

**Report #2: Photo-Identification of Beluga Whales in Cook Inlet, Alaska:  
Summary of survival and mortality of identified individuals in 2022**

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(2022 field season/cataloging)

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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 2022, 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 2022*. Detailed background information and methods for this long-term project are included in previous annual reports, available at [www.cookinletbelugas.com](http://www.cookinletbelugas.com).

## **Results**

### **Right-side catalog 2005–2022**

The 2005–2022 right-side catalog contains records for 522 individuals (Table 1; Figure 1a), with 78 of these individuals photographed in 2022. There were 18 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 2022 were added to their sighting records (Table 1). Twenty-five whales in the right-side catalog (5%) have sighting histories spanning the full 18 years of the study (i.e., they were photographed in both 2005 and in 2022; Table 1). Because 12 years is the maximum gap between resightings of any individual in the catalog, an individual was presumed to have died if it had not been photographed after 2010. There are 77 individuals in the right-side catalog presumed to have died by 2022 based on the lack of sightings after 2010, and seven confirmed dead (from stranding records) have been matched to individuals in the right-side catalog, leaving approximately 438 individuals in the right-side catalog that may still be in the population in 2022.

### **Left-side catalog 2005–2022**

The 2005–2022 left-side catalog contains records for 553 individuals (Table 1; Figure 1b), with 89 individuals photographed in 2022. There were seven 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 2022 were added to their sighting records. Twenty-three whales in the left-side catalog (4%) were seen over the 18-year period spanning 2005 to 2022 (i.e., they were photographed in both 2005 and in 2022; Table 1). Because 12 years was the maximum gap between resightings of individuals, an individual was presumed to have died if it had not been photographed after 2010. There are 79 individuals in the left-side catalog presumed to have died based on the lack of sightings after 2010 and ten confirmed dead (from stranding records) have been matched to individuals in the left-side catalog, leaving approximately 464 individuals in the left-side catalog that may still be in the population in 2022.

## Dual catalog 2005–2022

The 2005–2022 dual-side catalog contains records for 227 individuals whose right- and left-side catalog records are linked and who meet the criteria to be catalog individuals on at least one side; Figure 1c). In 2022, there were six new dual linkages made for individuals in the catalog. One dual-side individual who was photographed as recently as 2022 was identified in photographs taken by NMFS in 1998, giving it a 25-year sighting history (Table 1).

Table 1. Summary of individual CIBWs and their sighting histories in the 2005–2022 photo-ID catalog.

Number of:	Right-Side Catalog	Left-Side Catalog
Individuals in the 2005–2022 catalog	522	553
Individuals photographed in 2022	78	89
Individuals first photographed in 2022	0	0
Individuals photographed before 2022 who achieved catalog criteria with inclusion of 2022 photos	18	7
Maximum years between sightings of an individual	12	11
Individuals presumed dead based on lack of resightings <sup>1</sup>	77	79
Confirmed-dead individuals matched to the catalog 2005–2022	7	10
Individuals presumed alive at end of 2022 field season <sup>2</sup>	438	464
Individuals seen in each year of the 18-year study	0	2
Individuals photographed in 2005 and 2022 (18-year span)	25	23
Longest sighting record, in years <sup>3</sup>	25	25
Maximum number of days any single individual photographed	55	63

<sup>1</sup> i.e., not photographed since 2010 - using 12-year gap as most conservative.

<sup>2</sup> Individuals alive = (individuals in catalog - individuals presumed dead - individuals confirmed dead).

<sup>3</sup> First photographed by NMFS in 1998, Beluga D109.

## Strandings

### Stranded belugas photographed in 2022

The CIBW Photo-ID Project received reports and photographs from NMFS of five dead-stranded belugas in 2022 (Table 2). None of the stranded whales could be matched to individuals already in the 2005–2022 catalog; one adult beluga was too decomposed for identification marks to be seen and the four other belugas were calves and too young to have acquired marks used for identification (Table 2). There were three males and two individuals of unknown sex.

As in 2020 and 2021, beluga strandings reported by NMFS in 2022 were dominated by calves rather than by adults. This differs from the 2005–2017 reported strandings, which had followed general patterns of more adults than calves or subadults. The relatively high mortality of calves in recent years is under investigation by NMFS and the Alaska Marine Mammal Stranding Network.

