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# Cook Inlet Beluga Recovery Implementation Task Force, Research Subcommittee Update

2023 Annual Meeting  
27 January 2023

# Cook Inlet Beluga RTF Research Subcommittee Members

Robyn Angliss - NMFS/AFSC/MML, chair 2021-present

Chris Garner - JBER

Carrie Goertz - Alaska SeaLife Center

Amy Hapeman - NMFS/FPR

Tamara McGuire – Cook Inlet Beluga Photo-ID Project

Lori Quakenbush – ADF&G

Kim Sheldon – NMFS/AFSC/MML

Paul Wade (NMFS/AFSC/MML, previous RFT chair)



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# Research Subcommittee Activities

2020: Field activities limited due to COVID; no meetings held

2021 & 2022: Resume meetings (all virtual) & most field research

## Research Task Force annual schedule

Spring: Pre-field season coordination (virtual)

Fall: Post-field season debrief (virtual)

- Sharing general field season results
- Identify ongoing research and new planned research for the upcoming year
- Planning for outyears



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# Highlights of the 2021 & 2022 fall meetings

## Extensive collaborations to meet field and analytical needs

- CIB Photo-ID Project (McGuire lead) collaborates with MML/CAEP (Wade, Shelden and Goetz – photo-ID, scarring, demographics), JBER, ADF&G, Knik Tribe, UW (Warlick – annual survival and fecundity, extinction risk; Castellote – acoustics; McHuron - PCoD), MSU (Himes-Boor – survival and fecundity), CSU, UAF
- NMFS/AFSC/MML/CAEP CIB Species in the Spotlight (Wade lead) collaborates with other NMFS Science Centers (SWC - hormones, NWC – genetics and eDNA, NEC – satellite image analysis), OSU (Baker – epigenetic aging), Mystic Aquarium (Unal and Romano – RNA transcriptomics), UW (Castellote - acoustics, McHuron - PCod, Brewer – field work, processing)
- JBER and ADF&G provide field support to CAEP CIB and UW researchers

# Highlights of the 2021 and 2022 post-field season

## Many successful projects in 2021 and 2022

- Vessel-based photo-identification
- Collection of UAS data for photogrammetry
- Progress to use AI/ML to automate matching individuals
- Aerial surveys for abundance/trends in 2021 and 2022
- Expand collection of acoustics data to mid & lower Cook Inlet
- Passive acoustics provides information on CIB ecology
- Collection of eDNA to better understand prey species of CIB
- Continued collaborations with aquaria
- Publications completed or in prep regarding demographics, updated historical harvest estimates, results from evaluations of strandings
- Use of satellite data to understand distribution
- Collection of opportunistic data (images, sightings)
- Ongoing evaluation of stranded CIB to understand possible cause(s) of death



# Highlights of reports from the 2021 & 2022 meetings

## What's next?

- Lots of ongoing research!
- Do a more in-depth review and discussion of current research on two of the threats identified in the CIB recovery plan: Noise & changes in CIB prey



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# Plans for FY23-FY24

Continue pre- and post-field season meetings

Focused workshop(s) on existing “high” or “medium” threats

- Proposed: Noise & changes in CIB prey
- Coordinate with AKR & ADF&G to make sure products are useful
- Goals
  - Discuss state of the science
  - Identify & prioritize data gaps
- Organizers, timing, format (virtual vs in-person), communication approach, online repository, invitees TBD



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# Recent publications on Cook Inlet beluga

Bors EK, CS Baker, PR Wade, K O'Neill, KEW Shelden, MJ Thompson, Z Fei, S Jarman, & S Horvath. 2021. An epigenetic clock to estimate the age of living beluga whales. *Evolutionary Applications* 14(5):1263-1273. DOI: 10.1111/eva.13195

Burek-Huntington KA, KEW Shelden, RD Andrews, CEC Goertz, TL McGuire, & S Dennison. 2022. Postmortem pathology investigation of the wounds from invasive tagging in belugas (*Delphinapterus leucas*) from Cook Inlet and Bristol Bay, Alaska. *Marine Mammal Science* 1-23. DOI: 10.1111/mms.12981

Goertz C.E.C., Woodie K., Long B., Hartman L., Gaglione E., Christen D., Clauss T., Flower J., Tuttle A., Richard C., Romano T., Schmitt T., Otjen E., Osborn S., Aibel S., Binder T., Van Bonn W., Castellote M., Mooney T.A., Dennison-Gibby S., Burek-Huntington K. & Rowles T.K. 2021. Stranded beluga (*Delphinapterus leucas*) calf response and care: reports of two cases with different outcomes. *Polar Research* 40, article no. 5514, doi: 10.33265/polar.v39.5514.

Himes Boor, G.K., McGuire, T.L., Warlick, A.J., Taylor, R.L., Converse, S.J., McClung, J.R., and Stephens, A.D. 2022. Estimating reproductive and juvenile survival rates when offspring ages are uncertain: A novel multievent mark-resight model with beluga whale case study. *Methods in Ecology and Evolution* 00:1-12 (doi: <https://doi.org/10.1111/2041-210X.14032>).

McGuire TL, KEW Shelden, GK Himes Boor, AD Stephens, JR McClung, C Garner, CEC Goertz, KA Burek-Huntington, G O'Corry-Crowe, & BA Wright. 2021. Patterns of mortality in endangered Cook Inlet beluga whales: Insights from pairing a long-term photo-identification study with stranding records. *Marine Mammal Science* 37(2):492-511. DOI: 10.1111/mms.12766

Shelden KEW, KT Goetz, AA Brower, AL Willoughby, and CL Sims. 2022. Distribution of belugas (*Delphinapterus leucas*) in Cook Inlet, Alaska, June 2021 and June 2022. AFSC Processed Report 2022-04, 80 p. DOI: 10.25923/1wwf-2333

NMFS-AKR/AFSC. 2022. Beluga whale Cook Inlet DPS (*Delphinapterus leucas*) 5-year review: summary and evaluation. 56 p. <https://media.fisheries.noaa.gov/2022-09/cibw-5-year-review-2022.pdf>