

# The 2016 Industry Forum

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## *Sound In The Sea*



December 30, 2016

Subcommittee on Ocean Science and Technology  
c/o Roxanne Nikolaus  
Division of Ocean Sciences, National Science Foundation  
4201 Wilson Boulevard, Arlington, VA 22230

To the Subcommittee on Ocean Science and Technology:

As the voice of the ocean science and technology community, the Consortium for Ocean Leadership (COL) recommends the prioritization of ocean acoustic research in the “Ocean Research in the Coming Decade.” Current data and trends indicate that anthropogenic sound in the ocean will continue to rise with increasing commercial, recreational, and scientific endeavors conducted, in, near and on our ocean waters. According to a [2016 report](#) from the National Academy of Sciences, the impacts of sound on marine mammals are unknown when combined with other stressors; other unknowns include significant physical and biological implications of sound in the sea.

On October 26, 2016, COL’s [Industry Forum: \*Sound in the Sea\*](#) explored these issues, identified scientific gaps, and developed consensus statements to advance the discussion on sound in the sea. Over 100 stakeholders (representing academia, ocean industry and technology companies, environmental and scientific nonprofits, NOAA, Navy, and other federal agencies) attended, all of whom rely on sound science and input from both traditional and cutting-edge technologies for decision-making. The goal of the Forum was to understand where there is cross-sector convergence and divergence on what ocean science, research and technology gaps and needs exist; how they might best be addressed collaboratively; and how the academic, nonprofit, industry, and government ocean science and technology communities can work together to improve science and decision-making regarding sound in the sea. This input reflects the themes, discussion points and consensus statements developed by the stakeholder participants at the COL Industry Forum: *Sound in the Sea*, held on October 26, 2016, in Washington, D.C. The full proceedings of the event will soon be available [here](#). For the full list of cross-sectoral participants, see appendix A.

“Ocean Research in the Coming Decade” will describe the most pressing research questions and most promising areas of opportunity within the ocean science and technology enterprise for the next 10 years, setting the stage for actions across federal agencies and with non-federal entities to address societal needs and issues of national importance. The following are recommendations by Forum participants, for consideration by the Subcommittee on Ocean Science and Technology, of topics to be included in the upcoming “Ocean Research in the Coming Decade:”

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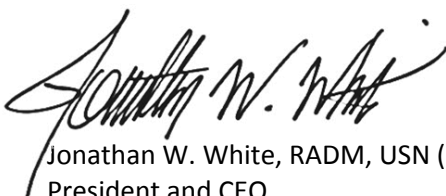


1. Collection of broad-scale, baseline data would help determine the biologically significant impacts sound has on marine animal behavior and environments.
2. Current scientific investigation is generally focused on very narrow and limited questions. A group of cross-sector representatives needs to articulate the necessity of a transition from this narrow view to a broader scientific scope that entails long-term, regional-scale observation and monitoring.
3. Federal mission agencies need to support the development and use of a collective engine, such as Google Ocean or a 6D ocean soundscape, to incorporate marine acoustic and other observational data. This will lead to an improved understanding of the biological impacts of sound on marine animal behavior and environments.
4. Our growing economy introduces many anthropogenic acoustic sources, both purposefully and as a byproduct, including shipping, seismic exploration, oil and gas production, oceanographic research and mapping, navigation fathometers, renewable energy production, military sonars, and ocean infrastructure construction. The federal government and other funders of scientific research need to incentivize development of new and innovative technologies that increase our understanding of ocean noise.

The inclusion of these pressing research topics in “Ocean Research in the Coming Decade” will help advance understanding of sound in the sea, enhance the effectiveness of policy development and cross-sector management, and enable productive dialogue and collaborations needed to consider the development and implementation of new technologies to mitigate threats to ocean biota. Additionally, utilizing NOAA’s [Ocean Noise Strategy Roadmap](#), as a foundation upon which to both build consensus and uniformity around acoustic science and to bridge communication gaps between sectors, would facilitate discussion and cross-sector joint action.

We share your commitment to advancing the future of ocean research and thank you for considering ocean acoustic research as a promising area of opportunity.

On behalf of the 2016 COL Industry Forum: *Sound in the Sea* participants,



Jonathan W. White, RADM, USN (ret.)  
President and CEO  
Consortium for Ocean Leadership

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### Appendix A: Participant List

Carolyn Wilson, Luncheon Discussion Panelist  
American Geosciences Institute

Andy Radford  
American Petroleum Institute

Andrew Ziegwied  
ASV Global, LLC

Jill Lewandowski, Resolving Conflict and  
Building Consensus Panelist  
BOEM

Desray Reeb  
BOEM

John Calambokidis, Resolving Conflict and  
Building Consensus Panelist  
Cascadia Research

Kim Olsen  
CSA Ocean Sciences, Inc.

John Young  
CSA Ocean Sciences, Inc.

