

Marine Mammal Research to Provide a Scientific Framework for Understanding Impacts Associated with the Diablo Canyon Seismic Surveys

Presentation for the Monterey Bay
National Marine Sanctuary Advisory
Council
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Overview

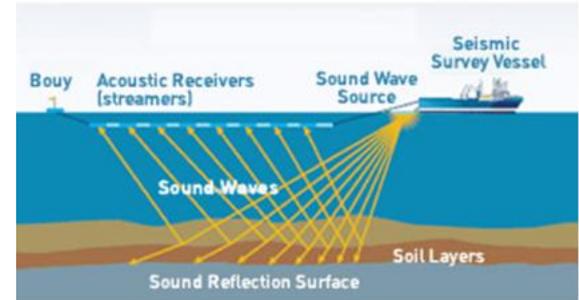
- Background
 - The Diablo Canyon proposed seismic surveys
 - NOAA: roles & responsibilities
- NOAA Fisheries: policy implementation and regulation
- NOAA Fisheries: scientific research

Background

The Diablo Canyon Proposed Seismic Surveys*

- PG&E (and National Science Foundation) propose to conduct a high energy seismic survey near the Diablo Canyon power plant and known offshore fault zones to support safety program
- NOAA determines if the project can be conducted in a manner compliant with federal natural resource protection laws
- The proposed survey would occur south of the boundary of the Monterey Bay National Marine Sanctuary
- “Box 4” is proposed to be surveyed in the fall of 2012
- NOAA has asserted that should the proposed project be permitted, the need for impacts analysis to living marine resources must be addressed

Seismic Survey Process



*courtesy Paul Michel

Superintendent, Monterey Bay National Marine Sanctuary

NOAA: Roles & Responsibilities



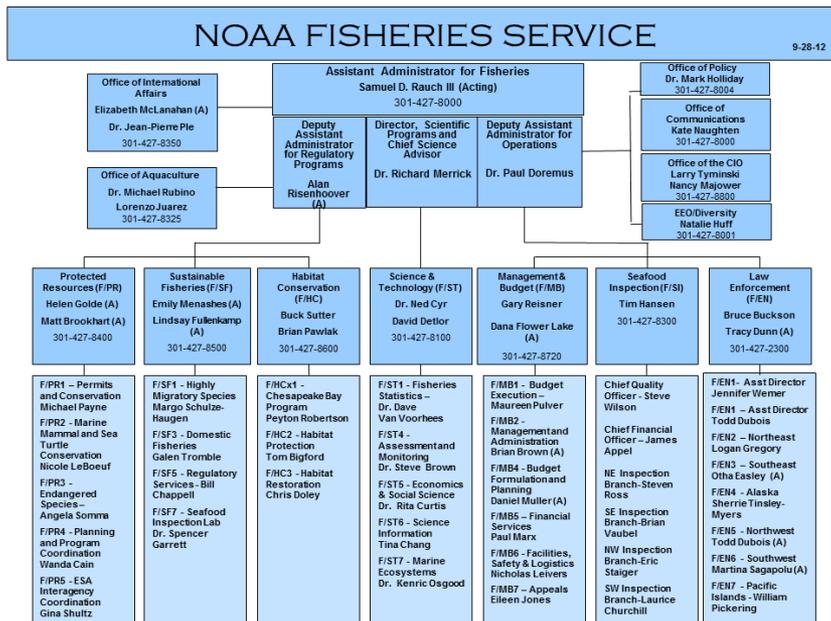
- NOAA – Federal Government Agency
 - NOAA Fisheries (NMFS) one of five NOAA Line Offices
 - Mission: Stewardship of living marine resources through science-based conservation and management and the promotion of healthy ecosystems
- <http://www.nmfs.noaa.gov/>
- Responsible for most marine mammals* (all cetaceans and most pinnipeds) *plus many other marine species*

*Of note: USFWS has management responsibility for some marine mammals, including sea otters



