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Project Title: Assessing the hearing capabilities of mysticete whales: a proposed research strategy for the Joint Industry Programme on Sound and Marine Life

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ABSTRACT

One of the most difficult problems faced by those charged with protecting animals from anthropogenic noise in marine environments is decision making in the absence of essential information. The mysticetes, or baleen whales, are species of particular concern with respect to this issue for several reasons, including their dependence on sound for social communication, their global distribution, and their vulnerable conservation status following massive human exploitation over the past several centuries. Presently, there is an immediate need for reliable estimates of hearing capabilities of mysticetes; however, scientists face numerous challenges in acquiring this information. A coordinated research strategy that identifies possible technical approaches to this problem, evaluates potential benefits and limitations of these approaches, prioritizes technology development and research efforts, and outlines funding and logistical requirements, is the vital first step towards addressing a topic of this scale and significance. This paper suggests such a research strategy for the Joint Industry Programme on Sound and Marine Life. The content is based on review of published and grey literature and discussion with experts in the field, as well as a survey of informal pre-proposals solicited to gain insight into possible novel approaches to this topic. The research problem is defined and placed in the context of available knowledge of mysticete sound production and communication, responses of free-ranging whales to sounds, neuro-physiological responses to sound, and anatomy and anatomy-based modeling. Overarching goals in the assessment of mysticete hearing capabilities are outlined, and specific knowledge gaps and general research needs are identified. Research priorities are established by topical area, and a “top-ten” list of practical science and funding recommendations are provided. Significant challenges including some of the technology requirements to support successful action on these recommendations are discussed.

A complete copy of the white paper can be accessed at:

<http://www.soundandmarinelife.org/Site/Products/MysticeteHearingWhitePaper-Reichmuth.pdf>

Project Objectives: (Bulleted list of no more than 5 entries)

1. To create a research strategy for measuring hearing in mysticete whales

Project Contract Dates (beginning and end dates): 13 Jan 2007 to 12 Sep 2007