

[10.1071/WR23026](https://doi.org/10.1071/WR23026)

Wildlife Research

Supplementary Material

Comparisons of morphometrics and body condition between two breeding populations of Australian humpback whales

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Supplement 1.

Figure S1. Boxplot of total body length for each reproductive class

Figure S2. Measurement accuracy of known object at different altitudes

Figure S3. Body condition of reproductive classes for 2017 and 2021

Table S1. Chi-squared results (χ^2) of the comparison of width (relative to body length) along the body axis at 5% increments

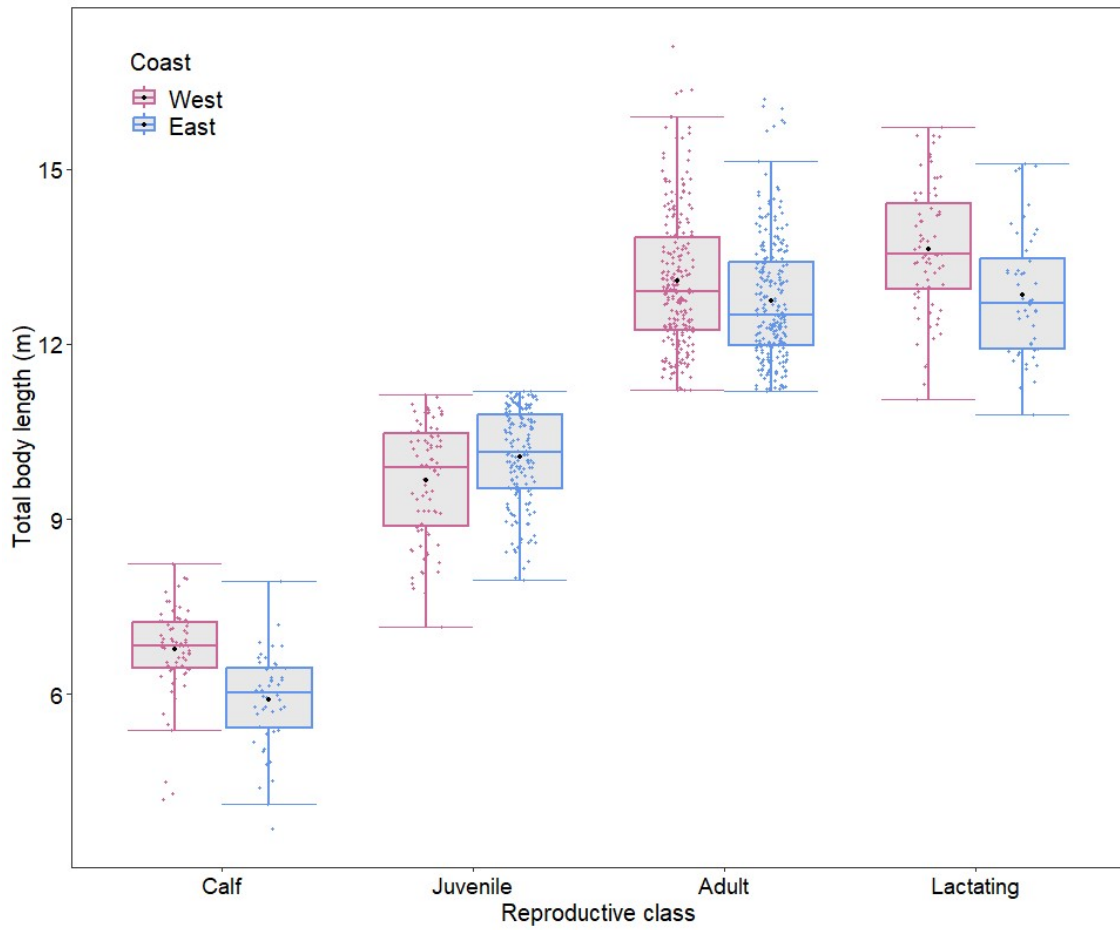


Figure S1. Boxplot showing the total body lengths of each reproductive class (calf $n = 119$, juvenile $n = 249$, adult $n = 486$ and lactating female $n = 119$) of humpback whales sampled on the east (blue) and west (pink) coasts of Australia.