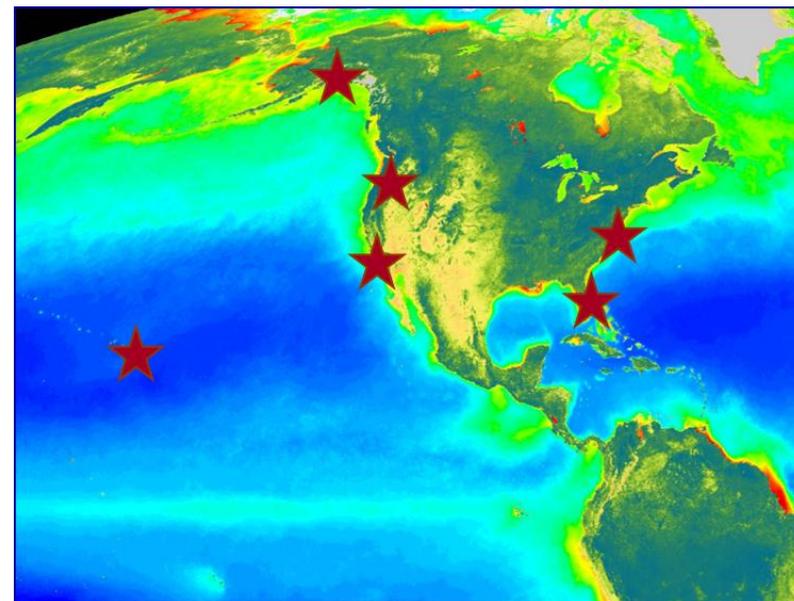
NOAA: Roles & Responsibilities

HEADQUARTERS



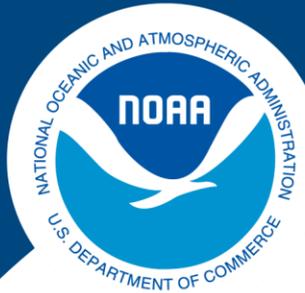
- Division of responsibilities
 - Policy implementation and regulation (Regional Offices)
 - Scientific research (Science Centers)

FIELD



- Sustainable Fisheries
- Protection of Marine Species
- Conservation of Marine Habitat

NOAA Fisheries: policy implementation and regulation



**NOAA
FISHERIES**

NOAA Authorities and Responsibilities for Proposed Diablo Canyon Seismic Survey

Kevin Chu, Ph.D.

Deputy Regional Administrator
National Marine Fisheries Service

Southwest Regional Office

Sept 24, 2012

Summary of Authorities

- Marine Mammal Protection Act
- Endangered Species Act
- Magnuson-Stevens Fishery Conservation and Management Act
- National Environmental Policy Act
- National Marine Sanctuaries Act

MMPA

- Section 101(a)(5)(D) allows NMFS to issue “Incidental Harassment Authorization”
- “the Secretary shall allow, incidental, but not intentional, taking ... of small numbers of marine mammals of a species or population stock by U.S. citizens within a specified geographical region if certain findings are made and, if the taking is limited to harassment...”
- Determinations:
 - negligible impact on such species or stock
 - not have an unmitigable adverse impact on the availability of the species or stocks for subsistence uses (where relevant)
 - set forth permissible methods of taking
 - means of effecting the least practicable impact on the species or stock
 - set forth mitigation, monitoring, and reporting requirements

- Issuing an IHA requires a 30-day public comment period on proposed issuance, notice published in Federal Register and materials on NMFS website
- <http://www.gpo.gov/fdsys/pkg/FR-2012-09-19/pdf/2012-22999.pdf>
- <http://www.nmfs.noaa.gov/pr/permits/incidental.htm#pge2012>
- Comment period ends Oct 15
- FR notice contains discussion of:
 - Scientific literature on the anticipated impacts of sound on marine mammals, habitat, fish and invertebrates
 - Seismic survey design
 - Proposed mitigation, monitoring, and reporting measures and adaptive management and stranding response plans

IHA proposed conclusions

- No injury or mortality is expected to any marine mammal, and none is authorized.
- Some harassment is anticipated to occur, but it will have a negligible impact.
 - Mitigation measures such as timing and area changes are intended to ensure that impacts are negligible.
 - Comprehensive monitoring, adaptive management, and stranding response plans will help allow NMFS to react if impacts seem more than negligible.
 - Specific attention has been paid to the resident Morro Bay stock of harbor porpoise.

Endangered Species Act

- Federal agencies must consult with NMFS or FWS if:
 - an action could jeopardize the continued existence of any endangered or threatened species, or
 - result in the destruction or adverse modification of critical habitat of such species.

