

Ecography

ECOG-04988

Ferguson, S. H., Yurkowski, D. J., Young, B. G., Fisk, A. T., Muir, D. C. G., Zhu, X. and Thiemann, G. W. 2020. Comparing temporal patterns in body condition of ringed seals living within their core geographic range with those living at the edge. – *Ecography* doi: 10.1111/ecog.04988

Supplementary material

Appendix 1

Table A1. Summary of general linear model results explaining blubber depth as a measure of body condition for core (A) and peripheral (B) ringed seal populations of the Canadian Arctic. Included in the table are ranked models, and regression coefficients (intercept and factors), number of estimated parameters (df), log-likelihood, Akaike's information criterion corrected for small sample sizes (AICc) values, Δ AICc (Delta), and AICc weights (Weight) for each model. Ringed seal blubber depth variation explained by the following explanatory variables age group (age), years (year), season (month), and one-year lagged environmental variables: spring breakup date (Spring), open-water duration (Open), and NAO.

A Core ringed seal population:

Model	Intercept	Age	NAO	Open	Month	Spring	df	LogLik	AICc	Delta	Weight
28	2.127	0.0912	0.0138		-0.02965	-0.0038	6	-1414.26	2840.6	0	0.576
32	2.436	0.09201	0.01379	-0.00081	-0.02853	-0.00495	7	-1414.12	2842.4	1.75	0.24
16	1.17	0.08877	0.01389	0.002052	-0.03045		6	-1416.24	2844.6	3.96	0.079
20	1.955	0.09139	0.0124			-0.00325	5	-1417.59	2845.2	4.62	0.057
24	2.533	0.09289	0.01248	-0.00149		-0.00541	6	-1417.1	2846.3	5.68	0.034
8	1.149	0.08929	0.01248	0.001614			5	-1419.64	2849.4	8.74	0.007
26	2.138	0.08472			-0.02391	-0.00381	5	-1420.73	2851.5	10.91	0.002
12	1.357	0.08956	0.01399		-0.02062		5	-1421.35	2852.8	12.14	0.001
30	2.463	0.08558		-0.00086	-0.02276	-0.00503	6	-1420.57	2853.2	12.62	0.001
18	1.998	0.08544				-0.00337	4	-1422.91	2853.9	13.25	0.001
4	1.313	0.08978	0.01298				4	-1423	2854	13.43	0.001
22	2.537	0.08681		-0.0014		-0.00538	5	-1422.49	2855	14.43	0
14	1.177	0.08221		0.002067	-0.02463		5	-1422.76	2855.6	14.98	0
6	1.158	0.08321		0.001711			4	-1425.01	2858.1	17.45	0
2	1.332	0.08342					3	-1428.75	2863.5	22.91	0
10	1.365	0.08288			-0.01488		4	-1427.88	2863.8	23.2	0
27	2.2		0.01		-0.02992	-0.00358	5	-1439.59	2889.2	48.63	0
15	1.276		0.01016	0.002142	-0.03154		5	-1440.25	2890.6	49.94	0
31	2.021		0.01003	0.000469	-0.03055	-0.00291	6	-1439.55	2891.2	50.57	0
19	2.024		0.008635			-0.00301	4	-1442.79	2893.6	53.01	0
25	2.203				-0.0258	-0.00359	4	-1442.87	2893.8	53.16	0

13	1.276		0.002142	-0.02725		4	-1443.62	2895.3	54.67	0
7	1.256	0.008726	0.001683			4	-1443.71	2895.5	54.84	0
23	2.112	0.008637	-0.00023		-0.00334	5	-1442.78	2895.6	55.01	0
29	2.063		0.000368	-0.02627	-0.00307	5	-1442.84	2895.7	55.13	0
17	2.049				-0.0031	3	-1445.28	2896.6	55.97	0
5	1.257		0.001744			3	-1446.25	2898.5	57.9	0
21	2.135		-0.00022		-0.00342	4	-1445.27	2898.6	57.97	0
11	1.472	0.01018		-0.02113		4	-1445.54	2899.1	58.5	0
3	1.427	0.009176				3	-1447.19	2900.4	59.78	0
9	1.472			-0.01699		3	-1448.88	2903.8	63.18	0
1	1.435					2	-1449.97	2903.9	63.33	0

B Peripheral ringed seal population:

