

## 2008 Annual Report: Marine Mammal Center

The new WHOI Marine Mammal Center was funded in May 2008 by a generous gift from *Pete and Ginny Nicholas and family*. The focus of the WHOI Marine Mammal Center (MMC) is to develop strength in basic research and technology, concentrating on conservation applications through strategic partnerships and interdisciplinary approaches.

This focus builds on WHOI's expertise, capabilities, and facilities – including ships, vehicles, and a state-of-the-art laboratory, testing, and imaging facility. To better study marine mammals and improve prospects for their conservation, the MMC promotes the development of interdisciplinary teams and new opportunities, new research initiatives in critical areas, and important outreach activities.

Marine mammals generate intense popular and scientific interest and have a special conservation status in the US. Many populations are threatened or endangered because of past whaling and current fishing and shipping industries. As fewer marine mammals are killed intentionally by humans, the focus in conservation has switched to accidental deaths (for example, in fishing gear) and to the degradation of their habitats.

Many of today's threats are less obvious than whaling, but may endanger the health of marine mammal populations even more. Fisheries compete with marine mammals for food; chemical and noise pollution threatens them. Our ignorance about the effects of these threats makes it nearly impossible to manage the impacts of human activities on the ocean environment. Protecting marine mammal populations requires the best science and technology, applied to understanding the issues and to developing innovative conservation solutions. Careful, objective assessment of where the major negative human impacts on marine mammal populations occur in time and space allow the most focussed mitigation measures, that in turn minimize the impacts on associated industrial and defense activities.

The Woods Hole Oceanographic Institution has been a pioneer in marine mammal research since WHOI researchers founded the field of marine mammal bioacoustics in the late 1940s. Research on marine mammals has faced a bias, particularly from terrestrial scientists, as being too difficult for scientific breakthroughs. Yet researchers at WHOI have developed advanced technologies enabling them to make important discoveries about how marine mammals specialize in using sound to communicate, to feed, and to orient in the ocean. Discoveries and methods developed through basic research at WHOI and elsewhere have turned out to be essential to understanding and managing risks to marine mammals, especially risks of ocean noise pollution.

Understanding the distribution and abundance of marine mammals, the demography of their populations, the ecological factors that affect their movements, and their behavior and physiology at sea are all areas of basic research that are essential for conserving marine mammal populations. Also important are computer models, tools that let researchers make predictions about what will happen to populations in the future. The WHOI MMC has a commitment to support both field and modeling work, bringing scientists together across disciplines.

Just as vital to our understanding of marine mammals is the hands-on study of marine mammals on land. Over the past 8 years, an average of 220 marine mammals stranded (beached and injured or dying) on Cape Cod each year, a remarkably high number for such a small area. While the causes of strandings are not fully understood, research on strandings is urgent.

The WHOI Marine Mammal Center partners with many organizations working with strandings on the Cape, in order to improve the welfare of live stranded animals, gather scientific information from strandings, and communicate this information to inform conservation methods. Among groups the MMC works with are the Research Division of the International Fund for Animal Welfare and the National Marine Life Center.

WHOI maintains, and the MMC uses, a state-of-the-art necropsy and imaging facility where researchers help to identify factors contributing to mortality from strandings, entanglement in fishing gear, and other causes. This work is critical for understanding persistent threats to marine mammal populations. The WHOI Marine Mammal Center helps support these critical research facilities and bring experts from many disciplines to work here.

Scientists using the MMC facilities are making new discoveries about the basic biology, physiology and anatomy of marine mammals, as well as information about toxic contaminants and pathogens, some of human origin. Using cutting edge techniques to diagnose the health status and causes of mortality of wild marine mammals is yielding surprising new findings that are exciting science and potentially important for maintaining the health of the populations. For example, WHOI biologists Michael Moore, Rebecca Gast and Andrea Bogolmoni, with colleagues at Tufts University's Cummings School of Veterinary Medicine, the International Fund for Animal Welfare, and the National Marine Fisheries Service recently reported, based on work done the MMC necropsy facility, that numerous species of marine mammals and birds harbored disease organisms, some capable of being transmitted to humans and some resistant to antibiotics. These



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Marine mammal specialist Michael Moore and WHOI guest student Colby Moore (from the College of the Atlantic) prepare to examine a white-sided dolphin that had stranded and died on a beach in Wellfleet, Massachusetts. Researchers from around the world come to the Marine Mammal Center's specialized facilities at WHOI to perform necropsies and other post-mortem studies of marine creatures. (Photo by Tom Kleindinst, Woods Hole Oceanographic Institution)

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results are important for human health as well as maintaining healthy populations of marine mammals.

In 2008 the MMC completed its first call for proposals, receiving eight proposals from the WHOI Biology, Chemistry, and AOP&E Department and the Marine Policy Center. The MMC sponsored talks at WHOI – Prof. Hal Whitehead, (Dalhousie University) on “Cultures of the Open Ocean: the Sperm Whale,” and Prof. Christopher Clark (Cornell University) on “Acoustic Ecology of Whales in the Waters around Cape Cod” – and hosted its first workshop, on “Gulf of Maine Seals - populations, problems and priorities” in May 2009.

The MIT/WHOI Joint Program and WHOI postdoctoral programs offer world-class opportunities for training and research, and the WHOI MMC has partnered with the Nicholas School of the Environment at Duke University to enhance opportunities for graduate education with a competitive fellowship for graduate students at either Duke or WHOI to perform conservation-related research projects with scientists at the other institution.

In addition to activities at WHOI, MMC is developing other outreach efforts, including web sites and databases for open access to critical data and projects, and funds to scientists for interacting with media, providing testimony and expert advice on marine mammal research and conservation issues. A look at the number of marine mammal-related stories in “WHOI in the News” on the WHOI web site (20 articles in just the second half of 2008,) or *Oceanus* magazine, emphasizes the importance of public outreach about our efforts.

—[Peter Tyack](#), Center Director

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