ESA Section 7 Consultations

- Biological opinions can:
 - provide an exemption for the take of listed species
 - specify the extent of take allowed
 - Provide Reasonable and Prudent Measures (RPMs) necessary to minimize impacts

Diablo Canyon Seismic Survey Consultation

- Two Federal Actions
 - Use of a NSF-owned vessel
 - NMFS issuance of IHA
- One Biological Opinion will be issued
- Opinion will be completed before any IHA is issued and before seismic survey begins
- Final Opinion will be posted, but no public review of draft (<http://www.nmfs.noaa.gov/pr/consultation/opinions.htm>)
- NMFS has worked with NSF on a regular basis to ensure protection of endangered species

Local Marine ESA Species

- Cetaceans
 - Blue, fin, sei, humpback, sperm
- Pinnipeds
 - Guadalupe fur seal, Steller sea lion (eastern DPS)
- Sea turtles
 - Green, leatherback, loggerhead, olive ridley
- Fish
 - Chinook and coho salmon, green sturgeon, steelhead trout
- Invertebrates
 - Black abalone

Magnuson-Stevens Act

- Primary law for conserving and managing marine and anadromous fisheries resources in Federal waters
- Essential fish habitat (EFH) provisions require consultation with NMFS for Federal actions that may adversely affect EFH
- Commercial & recreational fisheries in the area:
 - Highly migratory species
 - Coastal pelagic species
 - Groundfish
 - Salmon

National Environmental Policy Act (NEPA)

- Requires Federal agencies to use all practical means to create and maintain conditions under which people and nature can exist in productive harmony.
- Goal: to fulfill the social, economic, and other needs of present and future generations of Americans.
- NEPA analysis helps identify reasonably foreseeable environmental effects of proposed actions and to involve and inform the public in the decision-making process.

NSF Requirements Under NEPA

- NSF owns and operates the R/V Langseth
- NSF prepared a Final Programmatic Environmental Impact Statement in 2011 (Record of Decision signed in June 2012) to analyze the impacts of the overall program to conduct marine seismic research across the globe.
- NSF prepared a site specific draft environmental assessment (EA) that tiers off of the broader Programmatic Environmental Impact Statement to analyze the impacts of the seismic surveys of the Diablo Canyon Power Plant.

NMFS response to NSF DRAFT EA

- Concur with importance of information that will be gained
- Recommended:
 - More thorough analysis of impacts to commercial and recreational fishing
 - Improved information provided about marine mammals
 - More information about impacts of sound on fish
 - More information on whether Sanctuary resources could be affected

National Marine Sanctuaries Act

- Section 304(d) requires that Federal Agencies must consult with ONMS if an action is likely to “destroy, cause the loss of, or injure any sanctuary resource.”
- agency actions include:
 - actions internal or external to a Sanctuary
 - private activities that are allowed by Federal licenses, leases or permits

Diablo Canyon and NMSA

- NOAA requested more information than was in NSF draft EA
- Change in survey area may satisfy need to address Sanctuary impacts.



**NOAA
FISHERIES**

NOAA Authorities and Responsibilities for Proposed Diablo Canyon Seismic Survey

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NOAA Fisheries: scientific research

What do we know about the impacts of anthropogenic sound on marine organisms?

