



MARINE MAMMAL COMMISSION

8 June 2015

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Re: Permit Application No. 19108
(Daniel Costa, Ph.D.,
University of California Santa Cruz)

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the above-referenced permit request with regard to the goals, policies, and requirements of the Marine Mammal Protection Act (the MMPA). Dr. Costa is requesting authorization to conduct research on northern elephant seals from California to Washington during a five-year period—the same activities were authorized under permit 14636.

Dr. Costa proposes to conduct research year-round on northern elephant seals along the U.S. west coast, primarily on Año Nuevo Island, California. He would continue a long-term study investigating (1) population growth and status, (2) reproductive strategies, (3) behavioral and physiological adaptations for diving and fasting, (4) general and sensory physiology and metabolism, (5) health and disease, and (6) bioacoustics associated with northern elephant seals.

Dr. Costa and co-investigators are requesting authorization to observe, harass, acoustically record¹, capture, handle, hold, transport/translocate, sedate, measure, weigh, sample, mark/tag, conduct procedures (e.g., auditory evoked potential, ultrasound, playback experiments², etc.) and attach instruments to numerous individuals of various age classes and both sexes per year (see the Take Table). Each elephant seal would be marked with a flipper tag and with hair dye or bleach. They would collect blood, vibrissae, swabs, muscle, blubber, and/or milk³ from the elephant seals⁴. Researchers also would perform stomach lavage and/or enemas on, administer standard clinical metabolic tracers and hormones/short-term receptor blockers for the hormones⁵ to, administer doubly-labeled water and Evan's blue dye to, and collect serial blood samples from numerous captured elephant seals (see the Take Table). An individual could be recaptured and resampled up to four times during any given year. In addition, researchers would conduct metabolic rate measurements using a metabolic chamber and would simulate diving using a diving helmet for juvenile elephant seals (see the Take Table).

¹ Including ambient sound levels.

² Vocalization playbacks would be conducted using sounds no louder than 120 dB re 20 μ Pa.

³ Milk would be collected only from lactating females after administration of oxytocin.

⁴ Samples also could be imported from Mexico and exported to various countries for analysis.

⁵ All animals would be held for at least 24 hours to ensure no adverse effects.

Researchers could attach instruments to an individual elephant seal that comprises no more than 2 percent of its body mass. Those instruments could include VHF transmitters, satellite transmitters, accelerometers⁶, GPS transmitters, CTD tags, time-depth recorders, video cameras, buoyancy modification devices, data loggers with an oxygen electrode/thermistors /Doppler flow sensor⁷, long-term acoustic recording tags, active acoustic tags⁸, cardiography electrodes, and stomach temperature recorders. The stomach temperature recorder would be paired with a stomach temperature telemeter that researchers would place in the stomach of sedated seals using a stomach tube. Tags would either be allowed to fall off during the seal's annual molt or would be removed by the researchers at a later time. Researchers could instrument an individual elephant seal up to three times during the five-year period. For certain studies (see the application for specifics), elephant seals could be held for approximately two weeks but no longer than 30 days at Long Marine Laboratory. A maximum of four animals could be held at Long Marine Laboratory for translocation studies⁹ and a maximum of two animals could be held at any given time for periods longer than 24 hours; whereas, a maximum of two animals could be held at Sonoma State University for up to 24 hours.

Dr. Costa could harass incidentally non-target elephant seals, California sea lions, harbor seals, and Steller sea lions during the proposed activities. He also requests up to five elephant seal mortalities per year by either unintentional mortality or intentional mortality (i.e., euthanasia for humaneness purposes). If a lactating female dies as a result of research activities and her dependent pup can be identified or a female-pup pair is separated, Dr. Costa would either transport the orphaned pup to a rehabilitation facility or euthanize it if rehabilitation is not an option. Dr. Costa could intentionally kill up to 10 moribund¹⁰ or orphaned pups per year. All dead seals would be necropsied. Institutional Animal Care and Use Committees have reviewed and approved the research protocols.

During the breeding season, researchers would capture female-pup pairs at low-density harems to minimize disturbance. Researchers also would monitor the animals for longer periods of time to ensure that a female successfully reunites with her pup after any procedures and that females are protected from males that may harass them until they are recovered fully. In addition, animals instrumented with data loggers and sensors inserted via a catheter would be monitored prior to release to determine if they tolerate the instrumentation. If they don't tolerate the instrumentation, the instruments would be removed prior to their release. Individuals would be instrumented only once with the data loggers and sensors. To minimize disruption of natural behavior during playback experiments, those experiments would be conducted for a maximum of 5 minutes and would not be repeated for at least 2 hours. Playback experiments for a female and her pup would be conducted only for individuals on the periphery of a group to ensure a clear/unimpeded path if either animal moves towards the sound source and then must reunite. Finally, Dr. Costa would coordinate his activities with other elephant seal researchers.

⁶ Including jaw accelerometers.

⁷ Inserted venously or arterially via a catheter or intramuscularly. All animals receiving a catheter also would be given antibiotics to minimize any infection from the catheter.

⁸ Including two small transducers that emit signals no louder than 160 dB re 1 μ Pa. Sound levels would be determined in the laboratory prior to deployment and playbacks would occur intermittently for several days while the animals are foraging.

⁹ Animals could participate in translocation studies no more than twice during any given year, and they would be released at the capture site or up to 200 km from that site.

¹⁰ Including extremely emaciated pups or pups that have wounds into the body cavity or loss of eyes from gull attacks.

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The Commission believes that the activities for which it has recommended approval are consistent with the purposes and policies of the MMPA and recommends that the National Marine Fisheries Service issue the permit, as requested. Please contact me if you have any questions regarding the Commission's recommendation.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca J. Lent". The signature is written in a cursive style with a large initial "R" and a long horizontal stroke extending to the left.

Rebecca J. Lent, Ph.D.
Executive Director