

Exploring Baird's Beaked Whale Presence in the North Pacific through Long-Term Passive Acoustic Monitoring

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Introduction

- Baird's beaked whales (*Berardius bairdii*) are deep-divers with elusive surface behavior
- Baird's beaked whales produce unique echolocation clicks when foraging¹
- Passive acoustic monitoring can provide insight on Baird's beaked whale spatiotemporal distribution



Methods

Data Collection

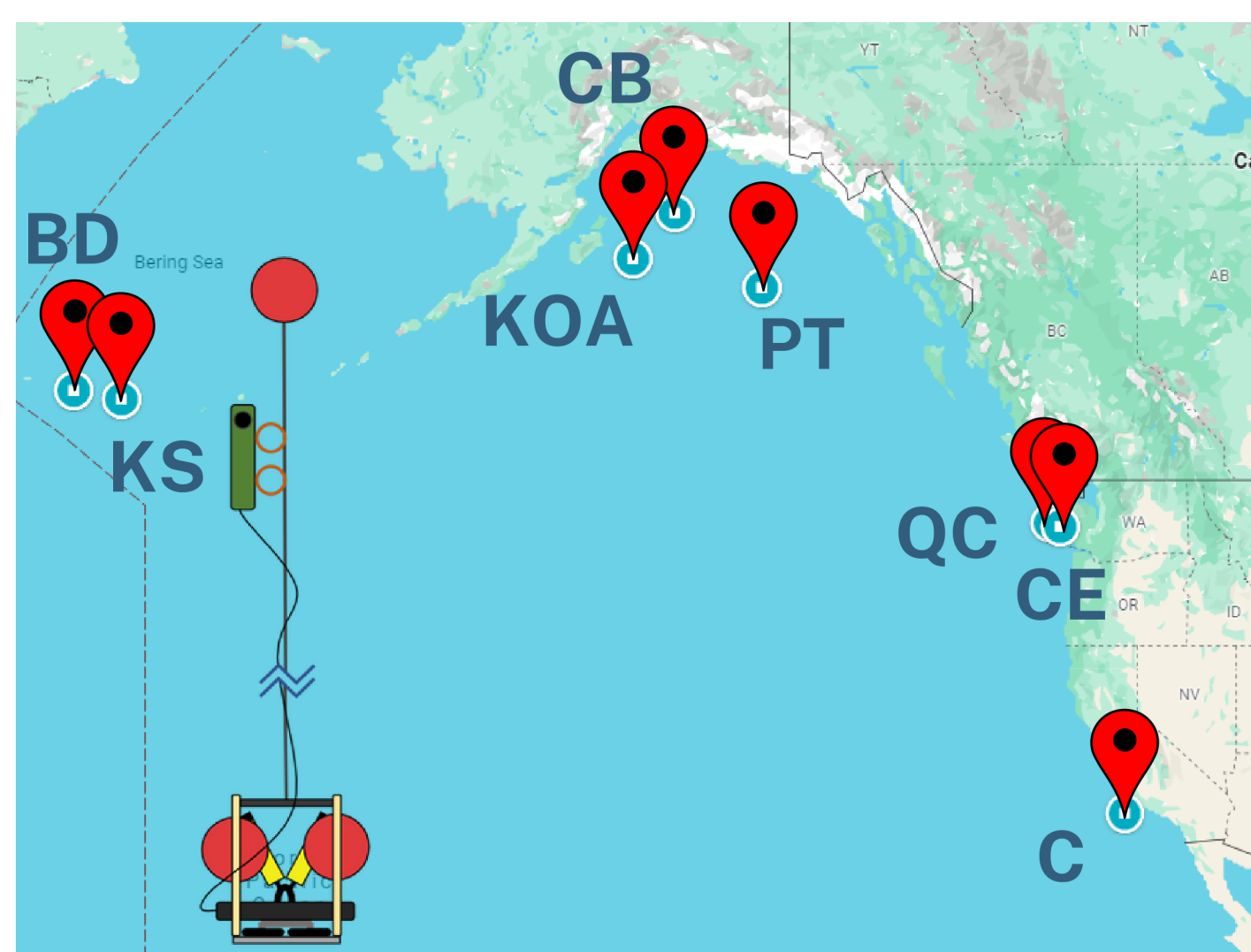


Fig 1. Location of 8 High-Frequency Acoustic Recording Packages (HARPs)² in the Eastern North Pacific.