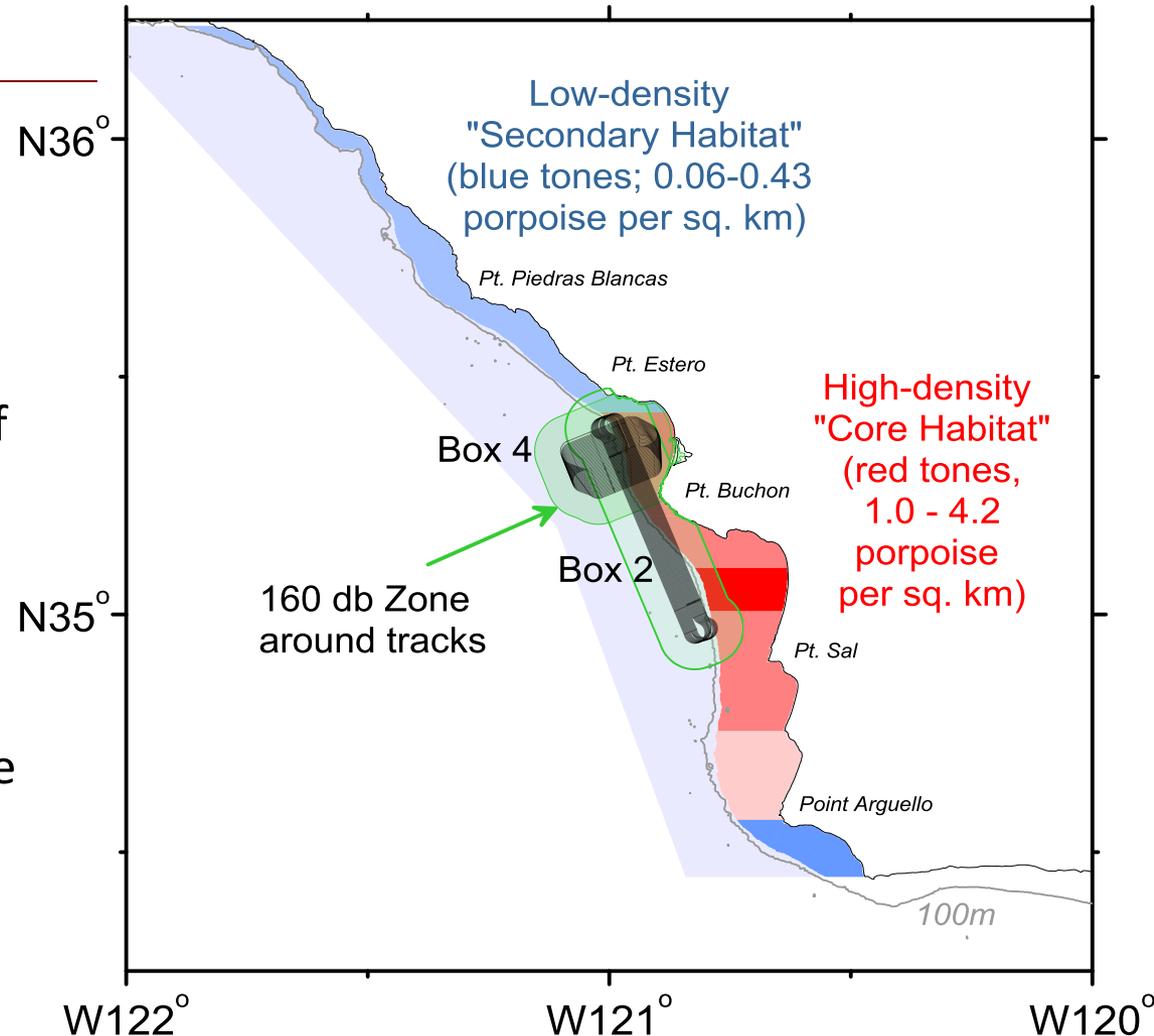
- Ocean noise is believed to mask communication signals for a wide variety of cetaceans
- Navy sonar and seismic surveys have been linked to strandings (live and dead) of beaked whales
- Navy sonar has been correlated with temporary movement of beaked whales away from the region
- The impacts of these activities on other cetaceans is not well known

Our Primary Concerns

1. Harbor Porpoise (Morro Bay Stock)

- Small, discrete population of about 2000 porpoises
- Sensitive to anthropogenic disturbance (sound, vessels, etc.)
- Seismic surveys may displace animals into sub-optimal habitat for days to weeks
- Potential adverse effects on feeding, health, survival

Morro Bay Harbor Porpoise Stock
Range-wide density patterns
(darker colors indicate higher densities)



Our Primary Concerns



2. Large Whales

- Foraging habitat for several ESA-listed species
 - Humpback whales
 - Fin whales
 - Blue whales
- Gray whales
 - Migrate through in December

Our Research: designed to assess impact of DC seismic surveys on cetaceans, esp. harbor porpoise and large whales

