

# WGOWDF Meeting, Madrid 2-5 June 2025

## PORTUGAL UPDATE

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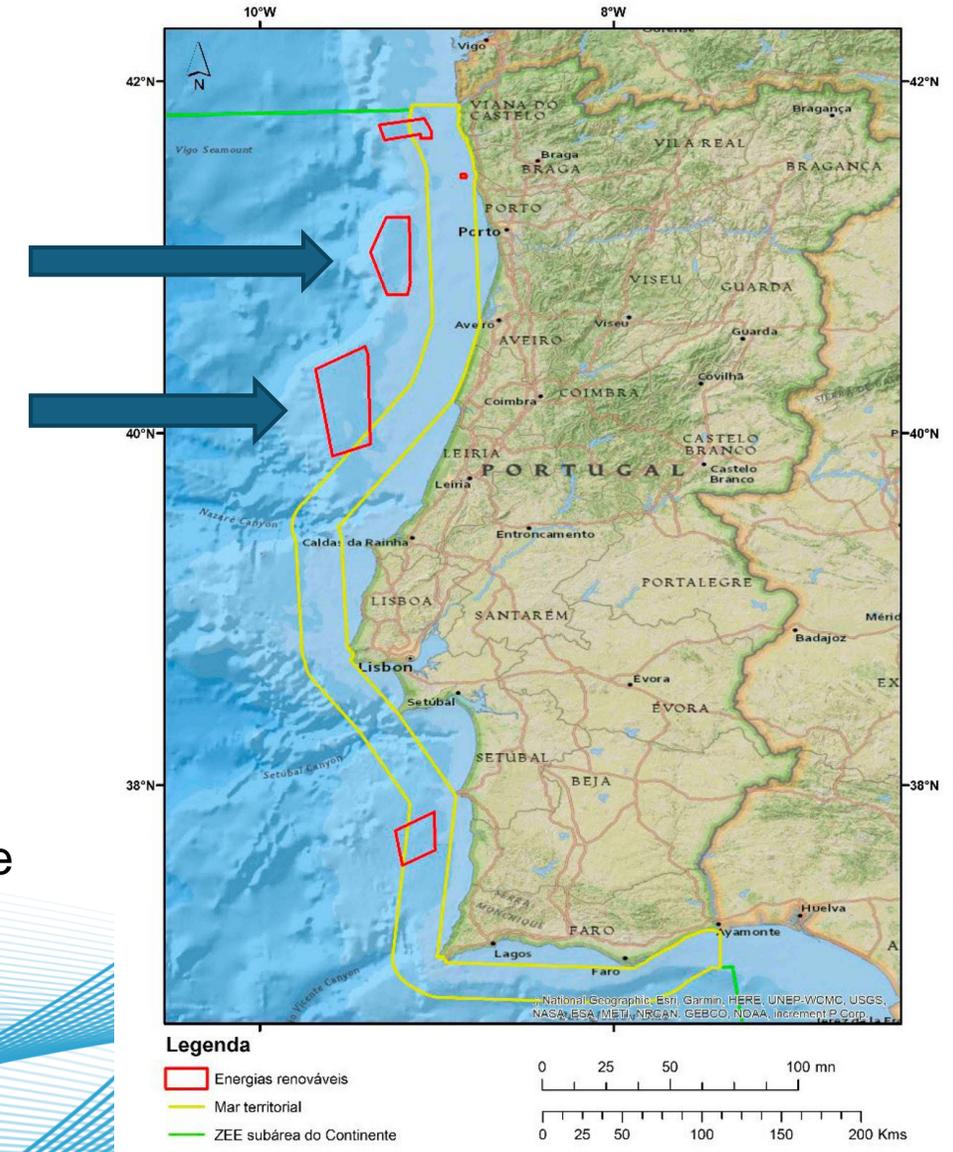
## GOALS FOR CARBON NEUTRALITY

- 45–55% reduction in GHG emissions by 2030
- Important contribution from wind energy (2040 =>2050)
  - 10 GW by 2030
  - 13 GW by 2050

