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Agenda Item 25.6.3

**SUMMARY OF REPORTS ON THE IMPLEMENTATION OF THE SINGLE SPECIES ACTION  
PLAN FOR THE ANGELSHARK (*Squatina squatina*) IN THE MEDITERRANEAN SEA**

*(Prepared by the Secretariat)*

Summary:

This document contains a summary and analysis of the reports submitted by Range States on the implementation of the Single Species Action Plan for the Angelshark (*Squatina squatina*) in the Mediterranean Sea, including recommendations for further implementation of the SSAP, in accordance with Decision 14.101 (e-g).

## SUMMARY OF REPORTS ON THE IMPLEMENTATION OF THE SINGLE SPECIES ACTION PLAN FOR THE ANGELSHARK (*Squatina squatina*) IN THE MEDITERRANEAN

Updated version 17 September 2025

(Prepared by the Secretariat)

1. This document provides a summary of reports on the implementation of the Single Species Action Plan for the Angelshark (*Squatina squatina*) in the Mediterranean Sea region in its Annex. Reports are based on a [template](#) that was developed by the Secretariat for that purpose. The format requests information on each of the activities that are included in the SSAP. This includes information on activities undertaken, reasons for obstacles to implementation and assessing the status of implementation.
2. The Secretariat shared the reporting format with Parties on 28 February 2025 through Notification [2025/009: First Meeting of the Working Group on the Implementation of the Single Species Action Plan for the Angelshark \(\*Squatina Squatina\*\) in the Mediterranean Sea \(Angelshark Med WG1\)](#). Original responses from Range States are provided on the [meeting website](#).
3. On 28 February 2025, the CMS Secretariat issued a request for reports to all 22 Range States in the Mediterranean region and the European Union (EU) regarding Decision 14.101(e): “Range States are requested to submit a brief report on the implementation of relevant activities for the Single Species Action Plan for the Angelshark (*Squatina squatina*) (SSAP).”
4. Reports were received from ten Range States (Albania, Algeria, Croatia, Cyprus, France, Greece, Malta, Montenegro, Spain, and Syria) and the EU.

### Executive Summary

5. The Secretariat has summarized the status of implementation of each Range State in **Table 1**, using a traffic light system. The areas shaded grey for the EU indicate that competency for those actions lies with EU Member States and are thus not applicable to the EU as a whole. Significant efforts were made by Range States in species-level protection, identification of sites and habitats, scientific studies and data collection, and resource allocation and international coordination. The implementation of the SSAP shows varying levels of progress among Range States. While some countries have made significant strides in legislation, awareness, and data collection, others face challenges due to conflict, funding, and capacity limitations.

#### *Species-Level Protection (SSAP Objective 1)*

6. Croatia, Cyprus and Greece have EU legislations prohibiting the capture, retention, and sale of Angelsharks. Albania, Algeria, Croatia, Malta, Montenegro, and Spain have national measures in place for species protection, while Cyprus, Greece and Syria lack specific national legislation. Croatia has legislation strictly protecting *S. squatina* and *S. oculata*, while *S. aculeata* is not included due to absence in the Adriatic. Malta and Montenegro both strictly protect *S. squatina*, *S. oculata*, and *S. aculeata*. Syria has not addressed this action due to ongoing conflict. Awareness and educational programmes have been initiated in eight Range States, focusing on stakeholder engagement and species identification. Monitoring and enforcement measures are in place in Algeria, Croatia, Cyprus, the EU, Greece, Malta, and Spain, with varying levels of implementation and effectiveness.

*Identification of Sites and Habitats (SSAP Objective 2)*

7. Significant data collection efforts have been implemented by all reporting Range States. Algeria, Cyprus, Greece, France, and Spain have made progress in identifying critical habitats, while other Range States have not addressed this action. Croatia, France, and Spain have conducted eDNA analysis to confirm the presence of Angelsharks. Croatia, France, and Spain have used non-invasive visual survey methods to monitor Angelsharks. Efforts to integrate Angelshark conservation into Marine Protected Areas (MPAs) are ongoing in Croatia, Cyprus, France, Greece, and Spain.

*Scientific Studies and Data Collection (SSAP Objective 3)*

8. Existing frameworks in Algeria, Croatia, Cyprus, France, Greece, and Spain include elasmobranch monitoring, with specific efforts for Angelsharks in Algeria, France, and Spain. Monitoring and enforcement related to Angelshark catch data are reported by Algeria, Croatia, Cyprus, France, Greece, and Spain. Reporting and awareness efforts are in place in Algeria, Croatia, Cyprus, France, Greece, and Spain. There are also reporting requirements under the GFCM framework that are applicable to all CPCs (thus all EU Member States in the region). Engagement of recreational fishers and divers in Angelshark conservation is ongoing in Algeria, Croatia, Cyprus, France, Greece, and Spain. Pilot monitoring programs have been implemented in Greece and Spain. Tagging efforts are reported by France, Greece, and Spain, with challenges in expanding these efforts.

*Resource Allocation and International Coordination (SSAP Objective 4)*

9. Cyprus and Spain have made progress in securing funds for Angelshark conservation. Through the EU's grant to the GFCM as well as through EMFAF projects, research on Angelsharks can be funded. Other states face challenges. Algeria, Cyprus, Greece, Montenegro, and Spain support the establishment of an international working group (IntWG) for Angelshark conservation. Efforts to expand MPA networks to include Critical Angel Shark Areas (CASAs) are ongoing in Greece and Spain.

**Conclusions and Recommendations**

10. The implementation of the SSAP shows encouraging progress in some Range States, but others continue to face significant challenges, particularly due to conflict, funding shortages, lack of data, and limited capacity. The differences in progress among Range States underscore differences in the legal and social context, and the need for continued support, resource mobilization, and stronger collaboration at the regional and transnational level.
11. Increased efforts are needed to secure additional funding and to build national capacity, particularly for activities related to monitoring, enforcement, and scientific research. Strengthening these areas will enable Range States to implement the SSAP more effectively.
12. The establishment and sustained support of the Working Group, under an efficient governance structure, is crucial. It will offer an effective forum for coordinated action, promote knowledge exchange, and help maintain momentum in implementing the SSAP across the region.
13. Where CASAs have been identified, Range States should work towards integrating these areas into existing or new Marine Protected Areas (MPAs). This step will help safeguard key habitats and support the long-term recovery of Angelshark populations.
14. By taking these actions, Range States can strengthen their conservation efforts for the Angelshark in the Mediterranean and contribute to the successful and coordinated implementation of the SSAP.

**Table 1:** Overview of information submitted by the Range States in response to Decision 14.101(e) of the implementation of relevant activities of the Range States regarding the implementation of the Single Species Action Plan for the Angelshark (*Squatina squatina*) in the Mediterranean. (green: fully implemented, yellow: partially implemented, red: not addressed yet, grey: not applicable)

