

Report #2: Photo-Identification of Beluga Whales in Cook Inlet, Alaska:

Summary of survival and mortality of identified individuals in 2024

Prepared by:

The Cook Inlet Beluga Whale Photo-ID Project
Anchorage, Alaska, USA
tamaracookinletbeluga@gmail.com



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Principal Investigator: Tamara McGuire

Co-Investigator: John McClung

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2024 field team: Debbie Boyle, Kyoko Hada, Brian McGurgan, John McClung, Chandera Tolley, Tamara McGuire, and Samantha Murk. Thanks to JBER, ADF&G, NMFS, BWA, AKBMP, and the public for sharing sightings and photos.

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Background: The Cook Inlet Beluga Whale (CIBW) Photo-Identification (ID) Project was contracted by National Marine Fisheries Service (NMFS) to use non-invasive photo-ID techniques to help fill data gaps regarding individual and population characteristics of this endangered beluga population, with the goal of providing information to aid NMFS in conservation and management actions. The contract specified that the CIBW Photo-ID Project would conduct a minimum of 25 photo-ID surveys in 2024, identify individual whales from photographs, and summarize results in a series of six reports. This report, the second in the series, is entitled *Summary of survival and mortality of identified individuals in 2024*. Detailed background information and methods for this long-term project are included in previous annual reports, available at www.cookinletbelugas.com.

Results

Right-side catalog 2005–2024

The 2005–2024 right-side catalog contains records for 555 individuals (Table 1; Figure 1a), with 94 of these individuals photographed in 2024. Twenty-six whales in the right-side catalog (5%) have sighting histories spanning the full 20 years of the study (i.e., they were photographed in both 2005 and in 2024; Table 1). There were 12 individuals added to the catalog that had been photographed in previous years but did not meet the criteria to become catalog individuals until the photos from 2024 were added to their sighting records. Because 18 years is the maximum number of years between resightings of any individual in the catalog, an individual was presumed to have died if it had not been photographed after 2006. The 18-year intersighting period observed with the addition of 2024 data is notable, because previously the maximum intersighting period had been 12 years. There are 23 individuals in the right-side catalog presumed to have died by 2024 based on the lack of sightings after 2006, and nine confirmed dead (from stranding records) matched to individuals in the right-side catalog, leaving 523 individuals in the right-side catalog that may still be in the population in 2024.

Left-side catalog 2005–2024

The 2005–2024 left-side catalog contains records for 571 individuals (Table 1; Figure 1b), with 106 individuals photographed in 2024. There were 6 individuals added to the catalog that had been photographed in previous years but did not meet the criteria to become catalog individuals until the photos from 2024 were added to their sighting records. Twenty-four whales in the left-side catalog (4%) have sighting histories spanning the full 20 years of the study (i.e., they were photographed in both 2005 and in 2024; Table 1). Using 18-year maximum intersighting period criteria (described in previous paragraph), there are 44 individuals in the left-side catalog presumed to have died by 2024. There are 11 confirmed dead (from stranding records) belugas that have been matched to individuals in the left-side catalog, leaving 516 individuals in the left-side catalog that may still be in the population in 2024.

Dual catalog 2005–2024

The 2005–2024 dual-side catalog contains records for 253 individuals whose right- and left-side catalog records are linked and who meet the criteria to be catalog individuals on at least one side (Table 1; Figure 1c). In 2024, there were six new dual linkages made for individuals in the catalog. One dual-side individual who was photographed as recently as 2024 was identified in photographs taken by NMFS in 1998, giving it a 27-year sighting history (Table 1).

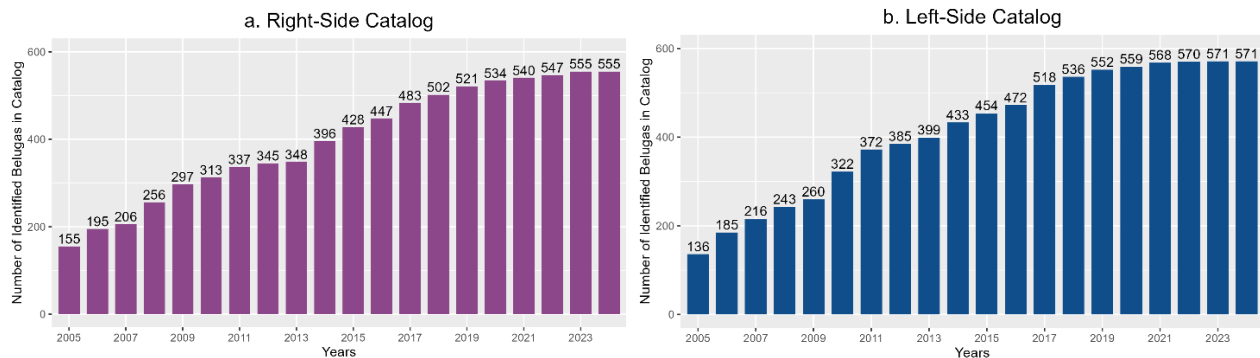
Table 1. Summary of individual CIBWs and their sighting histories in the 2005–2024 photo-ID catalog.

