

LMRnews

SUMMER 2014

Welcome!

Welcome to the Summer 2014 issue of *LMR News*—the quarterly newsletter from the Living Marine Resources (LMR) program. Our goal is to provide you with the latest information about program operations, significant accomplishments, and future focus areas for the LMR program. We hope you will find the content useful and that it provides insights into our efforts to better understand and protect living marine resources and support U.S. Navy readiness training.

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WHO WE ARE

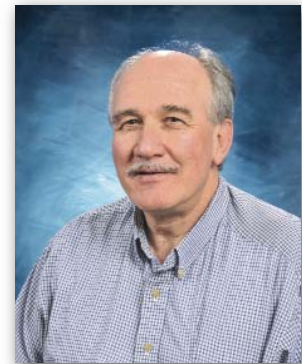
The LMR program is one of the Navy's applied research (6.4) programs, sponsored by the Chief of Naval Operations Energy and Environmental Readiness Division (CNO N45) and managed by the Naval Facilities Command Engineering and Expeditionary Warfare Center (NAVFAC EXWC) in Port Hueneme, CA. The mission of the LMR program is to develop, demonstrate, and assess information and technology solutions to protect living marine resources while preserving core Navy readiness capabilities.

PROGRAM OFFICE INSIGHTS

A number of important events took place during this past quarter, including a change in program management, a series of informative presentations by LMR staff to Navy headquarters and other federal programs, new projects getting underway, and a healthy response to our most recent Broad Agency Announcement (BAA).

The LMR program bids adieu to Bob Gisiner, the first official LMR program manager. Bob retired from federal service as of 27 June 2014. Bob's wide-ranging experience in the science and practice of animal cognition, marine mammals and bio-acoustics, coupled with his fundamental care of bringing science to conservation and resource management, have been critical to establishing the orderly and open program that the LMR has become. LMR Advisory Committee (LMRAC) member Mike Weise, who represents the Office of Naval Research, offered one perspective on Bob's role, "Bob was a fountain of knowledge when it came to the history on the topic of the effects of sound and the sonar issue." All the LMRAC members greatly appreciate Bob's contribution to LMR, transforming the program to better suit their needs and allow for broader representation within the Navy. Bob will be sharing his knowledge and energies with the International Association of Geophysical Contractors.

Anurag (Anu) Kumar, previously the LMR Deputy Program Manager, has been hired as Program Director. Anu has been applying his background in bio-acoustics, impacts assessments, marine species density estimation, and marine mammal biology with the U.S. Navy since August 2001. He was the Marine Resource Branch Head at NAVFAC Atlantic and oversaw a talented group of scientists that supported the analysis and completion of the Atlantic Fleet Training and Testing Environmental Impact Statement and Marine Mammal Protection Act/Endangered Species Act permit applications. The group also developed the US Fleet Forces marine species monitoring program. Prior to working for NAVFAC, Anu briefly worked for a consulting firm supporting the analysis of Navy training impacts on marine species and also worked at the Naval Postgraduate School in Monterey, CA in the Ocean Acoustics Laboratory



Bob Gisiner



Anu Kumar

studying marine mammal acoustics using existing Navy assets. He has a Master of Science (MS) degree in Marine Science from Moss Landing Marine Laboratories and B.Sc. in Ecology from California State University Fresno.

As Joel Bell, NAVFAC Atlantic Senior Marine Scientist and Marine Species Monitoring Program Manager and LMRAC member, noted, “Although he's missed here at NAVFAC Atlantic, I know that Anu's experience and expertise will be a great benefit to the LMR program and he'll continue to serve the Navy well in his new position.”

Before Bob's departure, he and Anu travelled to the Washington, DC area to meet with several organizations that share similar concerns and conduct complementary research to the LMR program. Organizations included the Marine Mammal Commission, National Marine Fisheries Service and Bureau of Ocean Energy Management. Bob and Anu also provided program updates to the Deputy Assistant Secretary of the Navy (Environment) and the Chief of Naval Operations (CNO) N45 management and staff. Sharing information about the respective programs helps to expand partnership opportunities, improve cooperative efforts, and maximize the function of the LMR program.