	European Union	Albania	Algeria	Croatia	Cyprus	Greece	France	Malta	Montenegro	Spain	Syria
<b>Action</b>											
1.1 Prohibition in fisheries regulations	Green	Red	Yellow	Green	Green	Green	Green	Green	Green	Green	Red
1.2 Species-protection	Grey	Red	Red	Green	Green	Red	Red	Green	Green	Green	Red
1.3 Awareness programmes	Green	Red	Red	Yellow	Green	Green	Green	Yellow	Red	Yellow	Red
1.4 Monitoring and enforcement	Green	Red	Yellow	Green	Green	Green	Red	Yellow	Red	Yellow	Red
2.1 Data collation	Green	Red	Yellow	Yellow	Green	Green	Green	Yellow	Yellow	Yellow	Red
2.2 Habitat modelling	Grey	Red	Yellow	Red	Green	Green	Yellow	Red	Red	Yellow	Red
2.3 Environmental DNA (eDNA) sampling	Grey	Red	Red	Green	Red	Red	Green	Red	Red	Yellow	Red
2.4 Non-destructive site sampling	Grey	Red	Red	Yellow	Red	Red	Yellow	Red	Red	Green	Red
2.5 Role of current MPA network	Grey	Red	Yellow	Yellow	Green	Green	Yellow	Red	Red	Yellow	Red
3.1 Scientific monitoring	Green	Red	Green	Green	Yellow	Yellow	Green	Red	Red	Yellow	Red
3.2 Commercial fishery-dependent catch-per-unit-effort data	Grey	Red	Green	Green	Yellow	Green	Red	Red	Red	Red	Red
3.3 Recreational fishery	Green	Red	Yellow	Yellow	Red	Red	Yellow	Red	Red	Yellow	Red
3.4 Citizen science	Grey	Red	Yellow	Yellow	Green	Green	Yellow	Red	Red	Yellow	Red
3.5 Fishery-independent survey trends	Grey	Red	Yellow	Red	Red	Yellow	Yellow	Red	Red	Red	Red
3.6 Quantification and characterization of discarded Angelshark survival and options for minimising discard mortality	Grey	Red	Yellow	Red	Red	Red	Yellow	Red	Red	Red	Red
3.7 Tagging	Grey	Red	Red	Red	Red	Yellow	Green	Red	Red	Green	Red
3.8 Population structure and connectivity	Grey	Red	Yellow	Red	Red	Yellow	Green	Red	Red	Yellow	Red
3.9 Life-history studies	Grey	Red	Yellow	Red	Red	Red	Yellow	Red	Red	Yellow	Red
3.10 Longer-term, historical population dynamics	Grey	Red	Yellow	Red	Red	Red	Yellow	Red	Red	Yellow	Red
4.1 Provide Resources	Green	Red	Red	Red	Yellow	Red	Red	Yellow	Red	Yellow	Red
4.2 Establish an international working group (IntWG) for the Mediterranean region	Grey	Red	Green	Red	Green	Green	Red	Green	Green	Green	Red
4.3 Appraise protected areas	Grey	Red	Yellow	Red	Yellow	Red	Red	Yellow	Red	Yellow	Red

## Detailed Summary of Reports

### Objective 1 - Ensure appropriate species-level protection for Angelshark (*Squatina squatina*)

#### Action Point 1.1: Prohibition in fisheries regulations

*“Secure national fisheries regulations to ensure that it is prohibited to fish for, retain, tranship, and land Angelsharks (*Squatina* spp.) in support of GFCM Recommendation GFCM/42/2018/2 and GFCM/44/2021/16. Note it is important to also prohibit intentional catches of Smoothback Angelshark (*Squatina aculate*) and Sawback Angelshark (*Squatina aculeata*) due to the difficulty to identify and distinguish between the three Angelshark species found within the Mediterranean.”*

15. Nine Range States and the EU have reported measures to protect *Squatina* species in the Mediterranean, in line with EU regulations and national legislation. Croatia, Cyprus, and Greece enforce EU regulations that prohibit the capture, retention, and sale of all three *Squatina* species that occur in the Mediterranean. Croatia, in addition to implementing EU Regulation 2019/1241, provides further protection through national ordinances and mandates the reporting of incidental catches. Cyprus and Greece apply EU Regulation 2023/2124, which prohibits all retention and trade of *Squatina* species, with Cyprus also imposing additional restrictions on recreational fisheries. Spain prohibits the capture of all three *Squatina* species through national legislation (Catálogo Español de Especies Amenazadas (CEEAA) 2019, Boletín Oficial del Estado (BOE) no. 134, 5 June 2019), with Canary Island populations listed as “Endangered” and Mediterranean populations included in the List of Wildlife Species under Special Protection Regime (LESRPE). Albania has reported a prohibition on fishing for, retaining, transhipping, and landing Angel Sharks (*Squatina* spp.) in accordance with the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (“Protocol to the Barcelona Convention”). Algeria has drafted an executive decree establishing conditions for the exploitation, conservation, and preservation of marine biological resources, including the angelshark, which is listed among endangered or threatened animal and plant species. At EU level, Regulation (EU) 2023/2124 of the European Parliament and of the Council of 4 October 2023 transposes decisions of the General Fisheries Commission for the Mediterranean (GFCM), reinforcing the prohibition of retention and trade of *Squatina* species across the GFCM Agreement area, which is thus applicable to all EU Member States. In France, particularly in Corsica, Council Regulation (EU) No 23/2010 of 14 January 2010 is applied, prohibiting the fishing, transhipment, and landing of the common angelshark (*Squatina squatina*). This regulation is communicated to fishers during embarkations for the small-scale coastal fishing monitoring programme (DACOR projects from 2017 to 2019) and the Angelshark monitoring programme (Corsic'Ange/ASP since 2021), coordinated by the Office de l'Environnement de la Corse and CRPMEM de Corse, with support from Université de Corse and funding from the European Maritime and Fisheries Fund (FEAMP) and the European Maritime, Fisheries and Aquaculture Fund (FEAMPA). Malta provides strict protection for all three species *Squatina* species under Schedule VI of national legislation SL 549.44. Montenegro has enforced a permanent fishing ban on the three species since 2015, based on the Law on Marine Fisheries and Mariculture.
16. Syria reported that Action 1.1 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Albania reported that it has no specific legislation regarding *Squatina* sp., but the species will be included in the red list of Albanian fauna and flora which is being prepared.

#### References

- Regulation (EU) 2023/2124: <https://eur-lex.europa.eu/search.html?scope=EURLEX&text=2023%2F2124&lang=en&type=quick&qid=1741257562441> <https://eur-lex.europa.eu/legal->

- [content/EN/TXT/PDF/?uri=CELEX:32019R1241](#)
- Regulation (EU) 2019/1241: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R1241>
- Terms for recreational fishing licenses in Cyprus: <https://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/FDDB8ACFCAD5FF00C2258AB600269226?OpenDocument>
- Spanish legislation CEEA 2019 (BOE no. 134, 5 June 2019)
- [BOE-A-2019-8317 Orden TEC/596/2019, de 8 de abril, por la que se modifica el anexo del Real Decreto 139/2011, de 4 de febrero, para el desarrollo del Listado de Especies Silvestres en Régimen de Protección Especial y del Catálogo Español de Especies Amenazadas.](#)
- Malta: Flora, Fauna and Natural Habitats Protection Regulations: <https://legislation.mt/eli/sl/549.44/eng/pdf>
- Montenegro: FAO regulation on the regulation on the closed season for age classes of fish and other marine organisms: <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC151759>
- Fisheries Law No: 1380 of 1971 is the main legislative instrument governing fisheries in Turkey. In 2018, Communiqué 2018/19 updated Article 5 of the Turkish Prohibited Species lists (Communiqué 2016/35), prohibiting targeting and retention of all three Squatina species found in the Mediterranean. This legislation also applies to recreational fisheries in Turkey.

#### **Action Point 1.2: Species-protection:**

*“Establish national species-level protection against the deliberate killing, injuring, or taking of Angelshark. This is of particular importance for those nations where prohibited species regulations (see 1.1) only apply to commercial fishing vessels, as additional protection against other sources of potential mortality (e.g., artisanal and recreational fisheries) may be required.”*

17. Eight Range States reported on domestic measures relevant to Action 1.2. Croatia has legislation strictly protecting *S. squatina* and *S. oculata*, prohibiting their capture, disturbance, trade, and habitat damage, while *S. aculeata* is not included due to its absence in the Adriatic. Cyprus indicated that measures under Action 1.1 also apply to Action 1.2. Spain provides legal protection for Angelshark populations through national endangered species listings, including the CEEA and LESPRES. Greece reported that no national legislation exists for the species’ conservation. Syria reported that Action 1.2 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta strictly protects all three species of Squatina under Schedule VI of national legislation SL 549.44. Montenegro has enforced a permanent fishing ban on all three Squatina species in the Mediterranean since 2015, applicable to all types of fisheries, based on the Law on Marine Fisheries and Mariculture. Additionally, Montenegro is in the process of adopting a new national list of protected species, which will include all three Squatina species. The EU reported no direct action under this measure, as implementation is to be carried out at the national level.

