

Environmental Studies Program: Ongoing Study

Title	NOAA-BOEM Partnership: Range-Wide Distribution of Cook Inlet Beluga Whales (<i>Delphinapterus leucas</i>) in the Winter
Administered by	Alaska Regional Office
BOEM Contact(s)	Dr. Christina Bonsell, christina.bonsell@boem.gov
Procurement Type(s)	Interagency Agreement
Conducting Organizations(s)	NOAA; DOI AQD
Total BOEM Cost	\$276,000 plus Joint Funding (\$92,000)
Performance Period	FY 2018–2022
Final Report Due	March 2022
Date Revised	September 16, 2022
PICOC Summary	
<i><u>Problem</u></i>	There is much uncertainty regarding the current spatial and temporal distribution of the critically endangered Cook Inlet Beluga Whale (CIBW) population. In particular, the most recent information regarding the winter range of the CIBW population is more than 15 years old.
<i><u>Intervention</u></i>	A wide-ranging aerial survey for CIBW in winter that could be augmented with passive acoustic monitoring (PAM) recorders to aid in winter detections of beluga whales.
<i><u>Comparison</u></i>	NOAA Fisheries conducts biennial summer surveys for this species, but the last winter aerial survey for CIBW was flown in 2002 (Rugh et al. 2004).
<i><u>Outcome</u></i>	This project will produce updated information regarding the winter range of the CIBW population.
<i><u>Context</u></i>	Cook Inlet Planning Area

BOEM Information Need(s): Updated information on the wintering locations of CIBW will aid BOEM in developing more effective and precise spatial and temporal mitigation measures to help minimize potential impacts from oil and gas activities on the Outer Continental Shelf (OCS) in Cook Inlet. Results from this effort will support National Environmental Policy Act (NEPA) analyses future Cook Inlet lease sales, as well as for future exploration plans (EPs) and development and production plans (DPPs) that be submitted for Cook Inlet.

Background: CIBW may be adversely affected by routine operations associated with oil and gas exploration and development, including seismic surveys, drilling, production, and shipping (Small et al. 2017). The areas leased in Cook Inlet Lease Sale 244 at least partially overlap with CIBW critical habitat and some are in the vicinity of major anadromous streams, which are important beluga foraging areas.

Biennial summer surveys for this species conducted by NOAA Fisheries indicate there has been a considerable contraction in the summer range (Shelden et al. 2019), as aerial surveys and satellite-tagging studies have shown the majority of whales now occupy the areas of upper Cook Inlet in the summer. Satellite tagging studies on 18 animals (Shelden et al. 2015), together with presence/absence

PAM (Castellote et al. 2016), show CIBW appear to still occur within the OCS historic range for this species in the winter, but the last winter aerial survey for CIBW was flown in 2002 (Rugh et al. 2004).

The most recent abundance estimate of 327 CIBW (Muto, 2020) falls within the range of abundance estimates from the last 10 survey years (278 – 375 whales). The minimum population estimate (NMIN) of 311 Beluga whales was calculated according to Equation below from the potential biological removal (PBR) guidelines (NMFS 2016):

$$NMIN = N/\exp(0.842 \times [\ln(1 + [CV(N)]^2)]^{1/2})$$

Using the 3-survey average population estimate (N) of 327 whales and an associated Coefficient of Variation (CV)(N) of 0.06. This is down from a historical estimate of 1,300 in 1979. NOAA Fisheries designated the CIBW population as depleted under the MMPA in 2000, subsequently listing this population as an endangered species in 2008 under the ESA.

Objectives:

- Identify distribution and hot spots for CIBW throughout their winter range.
- Assess winter spatial and temporal extent of CIBW in Cook Inlet, including OCS areas.
- Make recommendations on precise spatial and temporal mitigation measures for CIBW.

Methods: NOAA Fisheries is conducting a five-year (2018-2022) winter aerial survey program in upper Cook Inlet. BOEM has partnered with NOAA Fisheries to expand these winter aerial surveys to lower Cook Inlet. Winter surveys through upper and Lower Cook Inlet will occur two times a year, in Fall (October, November) and Spring (March, April) in 2018-2021. The lower Cook Inlet survey extends from East Forelands south to Homer on the east side and from West Forelands south to Kamishak Bay on the west side, as Nikiski (in close proximity to the Forelands) and Homer were identified as operating bases for exploration and development activities for Cook Inlet Lease Sale 244, and would cover the historic range of this species. At least initially, lower levels of OCS-related activity are expected during December and January, and the available daylight is limited, thus surveys are not planned during those months. Protocols for aerial surveys of CIBW have been well developed (Shelden et al. 2013) and will be followed using a twin-engine, high-wing platform with bubble windows at the right- and left-forward observer positions and a 6 to 8-hour flying time. Surveys may be augmented by deploying PAM moorings strategically placed throughout Cook Inlet with locations based on prior studies (Castellote et al. 2016), as funding permits.

Specific Research Question(s): What is the current winter range of the critically endangered Cook Inlet Beluga Whale population?

Current Status: Completed.

Publications Completed: None.

Affiliated WWW Sites:

<http://www.boem.gov/akstudies/>

<https://www.fisheries.noaa.gov/alaska/2018-cook-inlet-beluga-aerial-surveys>

References:

- Castellote, M., R. J. Small, J. Mondragon, J. Jenniges, and J. Skinner. 2016. Seasonal distribution and foraging behavior of Cook Inlet belugas based on acoustic monitoring. Alaska Department of Fish and Game, Final Wildlife Research Report, ADF&G/DWS/WRR-2016-3, Juneau.
- National Marine Fisheries Service (NMFS). 2016. Guidelines for preparing stock assessment reports pursuant to the 1994 amendments to the Marine Mammal Protection Act. 23 p. Available online: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/guidelines-assessing-marine-mammal-stocks>
- Rugh, D.J., B.A. Mahoney, and B.K. Smith. 2004. Aerial surveys of beluga whales in Cook Inlet, Alaska, between June 2001 and June 2002. U.S. Dept. Commer., NOAA Tech Memo. NMFS-AFSC-145, 26p.
- Shelden, K. E. W. and P. R. Wade (editors). 2019. Aerial surveys, distribution, abundance, and trend of belugas (*Delphinapterus leucas*) in Cook Inlet, Alaska, June 2018. AFSC Processed Rep. 2019-09, 93 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115
- Shelden, K. E., K. T. Goetz, D. J. Rugh, D. G. Calkins, B. A. Mahoney, and R. C. Hobbs. 2015. Spatio-temporal changes in beluga whale, *Delphinapterus leucas*, distribution: results from aerial surveys (1977-2014), opportunistic sightings (1975-2014), and satellite tagging (1999-2003) in Cook Inlet, Alaska. *Mar. Fisheries Review*, 77(2):1-32.
- Shelden, K. E. W., D. J. Rugh, K. T. Goetz, C. L. Sims, L. Vate Brattström, J. A. Mocklin, B. A. Mahoney, B. K. Smith, and R. C. Hobbs. 2013. Aerial surveys of beluga whales, *Delphinapterus leucas*, in Cook Inlet, Alaska, June 2005 to 2012. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-AFSC-263, 122 p.
- Small, R. J., B. Bros, M. Hooten, M. Castellote, J. Mondragon. 2017. Potential for spatial displacement of Cook Inlet beluga whales by anthropogenic noise in critical habitat. *Endangered Species Research* 32:43-57.