FINAL REPORT OF THE MEDBYCATCH PROJECT

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1. Project background and objectives

The MAVA funded MedBycatch project, 'Understanding Mediterranean Multi-Taxa Bycatch of Vulnerable Species and testing Mitigation – A collaborative Approach' started in 2017 and was completed in October 2022.

This project was the result of the partnership between the Secretariat of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS), the Secretariat of the General Fisheries Commission for the Mediterranean (GFCM) of the Food and Agriculture Organization of the United Nations (FAO), the Specially Protected Areas Regional Activity Centre (SPA/RAC) of the United Nations Environment Programme/Mediterranean Action Plan (UN Environment/MAP), the International Union for Conservation of Nature – Centre for Mediterranean Cooperation (IUCN-Med), BirdLife Europe (BLI), the Mediterranean Association to Save the Sea Turtles (MEDASSET) and the World Wildlife Fund (WWF).

Building on complementarities of the partners' respective mandates with a view to promote synergies and join resources and expertise, the project was aimed to address the gaps in knowledge regarding the bycatch of vulnerable species during fishing operations in the Mediterranean, support the potential testing of mitigation measures and eventually provide elements for the formulation of national/regional strategies to reduce incidental catches and support the sustainability of fisheries.

Project implementation involved field observation programmes (on-board, at landing site and through self-sampling) across different fishing gears (i.e., bottom trawls, gillnets, demersal longlines and purse seines), together with training, awareness raising, and identification and testing of mitigation techniques.

The project was implemented in five countries; Phase 1 (2017 – 2019) in Morocco, Tunisia and Türkiye and Phase 2 (2020 – 2022) with the additional countries of Italy and Croatia.

To ensure a harmonised approach, the project was coordinated by a steering committee, with activities implemented at a local level by national Partners and technical advice from a Scientific Committee (Fig 1). During the first phase, National observer teams were trained and mobilised to work with fishers for the collection of bycatch data via on-board observations and port-based questionnaires. The observer programmes were developed by the national focal points with close collaboration of direct partners, taking into account the methodology elaborated under the project. In the second phase the collection of data continued, with the additional focus of testing bycatch mitigation measures.

