Agreement on the Conservation of Albatrosses and Petrels

Twelfth Meeting of the Seabird Bycatch Working Group

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Reducing bycatch of threatened megafauna in the East Central Atlantic (REDUCE)

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SUMMARY

The REDUCE project aims to minimize bycatch of Endangered, Threatened, and Protected Species (ETPS) in industrial EU fisheries operating in the East Central Atlantic Ocean (ECAO). The project focuses on purse-seine, longline, and trawler fleets, particularly from Spain, France, and Portugal, which significantly contribute to bycatch in this biodiversity hotspot. REDUCE will employ interdisciplinary scientific approaches to enhance fishery monitoring, understand bycatch dynamics, and develop effective mitigation strategies. Key objectives include improving bycatch data collection through advanced electronic monitoring and machine learning, assessing post-release mortality, and evaluating bycatch risks through integrated modeling. The project also aims to quantify bycatch impacts on ETPS populations and collaborate with stakeholders to co-design sustainable bycatch solutions. Emphasizing international cooperation and capacity-building, REDUCE aligns with the goals of the UN 'BBNJ' treaty and EU conservation policies. By piloting innovative bycatch mitigation measures and promoting marine spatial planning, REDUCE seeks to transform bycatch management and ensure sustainable fishery practices in the ECAO, potentially setting a precedent for global fisheries.

KEYWORDS: Bycatch mitigation, East Central Atlantic Ocean, endangered species, sustainable fisheries, species distribution models, electronic monitoring, marine spatial planning

Reducing bycatch of threatened megafauna in the East Central Atlantic

Horizon Europe GA no. 101135583

Funded by the European Union

REDUCE

In a nutshell

Reducing the bycatch of threatened megafauna in the East Central Atlantic Ocean

Grant Agreement ID
101135583

JAN 2024
DEC 2027

€ 8.156.593,75
EU Contribution

Funded under Food, Bioeconomy Natural Resources, Agriculture and Environment

Coordinated by

Universitat de Barcelona

Partners

Vniversitat de València

1290 Universidade de Coimbra

Gobierno de España · Ministerio de Ciencia, Innovación y Universidades · CSIC

CETMAR Centro Tecnológico del Mar

IRD Institut de Recherche pour le Développement France

BIOPOLIS

USC Universidade de Santiago de Compostela

PRCM Partenariat Régional pour la Conservation de la zone côtière et Marine en Afrique de l'Ouest

ciimar

datafish

Associated partners

140 1884 2024 Marine Biological Association

BirdLife International

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- Marine Megafauna is characterized by longevity, slow growth, low fecundity, delayed sexual maturity, and extensive mobility.

  ➡ Highly susceptible to increased mortality rates.

- Incidental bycatch represents a multiple-fold problem:

  - ❑ Biodiversity, ocean health and global change
  - ❑ Economic and reputation loss for fishers
  - ❑ Legal/policy complexity and IUU
  - ❑ Food security
  - ❑ Ethics
  - ❑ Etc.

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Overall objective

REDUCE

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The REDUCE initiative aims to address the issue of bycatch of marine megafauna in the Eastern Central Atlantic Ocean through a unified effort involving stakeholders and an interdisciplinary scientific approach.

multidisciplinary solutions

- By **diagnosing and integrating bycatch data** from European fleets in the region, combined with fishing effort and species distribution, the initiative seeks to systematically address policy challenges.
- **Enhanced observer programs**, electronic monitoring, and **IA** machine learning systems will provide **species-specific data on bycatch at a high resolution.**
- Fine-scale GPS tracking of selected species, along with AIS fishery data, will help **understand interaction drivers**. New tracking data will improve understanding of **species abundance, distribution, and post-release mortality.**
- Combining sightings, fishery catches, and tracking data will facilitate **predictive habitat mapping** and **assess bycatch risk**.
- The initiative will also evaluate **mitigation measures** and establish **efficient data handling and sharing mechanisms.**

Capacity-building and **cooperation** among scientists, the fishing industry, and policymakers in the region will be enhanced through workshops, training, and collaborative events.