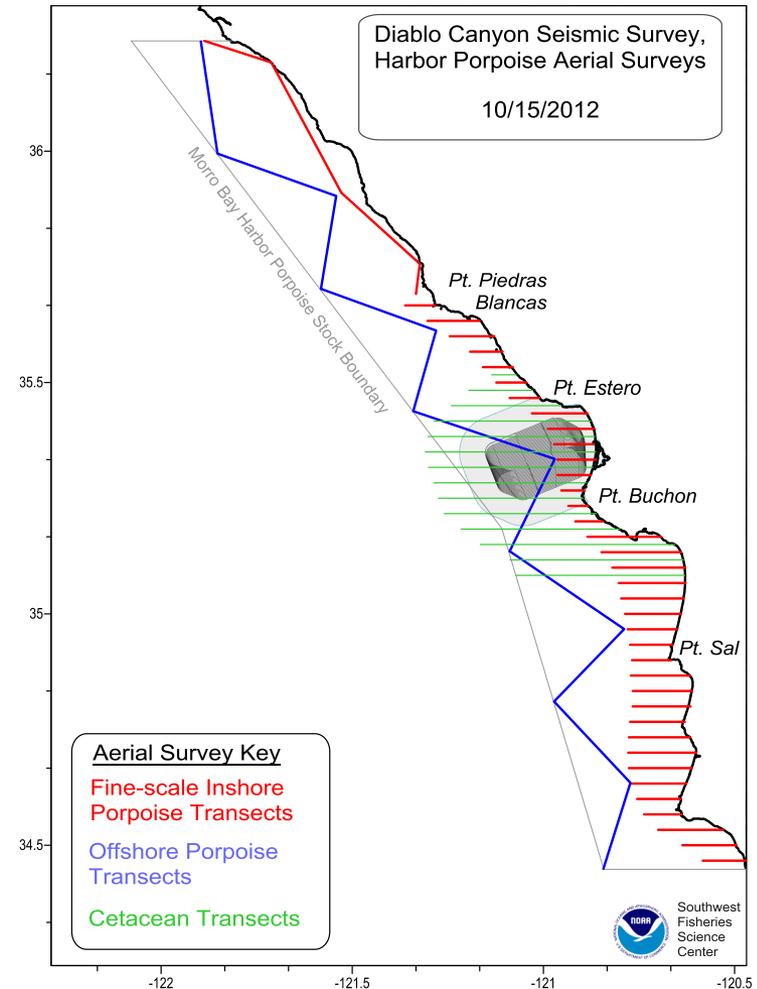
- I. Aerial surveys to assess abundance and distribution of cetaceans*
- II. Passive acoustics to assess harbor porpoise response*
- III. Passive acoustics to record ocean noise*
- IV. Stranding response to document impacts and investigate mechanisms of damage*

