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Update on key Alaska cetaceans

Robyn P. Angliss -- Research on killer whale and sperm whale interactions with commercial fisheries



Paul R. Wade -- Cook Inlet beluga abundance, distribution, and diet



Cetacean Assessment and Ecology Program
Marine Mammal Laboratory
Alaska Fisheries Science Center
NOAA Fisheries

NPFMC SSC, 2/1/2022

Research on killer whale and sperm whale fishery interactions

Killer whale interactions

Investigating interactions:

- What killer whale stocks are involved (genetics and photo-ID)
- Temporal and spatial scope
- Timeline: 2023



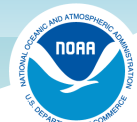
Abundance estimates:

- Gulf of Alaska, Aleutian Islands and Bering Sea Transient Stock: Outdated estimate
- Alaska Resident Stock: Updated abundance estimate available for public comment this spring

Sperm whale interactions

AFSC re-estimating depredation rates using existing data (Dan Goethal lead)

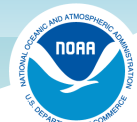
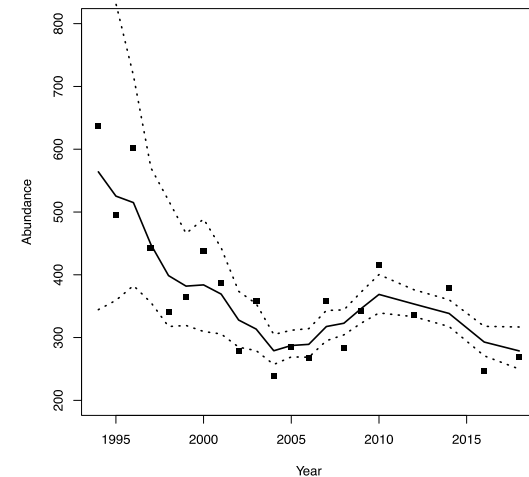
Updated abundance estimate for a small portion of the range may be available in 2023



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CI Beluga Aerial Abundance Survey

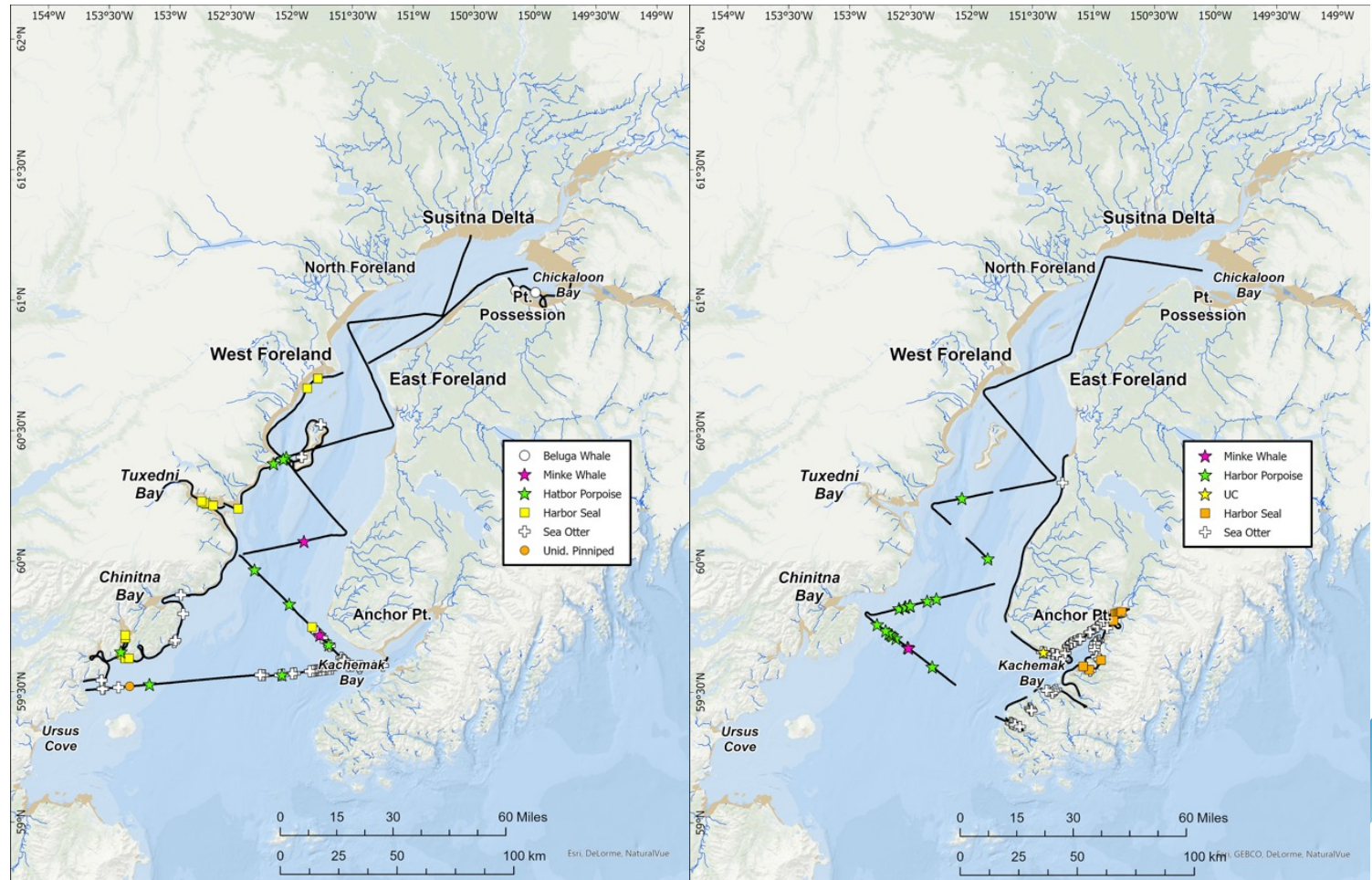
- Previous Survey was in 2018
- Canceled in 2020 due to covid
- Survey was completed in 2021
 - Video group size analysis recently completed
 - Results anticipated to be available by June
- Next survey scheduled for 2022