#### **Action Point 1.3: Awareness programmes**

*“Initiate educational and awareness programmes with relevant stakeholder groups in both the fisheries sector (e.g. enforcement officials, fishing industry, fish markets) and recreational sector (e.g. recreational fishers, spearfishers, and amateur divers) as to the prohibited and/or protected status of Angelsharks. With a particular focus on species identification to distinguish between the three Squatina spp., but also for classification purposes as Angelsharks are often reported as rays and not sharks. Share resources already developed by the Angel Shark Project for best practice to safely release Angelsharks if accidentally caught and the Angel Shark Sightings Map to report sightings.”*

18. Eight Range States and the EU reported awareness-raising and stakeholder engagement activities under Action 1.3. Croatia established a voluntary Co-Management Council involving local stakeholders and institutions, supported by educational materials and training. Cyprus engages fisheries officials in awareness efforts and launched campaigns under the “Protecting Angel Shark in Cyprus” project. Greece, through iSea (an Environmental Organization for the Mediterranean), conducted workshops and media campaigns, while the Natural Environment and Climate Change Agency (NECCA) included Angelsharks in Red List awareness videos. Spain, through the Angel Shark Project: Canary Islands (ASP:CI), developed training tools, led citizen science events such as “Count the Angels,” and promoted safe release protocols and public engagement. Algeria plans to hold information and awareness-raising days in 2025. The EU supports capacity building through the MedSea4Fish programme, including training and awareness campaigns under the Regional Plan of Action for Vulnerable Species (RPOA-VUL) framework. In France (Corsica), a wide range of initiatives have been implemented, including on-board demonstrations of best practices for accidental capture, distribution of species sheets and translated guides, perception surveys, and the development of educational materials such as booklets, comics, and videos for both fishers and schoolchildren. Additional outreach activities are planned for the 2025 science festival in Occitania, including a short scientific film. Malta is preparing a national programme in collaboration with a local NGO to produce a species identification guide for elasmobranchs, including Angelsharks, which will also reflect their protection status and best practices for release.
19. Croatia noted that Angelshark catch data will be shared with the Angel Shark Sightings Map following publication in a scientific paper. Spain reported that a Draft Recovery Plan for all three species is under internal review, with plans to implement an awareness program for key stakeholders as part of the proposed measures. Syria reported that Action 1.3 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Montenegro reported no data on the contemporary presence of Angelsharks is available.

### References

#### France:

- CRPMEM Corsica: [https://www.instagram.com/p/Cxm4ao5M80s/?img\\_index=1](https://www.instagram.com/p/Cxm4ao5M80s/?img_index=1)
- Video for the general public:  
<https://www.youtube.com/playlist?list=PLpoDIhxsIxPONBZMsk3vNwXFomncuA7sY>
- Video for young viewers:  
<https://www.youtube.com/watch?v=bc8VcjqVII4&list=PLpoDIhxsIxPONBZMsk3vNwXFomncuA7sY&index=3>

#### Greece:

- [Youtube video](#)

### Action Point 1.4: Monitoring and enforcement

*“Ensure that enforcement staff undertake appropriate monitoring of commercial fisheries and landings, particularly regarding those fleets that are more likely to encounter Angelsharks. Develop, or extend, national reporting framework for collating the number of inspections undertaken (by port, fleet, and month) and instances of infringement with regards to Angelsharks.”*

20. Eight Range States and the EU reported on the implementation of monitoring and enforcement under Action 1.4. Croatia confirmed full alignment with the EU Control Regulation and national fisheries legislation. Cyprus noted the use of both conventional and electronic monitoring systems, regular inspections, and training, although no species-specific monitoring is in place due to low shark landings. Cyprus also submits annual reports to the European Commission

detailing shark landings by species and port, as well as non-compliance cases and penalties, in accordance with Regulation (EC) 1385/2003 (Art. 6). Greece reported full implementation of monitoring and enforcement measures. Spain indicated reinforced inspections at ports, partial on-board observer coverage, and citizen reporting tools such as NORMAP and Red de Observadores del Medio Marino en Canarias (RedPROMAR). Algeria reported that law enforcement is carried out by the relevant departments, with all commercial and recreational fishing vessels subject to current fishing regulations. The EU supports the GFCM's RPOA-VUL, which calls for strengthened control and surveillance of fisheries activities and efforts to prevent the bycatch of vulnerable species. The revised EU Control Regulation (EU 2023/2842) further acknowledges the need to reduce and eliminate incidental catches of sensitive species, including Angelsharks. Malta reported that *S. squatina* is strictly protected under Schedule I of the Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549.44), and is also listed under Council Regulation (EU) 2019/1241, which prohibits retention, transshipment, and landing in EU waters. While historical records of landings exist prior to 2015, current data on landings or bycatch is minimal due to the species' strict protection.

21. Spain noted that an effort is underway for systematic monitoring, but more inspection personnel, more budgetary investment and digital integration of inspection data are required. Syria reported that Action 1.4 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Montenegro reported no data on the contemporary presence of Angelsharks is available.

#### References

##### Cyprus:

- Link for Regulation (EC) 1185/2003: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02003R1185-20130706&qid=1741259995264>

##### Spain:

- Recommendation GFCM/42/2018/2: <https://faolex.fao.org/docs/pdf/mul201606.pdf>
- Recommendation GFCM/44/2021/16 <https://faolex.fao.org/docs/pdf/mul217151.pdf>
- CMS Appendices I and II: <https://www.cms.int/en/species/appendix-i-ii-cms>

### Objective 2 - Identification of sites and habitats of Angelshark (*Squatina squatina*)

#### Action Point 2.1: Data collation

*“Collate national data (including both contemporary and historic sources) regarding the presence of Angelsharks *Squatina squatina* (and sister taxa) from relevant sources (including published studies, commercial and recreational fisheries data, fish market data, fisher and diver interviews, citizen science programmes, trawl survey data, discard observer data, museum specimens, Angelshark survey data and historical resources) to better document the contemporary and historical occurrence of Angelsharks in national waters. Such data may also be enhanced through the collection of data on the current presence of Angelshark through the use of social media.*

*Such data could be usefully collated in a common format ..., with institutes collating national data collaborating with other national institutes in order that more robust regional data are available. The collation of comparable data for other species of Angel Shark should also be undertaken, in order to aid in the interpretation of data for *Squatina squatina*. The Angel Shark Sightings Map, hosted by the Angel Shark Conservation Network, is already established, open access and widely used and could be utilised for this purpose.”*