Working area and fishing metiers

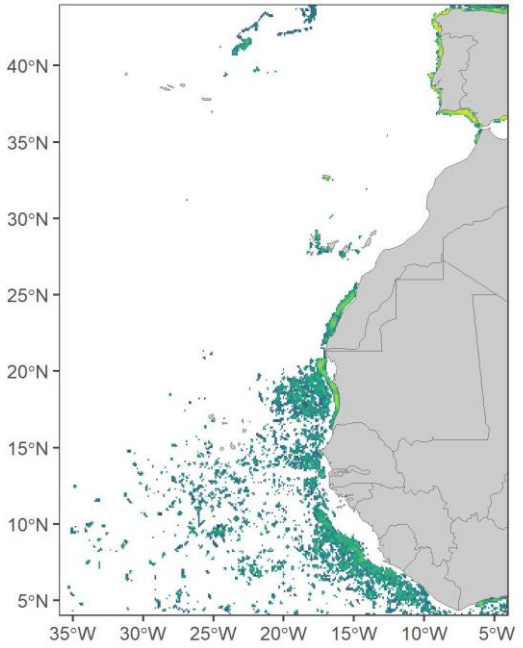
EU Long Distance Fleets in Eastern Central Atlantic Ocean

Images by David March, UVEG

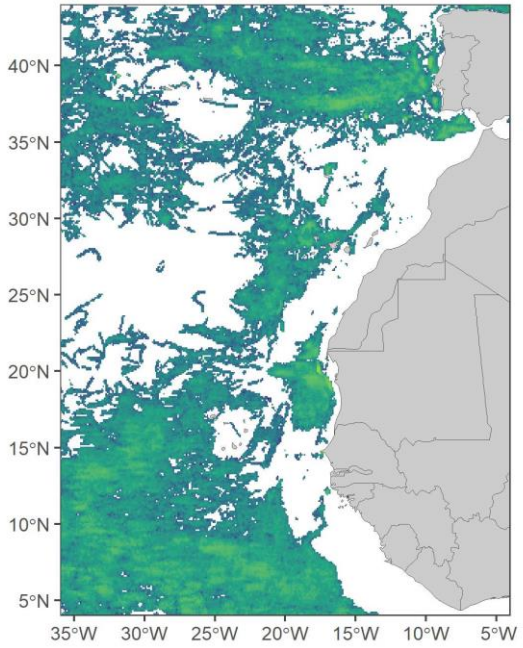
Fishing effort (h)