Contracts for several new projects are now in-place, paving the way for the summer and fall field season efforts. Updates on these projects will be presented at the next LMR In-Progress Review (IPR). More details on one of the projects, “Integrated Real-Time Autonomous Passive Acoustic Monitoring System (IRAP) for U.S. Navy Operational Use,” and on the IPR, are provided below.

The LMR BAA, issued 27 April and closed 16 June, generated 61 pre-proposals across three priority needs:

1. hearing measurements in a broad range of marine mammal species (29 pre-proposals),
2. population density estimation from passive acoustic monitoring (22 pre-proposals), and
3. marine species monitoring data collection toolkit development (eight pre-proposals).

The LMRAC is in the process of reviewing the pre-proposals to determine which ones might be suitable for requesting full proposals. The LMRAC recommendations and overall program concurrence are expected by 29 October 2014.



LMR PROJECT SPOTLIGHT

Wondering about some of the new LMR projects? This section provides a brief overview of a single project in each issue of LMR News. This quarter's project spotlight presents Principal Investigator (PI) Phil Abbot's "Integrated Real-Time Autonomous Passive Acoustic Monitoring System (IRAP) for US Navy Operational Use."

Passive Acoustic Monitoring (PAM) is a proven means of detecting and classifying vocally active marine mammals, as well as a number of fish species, through hydrophone sensors. Currently, most passive acoustic monitoring utilizes single hydrophones, which limits the range of detection coverage, and often requires the addition of visual observers.

To overcome this problem, Phil Abbot and his team are developing an autonomous PAM system that will expand the coverage area and eliminate the need for visual observers. This system will combine an autonomous passive acoustic system designed for underwater surveillance purposes and an Unmanned Undersea Vehicle (UUV) known as the REMUS 600, which has previously been used for underwater mapping and mine detection.

The REMUS 600 will be equipped with a sensor and digital signal processing (DSP) technology that was developed by Abbot's company, OASIS, and previously used (with a different UUV) to provide real-time detection of Humpback Whales. The REMUS 600 UUV will include onboard digital signal processors for the autonomous detection, classification, localization, and tracking of vocalizations from lower frequency baleen whales and higher frequency beaked whales. The raw data captured by this system will be autonomously processed by a commercial off-the-shelf computer equipped with custom software.

When complete, in 2016, this broadband frequency system will improve detection coverage of baleen and beaked whales, while improving the accuracy and completeness of existing animal density estimation techniques. Successful demonstration of this technology will also pave the way for future system enhancements such as the ability to autonomously classify a variety of other marine mammals.



The REMUS 600 prior to deployment.



REMUS 600 autonomous undersea vehicles like the one selected for this project are often used for mine detection, as shown here.

John F. Williams

IDEA WORKSHOPS

Introduction to Density Estimation using Acoustics (IDEA) workshops are being scheduled for Navy personnel and supporting contractors. The workshops are one step in implementing the results of a Navy-funded project focused on developing general methods for estimating whale density from passive acoustic monitoring, including fixed underwater hydrophones at Navy ranges. Components include distance-sampling-based methods and contrasting visual surveys against acoustic surveys. IDEA also includes other potential approaches for using data to estimate density.

The workshops will address methods available for varied circumstances, such as those that are constrained by the hydrophone configuration (e.g., number, placement and sensor characteristics), whale behavior (vocal, social and movement) and sound propagation through water. The goal of these workshops is to expand the knowledge and capability to use these methods within the Navy's monitoring program and increase the efficiency of passive acoustic based survey design.

NEXT IN-PROGRESS REVIEW

The program's next IPR will be held 17–21 November, 2014 at the Space and Naval Warfare Systems (SPAWAR) Transducer Evaluation Center in San Diego. The IPR provides a forum for the LMRAC and program PIs to discuss project status and direction to ensure the work will meet Fleet needs. The November IPR will include presentations on recently funded and initiated projects.