22. Ten Range States reported significant data collection efforts under Action 2.1. Croatia conducted three studies, including historical data collection, eDNA analysis, and habitat mapping, which led to the identification of important areas for Angelshark conservation. Cyprus is collecting data through commercial and recreational fisheries, as well as the MEDITS survey, and is participating in the CIESM SHARKnowledge initiative. Greece is gathering species data through the EU Data Collection Framework and iSea's Angel Shark Project (ASP), maintaining an extensive database. Spain's ASP has been collecting scientific data since 2014, identifying critical areas in the Canary Islands and contributing to the Draft Recovery Plan through sightings and collaborative research. Syria reported historical catch data, with 180 individuals recorded in 2001, 12 in 2015–2016, and only 5 in 2023. Algeria compiled an initial summary of existing and historical data based on fisheries surveys and scientific publications, with further data being formatted for reporting. The EU supports data collection through GFCM recommendations and the RPOA-VUL, emphasizing improved knowledge on vulnerable species and bycatch rates. The revised EU Fisheries Control Regulation (EU 2023/2842) highlights the need for enhanced data collection on sensitive species, including Angelsharks. In France, data collection includes the 2024 Chondrichthyan Atlas, eDNA campaigns, fishery monitoring, MEDITS data, and tagging efforts in Corsica under the Corsic'Ange and ANGE projects. Additional initiatives such as the IPOCOM and PIAF projects are contributing to regional knowledge, with participatory science data made publicly available. Malta is collating national data, though sightings are rare, with only one confirmed *S. squatina* sighting in recent years.
23. Spain noted that in many other Range States, there are still no equivalent systems of structured monitoring or citizen participation, nor interinstitutional collaboration. In addition, the lack of digitization of historical data, the absence of specific funding or qualified technical staff, limits the replicability of the model. Spain's Ministry for the Ecological Transition and the Demographic Challenge's (MITECO) Integrated Biodiversity Information System is being implemented. Syria reported that Action 2.1 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Montenegro reported only historical records of Angelsharks, with no recent observations from citizen science or fisheries monitoring projects, despite participation in regional initiatives such as the Mediterranean Elasmobranch Citizen Observation Project (MECO).

### References

- Saad, A., Seret, B., Ali, M., 2004. Liste commentée des Chondrichthyens de Syrie (Méditerranée orientale). Rapport Commission internationale Mer Méditerranée, 37, 430 pp.
- Saad, A., Ali, M., Seret, B., 2006. Shark exploitation and conservation in Syria. The proceedings of the international workshop on Mediterranean cartilaginous fish with emphasis on southern and eastern Mediterranean. 14th-16th October 2006, Istanbul-Turkey, p. 202 -208.
- Alkusairy H. The Study of Catches Composition (Quantitative and Qualitative) of Chondrichthyes, and Reproductive Biology and Diet of *Dipturus oxyrinchus* in Syrian Marine Waters [PHD Thesis]. Syria, Lattakia: Tishreen University, Faculty of Agriculture; 2019. (in Arabic, with abstract in English), 222 p.
- Ćetković, I., Serena, F., Barash, A., et al. (2024). Combining official fisheries monitoring and citizen science data to create the first chondrichthyan checklist of Montenegro. *Acta Adriatica*, 65(1), 21-31.

### Malta:

- <https://timesofmalta.com/article/dead-rare-shark-washed-ashore-marsaxlokk.1099790>  
<https://www.researchgate.net/publication/366426990> Records of the critically endangered *Squatina aculeata* and *Squatina oculata* Elasmobranchii Squatiniformes Squa

[tinidae from](#)

France:

- Atlas of chondrichthyans: <https://mnhn.hal.science/mnhn-04475562v2>
- IPOCOM project: <https://umr-marbec.fr/en/the-projects/ipocom/>
- Bousquet et al 2024: <https://archimer.ifremer.fr/doc/00917/102841/114270.pdf>
- Faure et al 2023: <https://onlinelibrary.wiley.com/doi/full/10.1002/aqc.3954>
- Deter et al 2024: [https://www.cell.com/current-biology/abstract/S0960-9822\(24\)00896-0](https://www.cell.com/current-biology/abstract/S0960-9822(24)00896-0)

**Action Point 2.2: Habitat modelling**

*“Based on data from action 2.1, undertake Angelshark habitat modelling in national waters and regional seas, in order to better understand and predict Critical Angel Shark Areas (CASAs), including habitats used by key life-history stages, including nursery, mating grounds, pupping and overwintering grounds.”*

24. Five Range States reported progress on identifying CASAs for Angelsharks under Action 2.2. Cyprus is preparing a report using ecosystem modelling to identify potential habitats. Greece has identified additional sites through the delineation of Important Shark and Ray Areas (ISRA). Spain has used habitat modelling in the Canary Islands to define priority areas, integrating results into the Draft Recovery Plan. Algeria is preparing a distribution map based on historical and current capture locations, which will be cross-referenced with habitat data to support future modelling efforts. In France, a Species Distribution Model has been developed for the Mediterranean, incorporating data from Corsica and various monitoring programmes. In Corsica specifically, acoustic monitoring is underway to identify fine-scale habitat preferences along the eastern coast.
25. Croatia noted that habitat modelling is currently not feasible due to insufficient data and funding constraints. Spain reported that a Species Distribution Model (SDM) is under development for the Mediterranean, including its national waters. Syria reported that Action 2.2 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta reported that due to the rarity of the species, available data are insufficient to support habitat modelling. Montenegro has not undertaken specific actions under this measure, citing the species’ low priority status in national biodiversity frameworks and limited technical and financial capacity.

*References*

- Giovos, I., Katsada, D., Spyridopoulou, R. N. A., Poursanidis, D., Doxa, A., Katsanevakis, S., Kleitou, P., Oikonomou, V., Minasidis, V., Ozturk, A. A., Petza, D., Sini, M., Yigin, C. C., Meyers, E. K. M., Barker, J., Jiménez-Alvarado, D., & Hood, A. R. (2022). Strengthening Angel Shark Conservation in the Northeastern Mediterranean Sea. *Journal of Marine Science and Engineering*, 10(2), 269. <https://doi.org/10.3390/jmse10020269>

**Action Point 2.3: Environmental DNA (eDNA) sampling**

*“Undertake eDNA sampling of appropriate areas (i.e., former, current and potential Angelshark habitats identified in 2.2) to gauge potential presence of Angelshark in the region.”*

26. Three Range States reported on the use of environmental DNA (eDNA) under Action 2.3. Croatia conducted eDNA analysis to confirm the presence of Angelsharks in the Molat archipelago. Spain proposed eDNA as a non-invasive tool to support habitat model validation and detect Angelsharks in low-visibility areas, highlighting its effectiveness for cryptic species. France has undertaken multiple eDNA initiatives: in Corsica, campaigns were conducted in 2021, 2023, and 2024, with results published in Faure et al. (2023) and Barroil et al. (2025),

while additional surveys are ongoing under the Ange2mer project. In Occitanie and PACA, the IPOCOM project has been active since 2024, with further analyses underway (Deter et al., in preparation).

27. Eight Range States reported that eDNA sampling has not yet been implemented. Croatia and Spain cited funding and capacity limitations, while Cyprus noted that although habitat identification is ongoing, eDNA analysis is not currently planned. Syria reported that Action 2.3 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Algeria has not yet launched eDNA activities due to limited financial and technical resources, though the approach is recognized as valuable. Malta reported that due to the rarity of the species, data are insufficient to support eDNA sampling. Montenegro has not initiated eDNA work, citing the species' low priority in national monitoring frameworks and a lack of technical capacity and resources.

