U.S. Navy Living Marine Resources Program
FY22 Need Topics

The U.S. Navy Living Marine Resources (LMR) program issued a call for pre-proposals pertaining to five FY22 need topics.

SOLICITATION OPEN PERIOD: 20 September – 02 December 2021.

SOLICITATION ADVERTISEMENT:

- BAA Solicitation N39430-21-S-2330 posted under Contract Opportunities on Beta.SAM.gov https://beta.sam.gov on 20 September 2021.
- Announcement posted on LMR Program website at https://www.navfac.navy.mil/lmr on 20 September 2021.
- Announcement posted to MARMAM and bioacoustics-l listservs on 20 September 2021.

NEED TOPIC N-0257-22: DEMONSTRATE AND VALIDATE THE ABILITY OF EXISTING SPARSE ACOUSTIC ARRAY TECHNOLOGY TO ADDRESS NAVY MARINE SPECIES MONITORING GOALS

The Office of Naval Research (ONR) Marine Mammals and Biology program previously developed passive acoustic monitoring (PAM) approaches using sparse acoustic arrays, in which sensors are distributed over a large area of interest, to detect and localize marine mammals. Recently, ONR invested in the further development of low-cost, easily deployed, acoustic arrays to detect and potentially track marine mammals in a study area. This investment led to multiple promising systems for cost effective monitoring data collection. The practical utility of these systems in collecting data for Navy marine species monitoring applications now needs to be demonstrated.

The LMR program is seeking pre-proposals to demonstrate the utility and benefits of sparse arrays, which are already developed and ready to collect marine species data in a Navy-relevant context, and to validate this technology against other existing technologies and methods. This includes demonstrating existing hardware, deployment and recovery logistics, optimal spatial configuration, as well as associated analysis approaches and algorithms. Where possible, hardware and spatial configuration should include the ability to detect low-frequency whales as well as high-frequency beaked whales. The capability of a sparse array to detect and localize marine mammals should be validated using existing approaches such as visual surveys to observe and count surface-dwelling species (e.g., using vessel, cliff, or aerial surveys) and/or using the Navy's installed hydrophone ranges for deep diving species.

In the pre-proposal, include a task to conduct an initial demonstration of existing, low-cost, sparse array technology to effectively evaluate configuration and analysis approaches to detect and localize species of interest in or near a Navy range. See Appendix A for LMR priority species and geographic regions. This task should include a validation effort in comparison with other approaches such as visual surveys and/or use of existing Navy acoustic ranges. Though the array design and species of focus should dictate the number of sensors, the scale of the project is anticipated to be approximately 5-15 sensors. Ultimately this task should demonstrate and validate the ability of the technology and methods to detect and localize marine mammals in a cost-efficient manner.

In the pre-proposal, detail instrument sensor specifications including sampling rate, bandwidth, sensitivity, analogue to digital sampling specifications, methods of calibration and time synchronization, recording endurance, etc.; and detail descriptions and performance results for detection and localization approaches and algorithms. Include all costs associated with deployment and recovery of the devices, such as travel and vessel support. Costs for data analysis should also be included.

While there may be some development proposed to refine the existing technology and methods, LMR is not seeking proposals on developing new devices or untested technologies that have yet to be demonstrated on their ability to detect marine mammals. This demonstration and validation effort will help the Navy move towards the ultimate goal of marine mammal density estimation using acoustics, and to meet other relevant Navy Marine Species Monitoring Program's Intermediate Scientific Objectives (ISO) (https://navymarinespeciesmonitoring.us/files/3615/1974/3535/Intermediate_Scientific_Objectives_02272018.pdf). A successful project demonstration will identify how the technology can be used to help the Navy Marine Species Monitoring Program address specific ISOs by using the proposed technology.

NEED TOPIC N-0258-22: DEMONSTRATE EXISTING MARINE MAMMAL TAG TECHNOLOGIES

The Office of Naval Research (ONR) Marine Mammals and Biology program previously developed marine mammal tag technology to collect marine mammal movement, diving and acoustic data. Tags developed under ONR have gone through extensive testing and demonstration in various projects. However, tag technology is constantly evolving. New and modified configurations of developed tags need to be demonstrated to ensure their robustness for Navy marine species monitoring applications.

The LMR Program is seeking pre-proposals to demonstrate that changes to existing tags (e.g., tag re-development or modification to address an identified technological issue) are robust and ready for use. While the primary purpose of this need is to demonstrate the ability of the tags to effectively function as designed, pre-proposals can include incremental modifications to existing tags to incorporate new capabilities. However, LMR is not seeking pre-proposals for new tags or incorporating unproven technologies within existing tags. See Appendix A for LMR priority species and geographic regions for proposed demonstrations.

NEED TOPIC N-0259-22: IMPROVE THE ABILITY TO IDENTIFY CALLING INDIVIDUAL FROM ACOUSTIC TAGS

The Office of Naval Research (ONR) Marine Mammals and Biology program has previously developed marine mammal tag technology to collect marine mammal movement, diving and acoustic data. Acoustic data from these tags have been useful for detecting sounds received, as well as the sounds produced by the tagged animal or surrounding animals of conspecifics. Data specifically from the tagged animals are useful for evaluating baseline behaviors, response and calling or cue rates that may be used in other applications such as estimating detectability or passive acoustic based-density estimation methods. Previous approaches have demonstrated the ability of using other sensors on the tags, such as the accelerometer, to link recorded calls to the tagged individual. However, there has not been focused effort on further developing approaches to associate detected calls to the tagged individual.

Using existing tag technology, the LMR program is seeking pre-proposals on further developing approaches that use the existing tag sensors to identify which calls detected are associated with the tagged individual. Include separate tasks that would 1) investigate and develop approaches, 2) demonstrate and validate the effectiveness of the proposed approach and 3) develop tools and training materials to enable tag users to easily apply the approach. See Appendix A for LMR priority species and geographic regions for proposed demonstrations.