USING OUR WEB SITE

Our web site (www.lmr.navy.mil) provides information on submitting needs, pre-proposals and proposals. For questions on these or any other function of our web site, contact our webmaster Eric Rasmussen at 732-323-7481 or eric.rasmussen@navy.mil.

NAVFAC
Naval Facilities Engineering Command

Living Marine Resources (LMR) Program

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Welcome To The Navy's LMR Website

Recent News and Events:

- **NAVFAC SELECTS NEW LMR PROGRAM MANAGER:** Effective June 4th 2014, Mr. Anu Kumar will be the new LMR Program Manager, replacing Bob Gisinor who is retiring at the end of June. The LMR Advisory Committee and LMR staff congratulate Anu on his well deserved recognition of his abilities and look forward to working with him to chart the future course of the LMR program in the months and years to come.
- Check out our recently released Spring issue of LMR News.

Our Mission and Objective
The mission of the LMR program is to develop, demonstrate, and assess information and technology solutions to protect living marine resources by minimizing the environmental risks of Navy at-sea training and testing activities while preserving core Navy readiness capabilities. This mission is accomplished by:

- Providing science-based information to support Navy environmental effects assessments for research, development, acquisition, testing and evaluation (IDATE) as well as Fleet at-sea training, exercises, maintenance and support activities.
- Improving knowledge of the status and trends of marine species of concern and the ecosystems of which they are a part.
- Developing the scientific basis for the criteria and thresholds to measure the effects of Navy generated sound.
- Improving understanding of underwater sound and sound field characterization unique to assessing the biological consequences resulting from underwater sound (as opposed to tactical applications of underwater sound or propagation base modeling for military communications or tactical applications).
- Developing techniques and methods to monitor and, where possible, mitigate biologically significant consequences to living marine resources resulting from naval activities, emphasizing those consequences that are most likely to be biologically significant.

The program is focused on three primary objectives that influence program management priorities and directly affect the program's success in accomplishing its mission:

1. **Collect, Validate & Track FAD Needs:** Expand awareness of 6-8 research program opportunities within the Navy marine resource community to encourage and facilitate the submission of well-defined and appropriate needs statements.
2. **Address High Priority Needs:** Ensure that program investments and the resulting projects maintain a direct and consistent link to the defined user needs.
3. **Transition Solutions & Validate Benefits:** Maximize the number of program-derived solutions that are successfully transitioned to the Fleet and system commands (SYSCOMs).

The LMR program is sponsored by the Chief of Naval Operations (CNO) Energy and Environmental Readiness Division (NERD) and managed by the Naval Facilities Engineering and Expeditionary Warfare Center (EKWC). Additionally, the Living Marine Resources Advisory Committee (LMRAC) oversees the program with participation from CNO N5S, Office of Assistant Secretary of the Navy Energy, Installations and Environment (OASN EIAE), Naval Facilities Command (NAVFAC), Naval Air Systems Command (NAVAIR), Naval Sea Systems Command (NAVSEA), Space and Naval Warfare Systems Command (SPAWAR), US Fleet Force Command (USFF), Pacific Fleet Force Command (PACFLT), and Office of Naval Research (ONR). The Technical Review Committee (TRC) provides expert technical advice to the LMRAC.

This site is intended as a public resource to provide information about the LMR program, its technology investments, and the process of collecting and responding to the submission of needs and proposed solutions.

www.lmr.navy.mil

PROGRAM SCHEDULE

A tentative program schedule for key program activities is provided below. Schedule changes are not uncommon, so please check the LMR web site (www.lmr.navy.mil) for the most current information.