#### References

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#### Action Point 2.4: Non-destructive site sampling

*“Depending on the results of 2.1, 2.2, and/or 2.3, undertake non-destructive surveys (e.g., underwater visual census) of contemporary/potential Angelshark habitat to determine whether effective non extractive field programmes could be developed in order to monitor localised populations of Angelshark.”*

28. Three Range States reported using non-invasive visual survey methods to monitor Angelsharks. Croatia conducted underwater visual censuses and habitat mapping in the Molat archipelago, while Spain's ASP:CI has used systematic coastal visual sampling since 2014, supported by participatory protocols for divers and snorkelers, proving effective in identifying critical habitats. France has been conducting a visual census (flipper-mask-tuba) of Angelshark preferred habitat in Corsica since 2020, as well as an underwater visual census campaign in 2022. As part of the Spicarena and Ange2mer projects, Angelshark habitat and picarel (Angelshark prey) arenas within the Parc Naturel Marin du Cap Corse et de l'Agriate (PNMCCA) and certain sites on the eastern plain have been characterised, defining induced pressures and good ecological status, using a system of towed and autonomous cameras.
29. Four Range States reported limited progress in visual survey efforts. Croatia noted a lack of underwater visual census (UVC) data due to funding constraints. Cyprus is currently working to identify contemporary and potential Angelshark habitats, while Greece has yet to determine such areas. Malta explained that due to the rarity of the species the gathered data is insufficient for non-destructive surveys specific to *S. squatina*, but indicated that it will explore the use of SCUBA dives that are part of other monitoring strategies to conduct underwater visual censuses for the purpose of assessing the abundance of coastal fish.
30. Syria reported that Action 2.4 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Algeria did not undertake any activity on this action yet due to a lack of financial resources but acknowledged that it should be considered as it requires field work. Montenegro has not initiated non-destructive site sampling, citing the species' low priority in national monitoring frameworks and a lack of technical capacity and resources. Albania reported no action taken without providing details.

## References

- Corsic'Ange/ASP:Corsica Project - Univ de Corse, CRPMEM de Corse and WWF France, 2021 [] [https://www.crpmem.corsica/CORSIC-ANGE\\_a899.html](https://www.crpmem.corsica/CORSIC-ANGE_a899.html)
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## Action Point 2.5: Role of current MPA network

*“Undertake appropriate sampling (e.g., eDNA sampling, underwater visual census) of existing Marine Protected Areas which may provide suitable habitat for Angelshark, in order to ascertain the likely presence/absence of Angelshark and the effectiveness of conservation measures in place in the current MPA network.”*

31. Six Range States reported varying progress on integrating Angelshark conservation into marine protected areas (MPAs). In Croatia, studies have been conducted in Natura 2000 areas, but current management plans do not address Angelshark conservation. Cyprus is conducting visual surveys in MPAs and is assessing potential overlap with critical habitats. Greece reported that identified CASAs do not fall within the national MPA network. Spain is evaluating overlap between Angelshark habitats and MPAs, with efforts underway to improve management and expand protective zones. In Algeria, a number of MPAs are currently undergoing the classification process, subsequent to the validation of the relevant classification studies. Following the classification and decree of the MPAs, in conjunction with the formulation of management plans and the establishment of relevant entities, Algeria indicates it could initiate work for this Action, although this is dependent on the availability of financial resources. France has conducted eDNA sampling along the coastline of Occitania and Paca, including MPAs, in spring 2024 (a study is underway). Through data obtained from recreational diving the presence of the species and its preferential habitat were confirmed in the Grand Herbière de la Côte Orientale Natura 2000 site in Corsica. Using eDNA, presence of the species was further investigated in the PNMCCA (ANGE, SPICARENA and Ange2mer projects), in the Eastern Coast N2000 area (ANGE, Spicara circus and PIAF projects), and in other Corsican MPAs (PIAF project, Deter et al. 2024). France further reports that the objective "preservation of elasmobranchs, with a particular focus on the sea angel" has been included in the PNMCCA management plan.
32. Four Range States highlighted data limitations for incorporating Angelshark conservation into MPA management. Croatia noted that additional funding is needed to collect the data required for including Angelshark measures in Natura 2000 plans. Spain is conducting a study on MPA overlap with Angelshark distribution in the Mediterranean. This study will be updated with most recent data on Angelshark presence in the Spanish Mediterranean coast. Malta reported no current samplings specific for *S. squatina* due to the rarity of the species, though noting that currently more than 35% of Maltese waters are covered by MPAs, covering a variety of habitat. Montenegro reported that although there are three MPAs in Montenegro, none of the monitoring programmes in these MPAs provided Angelshark records, indicating that it is likely that these species are not currently present there, as well as citing a lack of technical capacity and resources as a limitation. Syria reported that Action 2.5 remains unaddressed due to the

ongoing 14-year conflict and lack of funding. Albania reported no action taken for Action 2.5 without providing details.

### References

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**Objective 3 - Support and undertake scientific studies, including data collection and liaison with the fishing sectors, to improve scientific knowledge of Angelsharks *Squatina squatina*, including population trends**

#### **Action Point 3.1: Scientific monitoring**

*“Based on the results of 2.1, 2.2, and/or 2.3, initiate (or expand) scientific observer programmes to ensure dedicated and robust observer coverage of those commercial fleets that may interact with Angelshark, covering Angelshark habitats in order to improve contemporary data on the presence of Angelshark and their interactions with fisheries.), and associated biological information (length, gender, females that are pregnant or giving birth).”*

33. Six Range States reported efforts to monitor elasmobranch bycatch through existing frameworks. Croatia noted that data collection systems include vulnerable species. Cyprus and Greece indicated that current scientific monitoring through commercial fisheries and MEDITS surveys includes elasmobranchs broadly, with no dedicated Angelshark monitoring yet. Spain reported more targeted efforts, including onboard observers, landings monitoring, and catch cameras, with the Canary Islands implementing specific campaigns to assess interactions with artisanal and recreational fishers as part of their Angelshark Recovery Plan. Algeria has monitoring programmes in place, such as bottom trawl surveys that have been running since 2012, with landings of Angelsharks monitored by the Fisheries Administrative Offices in each fishing port. There is also monitoring and surveillance by the stations of the National Research Center for the Development of Fisheries and Aquaculture (CNRDPA), including researchers from universities. The EU financially supports the GFCM in their pilot projects for the monitoring of bycatch and mitigation trials of vulnerable species, in particular for elasmobranchs in the Adriatic and in the Alboran Sea. France has been monitoring accidental catches in Corsica since 2009 through the programme to monitor small-scale artisanal fishing and Angelsharks in Corsica and monitoring of Angelsharks, noting that biological data such as total length (TL), sex and conservation status (released alive or dead) and spatio-temporal data are collected systematically. Since 2025, male maturity and calving are also recorded as part of this regional monitoring. France also has an agreement with fishermen in the PNMCCA to test devices that reduce accidental catches, such as raising nets or replacing nets with creels.

34. Cyprus reported that dedicated observer coverage for Angelsharks has not yet been initiated, pending outcomes from related habitat and presence assessments. Spain noted that while monitoring efforts exist, coverage remains inconsistent and is not yet systematic across all areas of Angelshark distribution. Syria reported that Action 3.1 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.1 without providing details.

#### References

- Recommendation GFCM/42/2018/2 (Spain): <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC201606/#:~:text=The%20prohibitions%20for%20the%20conservation,landed%20in%20contravention%20of%20this>
- Recommendation GFCM/44/2021 (Spain): <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC217215>
- Suivi Corsican Fishery-Data Collection Framework (CF-DCF): [https://www.oec.corsica/Un-reseau-d-observateurs-scientifiques-embarques-a-bord-des-navires-de-la-petite-peche-cotiere-de-Corse\\_a4812.html](https://www.oec.corsica/Un-reseau-d-observateurs-scientifiques-embarques-a-bord-des-navires-de-la-petite-peche-cotiere-de-Corse_a4812.html)
- Corsic'Ange/ASP: Corsica Project - Univ de Corse, CRPMEM de Corse and WWF France, 2021 [FEAMPA] [https://www.crpmem.corsica/CORSIC-ANGE\\_a899.html](https://www.crpmem.corsica/CORSIC-ANGE_a899.html)

