MIGRALION MIGRATLANE

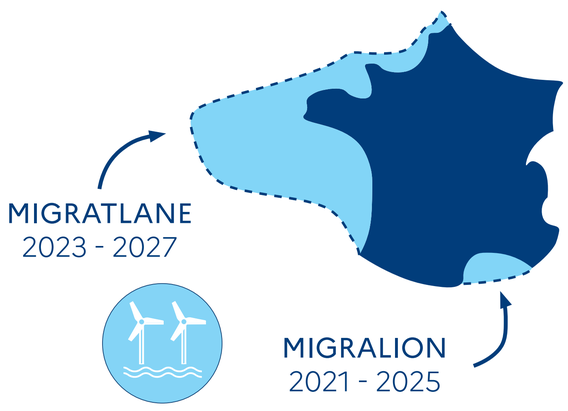
Large-scale multi-source data acquisition and modelling to characterise the use of maritime & coastal areas by birds & bats

Yann Planque[1]*, Cécile Bon[1], Aurélien Besnard[2,3], Antoine Chabrolle[4], Jocelyn Champagnon[5], Sophie de Grissac[4], Vincent Delcourt[6], Nicolas Delelis[6], Olivier Duriez[2], Alexandra Gigou[7], Frédéric Jiguet[4], Christian Kerbiriou[4], Anouk Vacher[8]

+29 other collaborators from 16 structures (research laboratories, associations, environmental study offices, etc.) | Flash the QR code below for the full list.

[1]France Energies Marines, Le Havre, France. [2]Centre d'Ecologie Fonctionnelle et Evolutive (CEFE - UMR 5175), Montpellier, France. [3]EPHE-PSL, Paris, France. [4]Muséum National d'Histoire Naturelle, Paris & Concarneau, France. [5]Tour du Valat, Arles, France. [6]Biotope, Mèze, France. [7]OFB, Marseille, France. [8]Ecosphere, Auray, France.
*contact : yann.planque@france-energies-marines.org

Context



- France is located at the **crossroad of major avian migratory routes in western Europe**. A high diversity of terrestrial and marine bird species inhabit the French coasts for breeding, wintering or for resting-foraging during migration stopover.
- Following the current objectives in increasing low-carbon energy technologies, the **offshore wind farm energy sector is in full expansion** in mainland France.
- There are **high knowledge gaps** on the use of French marine zones by **avifauna and chiropterans** (*e.g.* on migration fluxes and patterns, on spatial use at sea, on behaviour at sea).
- **MIGRALION** and **MIGRATLANE** projects aim at fulfilling these knowledges gaps.

Knowledge gaps

Spatial distribution | Functional zones | Migration flyways & timing | Flight heights

Complementary approaches for data acquisition

TELEMETRY

- Deployment of **GPS** or **GLS tags** on many species/individuals (with 3D accelerometers, pressure and temperature sensors)
- Seabirds, aquatic birds, passerines, raptors, waders, etc.

↳ Individual movements, migration patterns, behaviour

RADARS

- Stationary ornithological and weather radars (continuous recording)
- Coastal mobile ornithological radar (migration periods)
- Vertical marine radar for flight heights & fluxes at sea (🚢)
- Horizontal radar for bird movements at sea (🚢)

