

Body condition of Southern Resident killer whales, 2023 to 2024

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Sample Data. The body condition of 40 different Southern Resident killer whale (SRKW) individuals was measured from vertical drone photographs (Durban et al. 2015) in the summer 2023 to spring 2024, specifically between June 30th, 2023 and May 14th, 2024. This comprised all 25 members of J-pod, and 15/34 whales from L pod. K pod was not imaged during this period. Our sample therefore included 40/74 members of the population.

Identifying whales in “poor” body condition. Using the image measurements and statistical analyses detailed in Stewart et al. (2021), we identified whales in “poor condition” as those estimated to be in the lowest body condition state BC1. We have documented whales in BC1 to have an elevated probability of subsequent mortality compared to those in more robust states BC2-5 (Stewart et al. 2021). These were whales for which the measured eye patch ratio (EPR, a sensitive proxy for body condition; Fearnbach et al. 2020) at the time of their most recent photograph had a residual difference to the EPR expected for their age and sex that fell into the lowest 20% of residuals for the distribution of all available measurements in our long-term dataset from the comparable time of year. J-pod whales were all imaged in spring 2024, so the expectation was calculated by fitting generalized additive models of EPR against age, separately for each sex, to data available from the November-May period from 2016-2024. The L pod whales were imaged most recently in June-August 2023, and the expected EPR and residual distributions were estimated from data available from the comparable June-August period from 2008, 2013 and 2015-2023.

There were **14** whales in BC1 state from J and L pods: including one adult male (M), six adult females (F), three sub-adult males (SAM), two sub-adult females (SAF) and two juveniles (J).

J16(F), J36(F), J37(F), J39(M), J42(F), J44(SAM), J49(SAM), J53(J), L22(F), L94(F), L108(SAM), L113(SAF), L119 (SAF), L124(J)

This list includes five whales that were measured to be in BC1 in our 2023 body condition report to WDFW (fall to spring data 2022/2023) and 13 whales that were measured to be in BC1 in our annual report to NMFS (summer to fall data 2023). Of note, L94 and L119 both have young, dependent calves (born in June 2023). Additionally, J47 (SAM offspring of J37, a female in BC1 with dependent calf), declined three body condition states from a BC5 to BC2.

Dates last imaged for whales in BC1:

April 26, 2024: J16, J36, J37, J39, J42, J44, J49, J53; June 30, 2023: L94; July 1, 2023: L22, L113, L119, L124; August 19th, 2023: L108

References

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