



Progress on SAC Working Group Recommendations Regarding Ocean Noise

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MBNMS SAC, Cambria

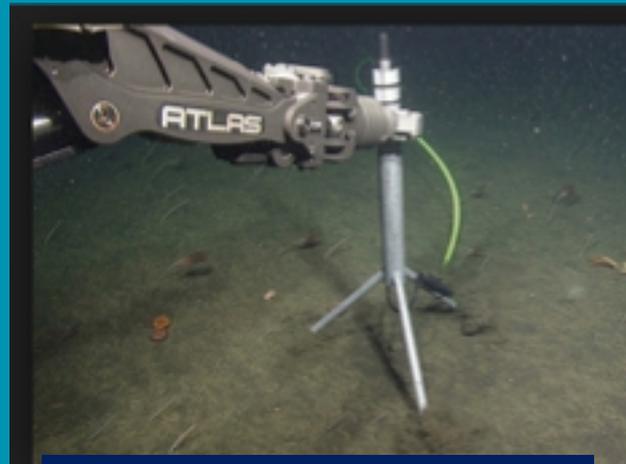
June 15, 2018

What brought us to today's SAC discussion?

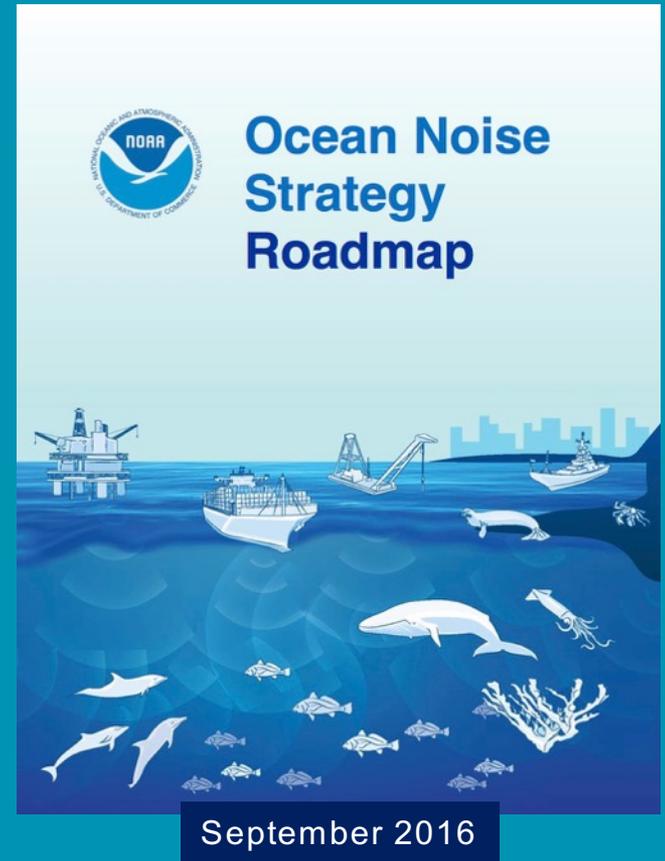
- SAC member ongoing interests
- Management plan scoping process
- Presentation by Dr. Leila Hatch
- SAC Working Group on Noise



