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Marine mammal groups: typical hearing capabilities

Despite the apparent importance of sound to marine mammals, relatively little is known about the hearing capabilities of the ~120 living species. The best available information comes from laboratory investigations of animals trained to participate in behavioral assessment of auditory processes. Since this data is available for only a few individuals representing less than 10% of marine mammal species, estimates of typical hearing capabilities must be augmented by anatomical and neurophysiological studies, analyses of vocalizations and other sound emissions, and responses to human-generated and natural noise sources. While it is clear that hearing capabilities vary at the level of individuals, age and sex classes, populations, and species, it is still sometimes useful to lump species into groups that likely share similar capabilities in order to assess potential noise impacts as well as the most significant knowledge gaps. Current estimates of typical hearing in small toothed whales, seals, sea lions, and sirenians are more reliable than those for baleen whales, sperm and beaked whales, and sea otters. In addition to the scientific bases for estimating hearing capabilities, these generalizations need to be considered in the context of the 2-dimensional geographical scales and 3-dimensional oceanographic scales over which different marine mammals range, and the ambient noise levels that characterize their environments.