R&D Project FISHOWF+
Investigating interactions between fish and offshore wind farms

MOTIVATION & BACKGROUND

Considering the ecological functions and socio-economic importance of fish, species responses to offshore wind farms (OWF) need to be assessed through comprehensive and long-term monitoring. The FISHOWF R&D project, completed in 2023, demonstrated the relevance of acoustic telemetry for monitoring the effects of offshore wind farms on fish.

Building on this, the FISHOWF+ project will implement this technology in 6 offshore wind farms (both fixed and floating) across 3 French maritime regions to address several key questions related to fish presence and behaviour within and across wind farm development areas.

OBJECTIVES

- **Characterise the interactions between fish and offshore wind farms and their export cables at multiple spatial scales through an *in situ* monitoring approach based on acoustic telemetry**
- **Promote and facilitate the integration of acoustic telemetry into national marine environment monitoring strategies**
- **Integrate France's monitoring efforts and results into European collaborations to assess the effects of offshore wind farm development on fish movements in the North-East Atlantic**

Duration: 36 months | Start: 2024 | Total budget: €4,053K

DELIVERABLES

- **Methodological tools and guidelines for the implementation of acoustic telemetry as a strategy for monitoring fish within wind farms**
- **Co-constructed roadmap for the developement and maintenance of a national acoustic telemetry infrastructure that includes OWF**
- **Identification of *in situ* movements and behaviour of electrosensitive species near subsystems emitting electromagnetic fields**
- **Key insights into species-habitat relationships at different phases of the wind farm lifecycle**
- **Knowledge on regional connectivity and functional areas of species contributing to informing marine spatial planning**
- **Predictive model of fish movements providing insights into the potential overlap between offshore wind farms and species' essential habitats**

SCOPE OF WORK

1. Stakeholder engagement and transferability

- Promoting telemetry tools for risk mitigation
- Knowledge sharing and perspectives
- Advocating for acoustic telemetry integration

2. Understanding impacts at different stages of OWF lifecycle

- Tagging species of interest accross different French Facades
- Deploying acoustic arrays within OWF areas
- General analysis and biological interpretation on impacts of OWF on space use and occupancy patterns of fish

Fig. Conceptual illustration of passive acoustic telemetry methodology. Acoustic tags are placed on or within individual fish and crustaceans. Credit: ©FEM – Graphic creation by Lyna Couturier

3. Free-swimming fish behaviour near EMF-emitting subsystems

- Tagging electrosensitive species
- Deploying dedicated multilateral acoustic telemetry arrays and data collection
- Detecting fine-scale 3D movements of electrosensitive species around two EMF-emitting OWF structures

4. Role of OWF on regional dynamics of fish ecology

- Inferring fish movements using geolocation models
- Building a trajectory simulation tool to infer population level-fish space use and movements: a sea bass case study
- Assessing the connectivity between OWF sites
- Transfer of new ecological data to ecosystem-based modelling

5. Northeast Atlantic Marine Tracking Network (NorTrack)

- Integration to European partnership : infrastructure, data management, communication

6. Digital Twin of the Ocean: Animal Tracking (DTO Track)

- Contributing to digital twinning of animal tracking at EU scale

PARTNERS

This project is led by France Energies Marines.

The project receives funding from the French government which is managed by the Agence Nationale de la Recherche as part of the France 2030 investment plan. It is also supported by the Pays de la Loire, Sud Provence Alpes Côte d'Azur, Brittany and Normandy regions.