## RENEWABLE ENERGY ALLOCATION PLAN (PAER)

UPDATED JANUARY 2025 – Ministers Council Resolution nº19/2025  
Taking into account the Public Consultation

- Reduction of the number of areas and slight changes in some polygons due to conservation and fishing aspects
- Areas for the installation of wind farms (3,393 km<sup>2</sup>)
- Mainly floating turbines
- Turbine density: 3.5 MW/km<sup>2</sup>
- Leixões and Figueira da Foz priority areas



# Baseline project: GEOLOGY, ENERGY, CULTURAL PATRIMONY AND ENVIRONMENT

- **Geophysics**

- Multibeam
  - Bathymetry
  - Backscatter
- Side Scan Sonar
- Magnetics
- Seismic reflection



- **Geotechnics**

- Seafloor superficial sediments
- Vibrocores
- Cone penetration tests

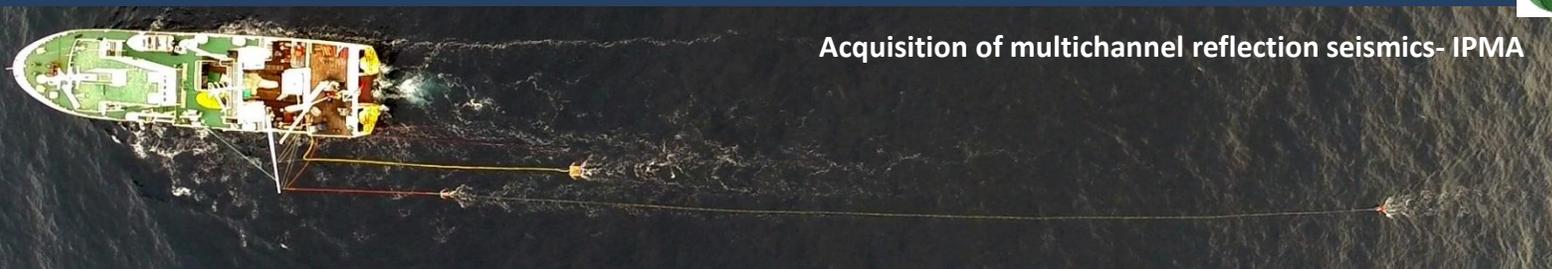
- **Energy**

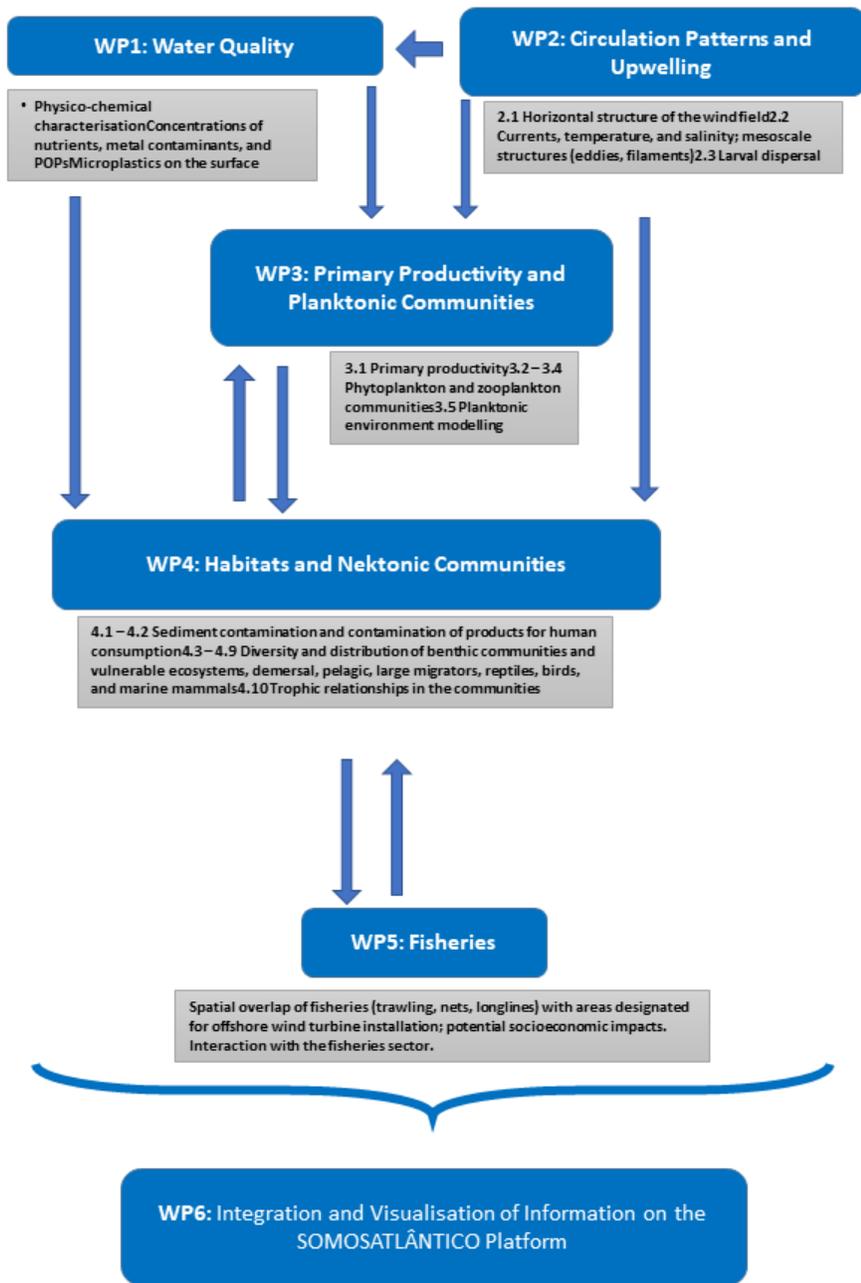
- Wind, waves and currents

<https://owf.ipma.pt/>



Acquisition of multichannel reflection seismics- IPMA





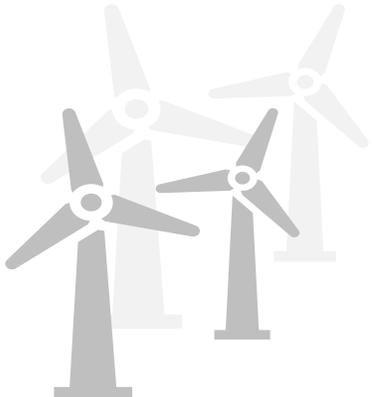
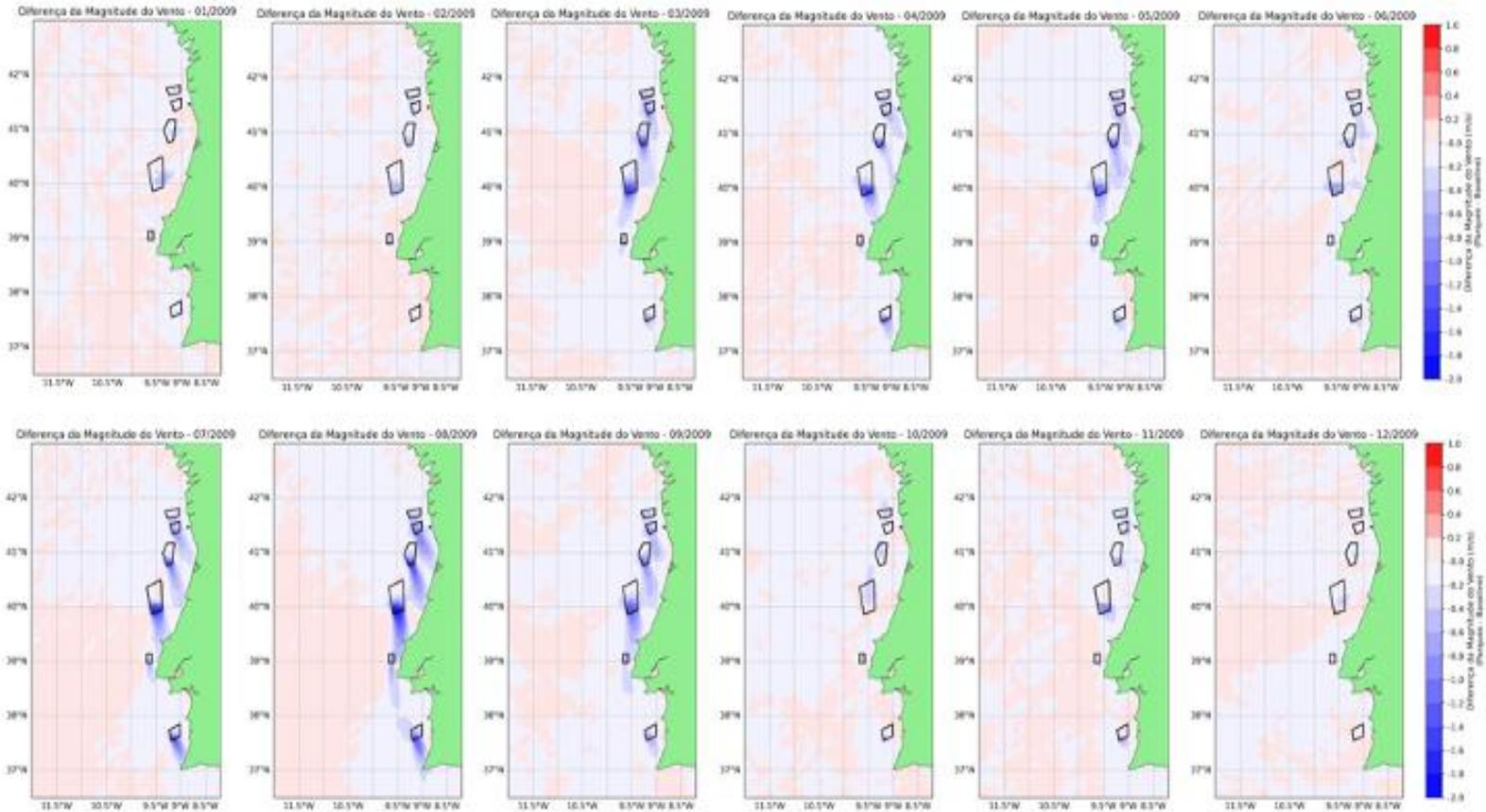
## Colaboration- University research centres and NGO

CIIMAR	WP1, WP4 (T 4.1, 4.9)
IDL	WP2
MARE-NOVA	WP3 (T 3.4), WP4 (T 4.4)
MARE-FCUL	WP3 (T 3.2, 3.3), WP4 (T 4.5)
FARM-ID	WP4 (T 4.2)
CESAM	WP4 (T 4.5)
CCMAR	WP4 (T 4.7, 4.9)
SPEA	WP4 (T 4.8)
CE3C	WP4 (T 4.10)
CEAUL	WP5

**Atmospheric modelling:** Monthly average fields of the difference in wind intensity between the simulation that has parameterised wind farms and the base simulation, for all months of 2009 (preliminary results)

**Modelação Atmosférica:**

**WRF (vento a 10m): Análise para 2009 (C/TURBINAS-BASELINE):**



# Assessment of the impact of offshore wind farms in Portuguese fisheries

## Data:

Log books from 2015 to 2023  
Selling prices at fish landing sites

## Exploratory analysis:

Mapping of fishing operations' location  
intensity using kernel smoothing  
Descriptive statistics  
quantity (kg) and value (€) per unit of fishing effort unit (h×kW)

