

MARINE MAMMAL COMMISSION
4340 EAST-WEST HIGHWAY, ROOM 905
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23 October 2006

Shelby Walker, Ph.D.
Joint Subcommittee on Ocean Science and Technology
CCSP/USGCRP Office
1717 Pennsylvania Ave., NW, Suite 250
Washington, DC 20006

Dear Dr. Walker:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the draft Ocean Research Priorities Plan, as announced in the 12 September 2006 *Federal Register*, and offers the following comments.

The Commission believes that the draft Ocean Research Priorities Plan represents a significant achievement in ocean science and management. Among other things, the plan—

- provides a broad perspective on research needed to manage the nation's marine ecosystems;
- integrates a multitude of marine topics into six main themes that span the nation's diverse interests;
- describes many benefits that we derive from marine ecosystems;
- recognizes real and potential effects of human activities that pose risk to marine ecosystems;
- recognizes the value of basic science and discovery for building our knowledge and understanding of the oceans;
- recognizes the value of applied science for addressing existing and anticipated challenges in maintaining ocean health and productivity;
- emphasizes an ecosystem-based approach to research and management;
- emphasizes the need for a transition to multi-disciplinary ocean science;
- identifies key tools and methods for support of ocean science; and
- provides a basis for integrating multiple research and management efforts at the federal, state, regional, and local levels.

If implemented effectively, the Ocean Research Priorities Plan will provide a milestone in our nation's efforts to develop a sustainable relationship with our natural marine environment. We commend the Joint Subcommittee on Ocean Science and Technology for preparing the plan. We suggest the following three areas for further consideration by the Joint Subcommittee to strengthen the plan.

Human population studies and activities

We see no mention of human demographics in the plan. With regard to the oceans, our nation's fundamental challenge is to derive long-term benefits from them without depleting their many resources or significantly diminishing the ecological character of the affected ecosystems. Much of the plan focuses on research aimed at understanding our marine ecosystems, but considerably less attention is focused on understanding the human activities that may affect them. Human abundance in the United States has reached 300,000,000, and is projected to reach 420,000,000 by 2050. The majority of the population is concentrated in coastal areas, where they impact the oceans through coastal development, construction, recreation, disposal of human and industrial wastes, and runoff from urban and suburban areas. Dead zones, harmful algal

blooms, and accumulating debris all are consequences of human activities occurring in the oceans or on land and transported by riverine or atmospheric systems. Worldwide fisheries catch from wild population appears to have peaked at about 80-85 million tons and aquaculture, which appears to be the only means for meeting the increasing demand for fish protein, will bring its own suite of risks to marine ecosystems (pollution, disease, competition with wild populations). Commercial shipping is projected to double in the next few decades, which will mean more and larger ships in coastal waters, dredging and enlargement of coastal ports, and increased transport of invasive species. Demand for energy is expected to increase by 50 percent by 2030 and may lead to increased oil and gas drilling in both coastal and offshore waters and development of nearshore "wind farms." Climate change may have profound effects on the oceans through changes in sea level, alteration of major currents, and acidification. Although the Ocean Research Priorities Plan recognizes and is based, at least partially, on concerns about the effects of human activities, the plan could be strengthened by explicitly calling for more concerted research efforts aimed at understanding human demography and socioeconomic activities and the risks they pose to the oceans. To understand the cause-and-effect relationships that underlie our concern about human effects on the oceans, we must study the causes as well as the effects. In 2003 the Marine Mammal Commission consulted with marine mammal scientists from the United States and six other countries to identify future directions for research on marine mammals in view of these kinds of concerns. The results were recently published in *Marine Mammal Research: Conservation Beyond Crisis* and, among other things, call for long-term research on the human activities that are at the center of many conservation issues.

International research

The plan does not mention international coordination and cooperation. In most respects, the oceans are an international domain. Not only do they cover 70 percent of the earth, but they are in constant motion, interacting with land, ice, and atmosphere. We need only track the movements of highly migratory species, map the great circle routes used for commercial shipping, or link polar pollutants to their industrial sources to appreciate the oceans as international commons. The United States rightly supports a wide range of international research activities, and such activities are and should continue to be a critical part of our ocean research efforts. The inattention to international research is an oversight with potentially significant consequences, that it unnecessarily limits U.S. research efforts, and that it undermines the collection and sharing of information vital to achieving a sustainable global relationship between human activities and healthy marine ecosystems. The United States cannot play a leading role in ocean research if it fails to engage other nations in this important endeavor. For these and other reasons, the Marine Mammal Commission urges the Joint Subcommittee on Ocean Science and Technology to expand the breadth of its plan to incorporate research cooperation and coordination with other nations.

Temporal scale and the importance of long-term goals

The major themes described in the Ocean Research Priorities Plan, and the research subjects embedded within them, will require long periods of dedicated research. Climate change and oceanographic regime shifts, ocean productivity and biodiversity, hurricanes and tsunamis, coastal development and dead zones, pollution, anthropogenic sound, fishing, marine pathogens, and similar topics are all subjects of ongoing research that will continue for decades, if not indefinitely. Maximizing the benefits of such research over time will require a long-term perspective in planning and implementation to address not only our information needs, but also those of future generations. Short-term objectives are useful for measuring progress, but the value of the Ocean Research Priorities Plan stems more from the long-term direction it provides. We understand that an implementation strategy is under development. We urge the Joint

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Subcommittee on Ocean Science and Technology to ensure that long-term goals are not compromised by excessive focus on short-term results.

Connectivity between watersheds and coastal environments

Pollutants, harmful algal blooms, and dead zones are all reminders of the linkages between on-land activities and the marine environment. Although these matters are discussed in the plan, we believe they warrant greater attention because they reflect the connectedness of ecosystems and the diffuse nature of human impacts on the marine environment. Each of the above phenomena are increasing rapidly and pose a growing threat to our vital coastal regions.

Adaptive management

Finally, the plan gives insufficient attention to adaptive, experimental approaches to ocean research and management. Risks posed by our marine activities will be virtually impossible to assess without adaptive experimentation that integrates research into our social and economic activities to test underlying assumptions about their effects. The current fishing strategy, for example, is based on the assumption that 60 percent or more of the biomass of target species can be removed from the oceans without significant consequences on the affected ecosystems. Such assumptions require adaptive, experimental evaluation if we are to sustain our marine ecosystems in a healthy state.

Thank you for the opportunity to comment on the draft Ocean Research Priorities Plan. We look forward to reviewing the implementation strategy.

Sincerely,



John E. Reynolds, III, Ph.D.
Chairman

Reference

Reynolds, J.E., III, W.F. Perrin, R.R. Reeves, S. Montgomery, and T.J. Ragen. 2005. Marine Mammal Research: Conservation Beyond Crisis, The Johns Hopkins University Press, Baltimore, MD, 240 pp.