Biological & Behavioral Response Studies of Marine Mammals in Southern California, 2014 (SOCAL-14)

www.SOCAL-BRS.org

Photos taken under NMFS permit #14534-2

SOCAL-14 OVERVIEW

SOCAL-14 continues a multi-year effort (2010-2015) called the "SOCAL-BRS" (Southern California Behavioral Response Study). This project is designed to better understand the behavior of numerous protected marine mammal species that inhabit the southern California Bight and provide direct, controlled measurements of their reactions to sound, including military sonar systems. The overall objective is to provide a better scientific basis for estimating risk and minimizing effects of mid-frequency sonar systems for the U.S. Navy and regulatory agencies. SOCAL-BRS includes collaborations among the National Oceanic and Atmospheric Administration (NOAA), private sector and academic scientists, and U.S. Navy researchers. It is jointly funded by the U.S. Navy Living Marine Resources Program (LMR) and the Office of Naval Research (ONR) and is part of an international collaboration to measure the impacts of noise on marine mammals.

Several successful field seasons of SOCAL-BRS have already been completed[1] using an adaptive approach that optimizes the probability of good weather and finding and tagging different focal species. Over 160 tags have been deployed on individuals of nine different species and 75 complete experimental BRS sequences have been conducted on individuals from seven different federally protected marine mammal species (Cuvier's beaked whale, Baird's beaked whale, sperm whale, Risso's dolphin, blue whale, fin whale, and humpback whale). The results of these experiments have been presented in scientific meetings around the world and are beginning to appear in the scientific literature (please see numerous papers available at www.socal-brs.org for more detailed discussion). A methodological paper focusing on the development of the smaller sound source and adaptation of previous CEE methods to meet the specified controlled sound exposure objectives summarizes the overall methods in detail[2].

SOCAL-14 will use similar configurations, protocols, focal species, equipment, and areas (based on lessons learned from previous field seasons) with an increasing reliance on smaller, adaptive vessel configurations in certain conditions. SOCAL-14 will also follow on the successful

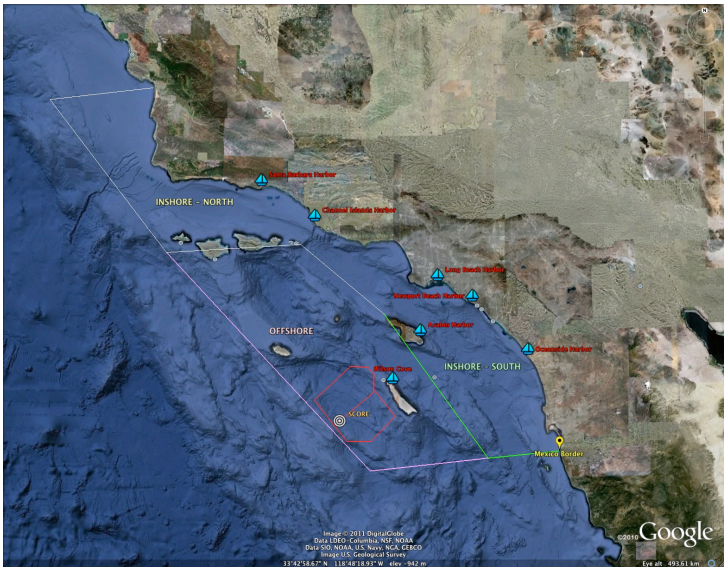
[1] Project reports for each field season are available in the individual pages for each season at: www.SOCAL-BRS.org
[2] Southall, B. L., D. Moretti, B. Abraham, J. Calambokidis, S. DeRuiter, P.L. Tyack. (2012). Marine Mammal Behavioral Response Studies in Southern California: Advances in Technology and Experimental Methods. Marine Technology Society Journal 46, 46-59.

first integration of CEE methods with ongoing regular training operations to increasingly including realistic Navy sonar systems in experimental applications. SOCAL-BRS will continue to attempt to tag whales opportunistically around these activities at much greater distances than typically used in simulated sonar exposures. The experimental objective is to match received sound levels with those tested using simulated sonars but in a completely realistic scenario to study the relative effects on behavior of source type, received sound level, and physical range to sound sources.

SOCAL-14 OVERALL CONFIGURATION

WHAT: SOCAL-14 is a study of basic behavior and responses to controlled sound exposures in a variety of marine mammal species. It consists of a multi-disciplinary research team with specialists in marine mammal field methods, active and passive acoustics, and the use of controlled sound exposures in studying behavioral response.

WHERE: SOCAL-14 operational area includes both "inshore" areas along southern California from Morro Bay to San Diego and an offshore area that includes the U.S. Navy's SCORE range near San Clemente Island. SOCAL-14 sound transmissions will occur more than 1nm from any land mass and more than 3nm from any land mass within the Channel Islands National Marine Sanctuary (CINMS)



WHEN: SOCAL-14 will occur during the summer and fall of 2014 in two larger multi-vessel phases (late July-mid August and September) and several smaller boat configurations. Because of the increasing emphasis on pairing effort with the opportunity to test realistic scenarios, our schedule for SOCAL-14 will be increasingly adaptive to the availability of such opportunities.

Specialized teams perform different operational functions:

- The **source vessel** is the logistical hub of operations and communication in some configurations, has visual monitoring capabilities, and conducts CEEs (for simulated sonar exposure experiments), monitoring/mitigation, and tag retrieval;

- **Two tagging RHIBs** operate independently of source vessel. They locate and tag focal animals with suction cup acoustic and positional tags; conduct behavioral focal follows during CEEs; will assist in tag recovery.

- **Passive acoustic monitoring** supports field operations by listening to marine mammals. This include monitoring from the Navy's SCORE range, towed acoustics from a dedicated sailboat, dipping hydrophones, and remote-deployed sonobuoys and archival recorders in some areas;

- **Operational Navy vessels** will coordinate with SOCAL-BRS in the course of already planned training activities. They will conduct sonar training operations in typical and authorized areas using standard procedures, but, as possible, will coordinate with SOCAL-BRS to directly measure responses in realistic scenarios;

- **Fisheries acoustics** will be used to measure prey field data (*e.g.*, krill) to better understand potential behavioral responses of baleen whales.

Experimental protocols involve the measurement of diving, vocal, and other behaviors before, during, and after CEEs with several sound stimuli under the following conditions:

- Tags must be successfully deployed for long enough to reduce attachment disturbance effects and obtain sufficient baseline behavioral data (time period is species-dependent)

- No calves in focal/nearby group(s) may be neonates;

- No marine mammals come within 200m of source vessel during transmissions.

- No unusual and abnormal surface/subsurface behavior involving apparent disorientation or risk of ship strike or stranding; and

- No clear separation of dependent calves from mothers is observed.

- When SOCAL-BRS coordinates with operational Navy training activities, all tag and focal-follow related activities conducted by the tagging boats will follow existing and authorized protocols (NMFS permit #14534-2). Navy operations in these conditions will follow all existing operational protocols, requirements, and usage periods authorized by NMFS for sonar training in the SOCAL operational area.

SOCAL-14 STRANDING RESPONSE AND TRANSPARENCY

- While these precautions are intended to reduce the risk of harm from studies intended to better understand and manage marine mammals, a **stranding response plan** in coordination with the Southwest Regional Stranding Network in place in the event of any stranding that occurs in the same general time and place as SOCAL-14 operations (not uncommon in California).
- SOCAL-BRS is committed to an **open and transparent process** regarding how and why these experiments are conducted, the results and their implications for better understanding and managing marine mammals. A daily blog describing research activities will be available from the field (linked from www.socal-brs.org).

www.SOCAL-BRS.org