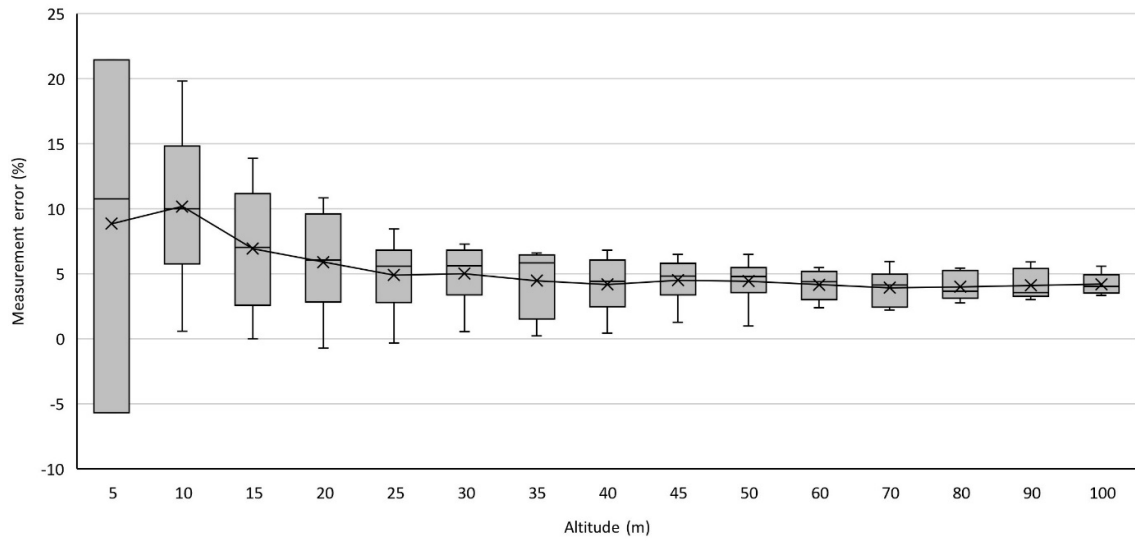


Figure S2. A boxplot of the measurement errors of two objects of known length (5 m and 10 m) from six unmanned aerial vehicle (UAV) flights flown at altitudes between 5 m to 100 m.