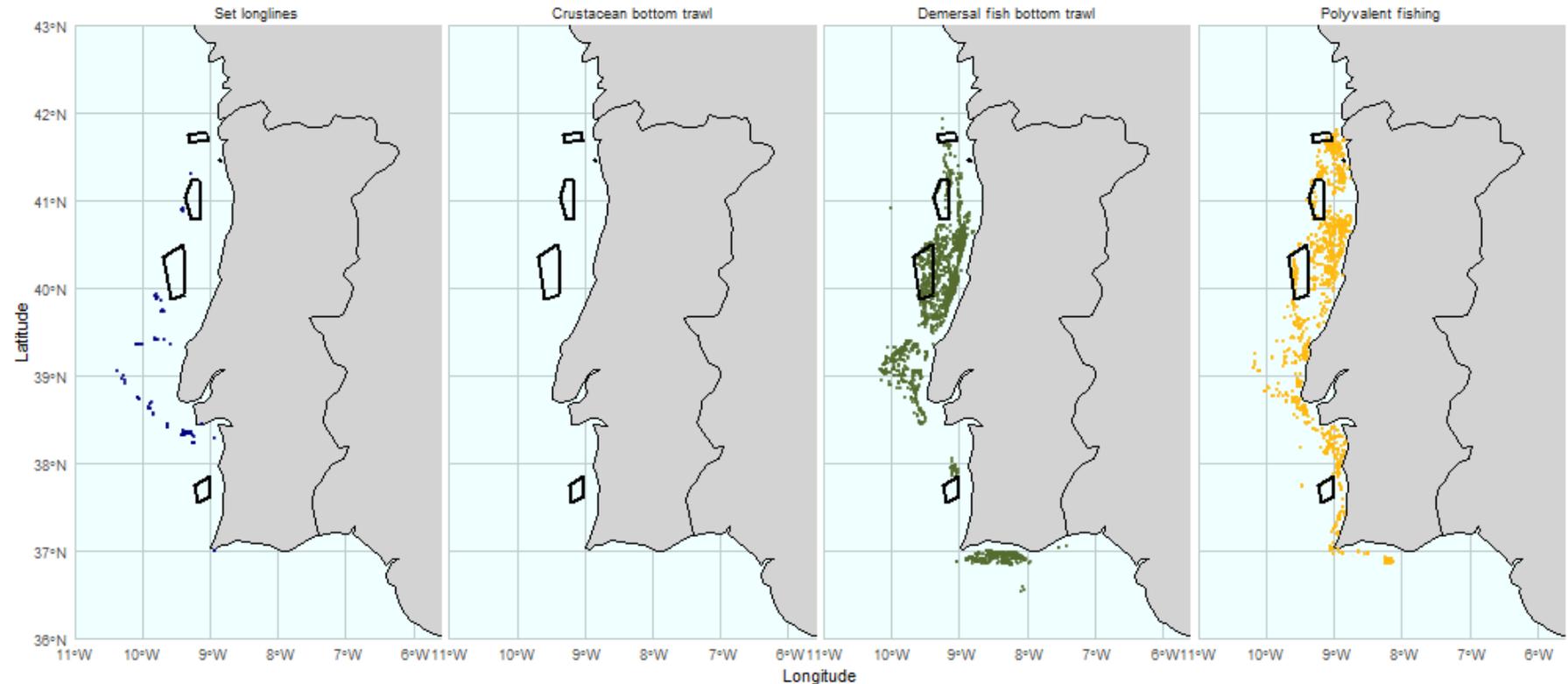
## Modelling of capture intensity (spatial and spatio-temporal)

Non-homogeneous Poisson processes with location varying intensity, linked to meteorological covariates, considering fishing seasons and quotas; Log-intensity modeled as a Gaussian random field to capture residual spatial correlation.

Bayesian approach via INLA for efficient estimation.

Fishing events in Portuguese waters (2015-01)

Monthly data from 2015 to 2023



# Objectives and methodology

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## Objectives:

- To characterize the communities of large migratory pelagic species through their abundance, spatial distribution, migratory routes and vulnerability with regards to the installation/operation of large offshore wind farms

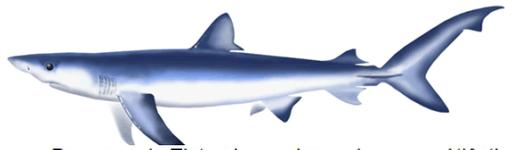
## Data and analysis:

- Catch and effort from electronic logbooks -> Fishing effort, CPUEs, analysis in value;
- Data from onboard observers -> Species composition and distribution, size distribution;
- Data from satellite telemetry on tagged blue sharks -> Movements, habitat use.

