Report #4: Photo-Identification of Beluga Whales in Cook Inlet, Alaska:

Summary of post-research monitoring of biopsies and satellite-tagged whales: sighting histories and photographs of wound healing 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. 2024 photo-processing team: John McClung, Chandera Tolley, Mackenzie Garner, Samantha Murk, and Tamara McGuire. Photographs taken in 2024 under NMFS permit # 27128.Thanks to JBER, ADF&G, NMFS AKR and MML, BWA, AKBMP, and the public for sharing sightings and photos.

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 fourth in the series, is entitled, *Summary of post-research monitoring of biopsies and satellite-tagged whales: sighting histories and photographs of wound healing in 2024.* Details of the long-term Photo-ID Project background and methods can be found in previous project reports, available at www.cookinletbelugas.com.

Results

2024 Resightings of belugas tagged 1999–2002

During a NMFS-led CIBW satellite tagging study conducted between 1999 and 2002, a total of 20 CIBWs were captured and 18 of those were tagged. Details about the capture, tagging, and whale movements during the life of the tags are presented in Shelden et al. (2018). Six (30%) of the 20 CIBWs originally captured and/or tagged between 1999 and 2002 were photographed in 2024 (Table 1; Figure 1). All six were known (genetically determined) or presumed (photographically inferred) females who had first been photographed during photo-ID surveys in 2005, and all six had been photographed with calves intermittently alongside them during their 2005-2024 sighting histories. None of the previously tagged males (n=8) were photographed in 2024; one was photographed dead in 2014, one was photographed dead in 2015, and one is presumed dead based on cessation of photographs after 2007 despite a large and conspicuous scar. Five previously tagged males are of unknown survival status, either because they were not photographed during tagging or because the tagging photos could not be matched to the CIBW Photo-ID catalog.

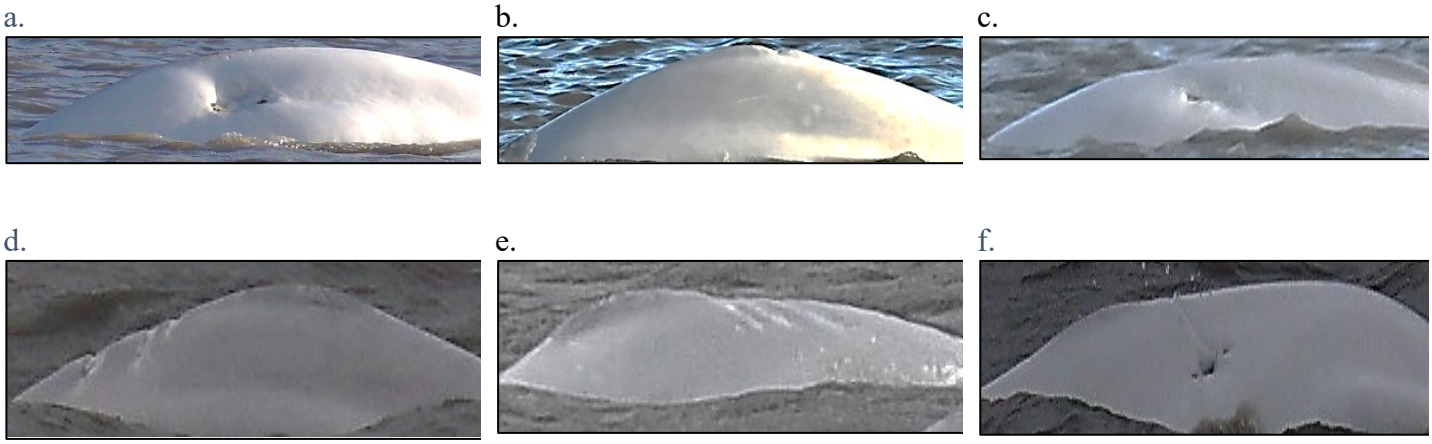


Figure 1. Photographs of the six belugas documented in 2024 who are confirmed satellite-tagged whales from the tagging study conducted by NMFS from 1999 to 2002. a) D49; b) D111; c) D403; d) D243; e) D103; f) R6.

