

Environmental Studies Program: Ongoing Study

Title	Cook Inlet Beluga Acoustic Monitoring in Lower Cook Inlet (LCI) Rivers (AK-20-01)
Administered by	Anchorage, Alaska Office
BOEM Contact(s)	TBD
Conducting Organizations(s)	TBD
Total BOEM Cost	TBD
Performance Period	FY 2020–2022
Final Report Due	TBD
Date Revised	October 16, 2019
PICOC Summary	
<i>Problem</i>	Cook Inlet belugas (CIB) (<i>Delphinapterus leucas</i>) are an endangered and genetically distinct population in decline, with an estimated population size of only 328 whales in 2016. Although the reason for a lack of recovery is uncertain, one potential contributor is disturbance from anthropogenic noise, especially in critical foraging habitat such as river mouths.
<i>Intervention</i>	The year-round presence and habitat use of CIB in LCI near river mouths will be monitored for acoustically active whales, with a focus on quantifying feeding bouts. Changes in feeding activity or spatial displacement from feeding areas due to anthropogenic activities will be monitored.
<i>Comparison</i>	Study results will be evaluated in the context of recent and historical observations and assessments of CIB habitat use in LCI.
<i>Outcome</i>	Findings from this study would assist with formulating effective mitigation measures (e.g., temporal, spatial) for oil and gas exploration and development activities in or near CIB critical habitat, to help in the recovery of the endangered population.
<i>Context</i>	Cook Inlet Planning Area

BOEM Information Need(s): BOEM needs information about the summer and winter range of CIB and how the range might overlap with areas of potential oil and gas activities. A better understanding of beluga movements, location and timing of important feeding areas, and characterization of the acoustic environment year-round will support BOEM’s Oil Spill Risk Analysis, National Environmental Policy Act analyses, Endangered Species Act (ESA) Section 7 consultations, and development of mitigation measures related to future lease sales in Cook Inlet, as well as potential exploration and development on existing leases.

Background: The Distinct Population Segment of Cook Inlet beluga whales, which remains within Cook Inlet year-round, was listed as endangered under the ESA in 2008 following a major decline in abundance (~50%) in the 1990s associated with overhunting. Although hunting ended in 2000, the CIB population is not increasing,

indicating that factors other than hunting currently impede recovery. The summer range of CIBs now occurs mostly in the Upper Cook Inlet (UCI), north of Kalgin Island, however prior to 1980, belugas ranged south of Kalgin Island and into Kachemak Bay. Their winter range is largely unknown but limited satellite telemetry data showed use of deeper water habitats farther from shore. Research efforts in 2018 (BOEM/ National Marine Fisheries Service [NMFS] funded aerial surveys, NMFS supported citizen science efforts, NMFS/Sea Grant study) have demonstrated the presence of belugas through much of LCI, including along the coastline and in the rivers, as well as near or within the lease areas. Four belugas were also observed in Kachemak Bay for the first time in several years.

Historical accounts from Native hunters and local residents indicate that belugas have used river mouths such as the Kenai and Kasilof Rivers between April and November while feeding on anadromous fish species, notably eulachon and Pacific salmon. While little contemporary work has focused on these LCI rivers, the presence of CIB has been noted in these areas through passive acoustic monitoring and sightings.

Beluga whales are highly dependent on sound to communicate, navigate, and find prey. Understanding natural ambient noise levels will allow noise from anthropogenic sources to be evaluated and provide insight about whether noise is a factor in beluga habitat use.

Objectives:

- Acoustically determine the seasonal foraging occurrence of CIB in LCI rivers.
- Characterize the type and level of noise from anthropogenic activities that have the potential to disturb CIB in LCI, and quantify the overlap with CIB distribution.
- Develop a range-wise evaluation of noise levels (natural and anthropogenic), potential feeding areas, and other relevant attributes.
- Assess correlations of CIB occurrence with currents, tides, and physical characteristics.
- Summarize acoustics recorded for other marine mammals

Methods: Acoustic cetacean and porpoise detectors (C-PODs) will be deployed to monitor beluga presence and foraging at various river mouths, including the Kenai and Kasilof rivers. C-PODs “listen” continuously for over 200 days and can detect beluga echolocation up to 900 m away. CIB presence will be identified by detection of echolocation signals and results will be analyzed to build seasonal presence plots. Foraging will be identified by the unique echolocation signature emitted by odontocetes when chasing prey (click trains ending in buzzes). The Kenai River would be monitored year-round while NMFS will monitor UCI locations only during the open water season.

This project will also leverage NMFS’s citizen science efforts to incorporate visual observations to provide a quantified measure of the level and type of anthropogenic activities in and around the river sections monitored acoustically. NMFS will also collaborate with the Beluga Whale Alliance and Alaska Wildlife Alliance to collect

additional visual observation data at the several acoustically monitored river locations. Helicopters or small planes may be needed to deploy C-PODs in difficult to access locations. This study can build upon previous experience acoustically monitoring river mouths in Cook Inlet (*e.g.*, Eagle River, Chickaloon River, and Little Susitna River).

Specific Research Question(s):

1. What rivers are used by CIB to feed and when?
2. Do CIB change behavior in the presence of anthropogenic activities and if so, is it due to certain levels or types of anthropogenic activities?
3. How do the acoustic data and visual data compare?

Current Status: Planned new start

Publications Completed: None

Affiliated WWW Sites: <http://www.boem.gov/akstudies/>