Data Analysis

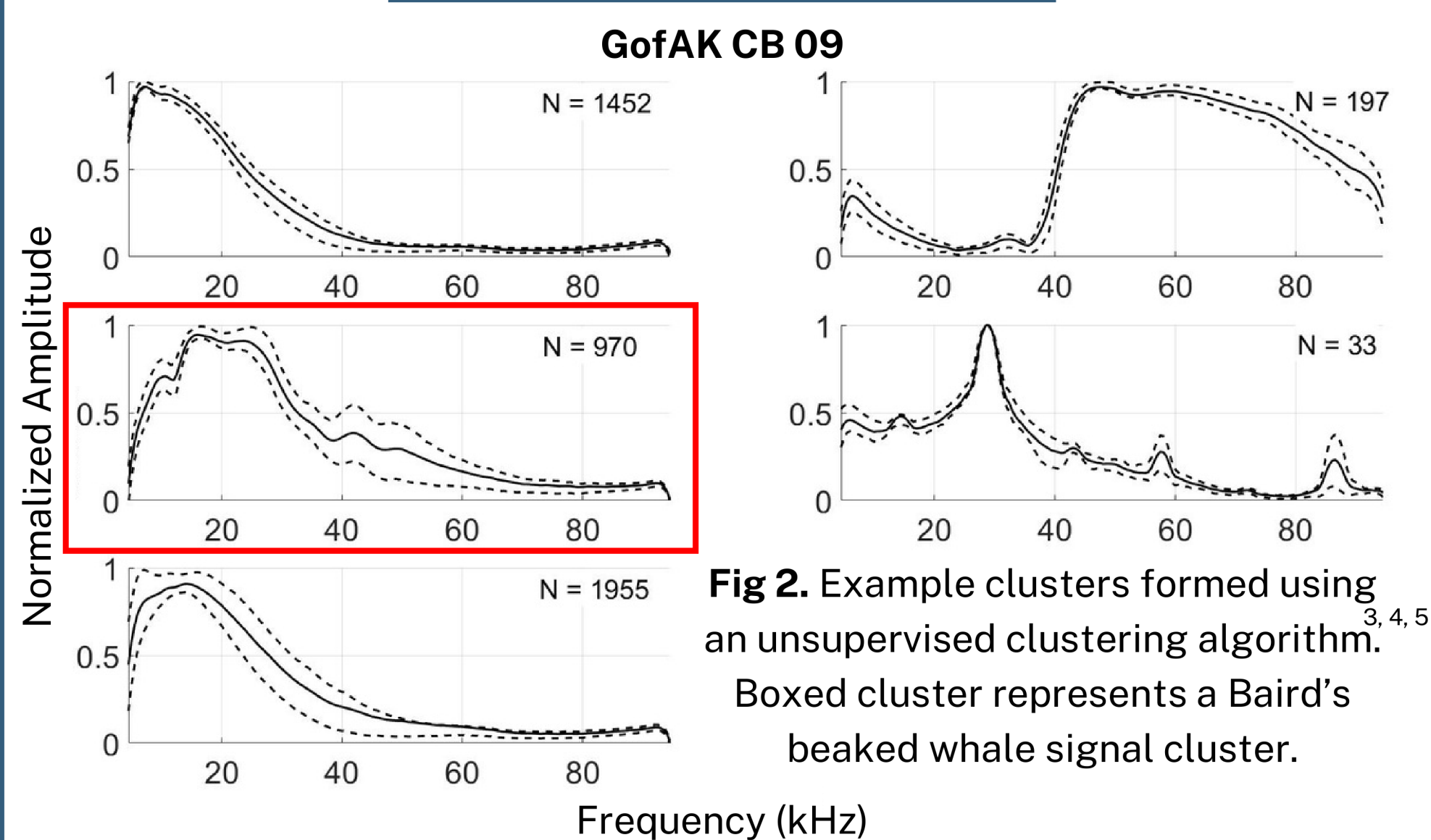


Fig 2. Example clusters formed using an unsupervised clustering algorithm.^{3,4,5} Boxed cluster represents a Baird's beaked whale signal cluster.

After clustering dominant signals and labeling Baird's beaked whale cluster(s), *DetEdit*⁶ was used to manually verify labeled clicks and generate time series.

