Technology Solutions to Mitigate Use Conflicts

Technology needs for scientifically robust wildlife monitoring and adaptive management

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CROWE Center for Research on Offshore Wind and the Environment

Project Introduction

Goal: Targeted recommendations for technology development

- Marine mammals & birds
- Atlantic, Pacific, Gulf of Mexico and Great Lakes
- Fixed and floating
- Priority questions
- Statistically robust data
- Integration into operations
- Literature review and expert workshops

Methods

Methods, approach, execution

Literature and database review of technologies

Engagement with organizations compiling technology information

Project Advisory Board

Three workshops:

- Marine Mammals
- Birds
- Integration into Operations & Maintenance

Project Tasks

Task 1: Desktop assessment of marine mammal and bird conflicts areas and barriers to industry advancement

Task 2: Refine questions and identify study design factors and technology parameters needed to achieve robust statistical outcomes

Workshops with experts

Task 3: Develop a relevant technologies database for use in Task 4 and 5

Task 4: Identify limitations for operational integration

Workshop with experts

Task 5: Final Report:
Identify gaps in capabilities of existing technologies to answer marine mammal and bird OSW conflicts
Integrate into equipment and operations of OSW
Make targeted recommendations for technology innovation

Desktop Assessment

Memo on marine mammal and bird priority conflicts

- Occurrence
- Conditions and stimuli
- Response
- Consequences/Cumulative
- Data standardization and access

Potential Solutions to Improve Monitoring Technologies

- Battery life improvement (or access to power)
- Replacing of batteries with solar or OSW infrastructure power sources, where possible
- Data storage and remote data transfer improvements
- More and better algorithms for identifying, localizing, and classifying animals and filtering clutter
- Addressing field-of-view and resolution constraints
- New technologies that can better detect small-bodied birds and high-frequency and small marine mammals at longer ranges

Potential Solutions to Improve Monitoring Technologies

- Developing protocols to better integrate datasets at different spatiotemporal scales
- Improving tags and tag deployment on animals to minimize invasiveness while maximizing tag longevity
- Improving stabilization
- Commercial scale production of tags and other monitoring technologies
- Improving equipment weatherization and robustness to harsh marine environments
- Integrating multiple sensors into platforms, including environmental sensors

Potential Solutions to Improve Integration into OSW Operations and Equipment

- Reducing the need for physical access to systems by developing remote access to power and capabilities for remote data transfer
- Improving attachment mechanisms, including attachment mechanisms that are robust and reduce the need for physical access to systems
- Standardizing interfaces with infrastructure, including possible dedicated space for monitoring technologies on OSW infrastructure
- Addressing safety and security issues
- Developing deployment configurations and equipment to reduce interference from structures (e.g., blind spots in radar)
- Coordinating planning processes early

Conclusions

- Summary of the gaps and potential solutions
- Many of the gaps are similar between birds and marine mammals
- Avoid collection of data that are not sufficient to reduce uncertainty and improve understanding
- Results can be used to prioritize and fund technology developers to address gaps

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https://nationaloffshorewind.org/projects/technology-development-priorities-for-scientifically-robust-and-operationally-compatible-wildlife-monitoring-and-adaptive-management/

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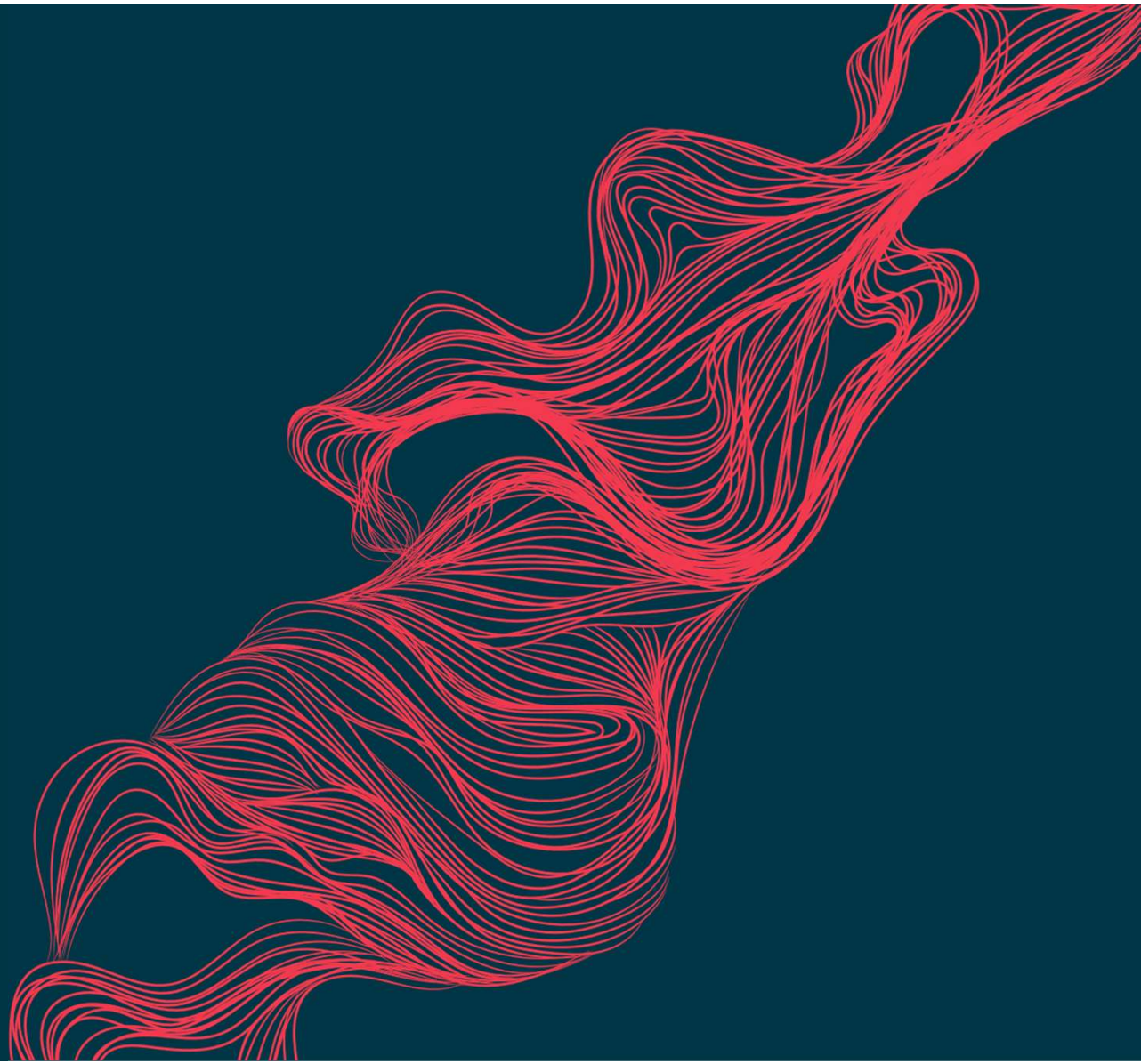
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