THE OFFICE OF NAVAL RESEARCH'S ESME PROGRAMME: ADVANCES IN MODELLING NOISE IMPACTS

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1. ABSTRACT

Under the sponsorship of the U.S. Office of Naval Research (ONR) a large amount of information has been generated on the environmental consequences of underwater sound. We are now assembling these data within information management technologies that enable the representation of complex data in graphical or statistical formats for easier analysis (e.g. Global Information Systems or GIS).

The Effects of Sound on the Marine Environment (ESME) Program merges data and models on underwater acoustic propagation, animal distribution and abundance, the hearing and physiological effects of sound, and behavioural data (diving, migrations, etc.). This prototype modelling and simulation tool is intended to inform decisions on how to minimise adverse effects from manmade underwater sound. An additional benefit of synthesising data in numerical models in this way is the identification of critical sources of uncertainty in the simulation environment; a kind of 'research triage' that will enable us to identify and prioritise critical research needs by their relative contribution to reducing uncertainty (model variance). The scope of this undertaking is quite large, so this report will focus not only on current efforts, but on the roadmap for institutionalising large data archives and a process for system updates.

We will also describe ESME's connection to related projects, such as Cornell University's Library of Animal Sounds, the Census of Marine Life, and the U.S. Navy Living Marine Resources Information System (LMRIS).

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