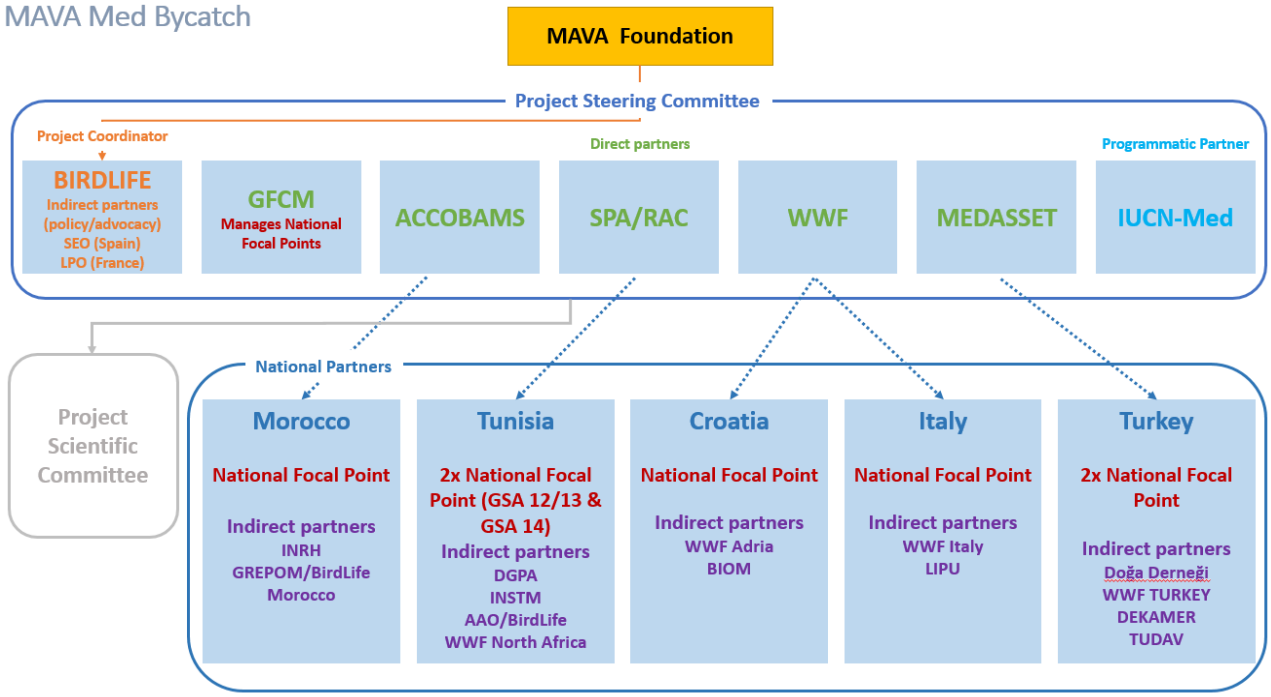


Figure 1 | Organogram for the coordination of the MedBycatch project Phase 2.

2. Overview of the main achievements

The main actions implemented since the beginning of the project are synthetized hereinafter. They are organized according to three strategic components of the project:

- Assessing incidental catches of vulnerable species in selected fisheries
- Identifying and testing of mitigation techniques
- Raising awareness on the incidental catches of vulnerable species and supporting policy advocacy

2.1. Assessing incidental catches of vulnerable species in selected fisheries

a. Development of a standardised methodology for multi-taxa data collection

Developed by GFCM in collaboration with other project partners, the "*Monitoring incidental catch of vulnerable species in the Mediterranean and the Black Sea – methodology for data collection*" aims to support regional monitoring programmes and provide a framework for the development and implementation of an efficient, standardized data collection and monitoring system for all vulnerable species encountered in the Mediterranean and the Black Sea, namely elasmobranchs, marine mammals, seabirds, sea turtles and macrobenthic invertebrates. This methodology includes on-board observations, questionnaires at landing sites and self-sampling activities. It ensures minimum common standards for the collection of data on these species and allows for replicability and comparisons among fisheries across the region, thus offering a harmonized basis of knowledge, information and evidence for decision-making.

Beyond its use in the Medbycatch project, this protocol and related methodology was developed consistently with existing instruments and regulations in place at GFCM level (i.e., the Data Collection Reference Framework and existing binding recommendations) as well as other relevant instruments (e.g., the EU Data Collection Framework).

b. Regional review on incidental catches of vulnerable species in the Mediterranean and Black Sea

The main objective of this report was to provide comprehensive baseline information, earmark the main data gaps, as well as identify the most impacting types of fishing gear by taxonomic group. This work is a reminder of the importance of standardized data collection and the need to have baseline information in order to support decision-making in the identification of appropriate bycatch mitigation techniques, thus enabling analysis of their effectiveness and comparison over time and space, as well as facilitating the implementation of relevant conservation and/or management measures at the national, subregional and regional levels.

c. Development of Identification Guide and Identification Sheets

Identification of vulnerable marine species is sometimes difficult, in particular when it has to be done during fishing operations before fishers discard the non-commercial catches. In order to support the work of the observers and to complement the data collection methodology, an Identification Guide of vulnerable species incidentally caught in Mediterranean fisheries was developed to provide observers on board fishing vessels and fishers with identification assistance and general information about vulnerable species potentially caught as bycatch. Each species description contains photographs, illustrations and narrative descriptions to highlight important anatomical structures and features of a particular species. The guide was translated into Croatian, French, Italian, Spanish and Turkish.

Based on this guide, pocket guides were also developed for each project country to provide observers and fishers with a practical tool that could be used in the field, at ports and landing sites for example.

d. Collection of multi-taxa data on bycatch to improve understanding the bycatch problem

This activity included the collection of multi-taxa bycatch data following the GFCM Protocol through observation programmes in Croatia, Italy, Morocco, Tunisia and Türkiye, focusing on high-risk fleet segments/areas or gaps from Phase 1 in Morocco, Tunisia and Türkiye.

Some activities aimed at assessing post release mortality of bycaught individuals (in particular sea turtles and elasmobranchs) were also carried out.

The main results are summarized below:

❖ Croatia:

- A total of 133 port-based questionnaires was collected and 38 on-board observations
- WWF Adria also initiated the collection of data on elasmobranch bycatch through a Facebook group Sharks & rays of Adriatic Sea

❖ Italy:

- Bycatch data has been collected in the fishing fleet operating in Lampedusa (Pelagie Archipelago, Sicilian Channel, GSA 16) between June and October 2021 (9 fishing trips).
- In Monopoli (Apulia) 21 fishing trips were monitored, 5 trips with onboard observations, 13 with self-sampling and 3 with questionnaires at landings, for a total of 89 fishing days. The fishing days monitored in GSA 18 represent 2.3%, 4.7% and 6.3% respectively for 2019, 2020 and 2021
- In Porto Cesareo, despite having positive initial meetings and the repeated distribution of self-sampling sheets, only one fisher reported bycatch.