↳ Quantification of population fluxes (multiple scale), migration patterns

VISUAL OBSERVATIONS

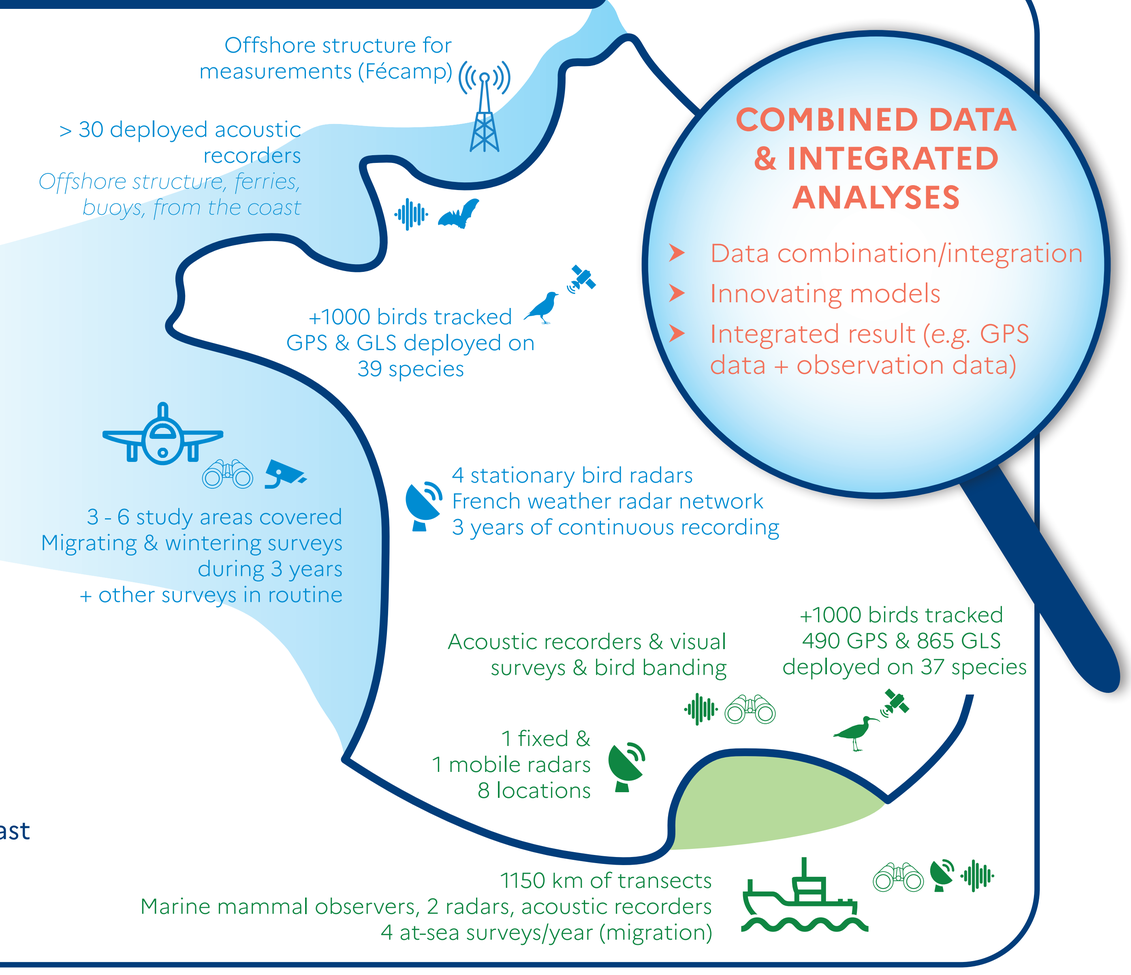
- Offshore (🚢 or ✈) & coastal surveys
- Digital to **improve bird detection and ID**

↳ Multi-species identification, at-sea distribution (large spatial scale)

ACOUSTIC

- Acoustic recorders deployed at sea (*e.g.* Fécamp met mast, from 🚢) and from the coast
- Automated detection and identification of bat and bird calls

↳ Multi-taxa identification, migration patterns, behaviour



Expected results

- Data obtained from complementary approaches through these two programs will **improve our knowledges on the presence at sea of avifauna and chiropterans** in mainland France, on their migration patterns and on their behaviour.
- Innovating **modelling approaches** will be developed to **combine these numerous heterogeneous data**. The results will help to **better characterise the key functional areas of bird/bat species at the scale of the French mainland maritime areas**.
- Results will help **to protect avifauna/chiropterans** in a context of possible **threats on bird and bats populations**, as many of them are in decline. **These projects, launched by the French Biodiversity Agency, will feed politics and practices to develop human activities (e.g. Offshore Renewable Energy) in an environmentally sustainable way**.

Programs financed by the Observatoire national de l'éolien en mer, Office Français de la biodiversité (OFB), Région Sud and Région Occitanie (France).

Icon credit: iconcheese/Nounproject