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2015. Sills, J. M. and Reichmuth, C. Vocal behavior of spotted seals. *21st Biennial Conference on Marine Mammals*, San Francisco, United States, 13 December – 18 December. (Presentation abstract).

Vocal behavior of spotted seals

The acoustic ecology of spotted seals (*Phoca largha*) remains largely unknown, due to their association with unstable pack ice during the breeding season, their presumed aquatic breeding habits, and their sympatric distribution in sub-arctic regions with closely related harbor seals (*Phoca vitulina*). As a result, distance sampling tools that rely on acoustics cannot yet be applied with spotted seals. Captive studies can support acoustic monitoring efforts by measuring fundamental features of species-typical vocalizations in controlled conditions. These include acoustic parameters as well as developmental, seasonal, and sex-based patterns in vocal behavior. We studied two male spotted seals from age 3 months through 5 years at Long Marine Laboratory (Santa Cruz, CA). We scored vocal behavior daily, and recorded spontaneous calls emitted by these individuals at known distances with calibrated receivers. The production of stereotyped underwater calls showed clear developmental and seasonal patterns. This behavior emerged with sexual maturity at age 4, with calling occurring most frequently during spring and summer seasons (peak prior to molt). Underwater signals were guttural roars of escalating amplitude, with initial harmonic components and a terminal series of pulses. Calls were ~4.0 s with dominant energy below 1 kHz, and with typical source levels of 140 dB_{rms} re 1 μPa (at 1m). Airborne calls--often associated with bouts of underwater calling--were more variable and included growls, grunts, and snorts. We confirm that spotted seals, like other aquatically mating phocids, emit stereotypical underwater vocalizations during the breeding season. Based on these results and data for related species, it is likely that subadult and adult males are the primary individuals producing these calls. These findings suggest important considerations for the application of passive acoustic methods to monitor spotted seals in the wild. [Supported by OGP JIP on Sound and Marine Life].