10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3}

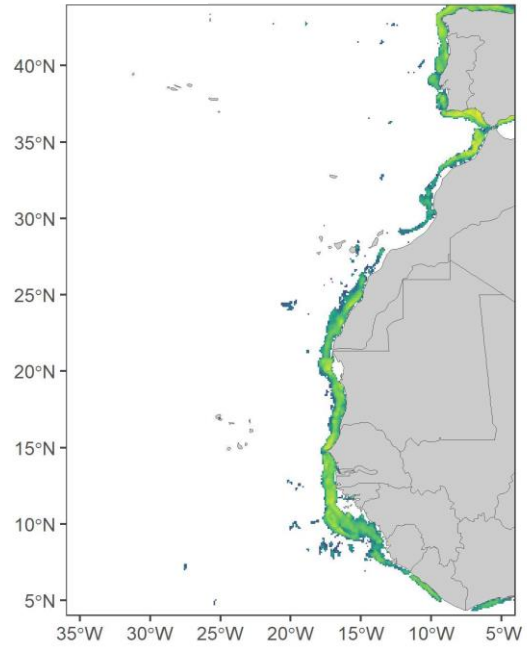
Purse seine



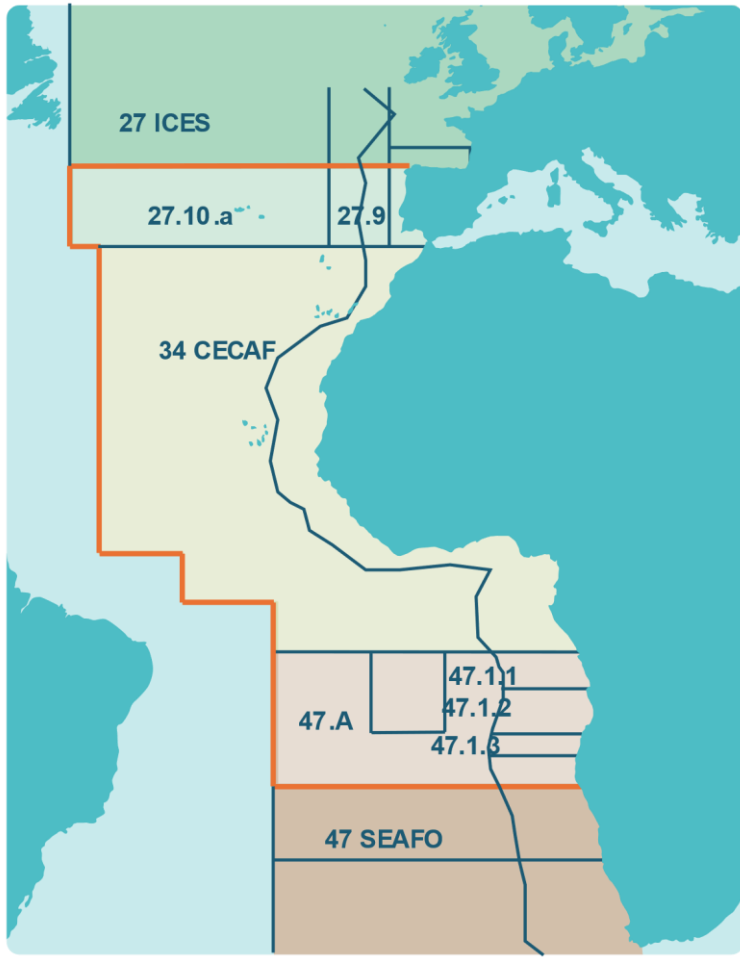
Longline



Trawl



Working area



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Targeted taxonomic groups

REDUCE

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Seabirds

Marine mammals

Turtles

Elasmobranchs

ENDANGERED, THREATENED AND PROTECTED SPECIES

THE WORKPLAN STRUCTURE

WP1- Ethics requirements

WP2- Coordination and data management

WP1 and WP2 will facilitate and guide the REDUCE consortium towards full compliance with Ethics requirements, sound and FAIR data management and a smooth coordination of all the activities, partners and procedures foreseen for a successful accomplishment of all the contractual commitments.

Assessing added mortality

WP3- Bycatch monitoring

To gather comprehensive data on bycatch of ETPS in the ECAO region through observers, electronic monitoring systems, automated bycatch identification (at the vessels and on FADs).

WP4- Post-release mortality

Provide post-release estimates and sub-lethal recovery periods for seabirds, sharks and turtles in longlines.

Understanding mechanisms and impacts

WP5- Spatial distribution, habitat modelling and bycatch risk

Electronic monitoring systems on animals and fishing vessels, together with fishing observer programs and numerical modelling offer new opportunities to understand and assess bycatch risk.

WP6- Impacts on population abundance and viability

Bycatch mortality can compromise ETPS population viability and ecosystem resilience. We are working to quantify impacts and assess resilience through modeling and standardisation of data streams from ETPS strandings and other sources.

Reducing impacts of bycatch

WP7- Reducing bycatch and post-realease mortality

Testing the application of circle hooks and fish bait, and hookpods and bird-scaring lines can shed light on viable measures for the reduction of bycatch and post release mortalities.

