

PINNIPED ACOUSTICAL PSYCHOPHYSICS: INDIVIDUAL STRATEGIES

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In acoustic signal detection tasks, rates of responding on signal-absent trials (false alarms) can be maintained within a particular range to minimize the effects of changing response criteria on threshold determination. We compared pooled false alarm rates for two California sea lions (*Zalophus californianus*), a northern elephant seal (*Mirounga angustirostris*), and a harbor seal (*Phoca vitulina*). In one analysis, false alarm rates calculated during audiometric assessment were compared for session types using two different psychophysical procedures [staircase and method of constant stimuli (MOC)]. False alarm rates for data generated from the staircase method were either not different or were reliably higher than MOC-derived data for all subjects; in no cases were false alarm rates in staircase sessions lower than MOC sessions. In another analysis, false alarm rates of the same subjects were compared for a temporary threshold shift experiment in which sensitivity was measured using the staircase method only. False alarm rates were significantly higher following exposure to noise for one *Zalophus* and for *Phoca* relative to their false alarm rates prior to noise exposure. For these subjects, noise exposure may have reduced the animals' ability to distinguish signal-present from signal-absent trials and/or induced a more liberal response criterion. In a final analysis, we found that varying the ratio of signal-present to signal-absent trials resulted in appropriate changes in response criterion by all animals under all conditions examined (e.g. higher signal probability always led to more liberal criteria). However, the subjects varied in the rate at which they changed their response criteria, with *Mirounga* taking significantly longer to respond to changes in signal probability than the other animals. This analysis of differences in response criteria revealed substantial individual and/or species differences on signal detection tasks; such differences provide insight into learning strategies and data comparisons.