Ongoing research at the Naval Postgraduate School



MBARI hydrophone, July 2015

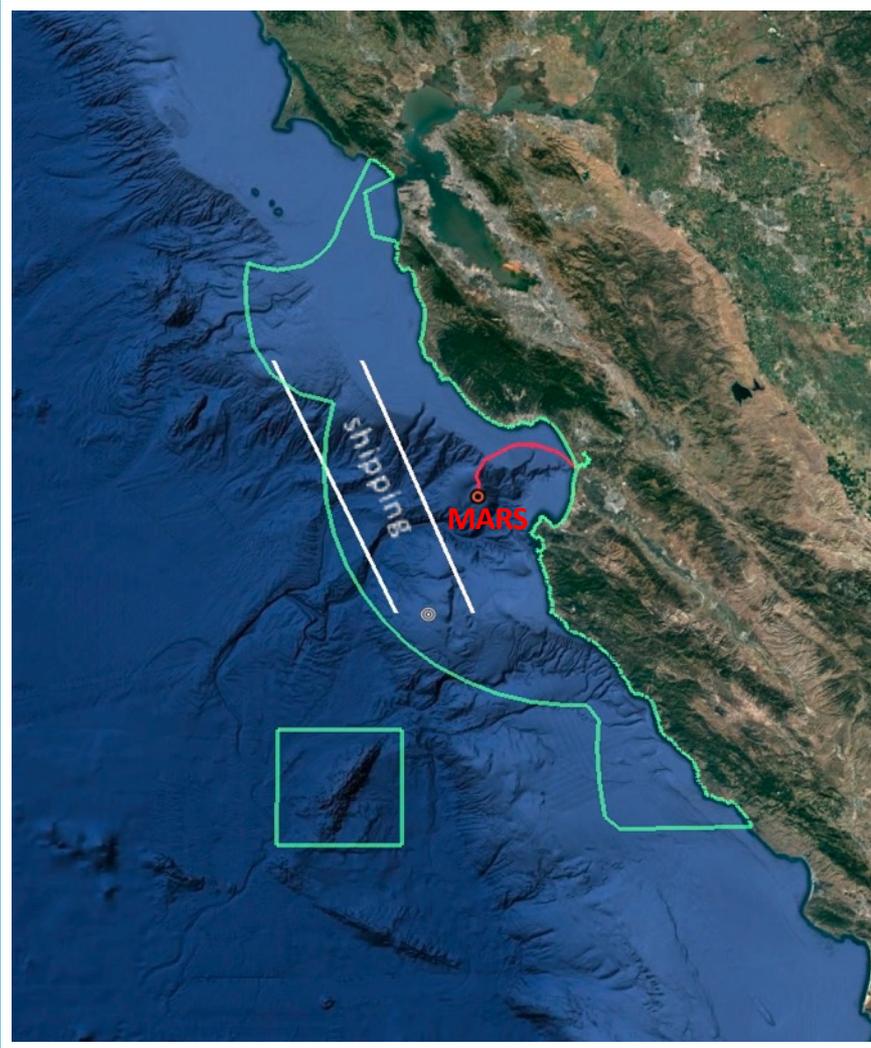


Management Plan Review Working Group: Wildlife Disturbance – Ocean Noise

Final Recommendations

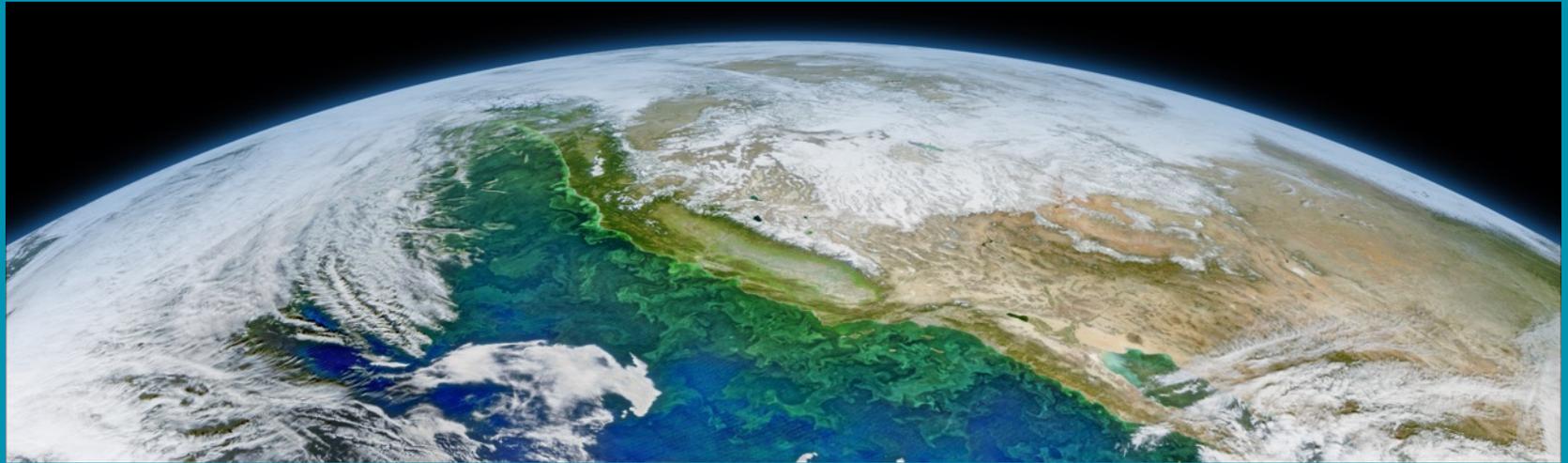
1. We recommend increasing research efforts, including CeNCOOS (Central and Northern California Ocean Observing System) monitoring sound as a core variable tracked over time, and work to integrate the project into similar NOAA efforts. We recommend collaboration with and support for the MBARI real time cable hydrophone and adding additional nodes so it can precisely locate sounds.