Marlon Lewis  
Dalhousie University

Blaine Collins  
DNV GL

Geoff Cooper  
Duke University Nicholas School of the  
Environment

Sarah Tsoflias, Resolving Conflict and Building  
Consensus Panelist  
E&P Sound & Marine Life Joint Industry  
Program

David Saulsbury  
Eastman Chemical Company

Megan Davis  
FAU Harbor Branch Oceanographic Institute

Meg Thompson  
Federal Science Partners

Joel Widder  
Federal Science Partners

Phil Kramer  
Florida Institute of Oceanography

Marvourneen Dolor  
Great Lakes Observing System

Michael Porter  
Heat, Light, and Sound Research, Inc.

Charna Meth  
Independent Contractor

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Robert Gisiner, Defining the Ocean Acoustic Environment Panelist  
International Association of Geophysical Contractors

Nikki Martin  
International Association of Geophysical Contractors

Dustin Van Liew  
International Association of Geophysical Contractors

Beth Allgood  
International Fund for Animal Welfare

Margaret Cooney, Resolving Conflict and Building Consensus Panelist  
International Fund for Animal Welfare

Josie Quintrell  
IOOS Association

Scott Carr  
JASCO Applied Sciences

David Hannay  
JASCO Applied Sciences

Cynthia Pyć, Measuring the Ocean Acoustic Environment Panelist  
JASCO Applied Sciences

Roberto Racca  
JASCO Applied Sciences

Jeff Condiotty  
Kongsberg Maritime

Jake Sobin  
Kongsberg Maritime

Peter Yinger,  
L-3

Justin Manley  
Liquid Robotics, Inc.

Forsyth Kineon-Simpson  
Lynker Technologies, LLC

Tiffini Brookens  
Marine Mammal Commission

Kevin Traver  
Marine Technology Society

Arthur Baggeroer  
Massachusetts Institute of Technology

Kelly Benoit-Bird  
MBARI

Chris Scholin  
MBARI

Stacey Karras  
NAS, Ocean Studies Board

Eric Lindstrom  
NASA

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Kris Hoellen  
National Aquarium

Barbara Bischof  
National Oceanographic Partnership Program

Joanna Peth  
National Oceanographic Partnership Program

Rick Murray  
National Science Foundation

Holly Smith  
National Science Foundation

Ru Morrison  
NERACCOOS

Jason Gedamke, Defining the Ocean Acoustic  
Environment Panelist  
NOAA Fisheries

Jolie Harrison  
NOAA Fisheries

Allison Hernandez  
NOAA Fisheries

Amy Scholik-Schlomer  
NOAA Fisheries

Kathy Broughton  
NOAA National Marine Sanctuaries

Shep Smith  
NOAA National Ocean Service

Todd Christenson  
NOAA Office of Education

Matt Womble  
NOAA Office of the Chief Scientist

Jeff Vorberger  
NOIA

Mark Wood  
Ocean Sonics, Ltd.

Scott Van Buskirk  
Oceaneering International

Kyle Becker, Measuring the Ocean Acoustic  
Environment Panelist  
Office of Naval Research

Steven Hipfel  
Office of Naval Research

Raymond Soukup  
Office of Naval Research

Roberta Marinelli  
Oregon State University

David Bradley, Defining the Ocean Acoustic  
Environment Moderator  
Pennsylvania State University

Allison Miller  
Schmidt Ocean Institute

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Leonard Pace  
Schmidt Ocean Institute

Brandon Southall, Measuring the Ocean  
Acoustic Environment Moderator  
SEA, Inc.

Debra Hernandez, Measuring the Ocean  
Acoustic Environment Panelist  
SECOORA

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Severn Marine Technologies, LLC

Kris Lynch  
Shell Exploration & Production Company

Ruth Perry  
Shell Exploration & Production Company

Clark Alexander  
Skidaway Institute of Oceanography of UGA

Ralph Rayner  
Sonardyne International, Ltd.

Rob Dunbar  
Stanford University

Paul Cooper  
Teledyne CARIS, Inc.

Peter Furze  
Teledyne Marine

Debbie Thomas  
Texas A&M University

Sue Cook, Luncheon Discussion Panelist  
The Oceanography Society

Tara Elliott  
U.S. Navy

Timothy Gallaudet, Invited Speaker  
U.S. Navy

Dick West  
U.S. Navy

Tony Busalacchi  
UCAR

Ari Gerstman  
UCAR

S. Bradley Moran, Luncheon Discussion  
Moderator  
University of Alaska Fairbanks

Jim Edson  
University of Connecticut

Brian Taylor  
University of Hawaii at Manoa

Don Boesch  
University of Maryland Center for  
Environmental Science

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Jennifer Miksis-Olds, Resolving Conflict and  
Building Consensus Moderator  
University of New Hampshire

Jim Miller, Defining the Ocean Acoustic  
Environment Panelist  
University of Rhode Island

Robert Thunell  
University of South Carolina

Jackie Dixon  
University of South Florida

Monty Graham  
University of Southern Mississippi

Terry Quinn  
University of Texas at Austin

Peter Hill  
Woods Hole Oceanographic Institution