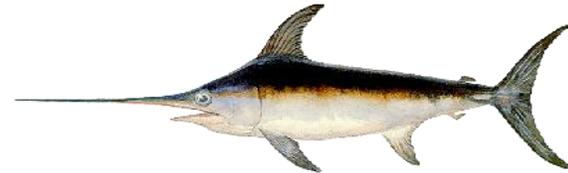
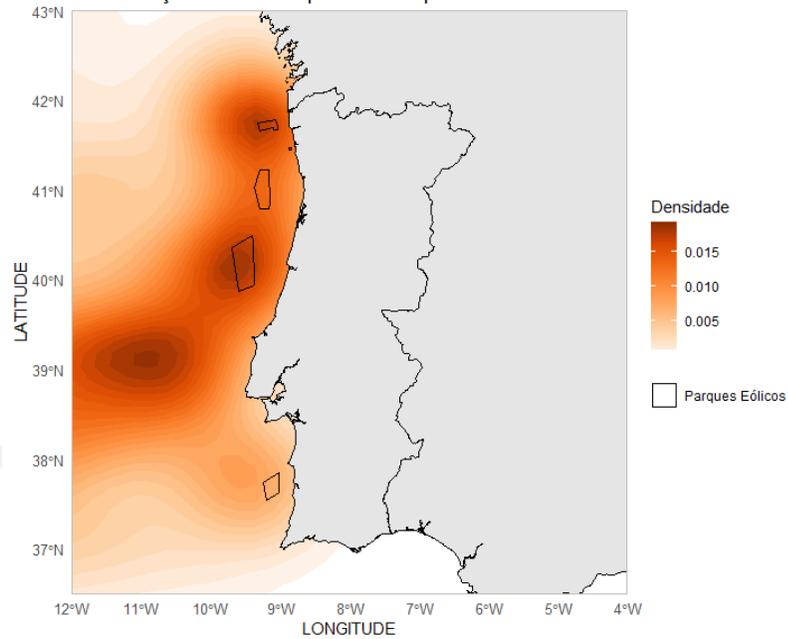


# Results (prelim.) – Distribution of the main species

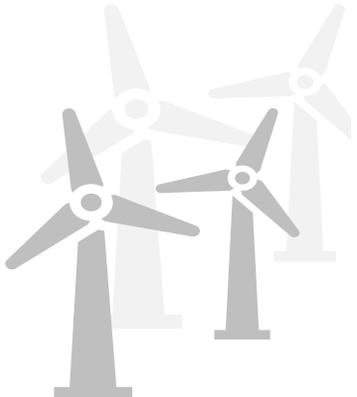
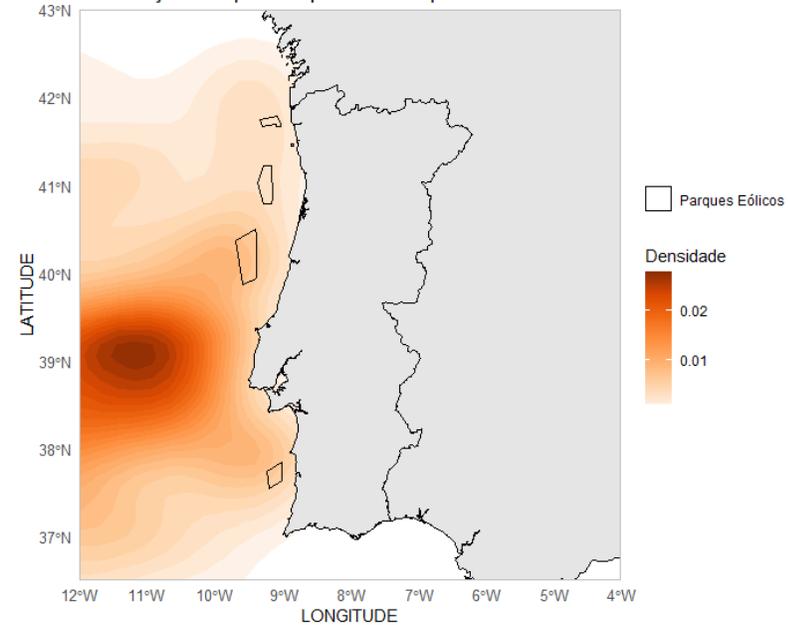
- **Blue Shark:** Some overlaps between the main distribution areas and the possible location of the wind farms (especially in the central/north regions)
- **Swordfish:** Less overlaps with the wind farm implantation areas