Sound as a Core Variable/Critical Parameter



- Brandon Southall joins the MBNMS Research Activity Panel in November 2017
- Andrew DeVogelaere is on the Governing Council for the Central and Northern California Ocean Observing System (CeNCOOS); the new staff had the first Council Meeting in May 2018
- Karen Grimmer then Andrew serve on the National Marine Sanctuary Noise Coordination Team

New Passive Acoustic Monitoring in Monterey Bay National Marine Sanctuary



exploring natural and anthropogenic sounds in a deep soundscape

J. Ryan, D. Cline, C. Dawe, P. McGill, Y. Zhang – MBARI, Moss Landing, CA

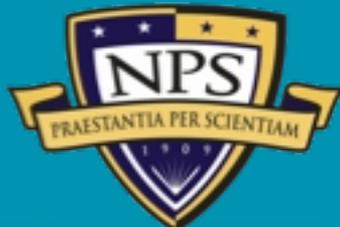
J. Joseph, T. Margolina – NPS, Monterey, CA

A. DeVogelaere – MBNMS, Monterey, CA

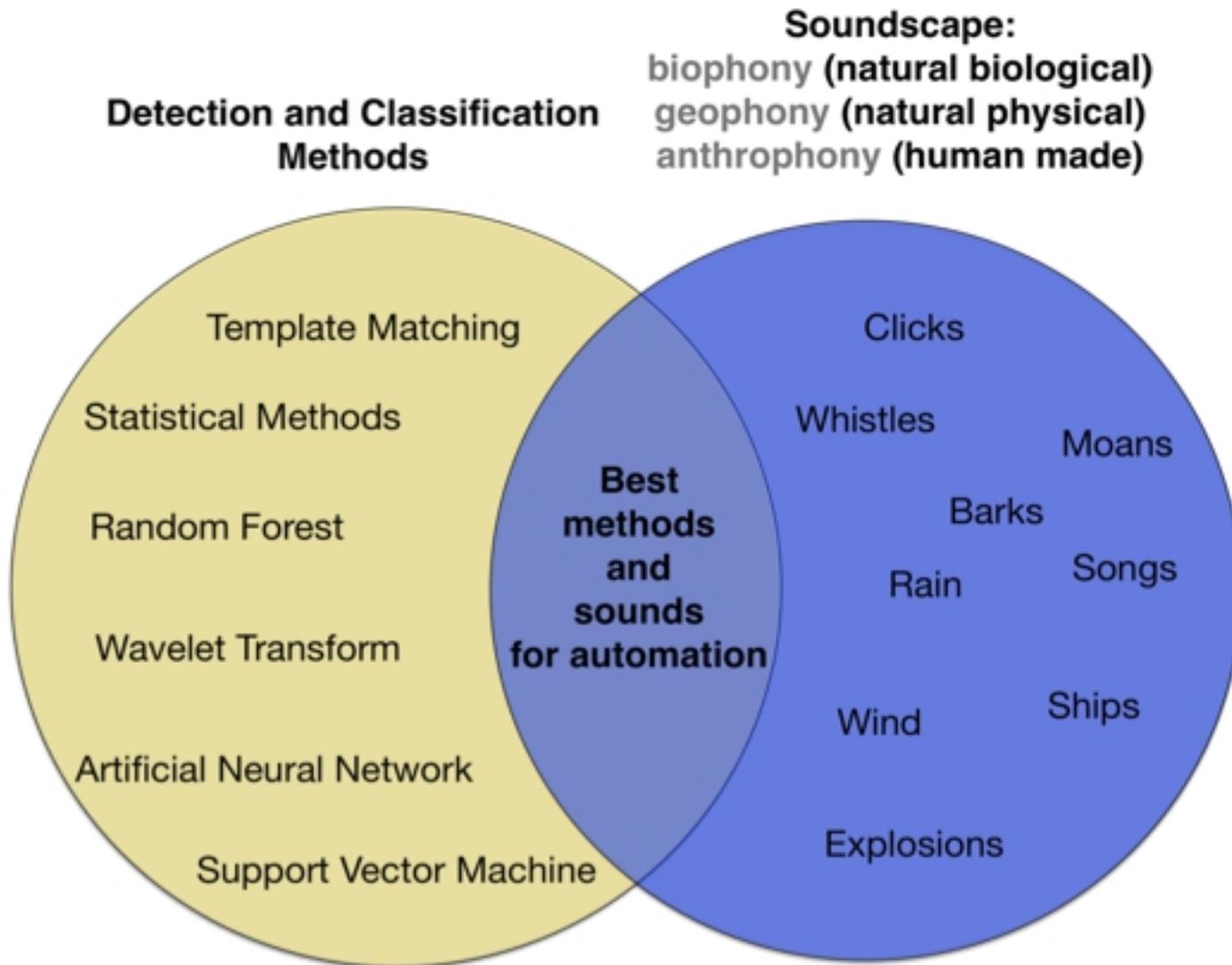
A. Stimpert – MLML, Moss Landing, CA

