Acoustic and Visual Monitoring for Marine Mammals at the Navy's Southern California Off-Shore Range

Conservation
CS-1189

Background:

The Southern California Off-Shore Range (SCORE) is a region where naval operations are frequently conducted and where marine mammals are known to be abundant. Current plans are to extend the SCORE range westward to produce a shallow water range of exceptional biological productivity. Environmental compliance efforts at SCORE would benefit from the ability to make real time assessments of marine mammal presence.

Objective:

The technical objective of this project is to compare methods for actively monitoring marine mammals within the SCORE region using the following four techniques: (a) aerial surveys (visual), (b) ship-based transect surveys (visual), (c) sonobuoy-based mobile acoustic surveys, and (d) continuous fixed-site acoustic surveys.

Simultaneous application of these techniques will allow comparisons to determine the combination of methods most suitable for long term monitoring of the SCORE range. In addition, this project will investigate the contribution of environmental factors, such as sea surface temperature, to make an environmentally based model for marine mammal presence. This research will provide a better understanding of marine mammal presence within SCORE and improve techniques for studying marine mammal presence at other sites of naval interest.

Summary of Process/Technology:

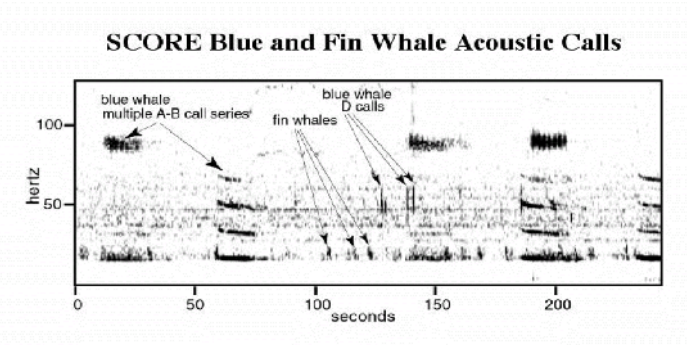
Aerial surveys at SCORE will cover a series of lines, ranging in length from 25 to 200 km with a total survey area of approximately 12,600 km_2. Aerial survey flights will occur quarterly each year of the project, assessing abundance during each season.

Ship based surveys, using both acoustic and visual techniques, will be conducted at SCORE six times each year. Ship based visual surveys will consist of teams of observers working daylight hours, individually recording sightings and group sizes. Biopsy, photo-identification, and detailed behavioral information will be collected at selected times during these surveys.

Fixed acoustic recording systems provide a continuous year-round survey for marine mammal presence. The project will examine data from these systems and deploy seafloor broadband hydrophone recorders within the SCORE region where coverage is not available from existing hydrophones.

Benefit:

There is a high priority Navy requirement for data on marine mammal locations and seasonal densities within areas of frequent naval operations. The acoustic population estimation techniques developed by this project offer the potential for efficient and economical monitoring of marine mammals. These techniques are a first step in understanding the impact of sound on marine mammal behavior.



Research findings will transition for use by SCORE personnel as a real time system for marine mammal detection and classification, as a database of seasonal marine mammal presence within SCORE, and as a predictive model for marine mammal association with environmental conditions.

Accomplishments:

This is an FY 2001 New Start project.

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