Workshop "Deep-water shark perceptions and map validation with fishers"

1st Azores workshop – Terceira Island – 11/04/2026

Marine Beacon – WP4.4 and WP8

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The Azores are home to 25 species of deep-sea sharks. Due to biological characteristics such as slow growth, late maturity and low reproductive rates, these species are particularly vulnerable to fishing pressure. Although many species are currently protected under regulations prohibiting their capture and landing, they continue to be caught accidentally in several fisheries. Because these species cannot be landed, very limited data exist on how frequently these interactions occur, the number of individuals being caught, or the mortality associated with these captures. Improving our understanding of these interactions is therefore essential for assessing potential conservation risks and developing realistic bycatch mitigation strategies.

As part of the Marine Beacon project, we held a workshop with fishers on Terceira Island (Azores) to better understand the interactions between fisheries and deep-sea sharks, and to discuss potential bycatch mitigation measures.

The workshop combined 1) an interactive survey, and 2) a validation exercise, creating a space for knowledge exchange between researchers and fishers.

1) Interactive survey

In the interactive survey, participants were asked to share their experiences regarding encounters with deep-sea sharks, perceived impacts on fishing activities, and current practices used to avoid unwanted catches. Seven fishers from Terceira participated in the workshop, both recreational and professional. Most participants primarily used handlines, and some also operated bottom longlines and other fishing gears. Most of them fished mostly at depths between 200 and 600 meters.

Overall, fishers reported relatively limited interactions with deep-sea sharks and highlighted that these species are not always easy to identify. Awareness of existing regulations and the protected status of many deep-sea shark species varied among participants. While some fishers considered shark bycatch to have

operational or economic impacts, others reported little direct effect on their fishing activities.

Discussions around mitigation measures revealed that fishers were generally open to learning about deterrent technologies, including light-based and electric devices. However, most fishers were unwilling to purchase these devices due to their cost and the extent to which fishers considered deep-sea shark bycatch a problem within their own fisheries.

When deep-sea sharks are caught, some fishers described cutting the line and releasing the animal immediately, while others noted that certain shark species are occasionally used as bait despite regulations prohibiting this practice. None of the participants reported removing hooks prior to release, due to concerns of their own safety. Reports on the condition of sharks at the time of release were mixed: some fishers observed animals that appeared alive and active, while others reported individuals in poor condition or stated that it was difficult to assess their status. Similarly, observations following release varied, with some sharks reportedly descending immediately and others appearing slower to return to depth.

The workshop also included a discussion on potential fisher participation in monitoring efforts through a self-sampling programme in which fishers could voluntarily report accidental shark captures during their normal fishing activities. Participants were generally receptive to contributing data and said that photo-based reporting and mobile application-based approaches were preferable to using logbooks.

2) Validation exercise

In the validation exercise, fishers were asked to review and validate key parameters used in the EASI-Fish framework to assess the vulnerability of two deep-water sharks, the Arrowhead dogfish (*Deania profundorum*) and the Birdbeak dogfish (*Deania calcea*), including fishing depth ranges, the duration of fishing activity throughout the year, and the spatial distribution of fishing effort.

For bottom longline fisheries, participants indicated that fishing typically occurs between approximately 70 and 600 meters. They also reported that, in their experience, fishing activity in the central island group can be substantially reduced for around three months of the year due to weather conditions.

Participants were asked to review fishing effort maps derived from vessel monitoring system (VMS) data. They generally considered the fishing effort maps to be representative of the areas where bottom longline fishing takes place and did not suggest major modifications. They were also asked to review maps of interaction between fishing effort and the distribution maps of the two species

under study. Because they did not have sufficient familiarity with these deep-sea shark species, it was not possible to validate the predicted interaction areas.

For handline fisheries, participants described a range of fishing depths, from around 20 metres to depths of approximately 400 metres. They noted that, in their experience, handline fishing offers greater flexibility than offshore fisheries because it is conducted closer to shore. Participants identified fishing grounds directly on maps. The areas identified by fishers were largely located around the islands, within approximately six nautical miles, and nearby seamounts and fishing grounds.

Conclusion

Overall, the workshop provided useful insights into both fishers' experiences with deep-sea shark bycatch and the characteristics of local fishing practices that are relevant for ongoing vulnerability assessments. The variability in the responses observed throughout the workshop indicates that interactions with deep-sea sharks and fisheries are not uniform and reinforces the importance of gathering information from a larger number of participants and across different islands to build a more representative understanding of fisheries interactions with deep-sea sharks in the Azores.