- Assessment of post-release mortality: 13 blue shark specimens were tagged during 4 fishing trips. Condition at capture was assessed for all captured Blue sharks during 6 fishing trips. A map was produced with the migration route of the tagged specimen confirming the southern Adriatic as a key area for this species.

❖ In Morocco:

- 4 ports were surveyed across GSA 3: Tangier, M'Diq, Al Hoceima and Nador
- 15 observers during Phase 1 and 2
- Fishing fleets monitored: trawlers, longliners and purse seiners

The total number of on-board observations and port questionnaires completed during Phases 1 and 2 is:

Phase 1 (March 2019-March 2020):

Ports	On-board observation	Questionnaires
Tangier	194	436
M'Diq	245	649
Al Hoceima	154	424
Nador	316	381
Total	**909**	**1 890**

Fleets	On-board observation	Questionnaires
Trawlers	339	889
Longliners	246	436
Purse-seiners	324	565
Total	**909**	**1890**

Phase 2 (August 2020-June 2022):

Ports	On-board observation	Questionnaires
Tangier	218	663
M'Diq	355	1219
Al Hoceima	200	943
Nador	521	1 077
Total	**1 294**	**3 902**

Main results:

- In both phases the highest bycaught taxa recorded was Elasmobranchs (more than 90% of the total number of bycaught individuals were sharks and rays - all vessel groups considered)
- Some individuals of *Delphinus delphis* were bycaught by purse seiners (12 individuals reported during Phase 1; 13 individuals during Phase 2)
- All dolphins caught during observer's trips were released alive at sea by fishermen during Phase 1 and 2
- During Phase 2, around 28% of all bycaught individuals (all species considered) were realised alive.

❖ In Tunisia:

- During Phase 1 (March 2019-June 2020): implemented in 22 fishing ports distributed in the 3 Tunisian GSA 12, 13 and 14; 3 fishing gears: trawlers, longlines and nets (trammel, gillnet and combined) under the supervision of 2 National focal points, 2 coordinators, 5 supervisors, 23 observers
- During Phase 2 (November 2020-January 2022): implemented in 25 fishing ports distributed in the 3 GSA 12, 13 and 14; 4 fishing gears: trawl, longlines, nets (trammel, gillnet and combined) and purse seine under the supervision 2 focal points, 2 coordinators, 5 supervisors, 18 observers

The total number of on-board observations and port questionnaires completed during Phases 1 and 2 is:

Phase 1 (March 2019 to March 2020)

Fleet	On-board observation	Questionnaires
Trawlers	174	288
Polyvalents	306	1290
Total	**480**	**1578**

Phase 2 (November 2020 to January 2022)

Fleet	On-board observation	Questionnaires	Self-Reporting
Trawlers	214	257	
Polyvalents	632	1005	27
Purse Seine	38	127	1
Total	**884**	**1389**	**28**

Phase 1 + phase 2 (including data collection from March 2020 to June 2020)

Bycatch/Standing Data in Tunisia	Phase 1 (March 2019-June 2020)	Phase 2 (November 2020-January 2022)	TOTAL
GSA 12/13			
Onboard observation	**253**	**434**	**687**
Questionnaires	**939**	**709**	**1648**
Stranding data	**7**	**109**	**116**
Bycatch Self-reporting	**0**	**19**	**19**
GSA 14			
Onboard observation	**304**	**438**	**742**
Questionnaires	**923**	**741**	**1664**
Stranding data	**24**	**26**	**50**
Bycatch Self-reporting	**0**	**9**	**9**
All GSA			
Onboard observation	**557**	**872**	**1429**
Questionnaires	**1862**	**1450**	**3312**
Stranding data	**31**	**135**	**166**
Bycatch Self-reporting	**0**	**28**	**28**

Main results:

- More than 1400 onboard observation
- More than 3300 questionnaires with fishers
- More than 1600 collaborating fishing vessels
- Bycatch self-reporting started
- Main bycaught species identified including the bycatch occurrence and its spatio-temporal distribution
- Trainings and awareness campaign at large scale implemented, and results promoted at regional and international level
- 2 National Datana analysis reports elaborated.