B. Southall – UCSC, Santa Cruz, CA

M. Caillat, M. Fischer – IC, San Jose, CA



Automated detection and classification

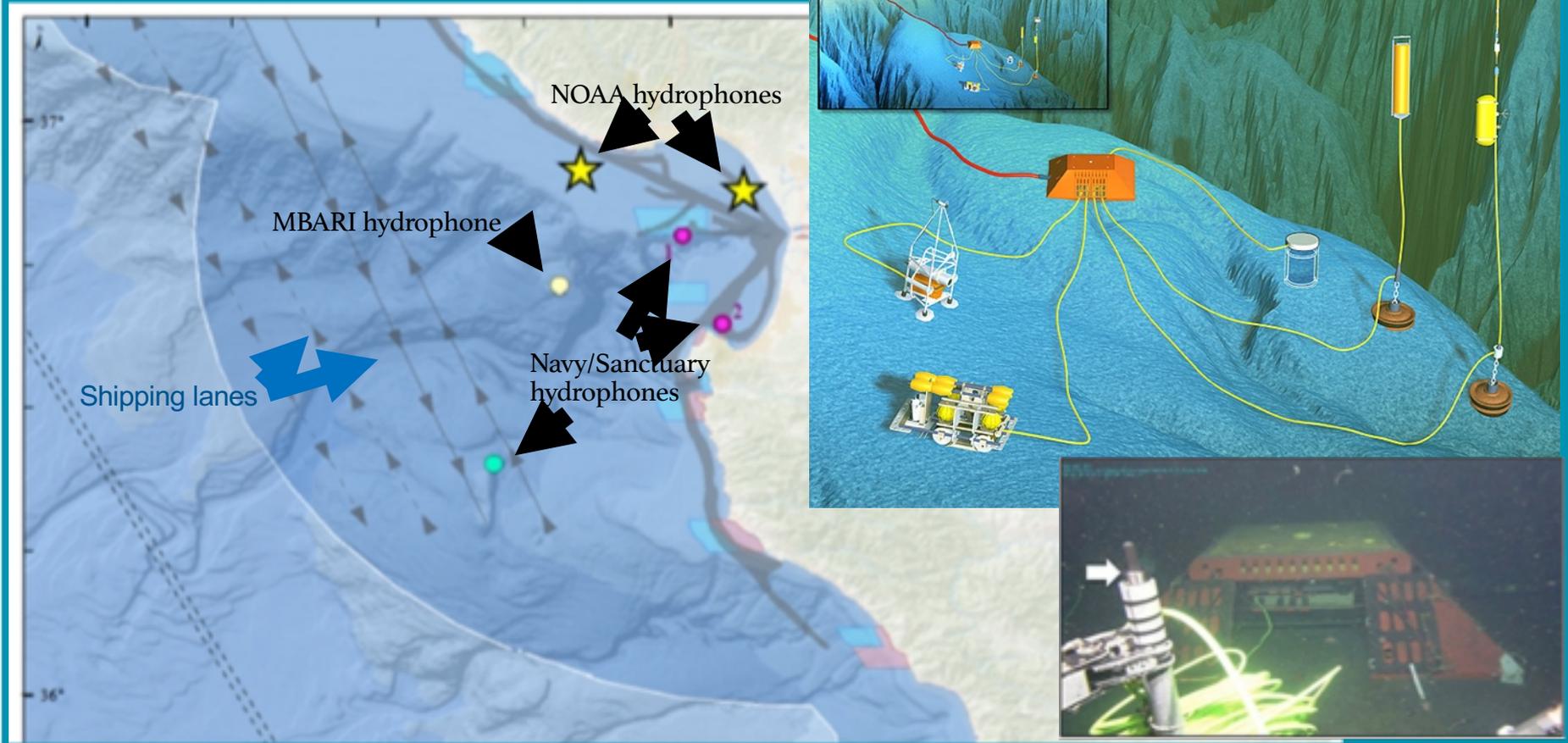


Monterey Accelerated Research System (MARS) Hydrophone Deployed in July 2015 is a Catalyst

Navy/Sanctuary hydrophones- summer 2018

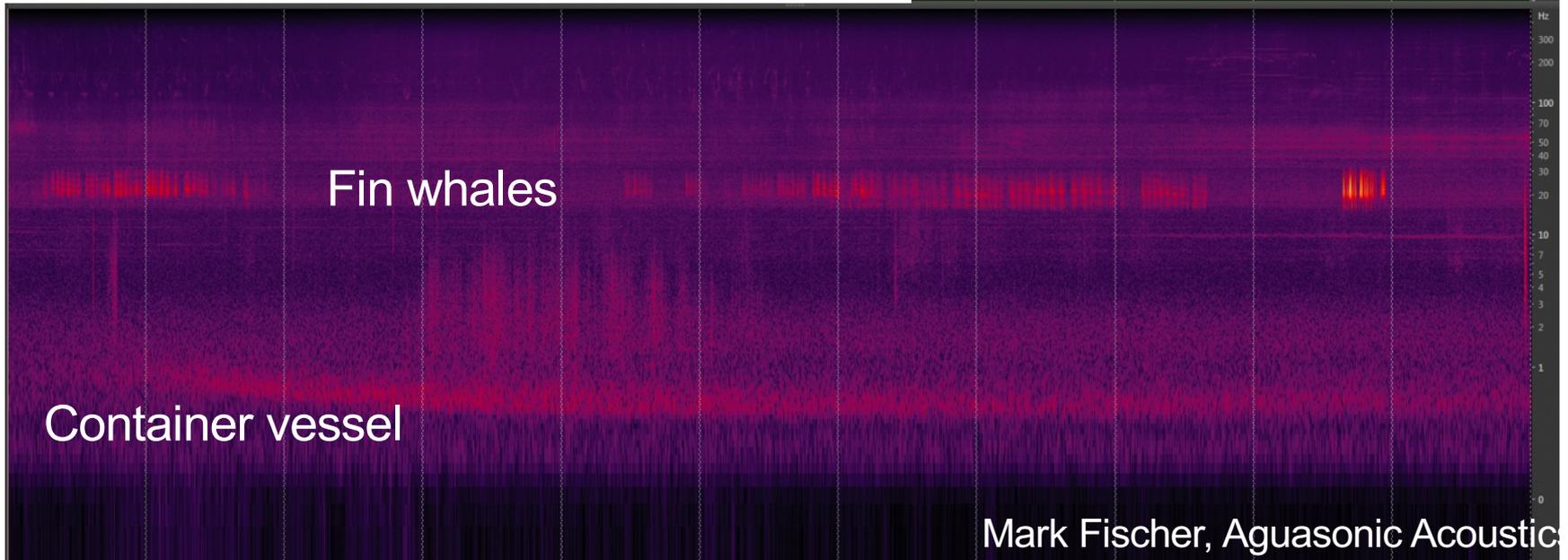
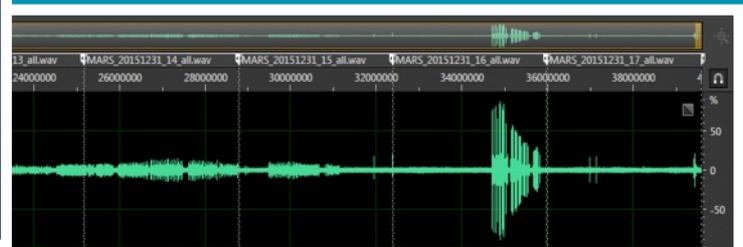
MBARI directional hydrophone- fall 2018