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CI Beluga Aerial Abundance Survey June 2021

2-day Lower Inlet survey – as is typical, no belugas seen south of West/East Foreland (Kim Shelden lead)



CI Beluga Aerial Abundance Survey June 2021

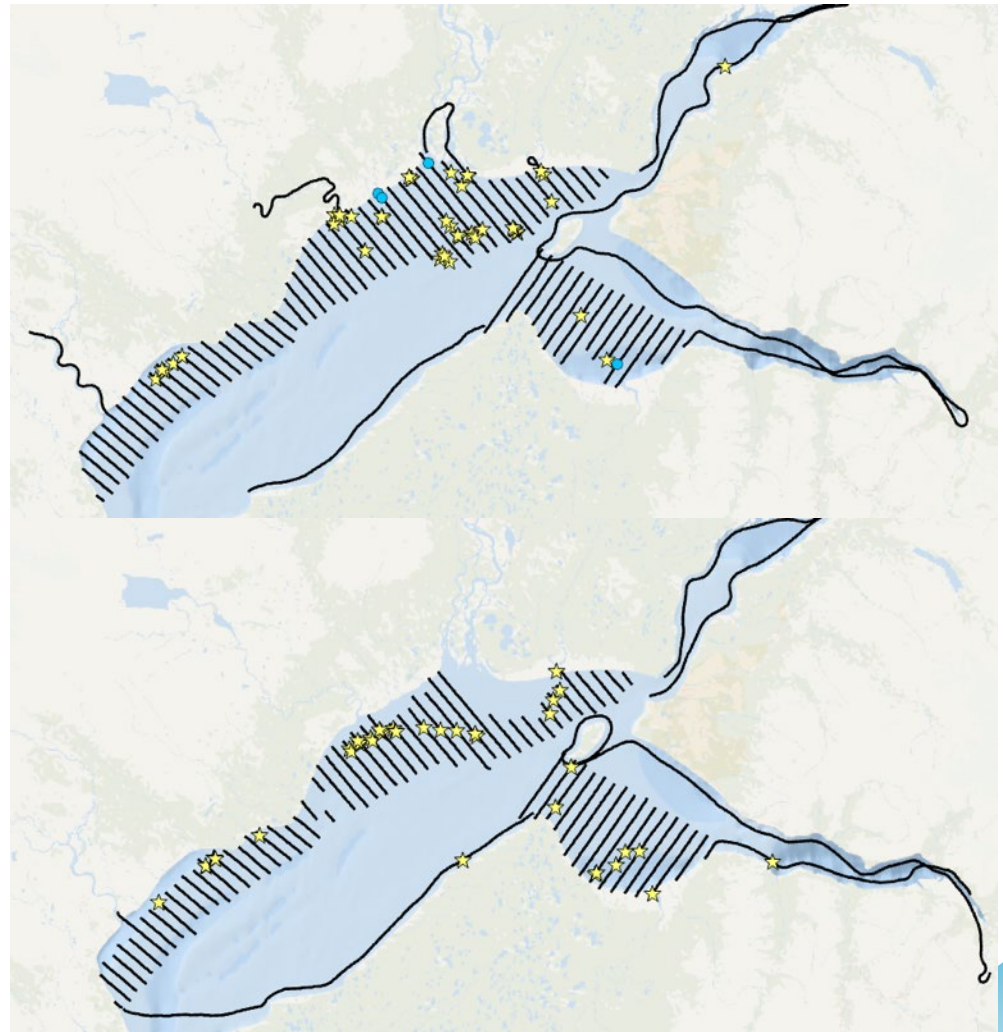
Upper Cook Inlet survey – poor weather during good low tide days only allowed 2 good survey days