❖ In Türkiye:

- 19 ports are surveyed (across GSA 22 and 24) during both Phases
- Phase 1: 13 observers, Phase 2: 24 observers
- Fishing fleets: trawlers and polyvalents (longliners and static nets)

The total number of on-board observations and port questionnaires completed during Phases 1 and 2 is:

Fleet	On-board observation	Questionnaires
Trawlers	212	none
Polyvalents	240	4412
Total	**452**	**4412**

Main results:

- In both phases the highest bycaught taxa recorded was Elasmobranchs. No marine mammal neither seabird bycatch reported.
- In both Phases, trawl fleet segment recorded the highest percentage of the presence of vulnerable benthic species at both GSAs.
- In both Phases, the highest percentage of marine litter at both GSAs is by far plastics, followed by glass, metal, fishing gear and others.
- Various trainings and awareness campaign were organized at national level.

e. Regional database on bycatch

GFCM developed a regional database to host the data collected during MedBycatch but also from other future projects/monitoring activities on incidental catches of vulnerable species.

A regional Bycatch observer programme database was also developed to be integrated to the regional bycatch database hosted by the GFCM.

2.2. Identifying and testing of mitigation techniques

The main purpose of the MedBycatch Phase 2 was to test mitigation techniques to address the most pressing issues identified from the results of monitoring programmes undertaken between 2019-2020. The huge data collected allows a better understanding of bycatch and more than 16 different science-based mitigation measures were tested directly

with fishers. The trials conducted in each country are summarized below. WWF-Med also prepared a report on Local Ecological Knowledge on mitigation techniques by fishers in the Mediterranean.

Croatia:

- Mitigation was focused on longlines:
    - change in the soak time.
    - circle hook trials.

Italy:

- Circular hooks were purchased and tested in mitigation trials. While they showed no significant difference in bycatch rate an effect could be found for the condition of the animals which was better with circle hooks than without, increasing the chances of post-release survival.
- Trials tested a different fishing strategy where fishing lines were set during daylight. Results were analyzed and summarised in a report in December. Preliminary data of the fisheries strategy change showed a clear effect of day/night fishing on catch amount of the blue shark (bycatch) for the swordfish longline fishery, showing that the fishing strategy is a very important driver to reduce the bycatch of blue sharks.

Morocco:

- Pingers were tested in purse seine fisheries
- A Bycatch Reduction Device for trawlers was also developed and tested based on the model developed in Tunisia, thanks to the support of INSTM Tunisian expert.

Tunisia:

- In GSA 14, Mitigation trials started in August 2021 and ended in December 2021 under the supervision of a team of experts and observers. The trials were implemented by two fishing vessels at Zarzis port for >55 fishing days. The trials consisted of:
    - Analysis of the effect of soak time and depth on catches/mortality, mainly of cartilaginous fish and sea turtles. Different nets were used: experimental nets for 12 hours as soak time and control nets usually used by the fisherman with a 24-hour soak time.
    - Analysis of the effect of two combined parameters: depth and bait on catches/mortality, mainly of cartilaginous fish and sea turtles. Different bait and depths are used: (Number of traps) number of hooks (+ 500h experimentation/+500h control) + two different depths
- In GSA 12 & 13 modified fishing gears were elaborated by a fishing gear expert and purchased. Mitigation trials started in November 2021 October 2022. The trials were implemented with 5 fishing vessels and a Scientific vessel in 6 ports (Cap Zebib, Ghar El Melh, Kelibia, Teboulba, Mahdia and Bizerte) and included:
    - CAP Zebib: 20 days at sea with 10 fishing operations for each type of net; 42 experimental trammel nets and 30 experimental gillnets.
    - Ghar El Melh: 10 days at sea with a minimum of 10 effective fishing operations for each type of longline; 2 complete rigged longline baskets with “J” hooks. 2 complete rigged longline baskets fitted with “G” (circular) hooks.