#### **Action Point 3.2: Commercial fishery-dependent catch-per-unit-effort data**

*“Improved reporting of interactions with commercial fishing fleets, including data on the numbers of Angelsharks caught, fate (discarded alive or discarded dead). Comparable data on fishing effort, especially for those fleets expected to have a higher number of interactions with Angelsharks, should also be recorded. Such work could utilise the existing reporting requirements of GFCM and potentially focus on a particular ‘reference fleet’ as a case study.”*

35. Six Range States reported on monitoring and enforcement related to Angelshark catch data. Croatia stated that its practices align with the EU Control Regulation 1224/2009 and the national Marine Fisheries Act. Cyprus noted that while incidental catches of protected elasmobranchs, including Angelsharks, are reported annually to the GFCM, data remain limited due to low interaction levels. Greece implements EU Regulation (EC) 1185/2003 on shark finning. Spain has initiated pilot efforts using artisanal fleet data and onboard observers, particularly in the Canary Islands, with plans to integrate these into mandatory bycatch reporting systems. Algeria reported that there is a system for collecting data on fish landings so that the species can be reported when caught. France has listed the three species of Angelshark present in the Mediterranean in the French National Work Plan of the Data Collection Framework, which produces an annual report with the collected data. Additionally, in Corsica, analysis of catch-per-unit-effort data and data on incidental catches of Angelsharks from commercial fishing are carried out through CF-DCF monitoring, via the GFCM call for data (Task III.4). As part of this monitoring, professional fishermen are made aware of the need to report incidental catches of Angelsharks, particularly in areas where this species does not occur frequently.
36. Spain reported that in many regions, standardized fishing effort and monitoring protocols by fleet are lacking. Resistance from some commercial fleets to share detailed effort or discard data, along with limited personnel for data analysis, hinders effective monitoring. Syria reported that Action 3.2 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.2 without providing details.

## References

- EU Council Regulation (EC) No 1185/2003: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003R1185>
- Regulation GFCM/42/2018/2: <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC201606/#:~:text=The%20prohibitions%20for%20the%20conservation,landed%20in%20contravention%20of%20this>
- Regulation GFCM/44/2021: <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC217215/>
- CF-DCF Project, OEC DCF [FEAMPA]

### Action Point 3.3: Recreational fishery

*“Encourage reporting of sightings to both the relevant national fisheries institute and the Angel Shark Sightings Map22. Adapt and distribute a code of conduct to safely release Angelsharks if accidentally caught (already developed by the Angel Shark Project) to the recreational fishing community.”*

37. Six Range States and the EU reported on actions related to recreational fisheries and Angelshark conservation. Croatia noted that a new data collection framework for recreational fisheries is under public consultation, with annual surveys including bycatch of vulnerable species. In Cyprus, projects such as "Protecting Angelshark in Cyprus" and "MedByCatch" have enabled recreational fishers to report incidental captures, including the first record of *S. aculeata* in 50 years. Greece reported only one recreational capture through citizen science. Spain highlighted outreach by the ASP: CI, including the creation of a Code of Conduct, campaigns for sighting reports, and integration of recreational fisher data in the Draft Recovery Plan. Algeria reported action is in progress, but that progress has been limited due to the fact that stakeholders are not organised into associations. France (Corsica) has communicated documents and released an application (Catchmachine) to remind people of the regulations concerning the Angelshark and to encourage the reporting of accidental catches by recreational fishermen in the Bouches de Bonifacio Nature Reserve (DCF Project, OEC) and more generally in Corsica (CRPMEM de Corse). France also created a double-page spread with a teaching aid to help differentiate between rays and sharks, using the example of the Angelshark in the PNMCCA's 'Livret du pêcheur de loisir', which is dedicated to good practice in releasing elasmobranchs that have been caught. France also raised awareness among members of an association of recreational fishermen (Bastia Offshore Fishing, ANGE project). The EU recalled the adopted GFCM recommendation on the establishment of a set of minimum rules for sustainable fisheries in the Mediterranean Sea at the GFCM adopted in 2022, which included the prohibition of retaining any specimen which is part of species listed under Appendices I and II of the CMS.
38. Spain reported a low perception of the impact of recreational fishing on Angelshark, which limits its inclusion in fisheries or marine policies. Additionally, there is a lack of institutional integration with recreational associations and poor coordination within recreational fisheries. Syria reported that Action 3.3 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.3 without providing details.

### Action Point 3.4: Citizen science

*“Through awareness programmes developed in Action 1.3, encourage reporting of Angelshark sightings to both the relevant national fisheries institute and the Angel Shark Sightings Map<sup>22</sup>, whether amateur or commercial divers, recreational fishers or someone sighting them in a market. Adapt and share a code of conduct for scuba and snorkel<sup>23</sup> (already developed by Angel Shark Project) with the diving community.”*

39. Six Range States reported ongoing efforts to engage recreational fishers and divers in Angelshark conservation. Croatia developed and disseminated a brochure for recreational divers with conduct rules. Cyprus and Greece, through iSea, promote the Angel Shark Conservation Network (ASCN) and MECO, with over 1000 and 3000 shark and ray records, respectively. Spain’s ASP:CI has produced training materials, workshops, and identification guides, improving citizen science data quality and coverage, and enabling the collection of hundreds of annual sightings through platforms like RedPROMAR, iNaturalist, and Count the Angels. Algeria has invited fishermen's associations to collaborate and to report any catches of this species, particularly in the Far East of the Algerian coast, where Angelsharks are most likely to be found. Diving clubs have also been invited to participate in monitoring and surveillance of this species by reporting sightings. France has an interactive map of chondrichthyan species that is publicly available online, in addition to a Facebook group that was created in the 2010s to pass on opportunistic observations (Elasmed project, Ailerons association). There was a census and display in 2022 for divers and recreational fishermen as part of the ANGE project. As part of the Mobile Marine Species Project (2024-2030), there are multiple actions to raise awareness about Angelsharks among the general public and professionals.
40. Croatia reported that expanding awareness programs to encourage reporting of Angelshark sightings requires additional staff and funding. In Spain, there is a lack of coordination with dive operators and insufficient funding for long-term educational campaigns. Efforts have mainly focused on the Canary Islands, as no confirmed records of Angelshark exist in the Spanish Mediterranean. Additionally, there is a need to update reporting maps and carry out a detailed analysis of the data. Syria reported that Action 3.4 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.4 without providing details.

#### References

- Carte interactive de recensement: <https://www.asso-ailerons.fr/carte-des-observations/>
- Groupe Facebook Elasmed: <https://www.facebook.com/groups/2141652949462180>
- Video linking to the Angel Shark Sighting Map online: <https://www.youtube.com/watch?v=bc8VcqjVII4&list=PLpoDIhxslxPONBZMsk3vNwXFomncuA7sY&index=3>

### Action Point 3.5: Fishery-independent survey trends

*“For any areas of localised Angelshark abundance or suitable Angelshark habitat (as surveyed under Actions 2.2, 2.3 and 2.4), initiate standardised, longer-term, non-destructive monitoring programmes to understand seasonal and annual trends in the presence and relative abundance of Angelsharks. Such work could involve collaborative studies with relevant stakeholder groups (e.g., commercial fishers, recreational fishers, divers etc.)”*

41. Four Range States reported progress on Angelshark conservation efforts. Greece noted that iSea is working with the fishing fleet in East Lemnos and Nysiros, where over 30 Angelsharks

have been released. Spain has implemented pilot monitoring programs in the Canary Islands through ASP:CI, utilizing the Sightings Map and *the* “Count The Angels” program as part of a citizen science initiative. Algeria reported limited progress, noting that areas of abundance of the Angelshark were previously determined on the basis of the historical data available, but that the presence of these areas still needs to be updated on the basis of the new medium-term monitoring and surveillance results. France (Corsica) has been conducting follow-ups with fishermen that experience frequent incidental catches since 2021, noting limited progress due to short-term project funding, with long-term implementation to be developed. Non-destructive monitoring in areas identified in collaboration with small-scale fisheries is to be implemented.

