

Environmental Studies Program: Studies Development Plan | FY 2021–2022

Title	Winter Ringed Seal Density within Beaufort Sea Oil and Gas Project Areas
Administered by	Alaska OCS Regional Office
BOEM Contact(s)	Rick Raymond (richard.raymond@boem.gov)
Conducting Organization(s)	TBD
Total BOEM Cost	TBD
Performance Period	FY 2021–2023
Final Report Due	TBD
Date Revised	April 28, 2020
PICOC Summary	
<i><u>Problem</u></i>	An estimate of the number of ringed seals that occur and could be disturbed within oil and gas project areas is needed to assess potential impacts to them for Endangered Species Act (ESA) Section 7 consultations and NEPA documents. Ringed seals stay under the ice and snow in winter and are not visible for counting during ice road and island building or winter seismic and drilling operations.
<i><u>Intervention</u></i>	This study will enhance ring seal assessments by establishing viable ways to locate ringed seals and their under-snow structures using satellite-telemetry tags that sense and record whether a seal is inside a lair, and a sensor web to monitor under-snow structures for ringed seal activity.
<i><u>Comparison</u></i>	This study will consider various approaches to develop capabilities for sensing ringed seal lairs and monitor their use and provide suggested mitigation measures to reduce impacts to ringed seals.
<i><u>Outcome</u></i>	This study will produce new technological and logistical solutions for quantifying impacts of oil and gas activities on ringed seals and refining guidance for future permitting and mitigation decisions for BOEM. The new technology will also expand capabilities for population assessment of ringed seals, facilitate research on their habitat requirements, and improve understanding about their vulnerability in a warming Arctic.
<i><u>Context</u></i>	Bering, Chukchi, and Beaufort seas

BOEM Information Need(s): Ringed seals are the most numerous marine mammals present during winter in the coastal OCS of the Alaskan Arctic and they are listed as threatened under the ESA. BOEM needs better information on ringed seals that may be affected by actions that could cause disturbance or injury (known as “take” under ESA), during the winter and early spring, when their breathing holes and under-snow lairs are inconspicuous to human observers and are susceptible to ice road, gravel island, and seismic and drilling operations. This

information will support ESA Section 7 consultations and NEPA analyses to inform permitting decisions related to these activities.

Background: Recent advances in technology have created the potential for key improvements in understanding ringed seal use of under-snow lairs and how sensitive that use is to various human activities. Bio-loggers have been proposed as a viable approach for integrating new sensors into tags that would indicate ringed seal presence inside lairs. These tags could be useful for studying responses of seals near oil and gas activities during infrastructure development. A redundant wireless network would autonomously indicate the presence/absence of seals in the lair structures and track structure integrity through the onset of melt and eventual collapse. Such monitoring of ringed seals' responses to human activities would support development of satellite remote sensing techniques. These new technologies would more easily and economically characterize important ringed seal breeding habitat.

Objectives: This study will enhance capacity for assessment of impacts on ringed seals by establishing a viable solution for maintaining the capability to find ringed seals and their under-snow structures and developing associated mitigation measures to reduce impacts.

Methods: Researchers will construct prototype bio-logger devices and test them in artificial snow structures. Testing will be conducted at various stages of snow transformation (full winter conditions, melt season, and collapse) over two winter seasons to evaluate performance. The final tag design will be available for the research community to deploy.

Researchers will coordinate discussions among stakeholders, including BOEM, NOAA, industry representatives, Alaska Native organizations, and university researchers, to identify requirements and design a 'sensor web' to monitor under-snow structures for ringed seal activity. The web will monitor under-snow lair use and conditions throughout the snow-covered period and relay the data autonomously to an internet node to ensure continuous availability of ringed-seal detection for mapping structures around oil and gas activities and for supporting research to improve understanding of ringed seal behavior and habitat needs. Final products will include recommendations for application of the sensor web to best mitigate potential impacts to ringed seals from oil and gas exploration, development, and production activities.

Specific Research Question(s): How can new technology expand capabilities, facilitate research on the habitat of ringed seals, and improve understanding about potential impacts from oil and gas activities?

Current Status: N/A

Publications Completed: N/A

Affiliated WWW Sites: N/A