WP8- Marine spatial planning

Transformations towards just and equitable MSP requires understanding of the complex socioecological dynamics of marine ecosystems, fisheries and of the institutional framework.

WP9- Dissemination, outreach and transfer of knowledge

Establishing a common ground for collaboration with stakeholders, enabling valuable and reliable information for all the interested parties, facilitating mutual understanding and opportunities for biodiversity conservation, will foster positive impact.

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WP1: Ethics requirements
WP2: Coordination and data management

Jacob González-Solís

Manel Gazo

WP1. Ethics requirements

This work package sets out the *'ethics requirements'* that the project must comply with.

WP2. Coordination and Data Management

This work package will ensure a smooth coordination among partners, across tasks and the management of data.

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WP3: Bycatch monitoring

To understand bycatch, we need to improve bycatch monitoring at the vessels but also on dFADs in the (ECAO) region.

1. Capacity of fishery observers and improved data collection protocols.
2. EM coverage in the EU fleet operating in the ECAO.
3. Automated bycatch identification and ML methods.
4. Bycatch observation gaps on dFADs.

Catarina Silva

1 2 9 0 UNIVERSIDADE D COIMBRA

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WP4: Post-release mortality

Quantifying post-release mortality is challenging because animals can be injured during capture or subsequent handling or due to physiological stress.

- Post-release mortality estimates and sub-lethal recovery periods for seabirds, sharks and turtles in longlines.

Nuno Queiroz

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WP5: Spatial distribution, habitat modelling an bycatch risk

Electronic monitoring systems on animals (bio-login) and fishing vessels (VMS, AIS), together with fishery observer programmes and numerical models offer new opportunities to understand the reasons and evaluate bycatch risk.

David March

- GAP analysis on bycatch, abundance and distribution of ETPS
- Spatiotemporal patterns of affected species
- Identify and map the fishing activity of high-risk per gear
- Spatiotemporal distribution and estimation of emission rates for ghost gears
- Operational and environmental drivers of bycatch and bycatch risk maps.

VNIVERSITAT DE VALÈNCIA

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WP6: Impacts on population abundance and viability

Bycatch mortality can compromise population viability and drive extinctions. It is crucial to understand how many individuals of ETPS are removed in the ECAO region and whether this is sustainable

- Impacts of fishery bycatch on ETPS population viability and ecosystem resilience.
- Exploratory data analysis, modelling and standardisation of input data streams.
- Integration of bycatch and life history data from ETPS strandings and other sources.

Graham J. Pierce

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WP7: Reducing bycatch and post-release mortality

Multiple effective mitigation measures exist globally, but their application in new areas and addressing operational questions and cross-taxa impacts require testing.

Reduce megafauna bycatch by testing

- Circle hooks and fish bait
- Hookpods, bird-scaring lines

Promote best practices about post release mortality.

Manel Gazo

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WP8: Marine Spatial Planning

REDUCE

Transformations towards just and equitable MSP requires understanding the complex socioecological dynamics of marine ecosystems, fisheries and other institutions.

- MSP in the study region.
- Fishers' Ecological Knowledge to develop bycatch hotspot risk maps, understand perceptions about MSP, and inform future bycatch mitigation strategies.
- Socioecological impacts of bycatching on value chain activities.
- Dissemination of a Good Practices and Onboard Code for Bycatch.
- Bycatch management decision support tool DST.

Sebastián Villasante

Gillian B. Ainsworth

USC
UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

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WP9: Dissemination, outreach and transfer of knowledge

Environmental, political and societal changes towards the reduction of bycatch needs building capacity and enabling the conditions for a fluent interaction with and among stakeholders.

- Common ground for collaboration and co-creation with the relevant stakeholders
- Reference source of information and scientific support to REDUCE ETPS bycatch
- Showcase the possibilities for knowledge and technology transfer and the opportunities for biodiversity protection derived from REDUCE.

Rosa Fernández Otero

CETMAR
CENTRO TECNOLÓGICO DEL MAR

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Thanks

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