*Pre-, during-, post- seismic survey

I. Aerial surveys to assess abundance and distribution of cetaceans

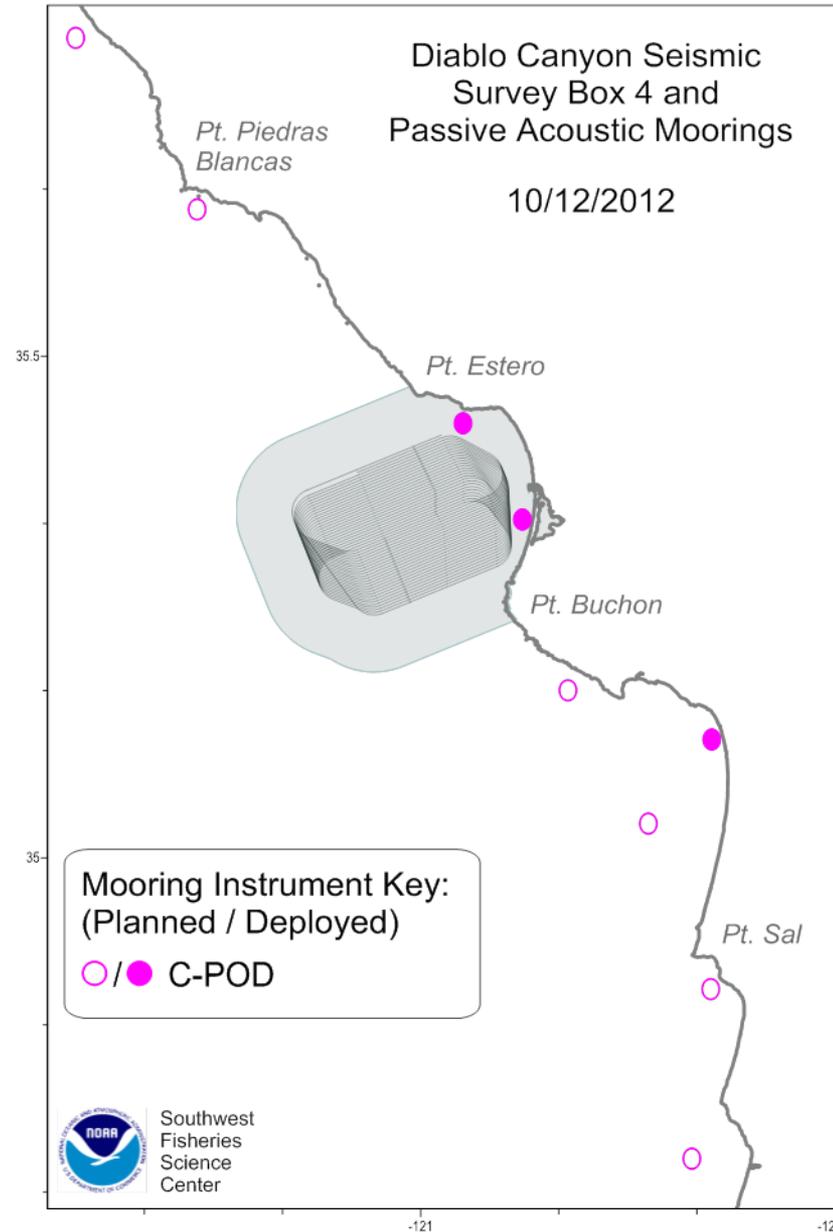
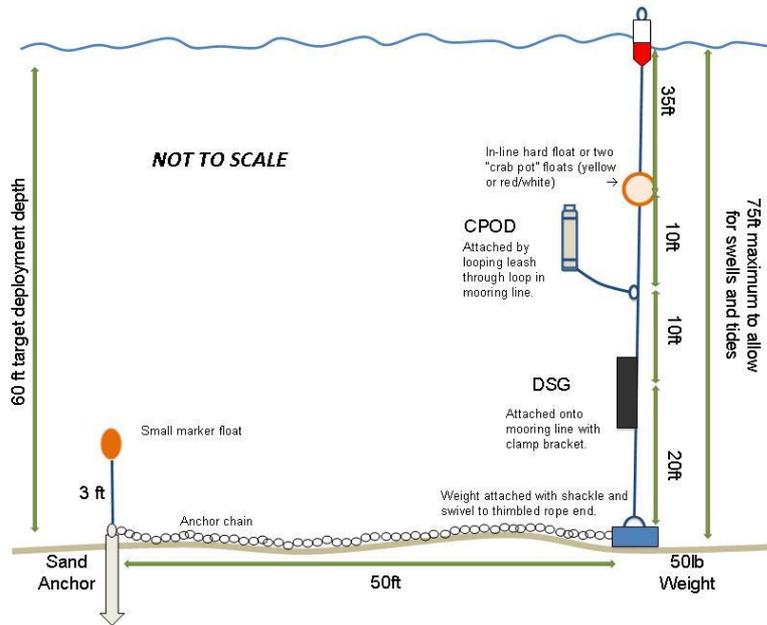
Key objectives:

- i. Detect **N/S** or **inshore/offshore** displacement of harbor porpoises within their stock range, if it occurs
- ii. Assess abundance and distribution of ESA-listed whales and other marine mammals **near seismic survey area**
- iii. Provide open-water sightings of sea otters to USGS sea otter monitoring team



