

North Aleutian Basin Environmental Research Planning

A planning meeting that included research scientists, managers, and local stakeholders identified the critical importance of resources in the North Aleutian Basin, including human subsistence resources, commercial fisheries, and internationally important bird and marine mammal populations and habitats. A number of topical areas were identified where basic information necessary to evaluate the potential impacts of oil and gas developments was lacking or incomplete.

PROBLEM/OPPORTUNITY

The North Aleutian Basin Planning Area of the Department of Interior's Minerals Management Service (MMS) is a large geographic area with significant ecological and natural resources. The Basin includes most of the southeastern part of the Bering Sea continental shelf, including all of Bristol Bay. The area supports important habitat for a wide variety of species and globally significant habitat for birds and marine mammals, including federally listed species. Villages and communities of the Alaska Peninsula and other areas bordering or near the Basin rely on its natural resources (especially commercial and subsistence fishing) for much of their sustenance and livelihood. The offshore area of the North Aleutian Basin is considered to have important hydrocarbon reserves, especially natural gas.

The MMS has released a draft proposed program identifying lease sales in the North Aleutian Basin, subject to restrictions. Additional environmental assessments will be needed to evaluate the potential effects of specific lease actions, exploration activities, and development and production plans in the Basin. A full range of updated multidisciplinary scientific information will be needed to address oceanography, fate and effects of oil spills, marine ecosystems, fish, fisheries, birds, marine mammals, socioeconomics, and subsistence in the Basin.

APPROACH

Argonne National Laboratory scientific staff assisted the MMS Alaska Outer Continental Shelf (OCS) Region in identifying and prioritizing information

needs related to the North Aleutian Basin and potential future oil and gas leasing and development activities. The overall approach focused on three related but separate tasks: (1) identification and gathering of relevant literature; (2) synthesis and summary of the literature; and (3) identification and prioritization of information needs. To assist in gathering this information, MMS convened the North Aleutian Basin Information Status and Research Planning Meeting, held in Anchorage, Alaska, in November 2006. The meeting was the primary method used to gather input from stakeholders and identify information needs and priorities for future inventory, monitoring, and research related to potential leasing and oil and gas developments in the North Aleutian Basin.

The purpose of the meeting was to involve a broad range of stakeholders and scientists in science planning for the North Aleutian Basin that would set the framework and priorities for pertinent studies and research in key disciplines and topics to be



Stellar sea lions in the North Aleutian Basin

sponsored by the MMS Environmental Studies Program. Identification of preliminary priorities of feasible studies took into consideration the relevance to the MMS Alaska OCS Region mission, timing needs, scientific quality, cost, and other criteria such as implementation considerations.

Background information provided to participants included an overview of MMS's 2007–2012 five-year program plan, the results of an Argonne literature review, and topical presentations by North Aleutian Basin subject matter experts on physical oceanography, fish and shellfish populations, federal fisheries, commercial fishery economics, community socioeconomics, subsistence research, seabirds and shorebirds, waterfowl, seals and sea lions, cetaceans, and sea otters and walruses. The intent was to provide sufficient background information for meeting participants on the full array of subject areas to enable them to identify and prioritize information needs relevant to environmental assessments of oil and gas development in the Basin.

Five working groups were formed from meeting participants with the objectives of (1) reviewing the status of existing information; (2) identifying information needs to support future environmental assessment activities in the Basin; (3) prioritizing those information needs; and (4) developing proposed study profiles to fill high-priority information needs.

RESULTS

Meeting participants emphasized the critical importance of resources in the North Aleutian Basin including human subsistence resources, commercial fisheries, and internationally important bird and marine mammal populations and habitats. In general, meeting participants believed that current information is insufficient to address oil and gas leasing issues.

Thirty-five high-priority study profiles were developed by working groups in the following topical areas:

- Characterization and modeling of meteorology, ocean circulation, sediments and benthic communities, physical oceanographic parameters, eelgrass and other ecosystems, sea ice edge productivity, and fate and effects of oil spills.

- Assessment of socioeconomics and subsistence in the North Aleutian Basin.
- Characterization of seasonal distribution and productivity of fish and fisheries, including nearshore forage fish, juvenile Pacific salmon, juvenile flatfishes; evaluation of potential for space-use conflicts between fishery activities and oil and gas development activities.
- Determination of spatial and temporal distribution of various regional birds, bird habitats, and migratory movements.
- Seasonal distribution, abundance, and habitats of marine mammals, including North Pacific right whales, humpback whales, fin whales, and other cetaceans; Steller sea lions; harbor and spotted seals; Pacific walruses; and northern sea otters.

It is critical that some topics receive further study because (1) there is little Basin-specific information on them, (2) the resources they address are considered of vital importance, and (3) additional information is needed as early as possible in the lease exploration on development production time line.

Assessments of the effects of oil and gas development activities in the North Aleutian Basin could greatly benefit from development of a high-resolution model of the Basin that characterizes important physical processes. Such a model would be useful for predicting the fate and effects of oil spills or other contaminant releases and could be linked to information collected about other resources in the Basin to better understand the underlying basis of distributions, seasonal patterns of use, population trends, or changes in resource status.

FUTURE

Studies and the environmental assessment program they support will be greatly strengthened by strong communication among principal investigators and MMS staff and the integration of studies to the extent possible. Studies should focus on hypothesis testing and employ robust statistical design using appropriate sample sizes and data quality objectives identified before the studies are implemented. Standardization of common data needed by several programs, avoidance of duplication of effort, and development of a Web-based data system using standard metadata procedures would improve the usability of results and make them available to a wider group of users.