Number of:	Left-Side Catalog	Dual-Side Catalog	Right-Side Catalog
Individuals in the 2005–2024 catalog	571	253	555
Individuals photographed in 2024	106	90	94
Individuals first photographed in 2024	0	0	0
Individuals photographed before 2024 who achieved catalog criteria with inclusion of 2024 photos	6	6	12
Maximum years between sightings of an individual	18	17	18
Individuals presumed dead based on lack of resightings ¹	44	2	23
Confirmed-dead individuals matched to the catalog 2005–2024	11	7	9
Individuals presumed alive at end of 2024 field season ²	516	244	523
Individuals seen in each year of the 20-year study	1	1	0
Individuals photographed in 2005 and 2024 (20-year span)	24	33	26
Longest sighting record, in years ³	27	27	27
Maximum number of days any single individual photographed	70	97	59

¹ i.e., not photographed since 2006 - using 18-year intersighting period as most-conservative criteria.

² Individuals alive = (individuals in catalog - individuals presumed dead - individuals confirmed dead).

³ First photographed by NMFS in 1998, Beluga D109.



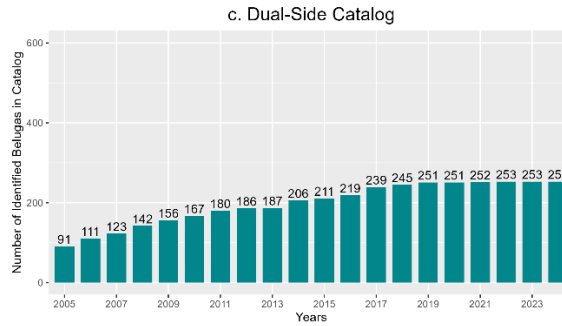


Figure 1. The cumulative number of identified individual belugas in the 2005–2024 (a) right-side, (b) left-side, and (c) dual-side catalogs, according to the year an individual was first photographed. This includes the right and left sides of dual-side individuals as well as those individuals that have died.

Stranded belugas photographed in 2024

A total of seven reports of stranded belugas were made to NMFS in 2024 (Table 2), comprising four dead strandings of individual belugas and three live strandings of individuals. Photographs were provided and reviewed from all strandings, but none were matched to the catalog, either because of advanced body decomposition, or the photograph was taken from too far away for marks to be visible.

The reported dead belugas in 2024 were two males and two of unknown sex. Three were classified as adults and one as a subadult/adult.

Identification of stranded belugas 2005–2024

Between 2005 and 2024, there were 158 dead belugas reported to the CIBW Photo-ID Project by NMFS. Thirteen of these dead belugas have been confirmed as individuals in the photo-ID catalog, and two more have been identified as possible matches. Twelve of the confirmed identified whales were adults and one was a subadult.

The age classes of the 2024 reported dead strandings are similar to the 2005–2017, 2019, and 2023 reported dead strandings, which had followed general annual patterns of more adults than calves or subadults. In 2018, there was an almost equal number of dead adults and calves reported (7 dead belugas; 4 adults, 3 calves). Annual reports of dead-stranded belugas reported by NMFS in 2020–2022 were dominated by calves rather than by adults.

Photo-ID to monitor belugas after live strandings 2005–2024

Two belugas in the 2005–2024 catalog have been recognized during live-strandings. Both were adults and presumed to be females because they had stranded with live calves at their sides.

- Beluga D1032 was photographed from 2008 to 2014, and in 2015 at the time of the live-stranding. Although she and her calf were seen to swim away with the rising tide after the live-stranding event in 2015, she was not photographed again later that year or during the 2016 field season. She was later photographed with a calf alongside in 2017, 2018, 2019, and 2020. Based on its size, the accompanying calf may have been the same calf every year and the same calf that stranded in 2015, but a definitive

match could not be made. The adult was photographed in 2021 but was not photographed with a calf. She was not photographed in 2022. She was photographed in 2023 with a calf that was smaller than the previous calf photographed in 2020. She was photographed in 2024 but was not photographed with a calf.



Figure 2. The right side of Beluga D1032.