42. Three Range States reported challenges in fishery-independent surveys for Angelsharks. Croatia highlighted the need for additional staff and funding to expand its surveys. Cyprus noted that trends in fishery-independent surveys are pending due to ongoing actions in Actions 2.1, 2.2, and 2.3. Spain faced difficulties with sustaining long-term funding for regular campaigns, lack of harmonized regional protocols, and poor integration of data into official fisheries monitoring systems. Syria reported that Action 3.5 remains unaddressed due to the ongoing 14-year conflict and lack of funding.
43. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.5 without providing details.

#### References

- Greece: <https://www.facebook.com/iSea.org/videos/447812561476856>
- France: Corsic'Ange/ASP:Corsica Project - Univ de Corse, CRPMEM de Corse and WWF France, 2021 [FEAMPA] [https://www.crpmem.corsica/CORSIC-ANGE\\_a899.html](https://www.crpmem.corsica/CORSIC-ANGE_a899.html)
- CF-DCF project, OEC partner DCF

#### **Action Point 3.6: Quantification and characterization of discarded Angelshark survival and options for minimising discard mortality**

*“Depending on the results of Action 3.1 and 3.2, detailed studies are needed to provide more robust estimates of discard survival (at-vessel mortality and post-release mortality) of Angelsharks from commercial fleets. Such work should be undertaken in conjunction with current levels and patterns of fleet activity and should be designed in such a way that would decrease fishing mortality on Angelsharks. Such work should also identify where changes in fisher behaviour (e.g., soak times of nets) can prevent or minimise mortality of incidentally caught Angelshark.”*

44. One Range State, Spain, has initiated preliminary trials on the status of Angelsharks caught and released in artisanal fisheries in the Canary Islands. ASP:CI has developed a Code of Conduct with best practices for minimizing damage during release. Additionally, specific protocols for post-release analysis, including resistance and recovery, have been designed and distributed. Algeria noted that this Action is dependent on the findings of 3.1 and 3.2, which are in progress, but that they are now compiling a simple manual outlining the process of releasing fish after capture for distribution to fishing communities. France (Corsica) conducted and published an analysis of 13 years of data on small-scale artisanal fishing (Bousquet et al 2024).
45. Croatia highlights the need for additional staff and funding to quantify and characterize discarded Angelshark survival and explore options for minimizing discard mortality. Cyprus reports that available data on incidental catches are rare, preventing detailed studies on discard survival from commercial fleets. Greece notes that data are scattered, making analysis difficult. Spain faces technical challenges in implementing post-release monitoring protocols, such as

tagging and cameras, and struggles with limited systematic data and funding for evaluating post-discard mortality rates regionally. Additionally, studies in the Canary Islands (Spain) indicate a mortality rate of about 40% for other species, and there is poor cooperation with industrial fleets in some countries. Syria reported that Action 3.6 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.6 without providing details.

### References

- Corsic'Ange/ASP:Corsica Project - Univ de Corse, CRPMEM de Corse and WWF France, 2021 [FEAMPA] [https://www.crpmem.corsica/CORSIC-ANGE\\_a899.html](https://www.crpmem.corsica/CORSIC-ANGE_a899.html)
- Bousquet et al 2024: <https://archimer.ifremer.fr/doc/00914/102628/114025.pdf>

### Action Point 3.7: Tagging

*“For any areas of localised Angelshark abundance (as surveyed under Action 2.4), consider the utility of visual and/or electronic tagging to inform on seasonality, habitat use, home range and movement. Such studies should be designed carefully and follow an ethical review process, to avoid increasing mortality.”*

46. Three Range States reported progress on tagging efforts for Angelsharks. Greece will conduct conventional tagging in East Lemnos, with satellite tagging scheduled for 2026. In Spain, visual and acoustic tagging studies have already been developed by the ASP:CI in the Canary Islands, with visual tagging involving hatchlings and adults in the eastern islands and Tenerife, and acoustic tagging starting in the marine reserves of La Graciosa and the Lobos corridor. These efforts have provided valuable data on Angelshark space use, and the ethical and methodological design has been validated by expert workshops and scientific committees from the Zoological Society of London (ZSL), the University of Las Palmas de Gran Canaria (ULPGC), and the University of La Laguna (LIB). France (Corsica) reported that it has implemented spaghetti, acoustic and satellite tagging since 2021.
47. Four states reported challenges in advancing tagging efforts. Croatia noted that electronic tagging requires additional staff and funding. Cyprus is currently considering the utility of visual and/or electronic tagging studies as part of ongoing work on contemporary and potential Angelshark habitats. Spain highlighted the high costs of acoustic transmitters and receivers, which make it difficult to expand efforts to other regions. Additionally, visual tagging relies on the development of long-term scientific monitoring and citizen science support, and there is a lack of specialized technical capacity in some areas. Efforts in Spain have primarily focused on the Canary Islands, as there are no confirmed records of Angelsharks in the Spanish Mediterranean. Algeria cited the absence of technical expertise, resources and funding as a salient factor limiting progress. Syria reported that Action 3.7 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.8 without providing details.

### References

- Mead, L. R., Alvarado, D. J., Meyers, E., Barker, J., Sealey, M., Caro, M. B., ... & Jacoby, D. M. (2023). Spatiotemporal distribution and sexual segregation in the Critically Endangered angelshark *Squatina squatina* in Spain's largest marine reserve. *Endangered Species Research*, 51, 233-248.

- Corsic'Ange/ASP:Corsica Project - Univ de Corse, CRPMEM de Corse and WWF France, 2021 [FEAMPA] [https://www.crpmem.corsica/CORSIC-ANGE\\_a899.html](https://www.crpmem.corsica/CORSIC-ANGE_a899.html)

### **Action Point 3.8: Population structure and connectivity**

*“Collect opportunistic tissue samples (e.g., from dead bycatch) and ensure appropriate longer-term archiving and storage. Subsamples of this material should be made available for scientific studies to facilitate Atlanto-Mediterranean genetic analyses to understand Angelshark connectivity in the region and global range.”*

48. Four Range States reported efforts in collecting tissue samples for genetic analysis. Greece's iSea has collected Angelshark tissue samples, with genetic analysis pending to explore connectivity with other Mediterranean and East Atlantic populations. In Spain, tissue samples from deceased individuals have been systematically archived in the Canary Islands since 2014, following standardized protocols by the ASP:CI. Some of these samples have been used for genetic studies on genetic diversity and kinship, and contacts with international laboratories have been established for future integrated analyses. Algeria has established a system for the collection of various biological data on Angelsharks that are captured and reported, though noting that no individual has been reported to date. France (Corsica) has submitted a paper about the population genetics of Angelsharks on the eastern coast, covering population size (number of spawners), a single population with strong kinship, polyandry, and site fidelity (Faure et al., in preparation). Another study on the connectivity between the Corsican population (~200 genetic samples collected in total) and the Mediterranean populations is in progress (partnership with the ASP).
49. In Croatia, additional staff and funding capacities are needed to collect data on population structure and connectivity. In Cyprus, the Department of Fisheries and Marine Research (DFMR) records incidental catches of live individuals returned to the sea and may collect tissue samples from dead individuals for genetic analysis. However, the development of a common protocol for tissue collection and preservation would be beneficial. In Spain, there is a lack of specific funding for large-scale genetic analysis, limited access to samples outside the Canary Islands, and a need for transnational collaboration to enable comparative studies. Syria reported that Action 3.8 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.8 without providing details.

