Meeting of Accredited Standards Committee (ASC) S2 Mechanical Vibration and Shock

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Accredited Standards Committee S2 on Mechanical Vibration and Shock. Working group chairs will report on the status of various shock and vibration standards currently under development. Consideration will be given to new standards that might be needed over the next few years. Open discussion of committee reports is encouraged.

People interested in attending the meeting of the TAG for ISO/TC 108, Mechanical vibration, shock and condition monitoring, and four of its five subcommittees, take note—that meeting will be held in conjunction with the Standards Plenary meeting at 9:00 a.m. on Tuesday, 23 October 2012.

Scope of S2: Standards, specifications, methods of measurement and test, and terminology in the field of mechanical vibration and shock, and condition monitoring and diagnostics of machines, including the effects of exposure to mechanical vibration and shock on humans, including those aspects which pertain to biological safety, tolerance and comfort.

Session 3pAB

Animal Bioacoustics: Vocalization, Hearing, and Response in Non-Human Vertebrates II

Michael A. Stocker, Chair
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Contributed Papers

1:00

3pAB1. Aerial hearing sensitivity in a southern sea otter (*Enhydra lutris nereis*). Asila Ghoul and Colleen Reichmuth (Institute of Marine Sciences, Long Marine Laboratory, University of California, Santa Cruz, 100 Shaffer Rd., Santa Cruz, CA 95060, asila@ucsc.edu)

The lack of information concerning auditory sensitivity in sea otters has been recognized by biologists and resource managers as a priority research need for this threatened species. Noise-generating human activity in near-shore marine environments occurs as a result of construction, transportation, exploration and recreation. These activities may degrade critical habitat or cause behavioral or auditory effects that are harmful to individuals. As direct measures of hearing are not presently available for sea otters, we obtained psychophysical hearing thresholds from a trained individual. Audiometric testing was conducted with an adult male sea otter using 500 ms frequency-modulated narrow-band sweeps under quiet conditions. Absolute aerial thresholds were collected at eleven frequencies ranging from 0.125 to 45 kHz. The sea otter showed a broad functional range of hearing, extending from 0.250 to ~40 kHz, with best sensitivity between 2 and 16 kHz. The lowest measured threshold was -1 dB re 20 μPa at 8 kHz. The high-frequency hearing data was similar to that of terrestrial carnivores, while hearing thresholds below 1 kHz showed a relative decrease in sensitivity. Measurements of underwater sensitivity in the same sea otter are ongoing, and will inform explorations of amphibious hearing capabilities in marine mammals, as well as provide insight into the effects of anthropogenic noise on this vulnerable species.

1:15

3pAB2. Auditory thresholds in marine vertebrates conform to natural ambient noise levels. Michael A. Stocker (Ocean Conservation Research, P.O. Box 559, Lagunitas, CA 94938, mstocker@OCR.org) and John T. Reuterdahl (Ocean Conservation Research, Mill Valley, CA)

Auditory thresholds are often displayed in a manner that reveals what is commonly called a "U-curve." But if the threshold curves are displayed on the x axis on a true Log10 scale the profile is shaped differently. For marine mammals the shape is more like a "hockey stick." If these curves are overlaid on the "Wenz ambient noise spectra curves" there appears to be shape conformance. This makes sense as auditory sensitivity would naturally evolve to exclude ambient environmental noise. This paper evaluates 120 legacy auditory threshold curves from 18 species of marine mammals and 60 threshold curves from 32 species of fish. The auditory threshold curves from the fish do not conform to the Wenz curves. Given that both the auditory thresholds and the Wenz curves were expressed as pressure gradient energy it is possible that the profile of the fish threshold curves express