- Kelibia (1 fisher): 10 days at sea with a minimum of 10 effective fishing operations for each type of fishing gear; 2 longline baskets with 200 hooks each, fully assembled. 21 fully assembled experimental trammel nets. 15 fully assembled experimental trammel nets
- Kelibia (2 fishers): 10 days at sea with a minimum of 10 effective fishing operations for each type of fishing gear; 02 longline baskets with 200 hooks each, fully assembled. 21 fully assembled experimental trammel nets. 15 fully assembled experimental trammel nets.
- Teboulba: 20 effective days at sea. During these days at sea, a minimum of 10 effective fishing operations will be carried out for each type of fishing gear; 04 baskets of longlines with 200 hooks each, fully assembled. 42 experimental trammel nets, complete. 30 experimental gillnets rigged complete.
- Additional mitigation trials related to the use of grid in the trawler to reduce the bycatch of the vulnerable species was implemented via the INSTM Scientific vessel, and two fishing boats (at Mahdia (GSA 13) and Bizerte (GSA 12) ports; more than 10 Fishing days per vessel)). An exchange visits with the Morocco team about the Bycatch Reducing Device were also done coordinated by ACCOBAMS and SPA/RAC with INRH and INSTM.

Türkiye :

• Grid	2 Types	2 Angle	3 Diif Fish.	2D	1 Area 1 boats
• Lights	2 Types				5 Areas 8 boats
• C Hooks	4 Types				6 Areas 9 boats

Grid Trials

- Commercial Bottom trawl
- Legal fishing time and area
- 30 days
- Equal 10 hauls each (Test and Control)
  - Duration
  - Direction
  - Time
- Depth range 50-600m
- Two periods
  - Fall
  - Spring
- Two bar spacing
  - 40 mm shrimp
  - 95mm fish
- Two angles
  - 45 Degrees Top Escape opening
  - 135 Degrees Bottom Escape opening
- Alternative Haul methods

4 trainings for fishers have been organized to 4 different ports for safe releases as a mitigation tool.

2.3. Raising awareness on the incidental catches of vulnerable species and supporting policy advocacy

This project component includes activities related to the communication on the project itself and activities aimed at facilitating, through awareness raising of decision makers and fishers, future changes in the fisheries management policies, based on reliable assessments and viable technical solutions to mitigate incidental catches.

a. Communicating on the project and creating awareness on bycatch issues

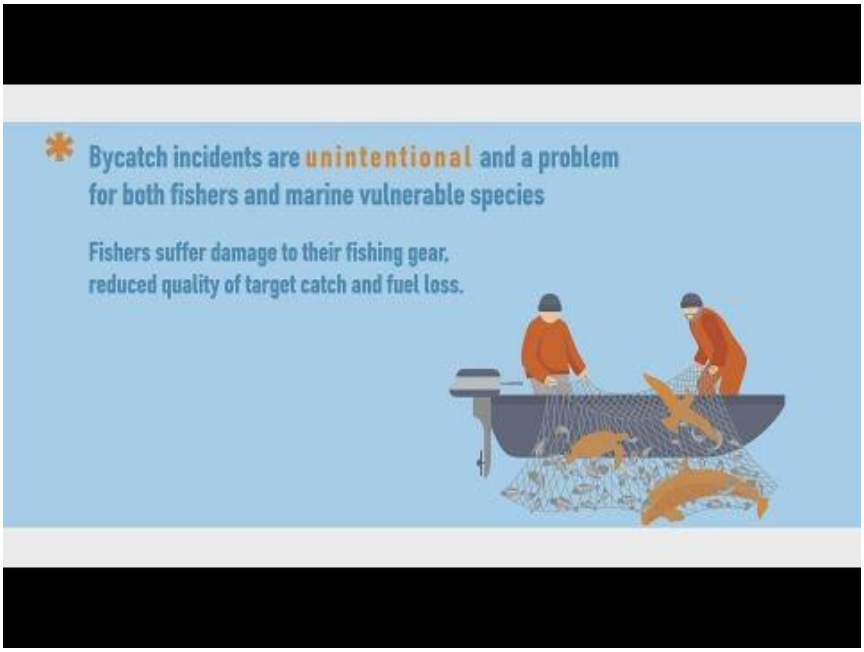
Communication on the project was led by MEDASSET which developed a Communication Strategy and a detailed Action Plan. A logo, that was declined in a different version for each country, was created to define a brand identity to the project.

Printed materials (leaflets, roll-ups) were created to present the project and information on the project was disseminated on the occasion of regional meetings/conferences/fora. Communication material (such as T-shirts, windbreakers…) was also produced for stakeholders (e.g., fishers collaborating with observers).

News on the project activities were regularly shared through the project partners' social media, using a common hashtag to identify the project. Press releases and web stories are produced on the occasion of national events.

