one states problems with soles in winter, while 38% of respondents do not have problems with dolphins.

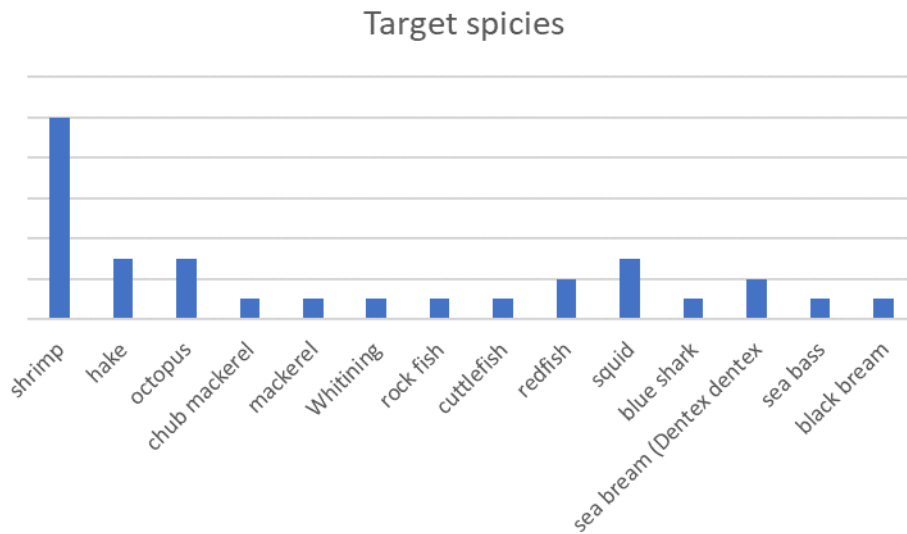
In relation to problems with other sectors of fishing, respondents mostly answer and most often mention trawls, the entry of trawls within 1 mile of the coast, the occasional destruction of tools when fishermen are in the same area, purse seiners who cut the signals for the trawlers, purse seiners in general, sports fishermen who sell before so people do not buy fish, 38% of respondents did not have a problem with other sectors of fishing, they state that the problem is getting smaller since the trawls are tracked and do not enter the mile.

Problems with dolphins



4. Target species

Respondents had to list up to 3 target species significant for their activity, and the most significant species for the respondent's activity are as follows on the following graph:



The majority of respondents notice a decrease in the number of species over the years, the largest catch of shrimp was recorded from 2000 to 2015, hake from 2010 to 2015, and other species from 2010 to 2017.

5. Winter/spring/summer/autumn

Part of the respondents do not fish throughout the year but are engaged in other activities.

Most respondents use the same tools throughout the year. The represented tools are: different types of traps, different types of nets, longlines, and gaffs.

- The number of fishing days in winter is 38 days on average.
- The number of fishing days in spring is 47 days on average.
- The number of fishing days in summer is 48 days on average.
- The number of fishing days in autumn is 30 days on average.

The duration of the fishing trip varies from respondent to respondent and is from 1 to 14 hours. However, the duration of a fishing trip mostly does not differ in relation to the seasons. On average, during the winter the duration of a fishing trip is 7.1 hours, during the spring, summer and autumn a little more than 8 hours.

The average daily distance varies from respondent to respondent and is approx. 3-55 nautical miles. However, the average distance per day by an individual respondent mostly does not differ in relation to the seasons. On average, during the winter the daily distance covered is 22.6 nautical miles, during the spring and summer about 24.3 nautical miles, and during the autumn 22.8 nautical miles.

The average fuel consumption per trip also does not differ significantly in relation to the seasons, and varies from respondent to respondent and is approx. 3-120 litres.

The income of an individual fisherman is linked to the number of fishing days, that is, it varies depending on the season. In general, respondents make the lowest income during the winter.

The target species differ from respondent to respondent, depending on the tool used by the respondent, with minor differences with respect to the season/season (period of closure).

