

# Distribution and habitat use by Cook Inlet beluga whales:

Insights from a long-term photo-identification study for management and recovery of an endangered population



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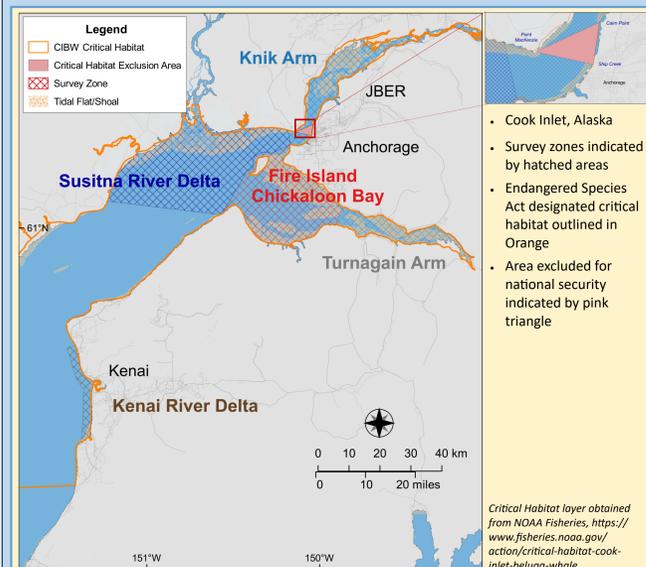
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All photo-ID vessel surveys conducted under NMFS MMPA/ESA Scientific Research Permit #18016 and #14210.

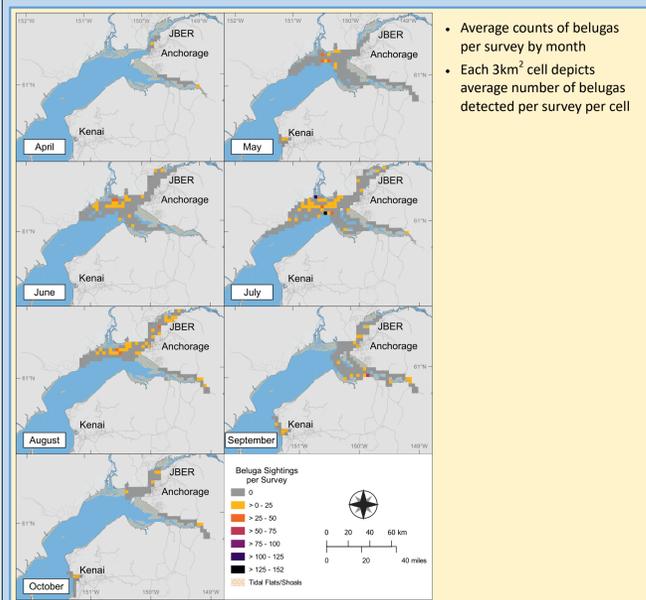
## Introduction

- Cook Inlet beluga whale (CIBW) critical habitat has been broadly defined but details of habitat use are lacking
- We examined data from a long-term photo-ID study to identify important CIBW habitat-use areas and patterns



## Methods

- 477 Photo ID surveys conducted 2005-2017 in upper Cook Inlet
- 575 Groups were encountered within CIBW critical habitat
- Approximately 273,000 photographs collected of individual whales
- Collected data on group location, behavior, size, composition, and age class of individuals
- Tested for patterns (accounting for effort) in group size, number of neonates, number of calves, and group-feeding counts by survey zone, month, and year using generalized linear models and Pearson's chi-squared test