Several videos and infographics showcasing the project and the incidental catch issue were also produced.

The MedBycatch Infographics Video:

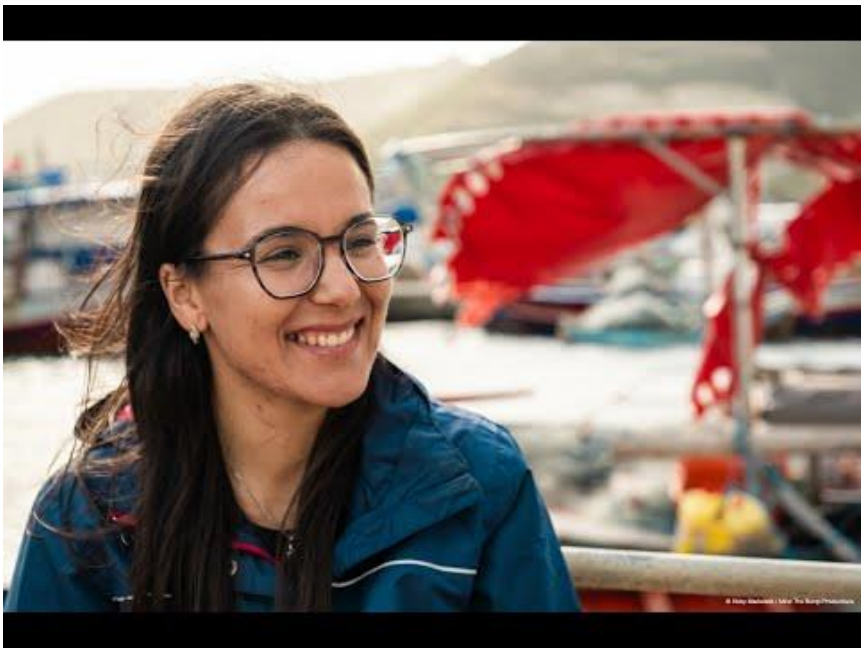


CNN Greece also produced a reportage on the project in Tunisia:

A short fiction film "**An Important Job – A Story of Change from the Mediterranean**" was produced and screened in Festivals & Cosmote TV paid platform:

The relationship between observers and fishers determined the success of the MedBycatch project. The reportage "**Protecting What's Precious**" highlights the story of Ezgi, a MedBycatch observer, and her vital role to reduce bycatch. It was displayed on WaterBear Platform until end of October 2022.

The short film **"Amal: Hope for Mediterranean Fisheries"** was produced to highlight the female involvement within fisheries through the story of Amal - a woman observer of the Medbycatch project in Tunisia - who gained fishers trust and changed their perception on vulnerable species.



b. Raising awareness of decision makers on the incidental catches of vulnerable species

Several awareness raising activities were implemented in the countries, for example:

- National photo exhibitions were organized to highlight the incidental catch issue
- Factsheets were developed for each country with information on the legal and technical contexts related to fisheries management, bycatch data collection and conservation of vulnerable species.

- Dedicated meetings/conferences/roundtables were organized at the national level involving the competent authorities to raise awareness among decision makers on the incidental catches issue.
- Local NGOs contributed to the dissemination of the project results and raising awareness on bycatch in fish ports, fish markets, schools, universities and national events.

Activities aimed at engaging with the EU to promote the project and specific deliverables such as the protocol and the GFCM database were also carried out.

c. Developing policy instruments

The project supported the development of regional/national policy instruments, such as national action plans. For example, in Morocco, a draft national strategy to limit the impacts of fishing on vulnerable species was developed in collaboration with the Maritime Fisheries Department (DPM). A national consultation was organized on 17 October 2022.

d. Disseminating good practices

Initially developed in English and French, the FAO-ACCOBAMS Good practices guides for handling marine species caught incidentally in Mediterranean fisheries were translated into Arabic, Croatian, Italian, Turkish and Spanish.

e. MAVA Sharing and Learning grant

The MAVA Foundation, under the 'Learning & Sharing Grants' which aims to support partners to share their experiences and knowledge from their participation in MAVA funded projects, funded a side-project 'Building Strong and Maintaining Collaborations between Fishery Observers and the Fishing Community'.