6. Main problems

From the collected opinions of respondents, small coastal fishermen from the area of Primorsko Goranska County, the main problems and comments can be determined:

- fuel price, fuel supply, fish sales, berths
- administration, high costs
- expensive fuel, we have to be happy to buy fish at any price
- low price of fish
- purchase of fish, drop in fish prices, high price of derivatives
- there are many problems, writing papers and documents, expensive oil, raw materials (traps, nets, ropes), expensive equipment used on vessels from lifting winches, stainless steel equipment, auxiliary engines, all the way to overpriced main engines, complicated replacement engines and registration in the privilege, problems with moorings for fishing boats, there is no real fishing port, and port authorities do not give priority to fishermen over tourists and carriers. Many problems have been going on for years, and most of them are not solved, the state does not solve the category of sport fishing and long-line fishing, which are unfair competition to commercial fishing. It is necessary to enable more selective fishing and the possibility to restore the fish stock and to remove trawling gear from internal waters and transfer it to external waters and the area of the economic zone
- shortage of workers
- overfishing
- trawling in the Gulf of Rijeka - the ECOSEA project from 2016 established that the condition of demersal species is in the worst condition in the Adriatic, trawls are destroying the habitat of demersal species
- lack of berths for new fishermen in communal ports
- trawling, it can be seen that every year it is more and more difficult to find areas where shrimp can be caught - trawling in the inland sea (channels) should be prohibited, as is regulated in the Velebit channel
- reduced catch, so a much greater fishing effort is required, which leads to overexploitation of resources and unprofitability - professional politicians would have to make agreement with fishermen and limit tools that are not selective in fishing for white fish and crabs - shrimp, we should be guided by the example of the Podvelebit canal, not money should be spent on tests rather than using the 20-year example of a closed area for trawling, trawlers should be compensated financially to give up trawling in the Gulf of Rijeka and in Kvarner and Kvarnerić
- use of illegal tools outside the permitted period, closed periods for certain species, poaching - fishing without adequate permits, leaving fishing tools in the sea for a long period (3-5 days) without lifting them from the sea, not marking fishing tackle in a legal way, more control is needed at sea, especially permits, stricter and more detailed control in all segments of fishing

- lack of catch, climate change, uncertain future, possibilities of investing in a safer vessel
- labour shortage: incentives for employment, promotion the fishing within the educational system (from kindergarten)

SPORTS AND RECREATIONAL FISHING

In 2022, a survey of sport and recreational fishermen was also conducted on a sample of 20 respondents.

The most important results of the of the survey conducted in 2022 are as follows:

- 60% men, 40% women
- Average age 50.3 years: 15% up to 30; 40% from 30 to 50; 45% over 50 years
- Types of fishing licenses:
 - annual recreational permits valid for the calendar year - 35%
 - annual sports permits valid for the calendar year - 70%
 - one-day sports and recreation permits - 0
 - multi-day sports and recreation permits – 5%
 - special permits:
 - ✓ Special permit for standing longline fishing - 30%
 - ✓ Special fishing permit for traps
 - ✓ Special permit for fishing with gaffs
 - ✓ Special permit for the use of artificial lighting
 - ✓ Special license for fishing with fishing gear for big fish - 10%
 - ✓ without permission
- fishing tools used in recreational/sports fishing:
 - 75%
 - fishing line – 20%
 - trolling line (panula) – 20%
 - jiggers for cephalopods - 10%
 - a gear for a large sea worm (trapula)
 - speargun – 5%
 - standing longline – 20%
 - gaffs
 - traps – 5%
 - fishing gear for hunting big fish - 10%
- annual number of fishing days – from 15 to 165 fishing days, an average of 47.5
- approximate amount of catch in kg in 2021 - from 2 kg to 300 kg, average 38.35 kg
- the most common way of fishing:
 - ✓ from the coast – 20%
 - ✓ from the boat – 25%
 - ✓ equally from the shore and from the boat - 55%
 - ✓ diving

- ✓ other
- fishing zones to which they most often gravitate: E1 (70%), E2 (30%)
- approximate number of fishing days (below 10, from 10 to 30, more than 30):
 - ✓ in the period 01.01.-31.03.2021. – 85% under 10 fishing days, 15% from 10 to 30 fishing days
 - ✓ in the period 01.04.-30.06.2021. – 55% under 10 fishing days, 40% from 10 to 30 fishing days, 5% more than 30 fishing days
 - ✓ in the period 01.07.-30.09.2021. – 20% under 10 fishing days, 45% from 10 to 30 fishing days, 35% more than 30 fishing days
 - ✓ in the period 01.10.-31.12.2021. – 65% under 10 fishing days, 25% from 10 to 30 fishing days, 10% more than 30 fishing days
- 25% accidentally or intentionally caught one of the following species during fishing - deep-water catsharks, tresher, eagle rays, rays, spiny dogfish, electric ray, blue shark
- With fishing tools - fishing line, fishing tool for hunting big fish, standing longline
- Period of the year: most often in the period 01.07.-30.09.2021.
- Average approximate amount of catch in kg of the mentioned species: 45 kg - from 0.5 kg to 100 kg