### **Action Point 3.9: Life-history studies**

*“Depending on studies being undertaken under the Concerted Action Plan, relevant national institutes could usefully collect life-history information (length, sex, weight, maturity, collection of biological material for supporting studies, including genetic samples, stomach contents, tissue samples, and parasites). In accordance with the “no taking” rule described in CMS Article III (524) such work should only be undertaken when based on specimens of incidental dead bycatch and under authorised derogation from relevant national regulatory frameworks (see Objective 1).”*

50. Two Range States reported ongoing biological sampling of Angelsharks. In Spain, biological samples from individuals killed by natural causes or incidental capture have been collected under the ASP:CI and used for morphometry and growth studies. Preliminary length-weight, sex, and maturity data have been recorded since 2014, coordinated by the Institute of Environmental Science (IUSA) at the ULPGC. France (Corsica) reported that life-history data has been collected during the ANGE project and was used in their report, as well as articles by Faure et al., with further collection of data (such as size, weight, sex, maturity) needing to be explored. Algeria has established a system for the collection of various biological data on

Angelsharks that are captured and reported, though noting that no individual has been reported to date.

51. Croatia reported that conducting life-history studies of Angelsharks requires additional staff and funding capacities. In Cyprus, the Department of Fisheries and Marine Research (DFMR) noted that incidental catches are recorded, with live individuals returned to the sea and deceased individuals utilized for collecting life-history data. Greece highlighted the scarcity of records and lack of available information on Angelsharks. Spain identified regulatory challenges, including restrictions on permits for analyzing deceased specimens, as well as the absence of systematic elasmobranch stranding protocols at the Canary Islands, national, and international levels for collecting stranded specimens. Syria reported that Action 3.9 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania reported no action taken for Action 3.9 without providing details.

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#### **Action Point 3.10: Longer-term, historical population dynamics**

*"Depending on the data available (see Action 2.1), undertake analyses of longer-term population trends of Angelsharks for national waters and regional seas to understand historical population trends."*

52. Two Range States reported data collection and analysis of longer-term population trends of Angelsharks. Spain reported that the ASP:CI has been collecting sighting data since 2014, with some study areas, such as the Las Teresitas breeding area, having a 10-year monitoring program. This data has contributed to the development of the Angelshark Conservation Relevant Areas (ARCAs), proposed within the draft Recovery Plan for the Angelshark in the Canary Islands, based on scientific criteria analysing population dynamics and life histories. France (Corsica) reported that Catch-Mark-Recapture data has been collected since 2021, but that analysis of this data needs to be set up.
53. Five Range States reported challenges in conducting longer-term, historical population dynamics studies of Angelshark. Croatia highlighted the need for additional staff and funding capacities, while Cyprus and Greece mentioned limited available data for such analyses. Spain cited limitations in historical data availability, lack of technical capacity for long-term demographic analyses, insufficient funding for research, and challenges in conducting climate impact studies. Algeria explained that observation of trends in comparison with historical data will be implemented as and when new data on the species becomes available, citing the paucity of recent data on Angelsharks as a matter of concern.
54. Syria reported that Action 3.10 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Malta indicated that this Action is not applicable due to the rarity of the species. Montenegro reported that there is no data on the contemporary presence of Angelsharks. Albania no action taken for Action 3.9 without providing details.

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## Objective 4 - Sufficient resources secured for long-term Angelshark (*Squatina squatina*) conservation actions

### Action Point 4.1: Provide Resources

*“National and regional governments secure the necessary funds for the implementation of the actions at national and regional levels. Parties shall strive to provide funds to implement priority actions in the plan and financially contribute to staff time and coordination.”*

55. Three Range States and the EU reported progress under Objective 4.1 to secure resources for long-term conservation of *S. squatina*. In Cyprus, the DFMR will evaluate the possibility to include priority actions that are not addressed yet and are eligible to be funded under the EU Data Collection Framework (Regulation (EU) 2017/1004) in future Cyprus Work Plans on Data Collection. In Spain, regional and national funds have been earmarked for Angelshark conservation actions, including the development of the Draft Recovery Plan for three species of Angelshark in the Canary Islands. ASP:CI has co-financed the development of the Recovery Plan with private funding. The Recovery Plan includes proposed conservation measures to be established in ARCAs: critical areas at the national level. The EU supports actions taken for the protection of vulnerable species, including the Angelshark in the Mediterranean, through its financial support, including a multi-million euro grant, to the GFCM, which covers actions for the implementation of the RPOA-VUL and monitoring pilot projects. The EU further supports its Member States through the European Maritime, Fisheries, Aquaculture Fund (EMFAF) which is put at the disposal of Member States, particularly under its first priority 'fostering sustainable fisheries and the restoration and conservation of aquatic biological resources'. Malta reported that it is currently securing funds for the management of MPAs, which could indirectly contribute to the protection of habitats of *S. squatina*.
56. Spain states that many states still do not prioritize critically endangered marine species in their budgets, and that there is a lack of integration of Angelshark in national marine biodiversity agendas or environmental budgets. Spain reports that its Ministry of Agriculture, Fisheries and Food (MAPA) has blocked the approval of the Angelshark Recovery Plan in relation to measures that would regulate professional and recreational fishing. Syria reported that Action 4.1 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Montenegro indicated that it will take time for the Government of Montenegro to recognize and accept the recommendation on Angelsharks and allocate funds for research. Albania, Algeria and France reported no action taken for Action 3.9 without providing details.

**Action Point 4.2: Establish an international working group (IntWG) for the Mediterranean region:**

*“An IntWG will be established to coordinate and monitor the implementation of this Single Species Action Plan.”*

57. Six Range States reported engagement under Action 4.2 to support international coordination for Angelshark conservation. Cyprus, Greece, Algeria, and Montenegro agreed to contribute to the establishment of an IntWG. Spain confirmed the participation of MITECO in the IntWG, and Eva Meyers from the ASP has been appointed as an additional expert. Algeria is represented in the IntWG by two designated representatives, an administrative focal point and a technical representative. Montenegro has nominated a Government Focal Point and a technical Focal Point for the International Working Group. Malta stated that it will contribute as necessary to the IntWG, given the rarity of the occurrence of the species in our country.

**Action Point 4.3: Appraise protected areas**

*“Expand the existing MPA network to include any identified CASAs and the effectiveness of MPA networks is continually monitored.”*

58. Two Range States reported progress under Action 4.3 related to the integration of CASAs into MPAs. In Greece, CASAs have been identified, but they are currently not included in the national MPA network. In Spain, some CASAs in the Canary Islands already overlap with existing MPAs. However, efforts are ongoing to expand protection through proposals for new MPAs, such as the marine corridor of Lobos, and the extension of "no take zones" within the Marine Reserve of La Graciosa.
59. Cyprus noted that the identification of CASAs is ongoing, and the expansion of the existing MPA network is under discussion. Greece reported that it overlooked sharks in the creation of its MPAs network. Spain reported that in many countries, marine spatial planning is not aligned with the ecological requirements of *S. squatina*, with a lack of integrative criteria between marine biodiversity and MPA management, and a lack of integration of elasmobranchs in MPA management plans, including Marine Reserves and Natura 2000 (NR2000). Algeria noted limited progress on this action, highlighting that it is currently in the process of establishing several MPAs. Malta has not identified any CASAs yet, due to the rarity of the species, though it notes that more than 35% of its waters are covered by MPAs, covering a variety of habitats. Montenegro states that no CASAs have been identified so far, as there are no contemporary records of Angelsharks. However, it notes that existing MPAs are monitored, that three new MPAs have been declared recently, and that work is ongoing for the proclamation of additional MPAs. Syria reported that Action 4.3 remains unaddressed due to the ongoing 14-year conflict and lack of funding. Albania and France reported no action taken for Action 3.9 without providing details.