NOAA OAP hydrophones- 2019





- Container ship *Benjamin Franklin*:
- largest container vessel to enter U.S. ports
 - passed MARS hydrophone on transit between LA and Oakland December 31, 2015



Publications

- Caillat et al. 2018. Passive acoustic (sound) monitoring: hydrophone use by MBARI. SIMoN project page.
- Ryan, J. et al. 2016. New passive acoustic monitoring in Monterey Bay National Marine Sanctuary. OCEANS 2016 MTS/IEEE Monterey; 19-23 September; 8pp.
- Ryan, J. et al. (in prep). Temporal variations in humpback whale (*Megaptera novaeangliae*) song in Monterey Bay National Marine Sanctuary, northeast Pacific. Acoustical Society of America.
- Kerr, A. and J. Scorse (in prep). The use of seal bombs in California fisheries: too little data and too much risk.

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Final Recommendations (cont.)

2. We recommend sound be featured in the Sanctuary's visitors centers- utilizing exhibits, events and outreach programs describing sound in the marine environment that will reveal how sound is used by animals in the ocean and that manmade sound can have impacts.

Sound Featured in Visitor Center



- First public outreach at the Sanctuary Exploration Center in Santa Cruz on 27 February 2016 (using beta version traveling exhibit).
- \$15,000 in NOAA construction funds to support the Exploration center Soundscape exhibit.
- Visitors will hear, see and feel sound from the MBARI hydrophone.
- Planned exhibit launch date December 2018.

Live stream from a deep-ocean soundscape



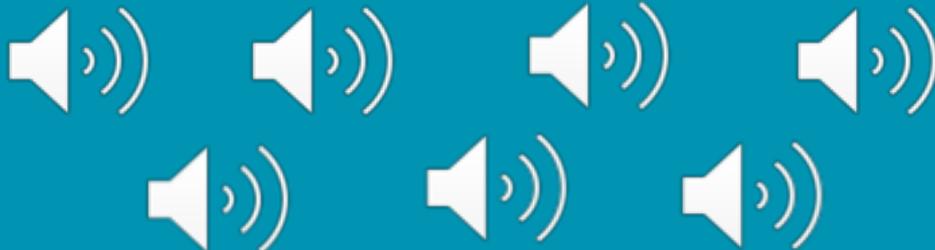
Soundscape Listening Room

These recordings represent a growing collection of sounds within the ocean soundscape, as recorded offshore of Monterey Bay, California. They are part of a **research and education project** that employs a deep-sea observatory to continuously record sounds within and outside the range of human hearing. These sounds fall into three categories: biophony (sounds of marine life), geophony (sounds of the earth), and anthrophony (sounds of human activities). More information about this project is available in a 2016 **publication**.

Use the category buttons below to select recordings associated with each source of sound. To play a sound, use the playback controls located at the lower left of each sound clip. Information about each sound is available by clicking on the sound title. Some of the recordings are relatively long (more than one hour) and so may take time to load before playing.

