



Development of Mission Avoidance Zones in the Eglin Gulf Test and Training Range

05-270

Background:

The Eglin Gulf Test and Training Range (EGTTR) encompasses over 124,000 square miles of over-water area in the Gulf of Mexico (Gulf). This water range supports testing and training missions for the U.S. Air Force, the U.S. Navy, and the U.S. Marine Corps. Underwater noise impacts to protected species are the primary obstacle for conducting testing and training activities. Consultation with regulatory agencies concerning marine mammals and threatened and endangered species are required under the Marine Mammal Protection Act and the Endangered Species Act, respectively. The consultation process is required for any proposed activities with the potential to affect protected species. Lengthy dialogue between the proponent and the regulatory agency may occur before reaching consensus, resulting in delays to critical testing or training actions. In fact, military missions have recently been delayed up to two years due to this process.

Objective:

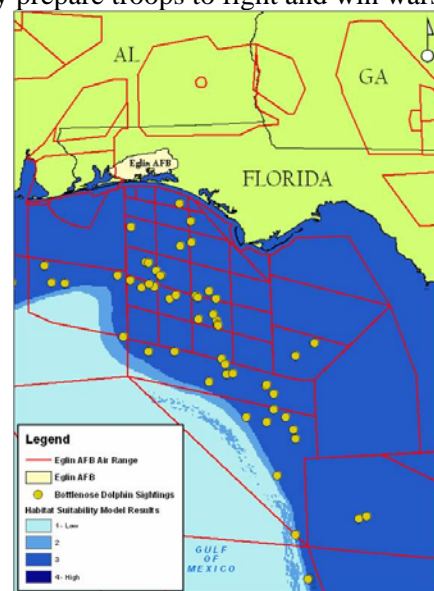
The overall purpose of this project is to identify, formulate, and implement a method to establish Mission Avoidance Zones (MAZs) in the EGTTR. MAZs would be identified based upon oceanographic features considered to be predictive of marine species presence. Ideally, the location of these features would be accessed in near real-time through satellite images. Use of MAZs would allow military activities to be directed away from areas of high protected species occurrence using habitat suitability modeling (HSM) in a Geographic Information System (GIS).

Summary of Approach:

HSM allows researchers to estimate the suitability of an area for a given species at a specific point in time. To initiate model development, a literature review was conducted, along with consultation with marine mammal biologists, to identify key habitat features. Bottlenose dolphins and sperm whales were chosen as the study species, based on the amount of existing information regarding habitat requirements. Next, the percentage that each feature contributes to the overall suitability of habitat was established, and criteria valuation for the levels within each of these variables was conducted. The model was populated with sighting data collected during the GulfCet II surveys. Finally, appropriate statistical tests were performed to evaluate the habitat features and to validate the models (separate models for each species).

Benefit:

The models were able to explain up to 74 percent of the spatial occurrence of these species, based on the habitat features evaluated. Refinement of the models is expected to increase the ability to identify these areas even further. This in turn would allow military planners to direct activities away from high concentrations of marine mammals. Ultimately, this tool would expedite the environmental consultation and compliance process, allowing the Air Force and Navy to more efficiently and adequately prepare troops to fight and win wars.



Habitat suitability map for dolphins in the EGTTR

Accomplishments:

Two preliminary models that can effectively predict areas of high concentrations of bottlenose dolphins and sperm whales in the EGTTR were constructed. The results of this initial were relatively robust. The statistical outputs show that the models were able to explain 70 to 74 percent of the location of species occurrence. These models are the first to be developed for bottlenose dolphins and sperm whales in the Gulf. It is anticipated that refinements to the models would allow species occurrence to be predicted at a highly significant level.

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