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CI Beluga Aerial Abundance Survey June 2021

- Two-day line-transect survey experiment
- Made use of available aircraft time on days without an optimal low tide
- May work better when whales are more dispersed, when not in just a few large groups

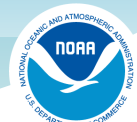
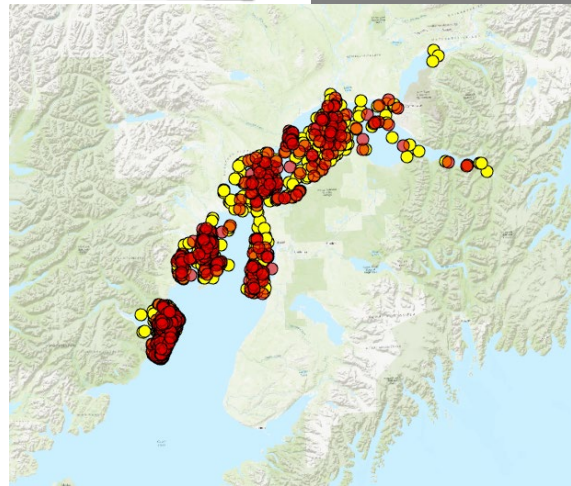
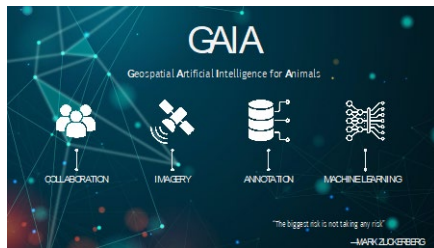
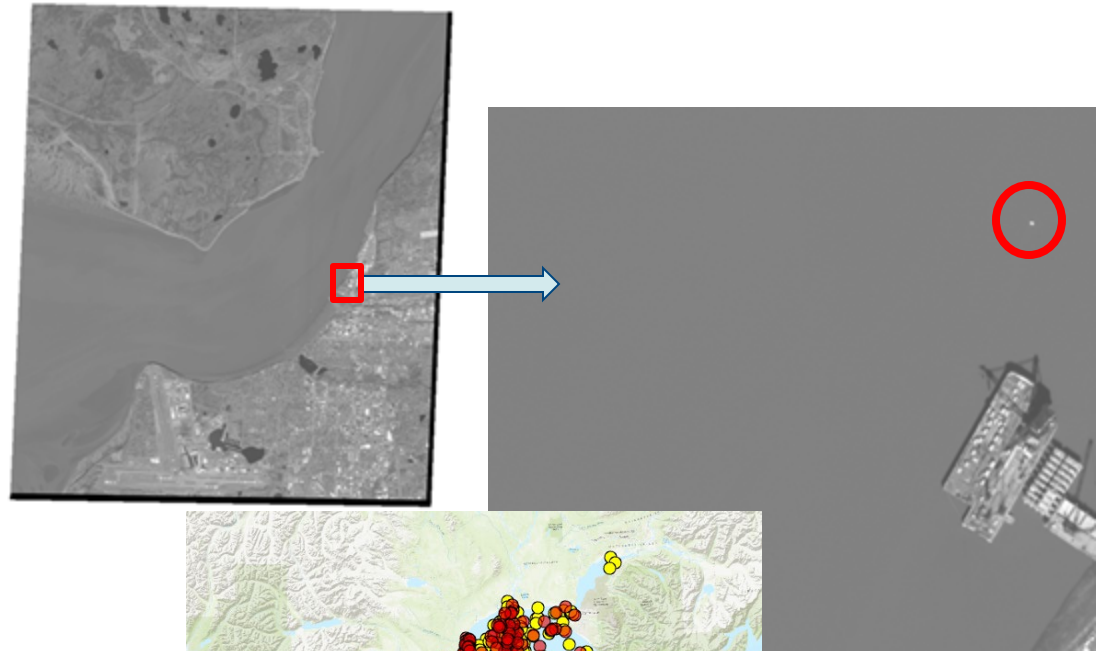