The objective was to bring together the national observers' teams and fishers of the MedBycatch project with the aim to capture knowledge and experiences from lessons learnt (successes and challenges) of working together in the field and to transfer this wealth of knowledge to new researchers and organisations. Testimonies of observers and fishers who participated in the monitoring programmes were collected to showcase the project and to highlight the challenges to be addressed. An infographic portraying best practices for collaboration (in Annex 1) was developed and a video showcasing successful collaborations between fishers and observers was also produced "**Salt in the eyes"**:

3. Conclusion and next steps

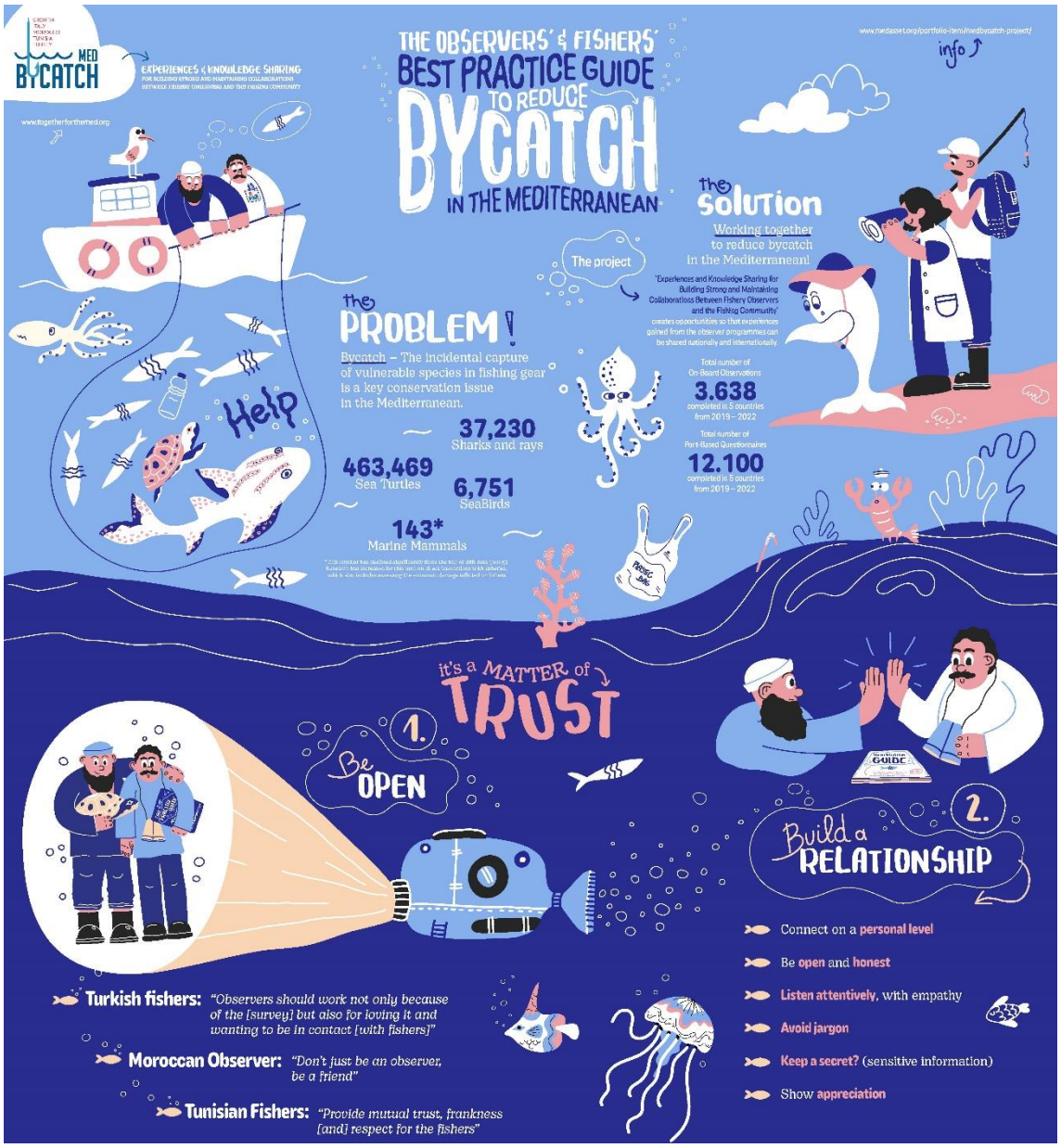
Thanks to the significant financial support by MAVA Foundation, the implementation of the MedBycatch project has created unprecedented positive momentum that led to the first regional insights into the bycatch of vulnerable species in the Mediterranean, based on reliable scientific data collected through standardized methodologies. Furthermore, the network has built collaborations with over 3000 fishers and reached more than one million through digital communication and a set of other awareness materials, including best practice guidelines widely disseminated to expand knowledge, capacity building and policy engagement at national and regional level.