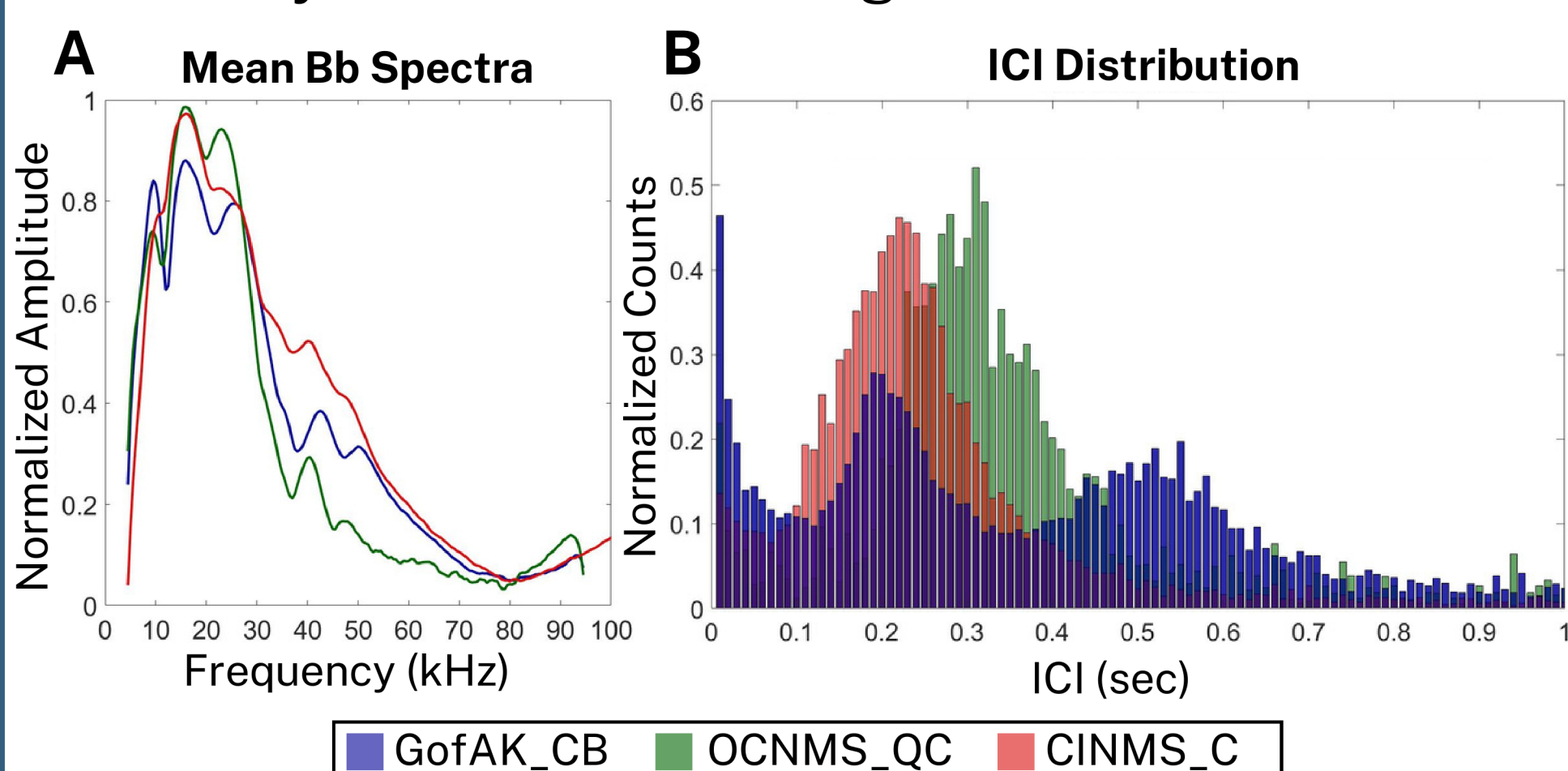
