

OWFSOMM

Offshore wind farm surveys of marine mega-fauna: standardisation of tools and methods for monitoring at farm scales

DURATION: 36 months | LAUNCH: 2020 | BUDGET: €1,447K

CONTEXT

Digital solutions for monitoring marine megafauna from aerial surveys have undergone significant technical development and are now being used as part of the environmental monitoring of French offshore wind farms. It is essential to ensure that the data acquired digitally is commensurate with data obtained from aerial surveys using on-board observers. In addition, the use of instrumented platforms at sea to monitor marine megafauna is increasingly being considered, and holds great promise. However, methodological developments are needed to automate future monitoring and extract the relevant ecological information from the multimodal data obtained.

OBJECTIVES

- To provide an operational guide for robust intercalibration of visual and digital aerial monitoring of marine megafauna in offshore wind farms
- To develop artificial intelligence tools for the identification and characterisation of marine megafauna

MAIN ACHIEVEMENTS

- Completion of 14 aerial monitoring campaigns of marine megafauna over 5 offshore wind farm sites and several seasons
- Calculation of inter-calibration indices and statistical analyses of their variability according to site, species and observation conditions.
- Development of automated detection algorithms for birds and marine mammals
- Methodological and practical recommendations to facilitate and harmonise the monitoring of megafauna, both from aerial surveys and from instruments deployed at sea.

CONCLUSION

OWFSOMM has highlighted the difficulty of comparing abundance estimates obtained by visual and digital methods from aerial surveys, showing that it is preferable to opt for the same monitoring method throughout the life cycle of an offshore wind farm. As offshore wind farms have to be flown over at higher altitudes for security reasons, digital aerial surveys should be favoured from the environmental baseline onwards. By developing promising automated algorithms and implementing a multimodal data acquisition approach, OWFSOMM have laid the first operational building blocks for integrated, continuous and long-term monitoring of the various compartments of the marine megafauna, an objective currently being pursued in the [DRACCAR-MMERMAID](#) project.



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TECHNOLOGIES



STAGES OF THE VALUE CHAIN



Preliminary studies | Design | Manufacturing | Installation Construction | O&M | Dismantling

OUTPUT RESOURCES

- Multi-source databases: visual and digital observations from aerial surveys, passive acoustics, 360° HD videos, etc.
- Technical reports and recommendations on the intercalibration of visual and digital approaches, and on the development of deep learning algorithms
- Development of a standardised data format for the processing of images from digital aerial surveys
- Algorithms for automated detection of marine megafauna from videos and passive acoustic data
- R package 'sismow' for simulating the distribution and abundance of birds and marine mammals, and testing the effectiveness of different sampling plans

PARTNERS



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