

GM-24-02c: Northern Gulf of Mexico Monitoring for Protected Birds: AI-powered Analyses with Visualization Tools

To support responsible offshore energy development, BOEM has collaborated with the U.S. Fish and Wildlife Service (USFWS) and a contract organization to conduct aerial and ship-based surveys for protected species in the Gulf of Mexico. This collaboration aims to enhance our understanding of the distribution and abundance of seabirds, marine mammals, and sea turtles in the region. BOEM and its partners are seeking to develop, automate, and enhance the detection and classification of these species in high-resolution aerial imagery by leveraging cutting-edge technologies, such as deep learning computer vision frameworks. This award will be a single-source cooperative agreement with a member institution of the Gulf Coast Cooperative Ecosystem Studies Units (CESU). Its purpose is to develop detection and classification algorithms for protected species using artificial intelligence and machine learning. These algorithms will be used to analyze aerial imagery collected in the Gulf of Mexico by the US Fish and Wildlife Service in a separate agreement.

Furthermore, BOEM is interested in developing a web-based visualization tool that will provide status updates on USFWS and BOEM remote sensing aerial imagery surveys conducted in the Gulf of Mexico, particularly in areas where energy development is occurring or planned. This tool will serve as a valuable resource for stakeholders, including government agencies, researchers, and the public, enabling them to track the progress of ongoing surveys and access the latest data and information. This project has a timeline of five years.

Goals and Objectives

Goals

The goals of this study are to develop (1) state-of-the-art detection and classification algorithms using artificial intelligence and machine learning to analyze aerial imagery gathered from the Gulf of Mexico by the USFWS and (2) a public facing, web-based tool providing results of aerial surveys.