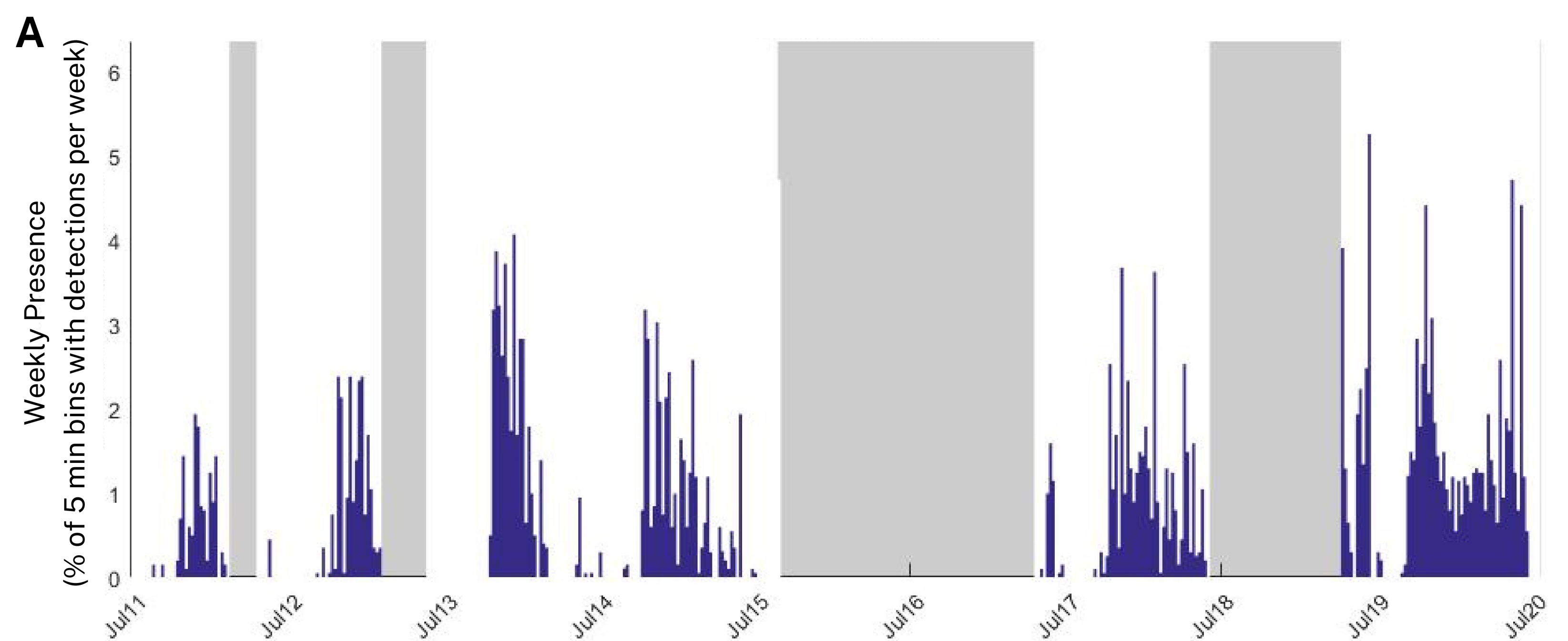


