U.S. Navy Living Marine Resources Program
FY20 Need Topics

The U.S. Navy Living Marine Resources (LMR) program issued a call for pre-proposals pertaining to three FY20 need topics.

SOLICITATION OPEN PERIOD: 3 September - 12 November 2019.

SOLICITATION ADVERTISEMENT:

- BAA Solicitation N39430-19-S-2185 posted at www.neco.navy.mil and www.fbo.gov on 03 September 2019.
- Announcement posted on LMR Program website at https://www.navfac.navy.mil/lmr on 04 September 2019.
- Announcement posted to MARMAM and bioacoustics-l listservs on 05 September 2019.

NEED TOPIC N-0228-20: MARINE MAMMAL ACOUSTIC SOFTWARE APPLICATION ENHANCEMENTS

The amount of passive acoustic monitoring data collected annually by the Navy's marine species monitoring program is significantly increasing, presenting the need to analyze the data efficiently. Existing, publically available, acoustic analysis software applications have improved over the years; however, there are still improvements that could be made to increase overall processing efficiency to identify, characterize, and catalogue acoustic signals of interest.

The LMR program is seeking pre-proposals that advance existing, publically available, passive acoustic analysis software applications to include additional features such as:

-using high performance computing (HPC) to process several tasks concurrently to increase computational efficiency, via anything from multicore desktop machines to enterprise-level and cloud-based servers that utilize CPU (Central Processing Unit) and/or GPUs (Graphical Processing Unit);

-incorporation of existing detectors, classifiers, and tracking algorithms (no development of new detectors, classifiers, or tracking algorithms) or creation of pathways and instructions for developers to write code in the appropriate format to allow for integration into the software;

-Tethys (Roch et al. 2013) integration to manage metadata related to acoustic analysis;

- Scalable data handling procedures to overcome the challenges of large amounts of complex data produced from HPC processing that is compatible with Tethys;

-end user guide, manual, and/or training workshop materials;

-acknowledgement process for developers to be given credit for the use of their detectors, classifiers, and tracking algorithms; and

-compiled version of the software that does not require licenses (or toolboxes) from other expensive software that can be prohibitively expensive for smaller labs and individuals.

Pre-proposals should include a discussion about how the software will be maintained with both derived funding support and technical development support.

M. A. Roch, S. Baumann-Pickering, H. Batchelor, D. Hwang, A. Širović, J. A. Hildebrand, C. L. Berchok, D. Cholewiak, L. M. Munger, E. M. Oleson, S. V. Parijs, D. Risch, and M. S. Soldevilla (2013), "Tethys: A workbench and database for passive acoustic metadata," Proc. IEEE Oceans, San Diego, CA, 5 pp.

NEED N-0225-20: MARINE MAMMAL CONDITIONED ATTENUATION OF HEARING SENSITIVITY

Conditioned reductions in hearing sensitivity has been demonstrated in several marine mammal species (Finneran 2018, Nachtigall and Supin 2013, Nachtigall and Supin 2014, Nachtigall and Supin 2015a Nachtigall and Supin 2015b, Nachtigall et al 2016a, and Nachtigall et al 2016b). These findings lead us to more questions on the implications and mechanisms of marine mammal's capability to reduce their hearing sensitivity.

The LMR program is seeking pre-proposals on investigating the extent of control marine mammals may have over reducing their hearing sensitivity, what anatomical and physiological mechanisms they may be using, the impact on temporary threshold shift (TTS) response, and an investigation into any additional species available in captivity.

Finneran, J. J. (2018). "Conditioned attenuation of auditory brainstem responses in dolphins warned of an intense noise exposure: Temporal and spectral patterns," J. Acoust. Soc. Am. 143:2, 795-810

Nachtigall, P. E., and Supin, A. Y. (2013). "A false killer whale reduces its hearing sensitivity when a loud sound is preceded by a warning," J. Exp. Biol. 216, 3062–3070.

Nachtigall, P. E., and Supin, A. Y. (2014). "Conditioned hearing sensitivity reduction in a bottlenose dolphin (Tursiops truncatus)," J. Exp. Biol. 217, 2806–2813.

Nachtigall, P. E., and Supin, A. Y. (2015a). "Conditioned frequency-dependent hearing sensitivity reduction in the bottlenose dolphin (Tursiops truncatus)," J. Exp. Biol. 218, 999–1005.

Nachtigall, P. E., and Supin, A. Y. (2015b). "Conditioned frequency-dependent hearing sensitivity reduction in the bottlenose dolphin (Tursiops truncatus)," J. Exp. Biol. 218, 999–1005.

Nachtigall, P. E., Supin, A. Y., Pacini, A. F., and Kastelein, R. A. (2016a). "Conditioned hearing sensitivity change in the harbor porpoise (Phocoena phocoena)," J. Acoust. Soc. Am. 140, 960–967.

Nachtigall, P. E., Supin, A. Y., Smith, A. B., and Pacini, A. F. (2016b). “Expectancy and conditioned hearing levels in the bottlenose dolphin (Tursiops truncatus),” J. Exp. Biol. 219, 844–850.

NEED N-0224-20: FREQUENCY- DEPENDENT, UNDERWATER, TEMPORARY THRESHOLD SHIFT IN CALIFORNIA SEA LIONS

California sea lions commonly occur throughout the western coast of the continental United States of America, in Navy training and testing areas. There has been limited research on underwater, temporary hearing threshold shift (TTS) in California sea lions (Kastak et al 2005). There is a need to conduct comprehensive TTS studies on California sea lions to determine appropriate criteria for impact modeling.

The LMR program is seeking pre-proposals that investigate frequency-dependent, underwater, TTS in California sea lions. Selected test frequencies should be based on equipment capability and most appropriate frequencies to characterize TTS across the spectrum of hearing in similar approach to what has been done with bottlenose dolphins, harbor porpoise, and harbor seals.

Kastak, D., Southall B. L., Schusterman R.J., Kastak C.R. (2005). “Underwater temporary threshold shift in pinnipeds: effects of noise level and duration.” J. Acoust. Soc. Am. 118(5):3154-63.