Presença de Tintureira por lance de pesca- Atlântico NE

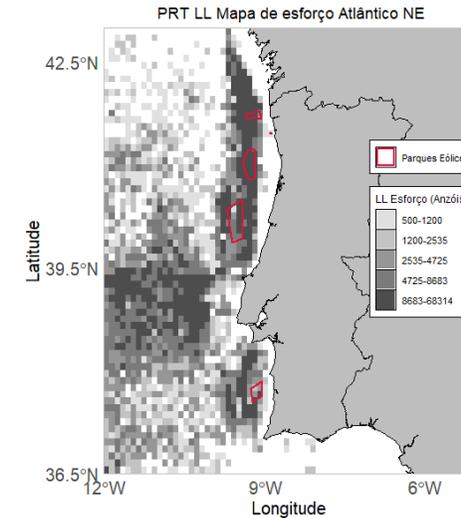
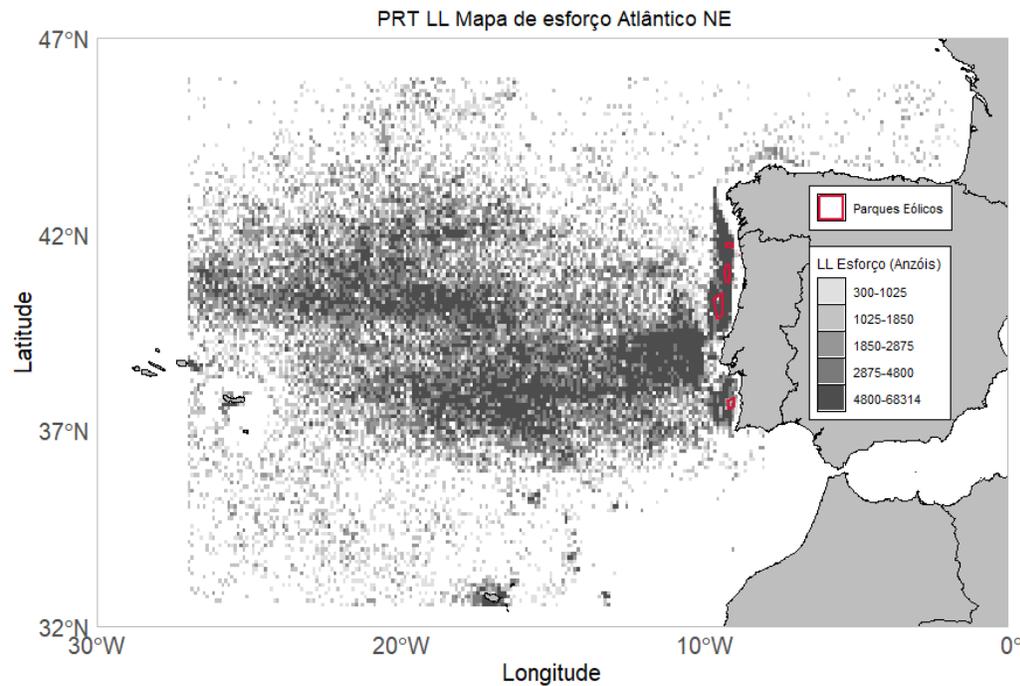