The collaborative work of the network has demonstrated the strength provided by the complementarity of the respective mandates and expertise of the involved organisations. The strength of the initiative is to have addressed bycatch from a multidisciplinary, science-based and multi-taxa approach through technical and inter-institutional cooperation and by getting engagement and buy-in from fishers. The latter have become full partners engaged in the solution-making process since 2018 and this has led even over relatively short periods to change minds and practices and create strong advocates for healthy marine ecosystems.

The achieved progress laid the foundations to scale-up action and solutions for bycatch and depredation in the Mediterranean. It has also contributed to increased commitment of decision-makers in the target countries to address bycatch, as well as policy developments at the GFCM and EU levels. A clear illustration of this progress is the adoption by the GFCM in 2021 of four binding recommendations aimed at improving the conservation of vulnerable species through monitoring and mitigation pilot projects. Furthermore, the GFCM 2030 Strategy provides for the development of a regional plan of action to mitigate bycatch and depredation including adequate monitoring, testing and implementation of mitigation and selectivity measures.

Considering the successful experience of MedBycatch project, regional and national partners are committed to maintain the created positive momentum by building on the achievements, and to continue their collaboration through future projects. Efforts are now undertaken to identify potential sources of funding.

Annex 1


MED BYCATCH
EXPERIENCES & KNOWLEDGE SHARING
THE OBSERVERS' & FISHERS' BEST PRACTICE GUIDE TO REDUCE BYCATCH IN THE MEDITERRANEAN
info
the PROBLEM!
Bycatch – The incidental capture of vulnerable species in fishing gear is a key conservation issue in the Mediterranean.
37,230 Sharks and rays
463,469 Sea Turtles
6,751 SeaBirds
143* Marine Mammals
Help
The project
the solution
Working together to reduce bycatch in the Mediterranean!
Total number of On-Board Observations
3.638
completed in 5 countries from 2019 – 2022
Total number of Port-Based Questionnaires
12.100
completed in 5 countries from 2019 – 2022
it's a MATTER of TRUST
1. Be OPEN
2. Build a RELATIONSHIP
Connect on a personal level
Be open and honest
Listen attentively, with empathy
Avoid jargon
Keep a secret? (sensitive information)
Show appreciation
Turkish fishers: "Observers should work not only because of the [survey] but also for loving it and wanting to be in contact [with fishers]"
Moroccan Observer: "Don't just be an observer, be a friend"
Tunisian Fishers: "Provide mutual trust, frankness [and] respect for the fishers"


3.
Work TOGETHER
@ THE DOCK
ON BOARD
Come prepared
(questionnaires, FAQs)
Reach Out:
introduce yourself
& the project
Invest time
& show genuine
interest
Explain
the project's purpose& why
it benefits fishers & marine life
Approach
fishers when
they have time
Avoid
presenting
yourself
too officially
Offer
a helping hand
(AND PERHAPS
A DRINK AFTERWARDS)
"Oh Captain,
my Captain"
(respect the dynamics
on the vessel)
Be one
with the team,
offer help if needed
Stay organised
& efficient in data
collection
Explain
the data collection
process (what, how, why)
Establish
healthy boundaries
KEEP THE
MAGIC
ALIVE
1. Visit often / and invest in nurturing relationships
2. Share project information / celebrate achievements and results
3. Share contact details / & keep in touch - even after the survey has ended.
BEST PRACTICE GUIDE
BYCATCH
IN THE MEDITERRANEAN
4.
Call to
ACTION
Italy
Croatia
Morocco
Tunisia
Türkiye
DOWNLOAD
THE MEDBYCATCH LEARNING
& SHARING PACKAGE
FOLLOW
#MedBycatch
UN environment programme
Mediterranean Action Plan Barcelona Convention
SPA/RAC
MEDASSET
BirdLife
WWF
ACCOBAMS
Doga
TURKISH MARINE RESEARCH FOUNDATION
BirdLife INTERNATIONAL
INRH
Funded by
MAVA
FONDATION POUR LA NATURE