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Marine Mammal Sensory Systems Laboratory: Ketten Laboratory

The Marine Mammal Sensory Systems Laboratory is located in WHOI's newly developed Marine Research Facility (MRF). Studies in the lab are directed at understanding how the ears of marine animals, particularly, whales and dolphins, are able to hear and use underwater sounds. Biomedical (CT and MRI) micro-imaging techniques are used at the Computerized Scanning and Imaging Facility (CSI) to study auditory systems from a wide range of species and to produce mathematical and three-dimensional computer models of marine ears. The models allow us to estimate hearing abilities for rare and endangered species, like blue whales (*Balaenoptera musculus*), that cannot be tested by normal methods. We also use computer simulations to determine how whale ears withstand rapid pressure changes during dives and how underwater noise affects hearing. We compare these results to anatomical and physiological findings we obtain during dissections of stranded animals. Because of the close relationship between what an animal hears and the sounds it produces, work in this laboratory is linked closely with vocalization and behavioral research in Peter Tyack's laboratory and the WHOI Marine Mammal Center (MMC). Studies on stranded animals are tied also to research in Michael Moore's laboratory on the effects of pollutants and disease and Mark Hahn's laboratory on chemical-biological interactions in marine animals.

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