No.	What	When
1.0	Proposal Solicitation, Review and Contract Process	
1.1	Issue BAA, Solicit Pre-proposals	27 April 2014
1.2	Pre-proposals Due	16 June 2014
1.3	Technical and Advisory Review Committees Complete Pre-proposal Review	14 August 2014
1.4	Request Full Proposals	20 August 2014
1.5	Full Proposals Due	29 September 2014
1.6	Collect Comments on Full Proposals (LMRAC and TRC members); Rank Full Proposals	15 October 2014
1.7	Obtain Sponsor Review & Approval of Full Proposals	29 October 2014
2.0	Quarterly Status Reports (QSR)	
2.1	Fall QSR	6 October 2014
2.2	Winter QSR	5 January 2015
2.3	Spring QSR	6 April 2015
2.4	Summer QSR	6 July 2014
3.0	Sonobuoy Requests	
3.1	Solicit Sonobuoy Requests	1 October 2014
3.2	Approve Sonobuoy Requests	15 January 2015
4.0	Needs Process	
4.1	Close Needs Solicitation	31 August 2014
4.2	LMRAC Completes Needs Ranking	15 October 2014
5.0	In-Progress Review	17 to 21 November 2014

Check out our web site at www.lmr.navy.mil
for the latest version of our program schedule.

PROGRAM INVESTMENT AREAS

The LMR program's Standard Operating Procedures lay out the following five key investment areas.

1. Data to Support Risk Threshold Criteria

Conduct applied research to establish risks to marine mammals, birds, fish, turtles and invertebrates from effects of naval training, exercise and R&D activities on Navy maritime ranges and operating areas, primarily risks from sound, vessel collisions and habitat degradation.

2. Improved Data Collection on Protected Species and Critical Habitat within Navy Ranges

Develop means to improve the quality, quantity and cost-effectiveness of protected species information and habitat monitoring capabilities on Navy at-sea ranges. Work should not include operational data collection that is part of required mitigation monitoring, but should offer proof-of-concept demonstrations of improved means for obtaining such data.

3. New Monitoring and Mitigation Technology Demonstrations

Demonstrate new technologies that offer to improve the effectiveness or endurance of monitoring and mitigation or reduce costs of required mitigation. Demonstrations should be undertaken with the cooperation and coordination of the Fleet or SYSCOM sponsor that would be accepting the technology if successfully demonstrated.

4. Database and Model Development

Address issues pertaining to data needs of Navy environmental documents and ongoing adaptive management evaluations of Navy activities on range marine life.

5. Education and Outreach, Emergent Opportunities

Provide information and capabilities developed under this or other programs both to potential users and experts in the field to facilitate application of new information and capabilities and to the concerned public and regulatory community to facilitate acceptance of new Navy science and technology applications. This investment area also covers emergent needs or opportunities that present a requirement for quick response on a topic of high Navy interest with a relatively quick and straightforward solution, but which is not covered by the preceding four Priority Areas of Investment.



Minke whale.
Mark Deakos, NMFS permit # 14451

CALL FOR LMR-RELATED PHOTOS

We know that many of you have wonderful high resolution photographs of marine mammals taken during your survey work, as well as photos of personnel who were involved and the equipment that you used. We'd like to include some of those images in a future issue of the LMR newsletter and give you credit—right there with your photo.

So please, go through those photos and send us a few that you're particularly proud of. Include a caption, photo credit and permit number (as applicable) and be sure that the photos are in high resolution format. And who knows, you may see one of those photos in a future issue of the LMR newsletter. Submit your photos via email to: exwc_lmr_program@navy.mil.



Bryde's whale.

Courtesy of CETOS Research Organization, NMFS permit # 1039-1699

HELP WITH OUR MAILING LIST

If you want to subscribe to or unsubscribe from LMR News, please send your email address to Lorraine Wass at 207-384-5249 or ljwass@outlook.com.

CONTACT THE LMR PROGRAM

For more information about the LMR program and its operations, contact Anu Kumar, Program Manager, exwc_lmr_program@navy.mil, 805-982-4853.

IN THE NEXT ISSUE OF LMR NEWS

Our next issue will include results of the LMRAC proposal recommendations (as available) and offer highlights from ongoing projects.

Until then, look for other articles about the LMR program's accomplishments in upcoming issues of *Currents*, the Navy's energy and environmental magazine. You can read *Currents* on-line and subscribe to the magazine at <http://greenfleet.dodlive.mil/currents-magazine>.