Biological & Behavioral Response Studies of Marine Mammals in Southern California, 2013 ("SOCAL-13")

www.SOCAL-BRS.org

Photos taken under NMFS permit #14534-2

SOCAL-13 OVERVIEW

SOCAL-13 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 a number of 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 sonar 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.

Three successful field seasons of SOCAL-BRS have been completed[1] using an adaptive approach that optimizes the probability of good weather and finding and tagging different focal species. Over 120 tags have been deployed on individuals of nine different species and 55 complete experimental BRS sequences 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 are beginning to appear in the scientific literature. 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 was recently published[2] and two new papers are currently

[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.

in press on behavioral responses of beaked whales[3] and blue whales[4]

SOCAL-13 will use similar configurations, protocols, focal species, equipment, and areas, as previous field seasons with a few modifications. These include the testing and deployment of an even lighter sound source and smaller vessel configurations. Additionally, building on the experiences and planning in previous seasons and in coordination with ongoing Navy training operations, SOCAL-13 will for the first time include the use of realistic Navy sonar systems in experimental applications coordinated with already planned and regular training operations. SOCAL-BRS will attempt to tag whales opportunistically around these activities at much greater distances than used in our simulated sonar sound exposures to date. The experimental objective is to match received sound levels with those tested but in a completely realistic scenario. These experiments will mark the first such integration of realistic operations in behavioral response studies for mid-frequency military sonar and they are being closely coordinated and planned with the Navy and regulatory agencies.

SOCAL-13 OVERALL CONFIGURATION

WHAT: SOCAL-13 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.

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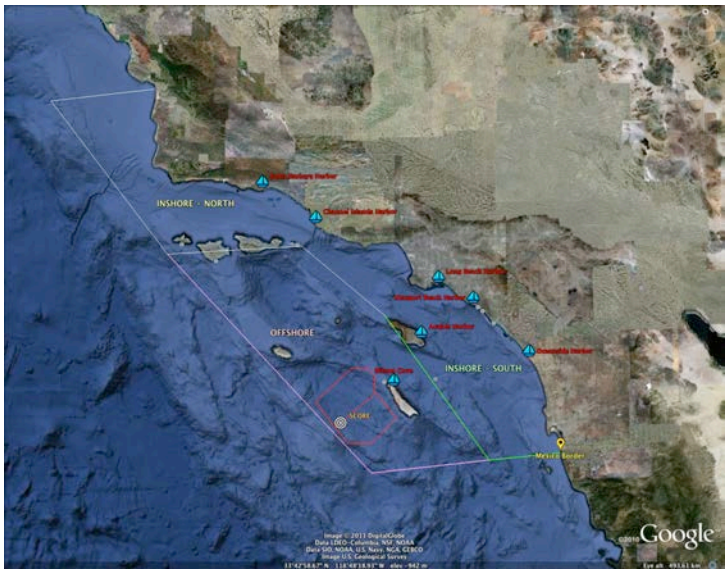
[3] DeRuiter, S.L., B.L. Southall, J. Calambokidis, W.M.X. Zimmer, D. Sadykova, E.A. Falcone, A.S. Friedlaender, J.E. Joseph, D. Moretti, G.S. Schorr, L. Thomas, and P.L. Tyack. (in press - Biology Letters). First direct measurements of behavioural responses by Cuvier's beaked whales to mid-frequency active (MFA) sonar.

[4] Goldbogen, J.A., B.L. Southall, S.L. DeRuiter, J. Calambokidis, A.S. Friedlaender, E.L. Hazen, E.A. Falcone, G.S. Schorr, A. Douglass, D.J. Moretti, C. Kyburg, M.F. McKenna, P.L.Tyack.(in press- Proceedings of the Royal Society - B). Blue whales respond to simulated mid-frequency military sonar.

WHERE: SOCAL-13 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-13 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-13 will occur in a smaller team pilot phase and two larger team primary phases during summer and fall of 2013:

SOCAL-13 Pilot Small Team Configuration: 6-12 July (7 days)

SOCAL-13 PHASE I: 23 July – 5 August (14 days)

SOCAL-13 PHASE II: 10 – 23 September (14 days)

Specialized teams perform different operational functions:

- The **source vessel** is the logistical hub of operations and communication, 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** guides field operations by listening to marine mammals. These include monitoring from the Navy's SCORE range, towed acoustics from a dedicated sailboat, dipping hydrophones, and remote-deployed sonobuoys 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 behavioral responses.

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 obtain sufficient baseline behavioral data

- 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). Navy operations in these conditions will follow all existing operational protocols and requirements authorized by NMFS for sonar training in the SOCAL operational area.

SOCAL-13 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 (not uncommon in California during this period).
- SOCAL-13 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).