Model	Intercept	Age	NAO	Open	Month	Spring	Year	df	LogLik	AICc	Delta	Weight
64	16.11	0.08955	0.01869	-0.00681	0.11	-7.73E-03	-0.00626	8	-3246.16	6508.4	0	0.783
48	14.21	0.0893	0.0259	-0.00252	0.1066		-0.00634	7	-3248.92	6511.9	3.5	0.136
32	3.634	0.08726	0.01892	-0.00732	0.1112	-7.82E-03		7	-3249.7	6513.5	5.07	0.062
16	1.562	0.08694	0.0262	-0.00301	0.1077			6	-3252.52	6517.1	8.67	0.01
60	14.94	0.08914	0.02749		0.1074	2.82E-03	-0.00715	7	-3252.13	6518.3	9.91	0.006
62	18.3	0.08904		-0.01083	0.1159	-1.59E-02	-0.00631	7	-3253.57	6521.2	12.8	0.001
44	17.94	0.08914	0.02323		0.1121		-0.0084	6	-3254.73	6521.5	13.1	0.001
28	0.4248	0.08637	0.0285		0.1086	3.70E-03		6	-3256.71	6525.5	17.07	0
30	5.726	0.08673		-0.01133	0.1172	-1.60E-02		6	-3257.21	6526.5	18.06	0
12	1.077	0.08563	0.02276		0.1153			5	-3261.41	6532.8	24.44	0
46	14.21	0.0874		-0.00146	0.1118		-0.00642	6	-3272.4	6556.8	48.44	0
42	16.35	0.0874			0.1149		-0.0076	5	-3274.4	6558.8	50.43	0
58	17.36	0.0875			0.1162	-8.96E-04	-0.00803	6	-3274.09	6560.2	51.81	0
14	1.394	0.08497		-0.00194	0.1128			5	-3276.08	6562.2	53.8	0
10	1.082	0.08427			0.1176			4	-3279.87	6567.8	59.35	0
26	1.085	0.08427			0.1176	-1.90E-05		5	-3279.87	6569.8	61.36	0
63	12.1		0.01802	-0.00654	0.1192	-7.37E-03	-0.00428	7	-3287.93	6589.9	81.51	0
31	3.566		0.01822	-0.00688	0.12	-7.40E-03		6	-3289.56	6591.2	82.76	0
47	10.24		0.02487	-0.00247	0.1159		-0.00433	6	-3290.34	6592.7	84.32	0
15	1.605		0.02509	-0.0028	0.1167			5	-3291.99	6594	85.61	0
59	10.84		0.02647		0.1167	2.80E-03	-0.00507	6	-3293.26	6598.6	90.16	0
27	0.5518		0.02721		0.1174	3.42E-03		5	-3295.53	6601.1	92.69	0
61	14.31			-0.0104	0.125	-1.52E-02	-0.00438	6	-3294.57	6601.2	92.78	0
43	13.77		0.02223		0.1214		-0.00628	5	-3295.73	6601.5	93.09	0
29	5.58			-0.01074	0.1258	-1.53E-02		5	-3296.3	6602.6	94.22	0
11	1.154		0.02192		0.1237			4	-3299.41	6606.8	98.43	0
45	10.35			-0.00145	0.121		-0.00446	5	-3311.21	6632.4	124.04	0
13	1.443			-0.00177	0.1217			4	-3312.96	6633.9	125.54	0

41	12.39				0.1241	-0.00559	4	-3313.11	6634.2	125.85	0	
57	13.25				0.1253	-7.76E-04	-0.00595	5	-3312.89	6635.8	127.4	0
40	16.99	0.1004	0.02945	-0.00401			-0.00749	6	-3312.66	6637.4	128.96	0
9	1.157				0.126			3	-3316.03	6638.1	129.67	0
56	17.49	0.1005	0.02771	-0.00508		-1.90E-03	-0.00749	7	-3312.5	6639.1	130.65	0
25	1.18				0.1262	-1.34E-04		4	-3316.02	6640.1	131.67	0
52	16.57	0.1001	0.0341			5.90E-03	-0.00812	6	-3315.63	6643.3	134.9	0
8	2.052	0.09792	0.02976	-0.00462				5	-3317.42	6644.9	136.46	0
24	2.553	0.09807	0.02805	-0.00567		-1.88E-03		6	-3317.26	6646.6	138.16	0
20	0.08003	0.09727	0.03525			6.95E-03		5	-3321.21	6652.5	144.06	0
36	23.35	0.1011	0.02557				-0.01097	5	-3326.63	6663.3	154.89	0
54	20.69	0.1008		-0.01101		-1.37E-02	-0.00756	6	-3328.1	6668.2	159.83	0
22	5.601	0.09829		-0.01154		-1.37E-02		5	-3333.01	6676.1	167.65	0
4	1.335	0.09714	0.02482					4	-3337.41	6682.8	174.44	0
38	16.72	0.09924		-0.00293			-0.00743	5	-3341.01	6692.1	183.65	0
6	1.891	0.09674		-0.00351				4	-3345.69	6699.4	190.99	0
34	21.28	0.09987					-0.00993	4	-3348.58	6705.2	196.78	0
50	19.3	0.09948				1.62E-03	-0.00909	5	-3347.62	6705.3	196.88	0
18	0.8596	0.09622				2.70E-03		4	-3354.58	6717.2	208.78	0
2	1.345	0.09633						3	-3357.41	6720.8	212.44	0
39	13.03		0.0288	-0.00409			-0.00545	5	-3362.37	6734.8	226.37	0
55	13.32		0.02782	-0.00469		-1.08E-03	-0.00546	6	-3362.32	6736.7	228.29	0
7	2.146		0.02904	-0.00452				4	-3364.84	6737.7	229.3	0
23	2.419		0.02811	-0.00509		-1.02E-03		5	-3364.8	6739.6	231.22	0
51	12.36		0.03371			6.13E-03	-0.00599	5	-3364.89	6739.8	231.4	0
19	0.1976		0.03456			6.90E-03		4	-3367.86	6743.7	235.33	0
35	19.27		0.02484				-0.00888	4	-3376.29	6760.6	252.2	0
53	16.66			-0.01061		-1.29E-02	-0.0056	5	-3377.39	6764.8	256.4	0
21	5.474			-0.01098		-1.28E-02		4	-3380.02	6768.1	259.67	0
3	1.444		0.02426					3	-3383.19	6772.4	263.99	0
37	12.85			-0.00303			-0.00544	4	-3388.3	6784.6	276.21	0

5	1.989	-0.00344			3	-3390.75	6787.5	279.12	0
49	15.09		1.92E-03	-0.00696	4	-3394.79	6797.6	289.2	0
33	17.38			-0.00793	3	-3396.09	6798.2	289.79	0
17	0.9598		2.74E-03		3	-3398.8	6803.6	295.2	0
1	1.453				2	-3401.6	6807.2	298.8	0

Figure A1. Ringed seal blubber depth (mean \pm SE) over months of a year compared by age class (YOY, Juveniles and adults) for seals sampled from core (left) or peripheral (right) regions of their geographic range in Canada.