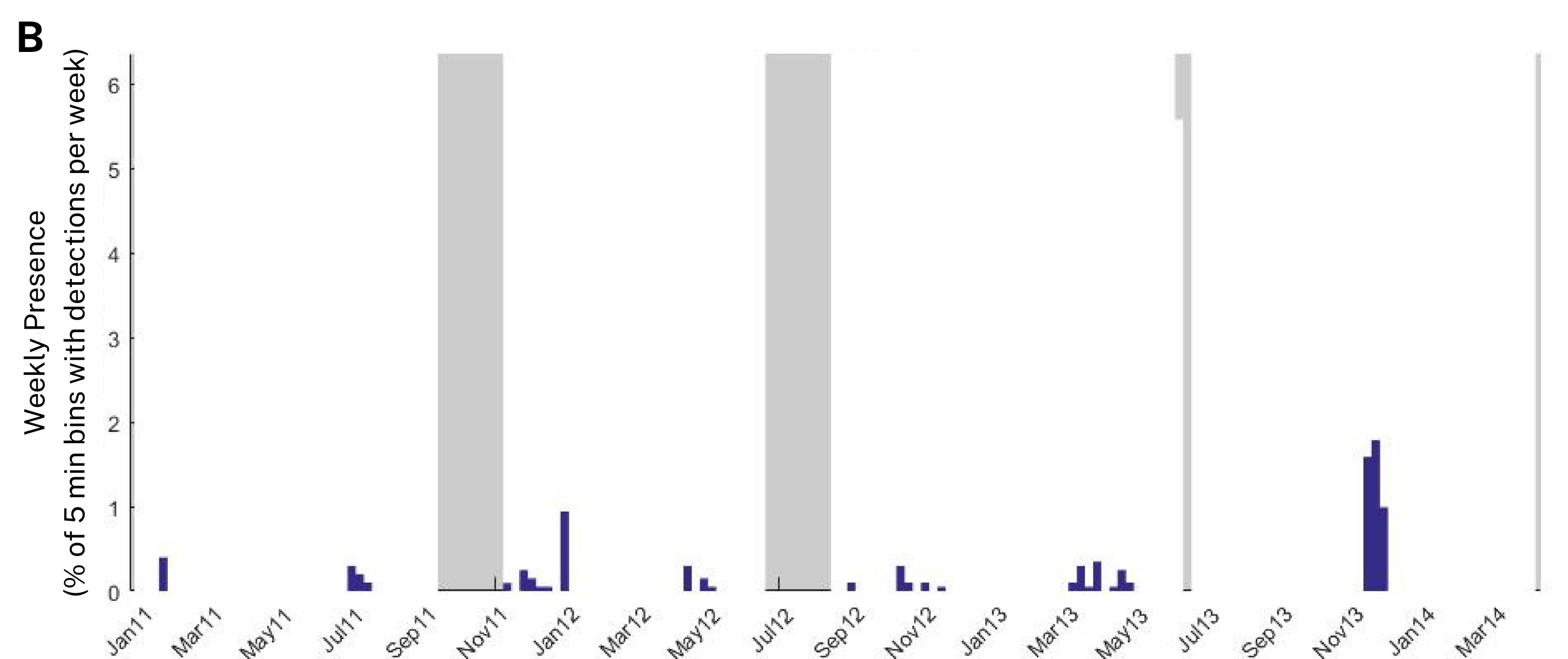
Fig 3. (A) Mean click spectra and (B) inter-click interval distributions for labeled Baird's beaked whale echolocation clicks. Sites included are the Gulf of Alaska CB site, Olympic Coast National Marine Sanctuary QC site, and Channel Islands National Marine Sanctuary C site.