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Year-round distribution – Use Very High Resolution WorldView-3 satellite images to look at distribution of CI beluga whales (Kim Goetz lead)

Part of the Geospatial Artificial Intelligence for Animals (GAIA) collaboration

- Database of annotated images under development with the help of a large crowdsourcing campaign with Maxar's GeoHive and xLab teams. Photos still need to be evaluated and validated to see if they truly represent beluga whales (some are likely whitecaps, and in winter some might be ice).



Beluga whale (*Delphinapterus leucas*) acoustic foraging behavior and applications for long term monitoring

Manuel Castellote^{1,2*}, Aran Mooney³, Russel Andrews^{4,5a}, Stacy Deruiter^{3,6}, Wu-Jung Lee⁷, Megan Ferguson², Paul Wade²

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PLOS ONE

Beluga acoustic foraging behavior and long term monitoring

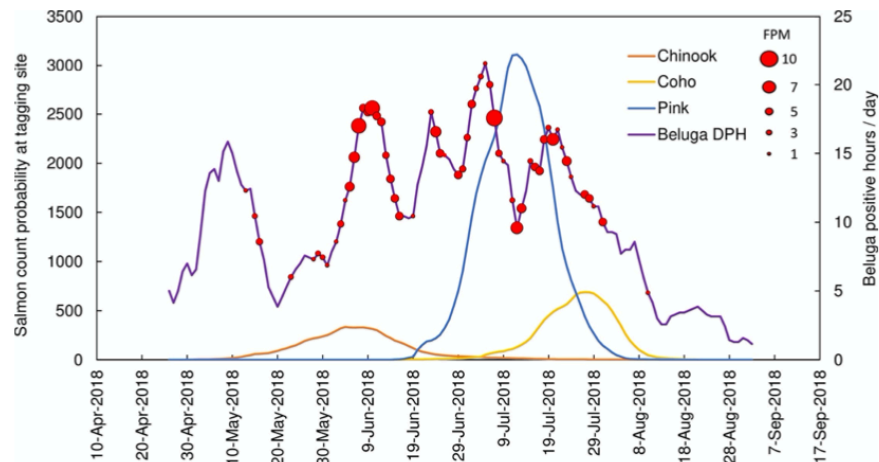


Fig 8. Predicted number of salmon per day at the tagging site at Susitna River for the five Pacific salmon species (fish/day), beluga daily presence in detection positive hours (DPH) per day, and feeding occurrence (FPM) per day (variably sized red filled circle). Note: chum and sockeye sustained very low predicted number of salmon per day at the tagging site and were omitted here.



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