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In-air hearing in Hawaiian monk seals: implications for understanding the auditory biology of monachid seals

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Despite its critically endangered status, little is known about the sensory biology of the Hawaiian monk seal (*Neomonachus schauinslandi*), a member of the Monachinae subfamily of phocid seals. While previous research has suggested that at least one monachid species exhibits reduced sensitivity to airborne sounds, no comparable hearing data are available for other species. Our aim in this study was to measure an in-air auditory sensitivity profile for a Hawaiian monk seal using a psychophysical paradigm. One adult male seal was trained to participate in a go/no-go procedure in an acoustic chamber, which enabled measurement of absolute detection thresholds for narrowband signals at frequencies spanning the range of hearing in air. The resulting behavioral audiogram for this individual reveals poor hearing sensitivity. The lowest threshold of 40 dB re 20 μ Pa at 0.8 kHz occurs within a +20-bandwidth of best hearing extending more than seven octaves. The apparently elevated in-air hearing thresholds for two monachid seals—compared to the highly sensitive true seals in the Phocinae subfamily—suggest that auditory adaptations may differ between these groups. Additional research is needed to confirm this finding, which has implications for understanding the evolution of hearing in amphibious marine mammals.

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