Results

Gulf of Alaska CB Site:



Olympic Coast National Marine Sanctuary (OCNMS) QC Site:



Channel Islands National Marine Sanctuary (CINMS) C Site:

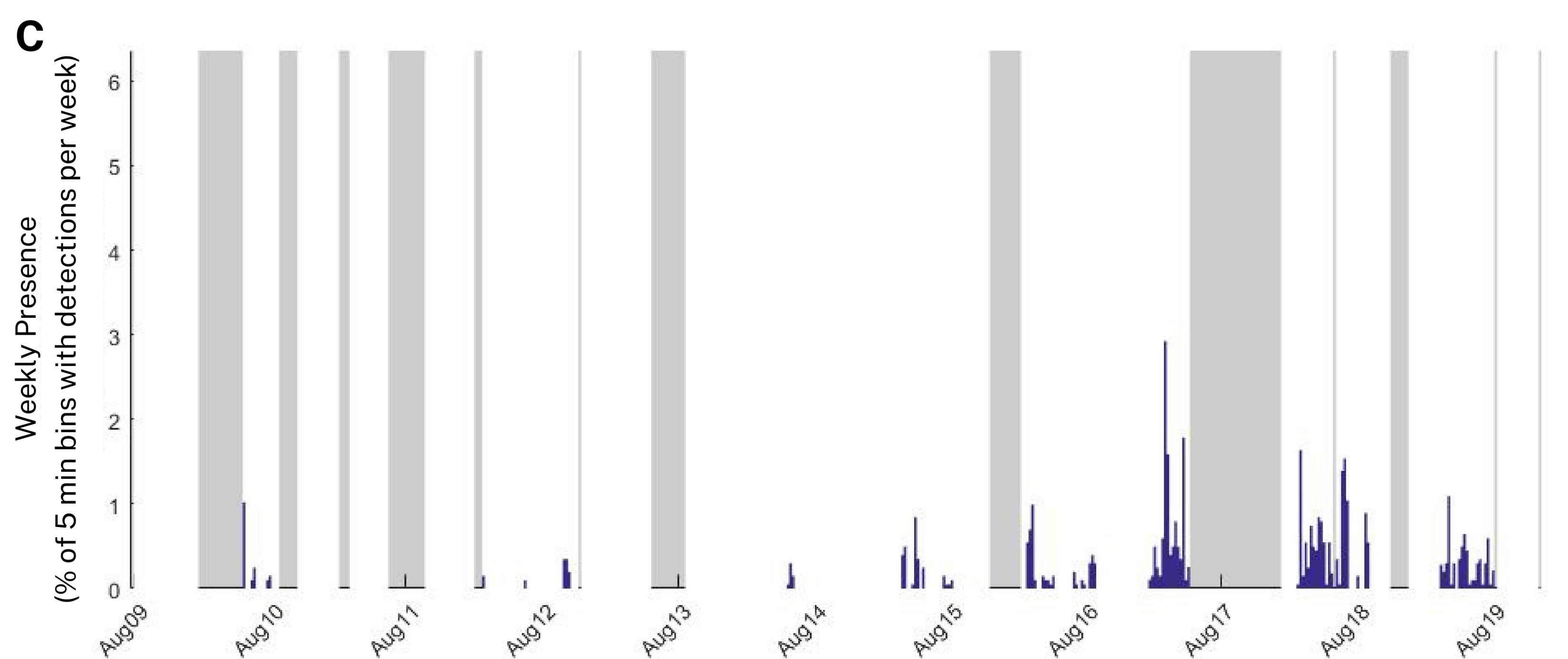


Fig 4: Time series of Baird's beaked whale weekly acoustic presence for (A) the Gulf of Alaska CB site, (B) the OCNMS QC site, and (C) the CINMS C site. Shaded areas indicate periods of no effort.

Conclusions

- Findings suggest a latitudinal seasonal migration pattern for Baird's beaked whale in the Northeastern Pacific
- Highest relative presence found in the Gulf of Alaska off of the continental slope
- Knowledge of the distribution and habitat use of Baird's beaked whale is needed for effective conservation and management efforts

References and Acknowledgements