Presença de Espadarte por lance de pesca- Atlântico NE



# Results (prelim) – Distribution of the fishing effort

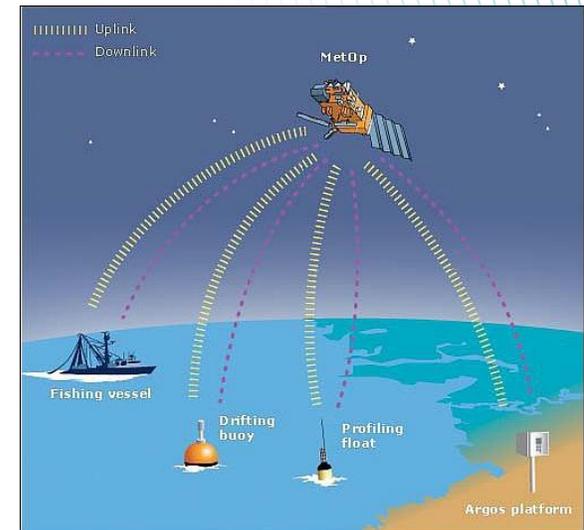
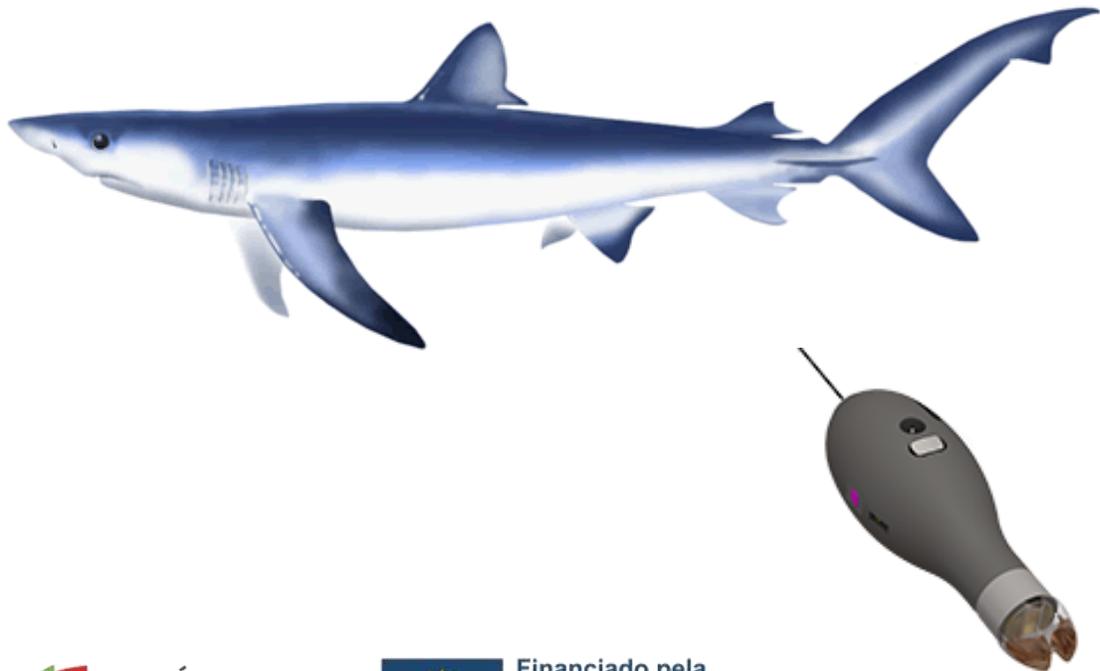
- **Fishing effort (longline):** Some overlaps between fishing effort (pelagic longlines) and the wind farm implantation areas



# Next steps

## Satellite tagging of blue shark

- Deployment of satellite tag (15) on blue sharks, planned to start in mid-July
- Objective to track specimens for a period of 5-6 months, both for horizontal/spatial movements as well as determine habitat/depth utilization
- Priority to deploy tags in the more northern wind farm areas



**THANK YOU VERY MUCH!**

