

MEASURES FOR THE MITIGATION OF IMPACT OF FISHING ACTIVITIES ON SENSITIVE SEABIRD SPECIES IN CROATIA



LIFE Artina Project Policy Brief

Association for Nature, Environment and Sustainable Development Sunce
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From 2018 to 2023, the project [LIFE Artina – Seabird Conservation Network in the Adriatic](#) worked on the conservation of three endangered species of seabirds, Yelkouan Shearwater, Scopoli's Shearwater and Audouin's Gull, in Croatia. One of the project aims was to understand the extent of the impact of bycatch on these species and to propose mitigation measures to reduce it.

Understanding the problem and adopting effective mitigation measures are key steps towards reducing the impact of fisheries on sensitive species and marine ecosystems, as well as ensuring a profitable and sustainable fishery.

The problem of sensitive seabirds' bycatch is recognized at international and national level. The recommendations of the General Fisheries Commission for the Mediterranean (GFCM)¹

Bycatch refers to those species that were inadvertently caught during fishing activities and includes incidental catches of endangered species or discards of non-commercial and commercial marine organisms.

Bycatch is one of the global causes of endangerment of many vulnerable groups of marine animals, such as marine mammals, sea turtles, cartilaginous fish, and seabirds.



and the International Commission for the Conservation of Atlantic Tunas (ICCAT)² include the collection of bycatch data and the monitoring of sensitive seabird species through fishing logbooks and scientific observers, as well as the application of effective mitigation measures to reduce their bycatch in fishing gear.

Previous research has established that longlines and set nets³ are the fishing

*Lifting a gill net with LED lights from the sea
(Author: A. Gugić)*

¹ Recommendation GFCM/35/2011/3 on reducing incidental bycatch of seabirds in fisheries in the GFCM area of application. Available at <https://www.fao.org/gfcm/activities/environment/bycatch/en/>.

² Recommendation by ICCAT on Reducing Incidental By-catch of Seabirds in Longline Fisheries, 11-09. Available at <https://www.iccat.int/Documents/Recs/compendiopdf-e/2011-09-e.pdf>.

³ Institute of Oceanography and Fisheries (2019): Expert background for assessing the impact of fishing activities on seabirds. LIFE ARTINA Project - LIFE17 NAT/HR/000594 „Seabird Conservation Network in the Adriatic“.

Placing weights on the longline
(Author: A. Gugić)

that represent the greatest threats to seabirds in the Mediterranean. These are sensitive and endangered species of often small populations that have a long-life span and slow reproduction rate, and the loss of a relatively small number of birds can negatively affect the entire population. Most of the seabird species breeding in Croatia are listed in the Annex 1 of the Birds Directive⁴, which places great emphasis on the protection of habitats for these endangered species.



It is also necessary to continuously **educate and raise fishermen's awareness** of their impact on the marine ecosystem and the important role all species have in that ecosystem, and ways to minimize negative impact of fishing activities.

The exact extent of bycatch of sensitive seabird species in Croatia is not known. Although there is a legal obligation⁵ to report it through fishing logbooks and during monitoring at sea by scientific observers, no information on seabird bycatch in fishing gear has been recorded so far.

However, does this mean that seabird bycatch doesn't happen in Croatia?

The results of the survey among fishermen on the islands of Vis, Korčula and Lastovo as part of the LIFE Artina project show seabird bycatch does occur, but the fishermen don't register information about it in their logbooks⁶. Therefore, the first, big step is to draw attention to the importance of collecting bycatch data and current insufficient bycatch reporting.

Bycatch is a missed opportunity for the fisherman and usually a fatal outcome for the bird.

Several activities and measures are being implemented around the world to reduce seabird bycatch. In countries where seabird bycatch during fishing is a large-scale problem, fishermen are looking for

⁴ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0147&from=EN>.

⁵ Regulation on the form, content, and manner of keeping and delivering the data on catch of commercial fishing at sea (NN 38/2018, 48/2018, 64/2018, 35/2020).

⁶ Institute of Social Sciences Ivo Pilar (2020): Report on the extent of the use of fishing gear with a potential impact on seabirds, and on the scale of seabird bycatch. LIFE ARTINA Project - LIFE17 NAT/HR/000594 „Seabird Conservation Network in the Adriatic“.