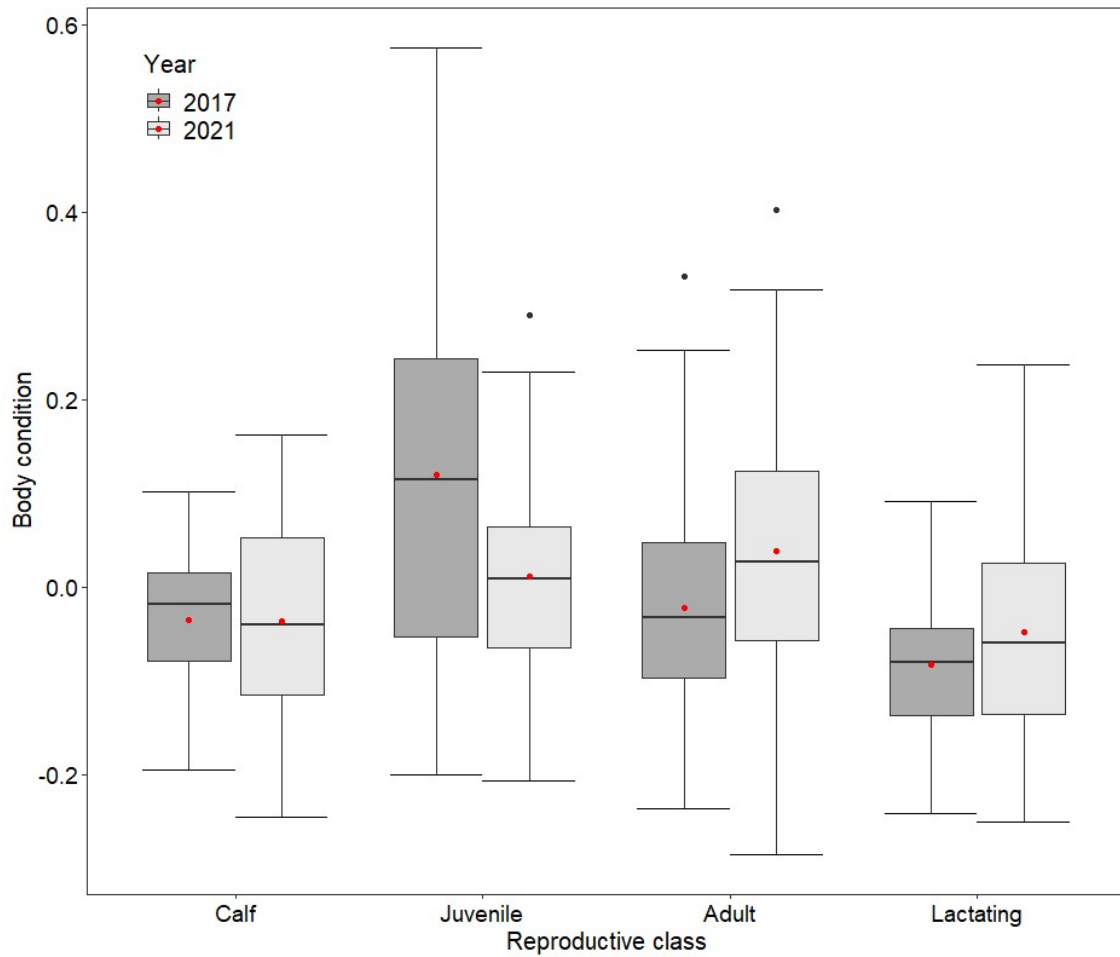


Figure S3. A comparison of Western Australia Breeding Stock D humpback whale body condition for different reproductive classes between sampling years of 2017 (dark grey, calf $n = 20$, juvenile $n = 55$, adult $n = 67$, lactating female $n = 20$) and 2021 (light grey, calf $n = 51$, juvenile $n = 28$, adult $n = 168$, lactating female $n = 51$). The red dot indicating the mean for each reproductive class. The box indicates the upper and lower quartile with the black solid line representing the median body condition for each reproductive class. The whiskers show the maximum and minimum ranges of body condition with outliers shown by black dots.

Table S1. Chi-squared results (χ^2) of the comparison of width (relative to body length) along the body axis at 5% increments between whales sampled on the east and west coasts of Australia. * denotes significant ($p < 0.05$) difference between populations with the Cohen's d effect size in brackets.

Body Axis	Calf	Juvenile	Adult	Lactating female
5	1.57	28.95* (0.69)	8.20* (0.25)	1.16
10	0.16	14.51* (0.48)	10.30* (0.28)	0.16
15	0.97	14.07* (0.46)	13.44* (0.32)	2.91
20	7.19* (0.50)	2.23	19.98* (0.39)	12.03* (0.69)
25	2.90	0.10	1.37	1.20
30	2.68	0.26	38.44* (0.54)	17.24* (0.81)
35	2.40	6.79* (0.35)	37.93* (0.53)	17.64* (0.85)
40	1.26	8.54* (0.37)	42.04* (0.53)	23.42* (0.96)
45	0.93	8.76* (0.37)	43.65* (0.53)	24.96* (0.97)
50	1.06	6.99* (0.34)	54.87* (0.58)	28.22* (1.02)
55	0.92	4.55* (0.29)	47.48* (0.54)	27.97* (1.02)
60	1.15	0.72	43.72* (0.51)	28.77* (1.04)
65	2.51	0.16	35.25* (0.47)	33.23* (1.12)
70	2.22	4.85	36.82* (0.50)	26.41* (1.02)
75	4.46* (0.39)	5.22	36.25* (0.51)	25.28* (0.98)
80	3.60	9.62* (0.37)	41.12* (0.55)	26.72* (0.98)
85	0.73	0.89	5.84* (0.21)	21.59* (0.90)
90	0.73	0.89	5.84* (0.21)	21.59* (0.90)
95	0.73	0.89	5.84* (0.21)	21.59* (0.90)