

PhD Dissertation Defense

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Title: An Appraisal Of The U.S. Navy Marine Mammals And Sound Research And Monitoring Programs

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ABSTRACT

The U.S. Navy uses active and passive sonar in its at-sea operations for detecting submarine ships. Active sonar has been implicated as a cause of unusual mass stranding events. Over the last two decades, the U.S. Navy has been the subject of substantial litigation for non-compliance with regulations established to protect marine mammals. Between 2004 and 2011, the Navy invested \$212 million on 358 marine mammal projects in order to understand the link between anthropogenic noise and stranding events, to achieve compliance with regulations, and to develop mitigation measures to reduce or eliminate the harmful effects of sound in the water. The objective of this dissertation was to review the project outcomes, determine the extent of positive results and identify predictor indicators for projects that were further evaluated as “groundbreaking” or “vital” as compared to “constructive”, “positive”, “outcome unknown”, or “failed”. To these ends I used basic statistics and binary logistic regression modeling. Results revealed that 94.6% of the projects had positive outcomes and predictor indicators included project length, number of co-PIs, funding source, geographic location, and technology development. To further tease out these findings and identify their qualitative aspects, I conducted forty-four semi-structured interviews with past and present federal employees who have worked marine mammal programs for the Navy, the National Marine Fisheries Service, and the Marine Mammal Commission. The results showed that opinions on the research and monitoring programs are largely positive but there are also clear needs including the following: 1) a more efficient and directed environmental compliance framework; 2) an overall Department of Navy strategic research plan; 3) improved internal coordination and external communications; and 4) protected and sustained programmatic funding in the current fiscal environment. The Navy is dealing with continuing litigation and negative public press (low societal agreement on values) combined with a high degree of scientific disagreement, criteria qualifying it as an environmental *wicked problem*. While the Navy needs to continue its focus on marine mammal scientific research, it also needs to expand its stakeholder engagement towards more effective dialogue between the scientific community, stakeholders, and Navy decision makers.