Deployment of hookpod devices for releasing hooks of floating longline gear underwater (Author: A. Gugić)

solutions to avoid damage of fishing gear, to reduce the loss of bait on hooks and to preserve the balance of the marine ecosystem, thus ensuring targeted fish catches.

The LIFE Artina project, in cooperation with fishermen, tested the use of several modified fishing gear⁷ that are used worldwide to reduce bycatch of seabirds, in order to explore the possibilities and effectiveness of their application in Croatia⁸.

Placing additional weights on the longlines increases the sinking speed of the hooks and thus reduces the time the bait is exposed to the birds. The weights are simply attached to the longline with clips when the birds are near the gear, they have no effect on the fishing activity, and their price is relatively low, so fishermen support the use of this type of gear⁹.

Signal lights (LED) emit green light when submerged and signal the presence of nets in the sea to the birds, so they can avoid them. Their use leads to an increase in the time spent on fishing activity, and the price is quite high, so fishermen's opinions about their use are divided.

The use of **hookpods** (devices to release the hooks of the floating longlines under the sea surface) reduces the exposure of the hooks with baits to the birds near the surface of the sea. This gear is the least accepted by fishermen due to its impracticality to use, tangling and increased time spent on fishing activity.

The test results showed that in order for the measures and modified fishing gear to be effective and to ensure that they are implemented by fishermen, they should be simple, appropriate to the fishery type, cost-effective, practical, safe, and accompanied by economic or social incentives¹⁰.

The LIFE Artina project also pointed out the need for additional testing of fishing gear and measures with fishermen and on larger area in the Adriatic: installation of additional weights for set/demersal and floating/pelagic longlines, installation of bird-scaring lines and devices, setting longlines at night, avoiding throwing bait remains or cleaning caught fish when setting longlines or nets, etc. Incentives should be found for stronger motivation of fishermen to register bycatch data in logbooks and to participate in testing



Signal LED lights on the net (Author: A. Gugić)

⁷ Association for Nature, Environment and Sustainable Development Sunce (2021): Seabirds and fishing activities interactions assessment report. LIFE ARTINA Project - LIFE17 NAT/HR/000594 „Seabird Conservation Network in the Adriatic “.

⁸ Miletić A., Kapelj S., Čeprija, H. (2022): Report on Testing Modified Fishing Gear to Reduce Seabird Bycatch in Croatia. Project LIFE ARTINA - LIFE17 NAT/HR/000594 “Seabird Conservation Network in the Adriatic”. Association for Nature, Environment and Sustainable Development Sunce).

⁹ Association for Nature, Environment and Sustainable Development Sunce (2022): Video [LIFE Artina - Seabird bycatch on fishing gear](#). English subtitles are available.

¹⁰ The results of testing this gear, as well as fishermen's opinions about the functionality and practicality of the test gear, are detailed in Report on Testing Modified Fishing Gear to Reduce Seabird Bycatch in Croatia (Miletić et al., 2022).



Scopoli's shearwater in flight (Author: Bart Verduyse)

of bycatch reduction gear and measures. Although focus of this project was on seabirds, many more species are affected and therefore the documentation of It is also important to strengthen cooperation between competent authorities, the scientific community and civil society organizations for the purpose of more efficient collection and exchange of data on bycatch of sensitive and protected species¹¹.

Nature conservation is not only a responsibility, but also our duty. Therefore, we invite you to use and share these recommendations. By developing and applying sustainable fishing practices, reducing the negative impact of human activities on marine ecosystems, and spreading awareness of the importance of preserving sensitive species, we can ensure the survival of seabirds and the productivity of the marine ecosystem for future generations.

¹¹ Association for Nature, Environment and Sustainable Development Sunce and Association BIOM (2023): Recommendations resulting from the testing of modified fishing gear to reduce seabird bycatch within the LIFE Artina project.

LIFE Artina Action C.1. Reduce the impact of fishing activities on seabirds by identifying and promoting best practice solutions. Deliverable: Policy report on solutions for mitigation of impact of fishing activities on seabirds in Croatia

Project partners



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