



San José State
UNIVERSITY
FOUNDATION

Office of Sponsored Programs

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December 14, 2005

Mandy Allen
Operations Administrator
Monterey Bay Aquarium Research Institute
7700 Sandholdt Road
Moss Landing, CA 95039-9644

Dear Ms. Allen:

Enclosed is a proposal entitled "Observations of Marine Mammals During the MBARI MARS Cable-Laying Activities" to be directed by Dr. James T. Harvey. We are requesting a total of \$19,322 for the period beginning January 1, 2006 and ending December 31, 2006.

The placement of fiber-optic cables on the sea floor in the nearshore environment (e.g. within 50 km of shore) has the possibility of disturbing sea turtles, seabirds and marine mammals via the presence of vessels and noise during cable-laying or the possibility of harming individuals via entanglement with the cable or collisions with the vessels. The Monterey Bay Aquarium Research Institute (MBARI) will be placing a 31.7 mile undersea cable (28 mm in diameter) from the shoreline of Moss Landing out to approximately 20 miles offshore as part of a program to develop an undersea observatory (Monterey Accelerated Research System; MARS). This proposal is to provide trained marine mammal observers that will assess and record potential interactions between the cable-laying operations and specific, protected marine vertebrates.

San José State University has complete confidence in Dr. Harvey's capabilities to carry out the proposed project. If you have any questions on administrative matters, contact Jerri Carmo, Director of Sponsored Programs, at (408) 924-1429; for program matters contact Dr. James T. Harvey, Project Director, at (831) 771-4434; and for fiscal matters contact Chris Thompson, Sponsored Programs Manager, at (408) 924-1440.

Any contract, grant or other agreement resulting from this proposal should be between your agency and San José State University Foundation. The Foundation is a legally recognized auxiliary organization of San José State University.

Sincerely,

Pamela C. Stacks, Ph.D.
Associate Vice President for
Graduate Studies and Research

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Encl.

Observations of marine mammals during the MBARI MARS cable-laying activities

Proposal submitted by:

**James T. Harvey
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INTRODUCTION

The placement of fiber-optic cables on the sea floor in the nearshore environment (e.g. within 50 km of shore) has the possibility of disturbing sea turtles, seabirds and marine mammals via the presence of vessels and noise during cable-laying or the possibility of harming individuals via entanglement with the cable or collisions with the vessels. The Monterey Bay Aquarium Research Institute (MBARI) will be placing a 31.7 mile undersea cable (28 mm in diameter) from the shoreline of Moss Landing out to approximately 20 miles offshore as part of a program to develop an undersea observatory (Monterey Accelerated Research System; MARS). This proposal is to provide trained observers that will assess and record potential interactions between the cable-laying operations and specific, protected marine vertebrates.

The waters within Monterey Bay support an incredible abundance and diversity of marine life, including 90 seabird (Table 1; Ainley and Terrill 1996), 3 sea turtle species, and at least 28 species of marine mammals (Harvey 1996: <http://montereybay.nos.noaa.gov/sitechar/mamm1.html>). Strong upwelling events and subsequent primary production along with the central location of Monterey Bay between arctic and tropical habitats and the variety of habitats and prey available attract large amounts of marine vertebrates. Some species of seabirds and marine mammals use Monterey Bay as a foraging area during winter (e.g. surf scoter, fulmar), some migrate to Monterey Bay in the summer and fall to take advantage of the high productivity (e.g. sooty shearwaters, humpback and blue whales), and some reside in the area year round (e.g. Brandt's cormorants, harbor porpoise). Sea turtles are typically seen during summer and fall, corresponding to warmer sea surface temperatures and increased prey abundance.

Federal and state agencies have approved the Marine Mammal Monitoring Plan prepared by MBARI, and the following proposed marine mammal (including some seabirds and turtles) monitoring activities are in accordance with that approved plan.

METHODOLOGY

Four trained and approved (observers approved by NOAA Fisheries and Executive Director) will be placed on the cable-laying vessel for the duration of cable-laying activities (including cable installation, maintenance, and inspection). Observers will be trained prior to boarding the vessel by providing them with the following information: (1) the marine mammal monitoring plan, (2) methods for sighting, identification, and distance estimation, (3) the presence and position of the 152-m safety zone, (4) operation of all required gear, (e.g. binoculars, range finders, night-vision goggles), and (5) data recording and entry requirements, including QA/QC issues, schedules, and contingency plans. Two observers will be active at any given time (24-hours a day), with each observer working for 12 hours a day, during 4-hour shifts. Observers will be placed on the vessel such that they have an unobstructed 360° view around the vessel at least 500 ft (152 m) out in all directions. The area from the vessel out a distance of 152 m is considered the safety zone. Thirty minutes before cable-laying commences, observers will determine the absence of protected species within the safety zone, and then operations can begin.

During daylight, observers will use 8X42 or 7X50 reticulated, compass binoculars to determine the species, number, behavior and approximate distance from the vessel of all marine mammals sighted. Other species of interest (endangered or threatened seabirds and sea turtles) also will be observed and recorded. During nighttime, observers will use night-vision goggles (Generation III) to monitor the presence of marine mammals within the safety zone. Because night-vision equipment greatly reduces the range and field of view of the observer, the night operations may not provide complete coverage of the safety zone, but observers will make all attempts to at least provide coverage of the stern (potential interactions of marine mammals with the propeller or cable) and bow (potential collisions with marine mammals). Observers will inform the appropriate official if a protected species is within the safety zone or if its health appears to be in jeopardy. The observers can order a cessation to cable-laying activities if they determine that a protected species may be "taken".

Data to be collected for each sighting include: species (to lowest taxon possible), number of individuals, bearing to sighting (based on a compass in the binoculars), distance from the vessel (determined using the reticles in the binoculars or laser-range finders), behavior, and direction of travel. Animals that are moving toward the safety zone will be observed to determine their projected path, potential of entering the safety zone, and potential for harmful interaction with the cable-laying operations. The observers will inform the ship's captain of any potential conflicts with protected species, so they can determine using the ship's speed and direction the possibilities of an interaction. Potential evasive measures will be assessed based on the marine mammal activity and the capabilities of the vessel. Any changes in behavior of the animals as the approach the vessel also will be recorded to document avoidance of the operations. The animals will be observed until they move out of the safety zone.

PRODUCTS

1. A final report will be submitted to MBARI, NOAA Fisheries, USFWS, and any other agencies requesting the report. This final report will provide: (1) an evaluation of the effectiveness of the monitoring, and (2) reports of all sightings.
2. Daily reports of sightings (species, number, location, direction of travel, and behaviors) will be faxed to NOAA fisheries and USFWS.

BUDGET

SALARIES	HRS/#	RATE	AMOUNT
Observer 1	156	20	3120
Observer 2	120	20	2400
Observer 3	120	20	2400
Observer 4	120	20	2400
J. Harvey	20	50	1000
Benefits	11320	0.125	1415
SUPPLIES			
8X42 binoculars	2	400	800
Laser range finder	1	300	300
night vision goggles	1	1000	1000
GPS handheld units	2	250	500
DIRECT COSTS			15335
INDIRECT COSTS	0.26	15335	3987.1
TOTAL COSTS			19322.1

This budget is based upon the possibility that 4 observers might be needed for observations. If fewer observers are needed (most likely two observers would be needed), then the budget would be less by that reduced amount of effort.