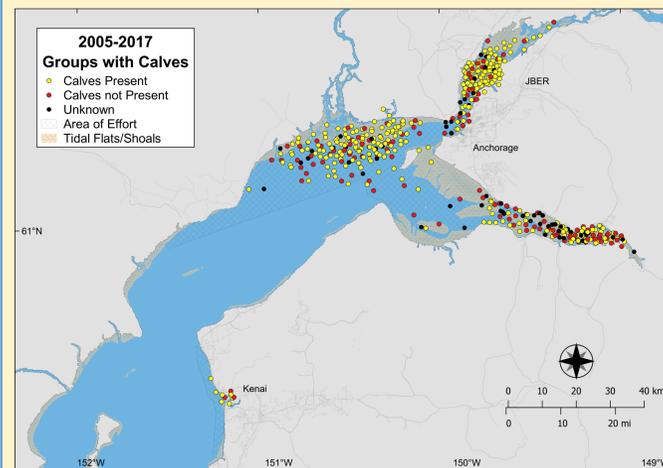


NMFS permit #14210

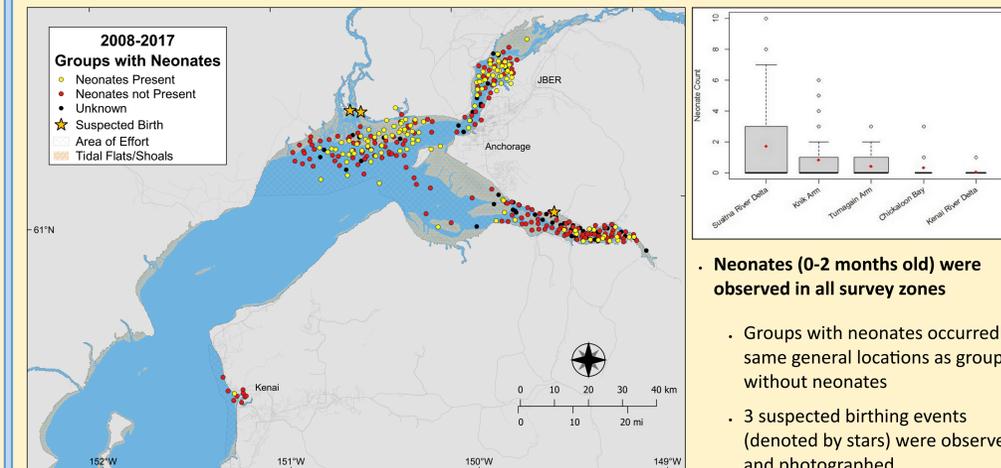
A pair of CIBW mothers with calves

## Results

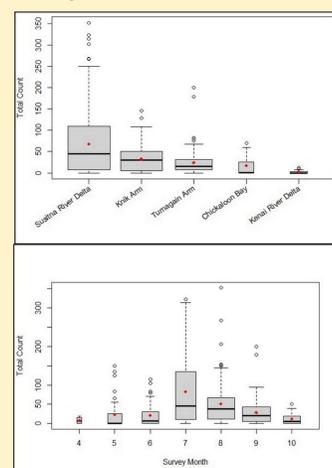
### Calf-rearing Habitat



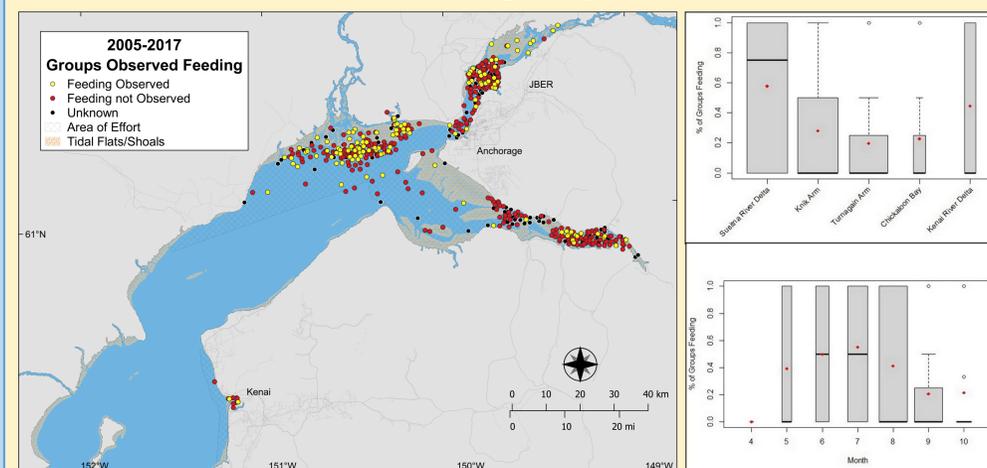
### Calving Habitat



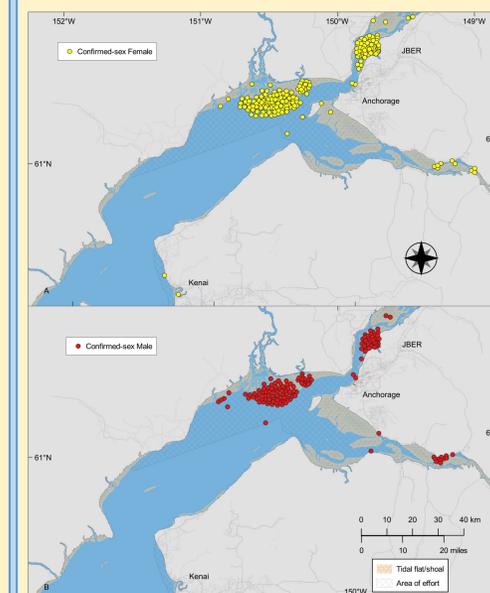
### Group Distribution and Size



### Feeding Groups



### Group Composition and Distribution



### Individual Whale Fidelity and Movements of Groups

- CIBW do not show individual site fidelity
- Travel by groups within and between areas appeared to be highly influenced by tidal state

## Conclusions and Recommendations

- CIBWs were found seasonally in distinct areas where they aggregate in large groups of both sexes and all age-classes while rearing calves and feeding. These areas, and the general corridors connecting them, represent important beluga habitat that may warrant focused management attention and protection efforts
- Whales travelling among distinct areas of Cook Inlet increase their likelihood of exposure to multiple, localized threats
- Habitat protection and regulation of anthropogenic activities should consider cumulative effects of all activities in the range of CIBWs
- The potential of localized anthropogenic activities to affect the entire population must be taken into account

### Acknowledgements

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Beluga in pursuit of a salmon

NMFS permit #18016