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PEW
ENVIRONMENT GROUP



**US ARCTIC PROGRAM
OCEANS NORTH**

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ADDRESSING MAJOR GAPS IN ARCTIC SCIENCE



King eiders

PHOTO: KATE STAFFORD

The Pew Environment Group and Ocean Conservancy commissioned respected scientist Dr. Robert Spies to convene independent Arctic experts to review the U.S. Geological Survey's (USGS) Circular 1370: *An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska*.

USGS Circular 1370, released June 23, 2011, was done at the request of Interior Secretary Ken Salazar to "gather the information we need to develop resources in the right places and the right ways."

The USGS developed more than 50 findings and recommendations, but also recognized overarching themes throughout every topic, including the need for:

1. *large-scale synthesis of data and information,*
2. *enhanced dialog and collaborative science planning, and*
3. *a more transparent and inclusive planning and decision-making process.*

In the review commissioned by Pew and Ocean Conservancy, 14 independent Arctic experts commend the USGS for identifying the major gaps in scientific knowledge in an unbiased manner. To address information still missing and to provide a better understanding of the ecosystem as a whole, they call on the administration to take the following steps:

SET RESEARCH PRIORITIES

USGS Circular 1370 does not indicate which of the many science gaps are most important to fill, and there are insufficient resources to study all the topics recommended. It is essential to prioritize gaps and design the studies or other scientific activities needed to carry out the USGS recommendations. One area that should be considered a top priority for basic biological research is the population dynamics of species important to the ecosystem and human subsistence, such as seals, walrus, bowhead whales, marine birds and marine fishes.

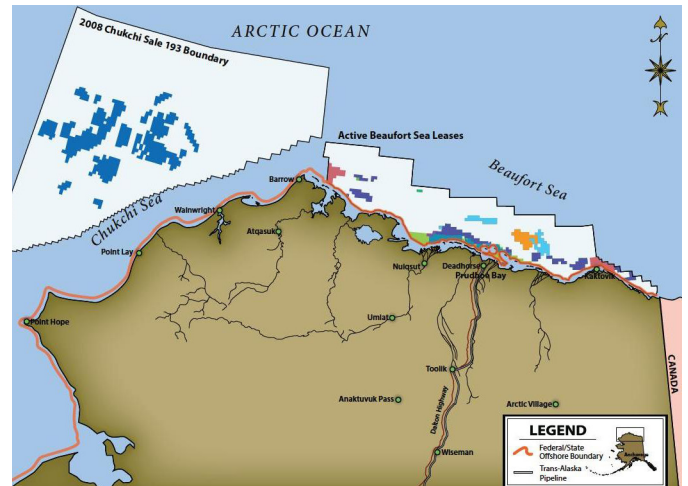
SUPPORT BASIC ECOSYSTEM RESEARCH

Basic ecosystem research is the foundation upon which targeted scientific studies and results can be built to provide the information required for decisions concerning offshore oil and gas activities. To keep this foundation solid, the range of existing scientific research and monitoring in Arctic waters should continue and be developed into a comprehensive, fully integrated effort.

IDENTIFY AREAS FOR ENHANCED PROTECTION

Currently available information shows that some areas in the Arctic are biologically and ecologically important, and therefore, the Department of the Interior (DOI) and other appropriate government agencies—the National Oceanic and Atmospheric Administration (NOAA), for example—should make a concerted effort to protect these areas. Important areas include Hanna Shoal, Ledyard Bay and Barrow Canyon and unique habitats such as the Boulder Patch in the Beaufort Sea.

Ledyard Bay, located between Cape Lisburne and Kasegaluk Lagoon in the Chukchi Sea, was identified as a Super Ecologically and Biologically Significant Area by the International Union for Conservation of Nature and the Natural Resources Defense Council in an overview synthesis of the Arctic marine environment and as an Important Bird Area of global significance by the National Audubon Society. It was also afforded special recognition under the Endangered Species Act as a Critical Habitat Unit. Ledyard Bay is a critical molting area for spectacled eiders (at right).



Map showing active oil and gas leases in the Chukchi and Beaufort seas



Bowhead whale

PHOTO: KATE STAFFORD



Spectacled eider

PHOTO: U.S. FISH AND WILDLIFE SERVICE

IMPLEMENT BETTER MONITORING

Climate change is likely to be the dominant driver of future ecosystem change, and it is important to account for this in the design of a monitoring plan. This requires annual monitoring supported by stable, long-term funding and enhanced planning and coordination. The inclusion of traditional knowledge and local observations of indigenous people would be a valuable addition here, as well as in other activities in this list.

IMPROVE INFORMATION EXCHANGE

There is a significant lag in the sharing and communicating of scientific study results. For example, some of the areas suggested by USGS for research are being addressed already but the information was apparently unavailable to USGS. A broader, more-integrated effort to manage, consolidate, coordinate and share data is needed, particularly to support synthesis activities that combine the results of different studies or disciplines to answer questions that are beyond the scope of only one study.

SYNTHESIZE EXISTING KNOWLEDGE

There are a number of biological syntheses (combining results of different studies and disciplines to answer questions that are beyond the scope of only one study) under way. When these are completed, the DOI, in cooperation with other federal agencies, should complete a regional ecological synthesis. Integrating knowledge could help address basic questions about oil and gas activity, such as whether, where and when to allow such activities based on the sensitivity of the area and species to development impacts.

ASSESS CUMULATIVE EFFECTS

Assessing cumulative effects (combined impacts from multiple sources) is essential to informed decision making about oil and gas activities in the Arctic. For example, there is considerable information about the impacts of noise on movements of bowhead whales, but very little is known about the cumulative



A walrus mother and her calf

PHOTO: U.S. GEOLOGICAL SURVEY

impacts of many disturbances (e.g., noise, vessel strike, spilled oil) at once, or continuously, as whales migrate through the Arctic Ocean. An assessment of cumulative impacts, beginning with the development of a range of scenarios for industrial activities over the next few decades, should be started as soon as is feasible.

INTERPRET DATA AND RESULTS

It is important that existing information about the Arctic marine environment is synthesized and interpreted for use by decision makers and the public. If the goal is to inform policy decisions about oil and gas activities in the Arctic with science, then the necessary information and data must be made available in timely and accessible ways.

IMPLEMENT TRUE ADAPTIVE MANAGEMENT

To actually conserve Arctic resources, true adaptive management must be in place, so that management agencies can revisit policies and decisions on an ongoing basis and change them in response to research and monitoring findings. An examination of decision-making processes to determine whether this can be done under existing laws, regulations and procedures would be valuable.

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