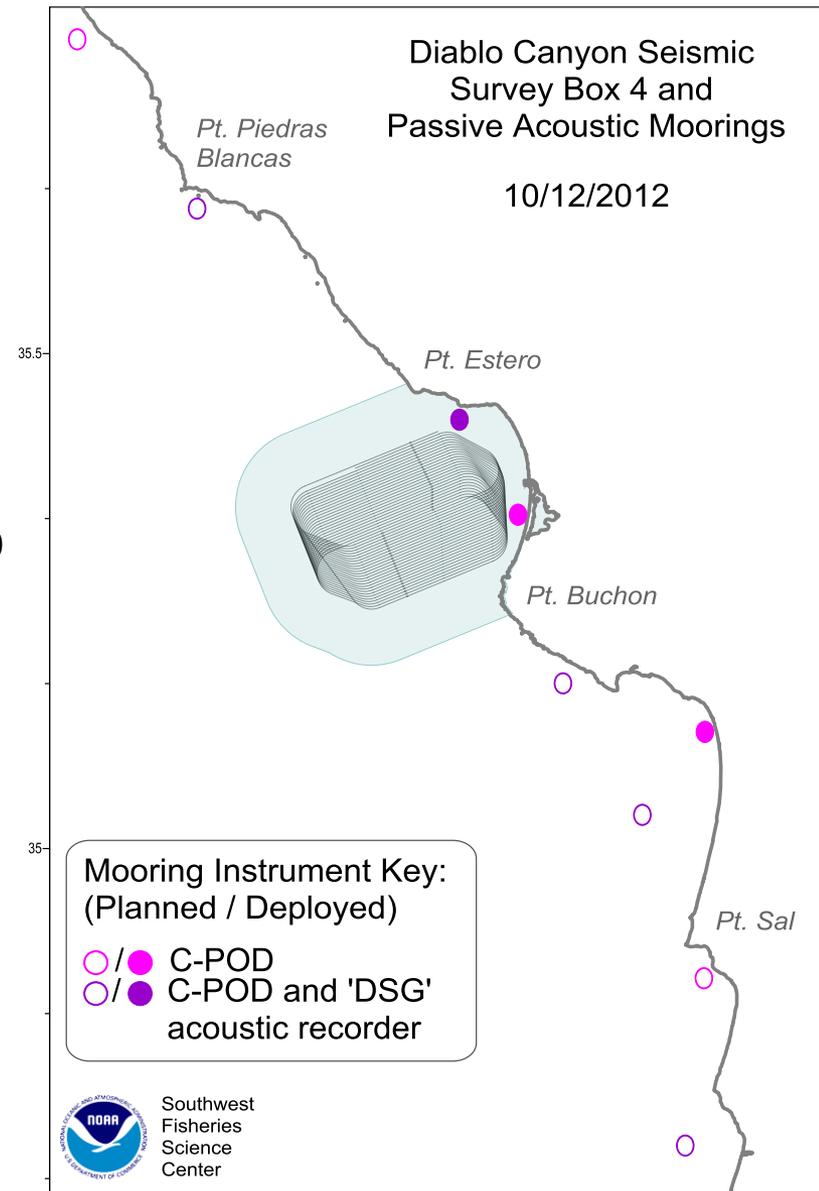
II. Passive acoustics to assess harbor porpoise response

- Deploy a network of porpoise echolocation click detectors (CPODs) to monitor north/south occurrence patterns before, during and after the seismic surveys



III. Passive acoustics to record ocean noise

- Deploy Loggerhead Instruments 'DSG' acoustic recorders with CPODs, to record actual received sound levels
- Collaborate with USGS sea otter researchers to monitor sound in kelp



IV. Stranding response to document impacts and investigate mechanisms of damage

- *Goal:* ensure efficient responses to and investigation of live and dead stranded animals
- *Response region:*
 - Primary: Piedras Blancas to Pt. Sal.
 - Secondary: Pt. Lobos to Pt. Conception
- *Plan components:*
 - Active beach surveillance:
 - Weekly surveys of the primary response region
 - Weekly aerial flights of the secondary, larger, response region
 - Stranding response: complete necropsies to identify cause of death and to assess potential impacts of the seismic survey



Calendar of Major Events*

*as of 18 October, 2012

OCTOBER

NOVEMBER

DECEMBER

- Aerial surveys
 - Began 2 October through mid-December
- Passive acoustics
 - Three instruments already deployed; six planned by mid-November
- Stranding response
 - Active beach surveillance: 5 November - mid-December
- Seismic surveys
 - Begin 19 November for 12 days
 - *Pending*
 - *CA coastal commission approval : next meeting 11/14*
 - *NMFS incidental harassment authorization: decision ~11/17*

How can you help?

- Watch for our CPOD and DSG acoustic recorders (please do not disturb)
 - N35:25.990 W120:56.932
(Cayucos mooring)
 - N35:20.233 W120:52.637
(Morro Bay mooring)
 - N35:07.072 W120:38.928
(Oceano mooring)
 - Contact: 831-420-3908



- Call in strandings:
 - Hotlines for marine mammal and sea turtles
 - Live: The Marine Mammal Center: 415-289-7350
 - Dead: Santa Barbara Museum of Natural History: 805-682-4711 x156

A photograph of three dolphins leaping from the water. The dolphins are captured in mid-air, with their bodies arched and tails pointing downwards. The water is a deep blue with white foam and splashes around the dolphins. The text 'Additional Information' is overlaid in yellow at the top left.

Additional Information

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<http://swfsc.noaa.gov/prd.aspx>