- Beluga D3603 was photographed 2007–2019 in the Susitna River Delta and Knik Arm. In 2020, she was photographed in the Susitna River Delta during a photo-ID survey, then by the Alaska Marine Mammal Stranding Network and National Geographic when she live-stranded with a live calf at her side on September 11, 2020, in Turnagain Arm. She was later photographed on September 24, 2020, alive and free-swimming in Turnagain Arm, with a calf in the group, although it could not be determined if it was the same calf who had also live-stranded on September 11. She was photographed in 2021 in Turnagain Arm with a non-neonate calf of unknown age, and in 2022 in Knik Arm without a calf. She was not photographed in 2023. She was photographed in 2024 in Knik Arm and Turnagain Arm with a calf that was younger than two years old.

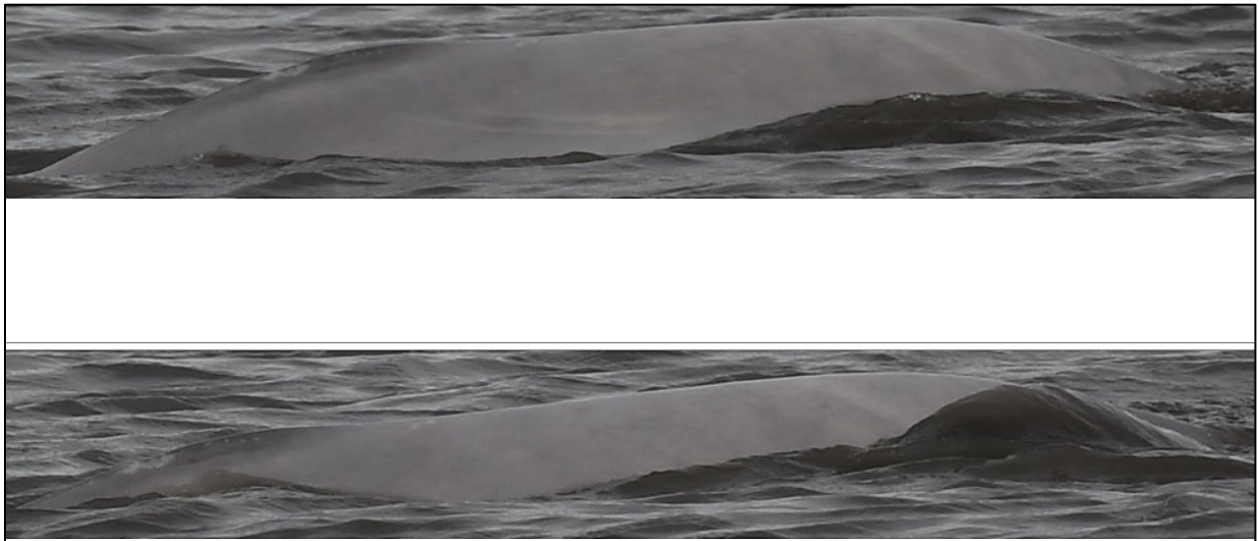


Figure 3. The left side of Beluga D3603 with a calf emerging alongside.

Table 2. Summary of four dead- and three live- Cook Inlet beluga whale stranding events reported to Dr. Mandy Keogh, National Marine Fisheries Service (NMFS) Alaska Region (AKR) Stranding Coordinator and shared with the CIBW Photo-ID Project in 2024. Dead-stranded beluga necropsies and sample collections were conducted by the Alaska Marine Mammal Stranding Network (AMMSN), who also assigned age class.

NMFS AKR Stranding ID	Observation Date	Location of Stranded Beluga	Type of Stranding	Examined by AMMSN	Age Class	Sex	Length (cm)	Utility of Photo for ID	Matched to Catalog Whale?
2024023	2024-May-05	Chickaloon Bay	Mummified/ Skeletal	Yes	Adult	Unknown	357.5	Too decomposed	No
2024102	2024-Jul-03	2 mi from Captain Cook State Park parking lot (near Nikiski)	Advanced decomp	Yes	Adult	Male	435.0	Too decomposed, dorsal crest obscured by sand in photos	No
2024116	2024-Jul-17	West of Beluga River, approx. 4.5k from Beluga Airport	Condition unknown	Yes	Adult	Male	421.0	Too far away/too decomposed/bad angle	No
2024250	2024-Sep-19	Middle of Turnagain Arm across from Hope	Alive	Photos only	Unknown	Unknown	Unk	Too far away, reported by pilot	No
2024258	2024-Oct-01	Turnagain Arm, Bird Point	Alive	Photos only	Unknown	Unknown	Unk	Too far away	No
2024259	2024-Oct-06	Turnagain Arm, north of Rabbit Creek Shooting Range	Mummified/ Skeletal	Yes	Subadult	Unknown	295.0	Too decomposed	No
2024272	2024-Oct-18	Turnagain Arm, Hope looking towards Falls Creek (along Seward Highway)	Alive	Photos only	Adult	Unknown	Unk	Too far away, floating	No