NOTE: Some of these sounds have a very low pitch and cannot be heard on computer or phone speakers. To hear these sounds you will need to play them on a sound system with a subwoofer speaker or use high-quality headphones. This requirement is indicated in the sound clip titles with, ****audible only with appropriate speakers****.

 Pacific white-sided dolphin	 Beaked whale	 Blue whale	 Fin whale	 Humpback whale	 Sperm whale	 Gray whale
 Marine mammals	 Earthquakes	 Rain				



Mid and high range speakers

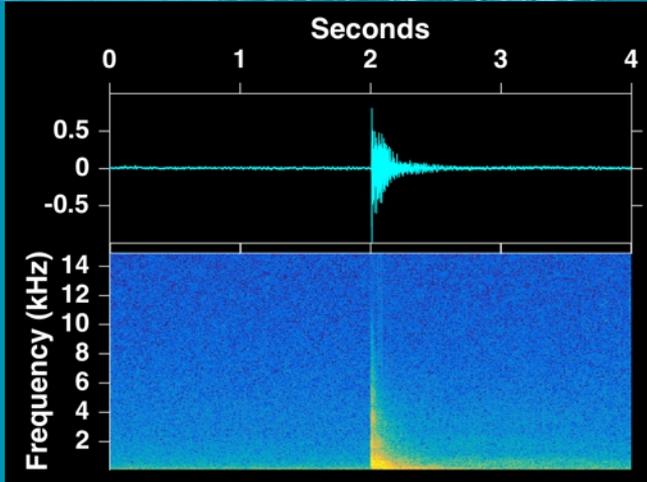
subwoofer



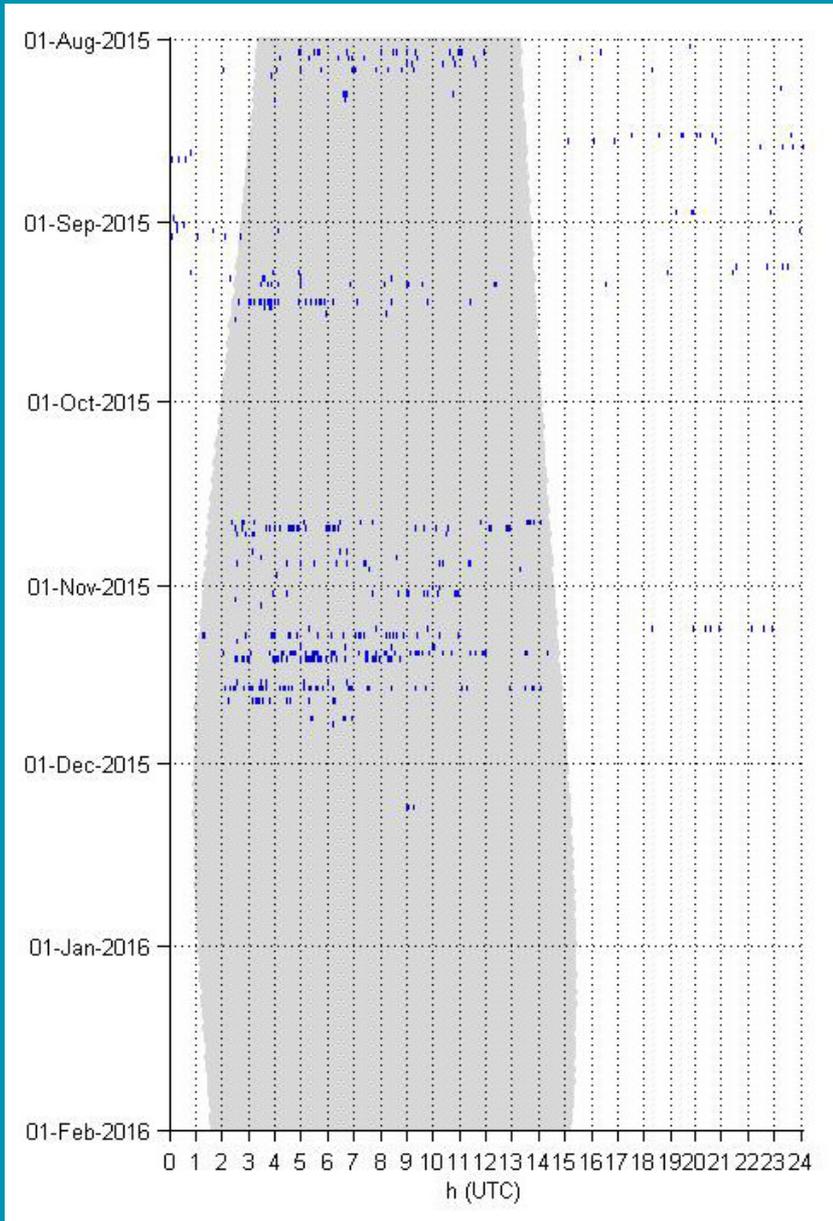
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Final Recommendations (cont.)