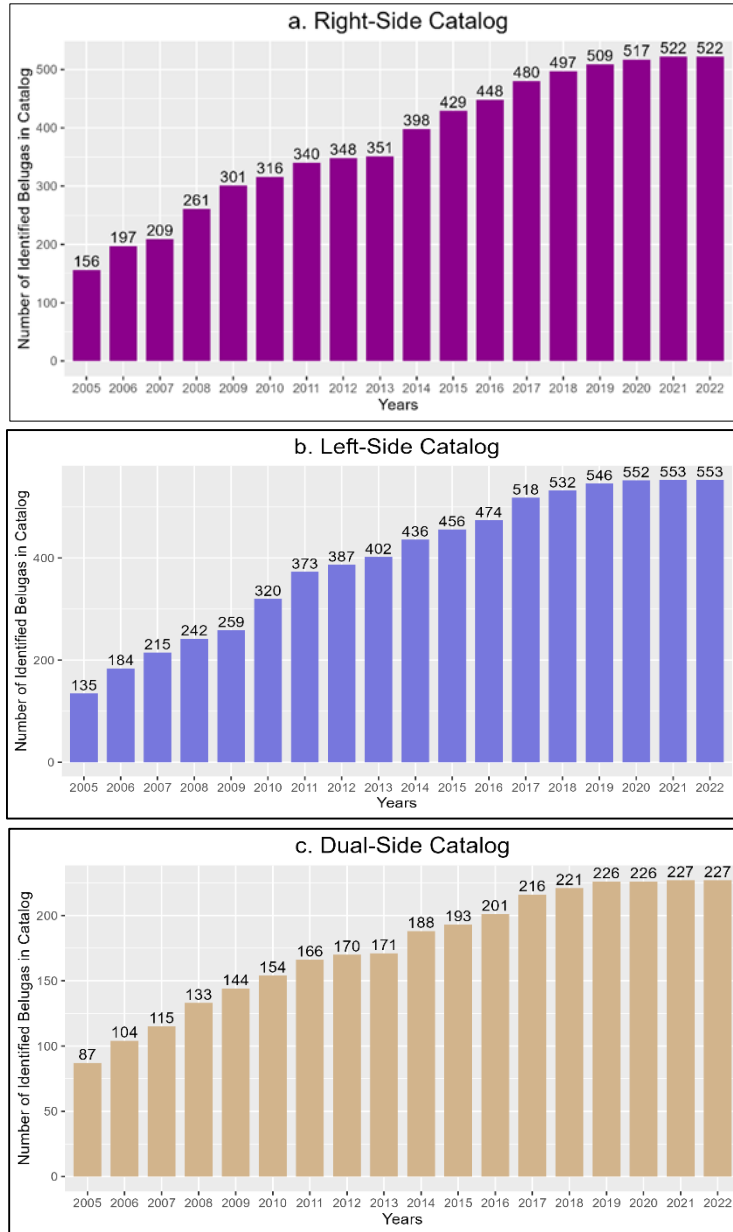


Figure 2. The cumulative number of identified individual belugas in the 2005–2022 (a) right-side, (b) left-side, and (c) dual-side catalogs, according to the year an individual was first photographed. This includes the right and left sides of dual-side individuals as well as those individuals that have died.

### Identification of stranded belugas 2005–2022

Between 2005 and 2022, there were 140 dead belugas reported to the CIBW Photo-ID Project by NMFS. Twelve of these dead belugas have been identified as individuals in the photo-ID catalog. Eleven of these identified whales were adults and one was a subadult.

Two belugas in the 2005–2022 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. However, 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 has not been made. The adult was photographed in 2021 but was not photographed with a calf. She was not photographed in 2022.

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. She was not photographed in 2022.

Table 2. Summary of five dead-stranded 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 2022. Dead-stranded beluga necropsies and sample collections were conducted by the Alaska Marine Mammal Stranding Network (AMMSN), who also assigned age class. Future genetic analysis of individuals may reduce the number of individuals of unknown sex (U = unknown).

NMFS AKR Stranding ID	Date Reported	Location of Stranded Beluga	Type of Stranding	Examined by AMMSN	Age Class	Sex	Length (cm)	Comment on Utility of Photo for ID	Matched to Catalog Whale
2022136	Jul-20	Near Three Mile Creek/ Chuitna River	Beached/ dead	Yes	Calf	M	109	Unusable, too young	No
2022165	Aug-09	Turnagain Arm	Beached/ dead	Yes	Calf	M	238	Unusable, too young	No
2022161	Aug-09	Fire Island	Beached/ dead	Yes	Calf	M	204	Unusable, too young	No
2022236	Oct-01	2 miles south of Point Possession	Beached/ dead	Yes	Adult	U	U	Unusable, too decomposed	No
2022243	Sep-30	Turnagain Arm	Beached/ dead	No	Calf	U	152.4	Unusable, too young	No