Table 1. Sighting records of confirmed satellite-tagged individuals in the 2005–2024 CIBW Photo-ID Catalog and photographed in 2024, including records of reproduction, survival, and satellite-tag scar status. A beluga was classified as "presumed female" if it appeared in the same uncropped image with a calf alongside, and as "confirmed female" based on results from DNA samples collected at the time of capture. "U" = unknown.

Photo-ID # (NMFS tagging ID #)	Tagging Year	First Identified in Catalog	Scar First Photographed	Sex	Photographed with a Calf Born Post Tagging (2005-2024)	Research Scar Sighting History (see Figure 1 for most-recent photos)
D49 (U)	U	2005	2005	Presumed female	Yes	Tag scars conspicuous with possible infection intermittently throughout sighting history including dark coloration in 2021-2024.
D111 (CI-00-02)	2000	2005	2000	Confirmed female[1]	Yes	Tag scars inconspicuous and no signs of infection; abrasions across dorsal ridge
D403 (U)	U	2005	2005	Presumed female	Yes	Tag scar conspicuous (one on each side) with infection intermittently throughout sighting history, some dark coloration 2024.
D243 (CI-01-01)	2001	2005	2001	Confirmed female[1]	Yes	Tag scars conspicuous; scars in 2024 appear healed
D103 (CI-01-06)	2001	2005	2001	Confirmed female[1]	Yes	Tag scars conspicuous; scars in 2024 appear healed
R6 (U)	U	2005	2005	Presumed female	Yes	Tag scars conspicuous; some dark coloration 2024

[1] Genetic sex from satellite tag samples analyzed by Greg O 'Corry-Crowe, Florida Atlantic University (Shelden et al. 2018).

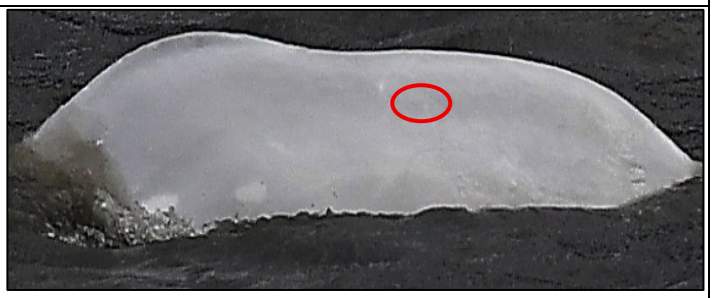
2024 Resightings of belugas biopsied 2016–2019

During a NMFS-led CIBW remote biopsy study conducted between 2016 and 2019, 51 belugas were biopsied. Photos of these individuals were examined for matches to the CIBW Photo-ID catalog for long-term sighting and reproductive histories. See report #3 for information about the reproductive histories of the biopsied females. Thirteen of the identified biopsied individuals were photographed in 2024 (Table 2). The majority of previously biopsied belugas photographed in 2024 appear to have healed biopsy scars with no signs of infection, although there were a few instances where scar healing could not be evaluated because the part of the body that had been biopsied was not visible in photos. Evaluations and photographs of select biopsy scars resighted in 2024 are in Figure 2. Biopsies were not attempted in 2020, 2021 or 2022. One biopsy sample was obtained in 2023, but photographs could not be matched to the long-term catalog. Biopsy was not conducted in 2024.