3. We recommend Sanctuary staff consult with appropriate agencies and fishing industry representatives to catalog current uses of seal bombs and where applicable encourage continued enforcement by appropriate agencies.



Seal Bombs



August 2015: 448

September 2015: 486

October 2015: 386

November 2015: 976

December 2015: 11

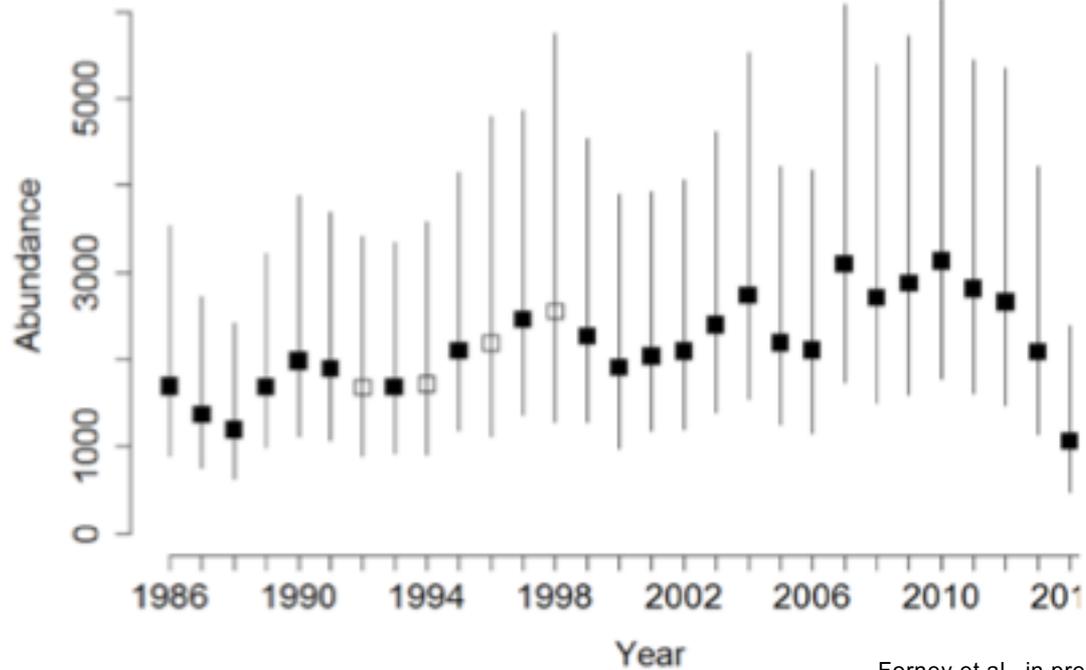
January 2016: 1

Total: 2308



S. Baumann-Pickering
A. Meyer-Lobbecke

Harbor Porpoise and sound



Forney et al., in prep.

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Final Recommendations (cont.)

4. We recommend the Sanctuary convene collaborative groups of stakeholders with the goal of developing strategies to both minimize future seal bomb use and developing effective alternatives in the Sanctuary.



Video:
“Daniel and the Sea of Sound”

AMERICA'S UNDERWATER TREASURES