a. left side of beluga D220

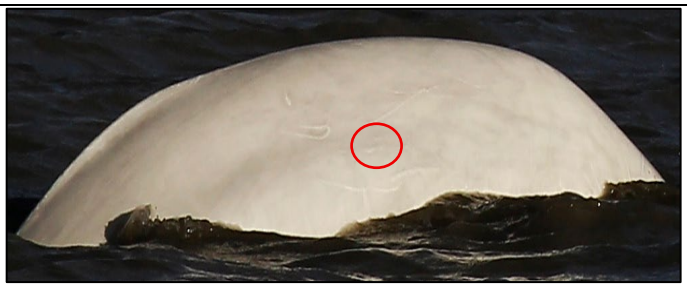
b. right side of beluga D19173

c. right side of beluga D2379



d. left side of beluga D2379

e. right side of beluga D11374



f. left side of beluga D3833

Figure 2. Photographs taken in 2024 of belugas biopsied in a NMFS-led study 2016–2019. Biopsy sites are denoted with an ellipse. a) left side of beluga D220; b) right side of beluga D19173; c) right side of beluga D2379; d) left side of beluga D2379; e) right side of beluga D11374; and f) left side of beluga D3833. Contrast has been adjusted in these photos to highlight the biopsy scars.

Table 2. Summary of photographic matches of 13 individual belugas photographed in 2024 that were also biopsied during the 2016–2019 Cook Inlet Beluga Biopsy Study. Individuals with more than one biopsy are noted by colored rows of matching colors. Matches between the CIBW Photo-ID Project catalog and biopsy photos are updated semi-annually; please contact Tamara McGuire (tamaracookinletbelugas@gmail.com) before using the data in this table as results may have changed as cataloging is ongoing. Genetic sex from biopsy samples analyzed by Nick Keller, NMFS Southwest Fisheries Science Center, and Kim Parsons, NMFS Northwest Fisheries Science Center.

Biopsy Date	Biopsy Sample ID	Photo-ID Catalog ID	First Identified in Catalog	Genetic Sex	Side of Whale Biopsied	Biopsy Scar Comment
2016						
20-Aug	DL-CIB16-36	D220	2005	F	Left	No signs of infection of biopsy scar in 2024.
2017						
2-Sep	DL-CIB17-02	D19173	2014	F	Right	No signs of infection of biopsy scar in 2024.
2-Sep	DL-CIB17-03	D2379	2005	M	Right	Struck-with-sample on 31-Aug-2019 (left), DLCIB19-07; no signs of infection of biopsy scar in 2024 although has a dark margin that others don't.
3-Sep	DL-CIB17-05	D1187	2008	M	Right	No signs of infection of biopsy scar in 2024.
9-Sep	DL-CIB17-12	D18993	2016	F	Right	Biopsy site not visible in photos taken during biopsy. No obvious biopsy scar in photos from subsequent years, including 2024.
2018						
9-Sep	DL-CIB18-06	D595	2007	M	Right	struck-with-sample; also struck-no-sample on 6-Sept-2018, DLCIB18-hitnosample-4; No signs of infection of biopsy scar in 2024.
9-Sep 10-Sep 12-Sep	DLCIB18-04 DLCIB18-10 DLCIB18-18	D85	2005	M	Right	Also struck-with-sample 10-Sep-2018, DLCIB18-10 (left) and struck-with-sample 12-Sep-2018, DLCIB18-18 (right); No signs of infection of two right-side biopsy scars in 2024; the left-side biopsy scar site was not visible in 2024.
10-Sep	DLCIB18-09	D17121	2014	F	Right	No 2024 photos of scar area.
11-Sep	DLCIB18-12	D20266	2012	F	Left	No signs of infection of biopsy scar in 2024.
12-Sep	DLCIB18-20	D11374	2008	M	Right	No signs of infection of biopsy scar in 2024.
12-Sep	DLCIB18-17	R17000	2014	M	Right	No signs of infection of biopsy scar in 2024.
2019						
31-Aug	DLCIB19-07	D2379	2005	M	Left	Biopsy site appeared infected (raised and dark) in 2020 and 2021. No sign of infection in 2022, scar site appears dark in 2023, no signs of infection 2024; right-side struck-with-sample on 2-Aug-2017, DL-CIB17-03.
29-Aug	DLCIB19-04	R3235	2009	M	Right	No 2024 photos of scar area.
31-Aug	DLCIB19-10	D3833	2007	F	Left	No signs of infection of biopsy scar in 2024.