The following supplements accompany the article

Temporal and intra-population patterns in polar bear foraging ecology in western Hudson Bay

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Supplement 1 Age/sex class sample sizes over time

This supplement contains a table of the sample sizes for each Western Hudson Bay polar bear age/sex class over time (Table S1).

Table S1. Sample sizes of Western Hudson Bay polar bears for each age/sex class in each year (1993–1994, 2004–2016)

Year	Adult female with young	Solitary adult female	Adult male	Subadult female	Subadult male
1993	8	7	6	0	1
1994	12	0	5	0	0
2004	19	5	59	13	10
2005	22	8	32	7	4
2006	20	7	31	4	5
2007	13	3	24	0	0
2008	15	9	16	5	6
2009	23	6	27	11	5
2010	16	8	33	2	3
2011	13	16	27	7	4
2012	9	7	22	4	2
2013	5	6	13	1	1
2014	16	15	27	5	1
2015	13	10	19	2	2
2016	14	10	23	1	1

Supplement 2 Age- and sex-related patterns: Isotopic niche sizes, isotopic signatures, and niche overlap

This supplement contains a figure of the isotopic niches and niche sizes for each Western Hudson Bay polar bear age/sex class (Fig. S1), tables from the Dunn's test results comparing the isotopic signatures among age/sex classes (Tables S2 and S3), and a table of the percentage overlap of isotopic niches among classes (Table S4).

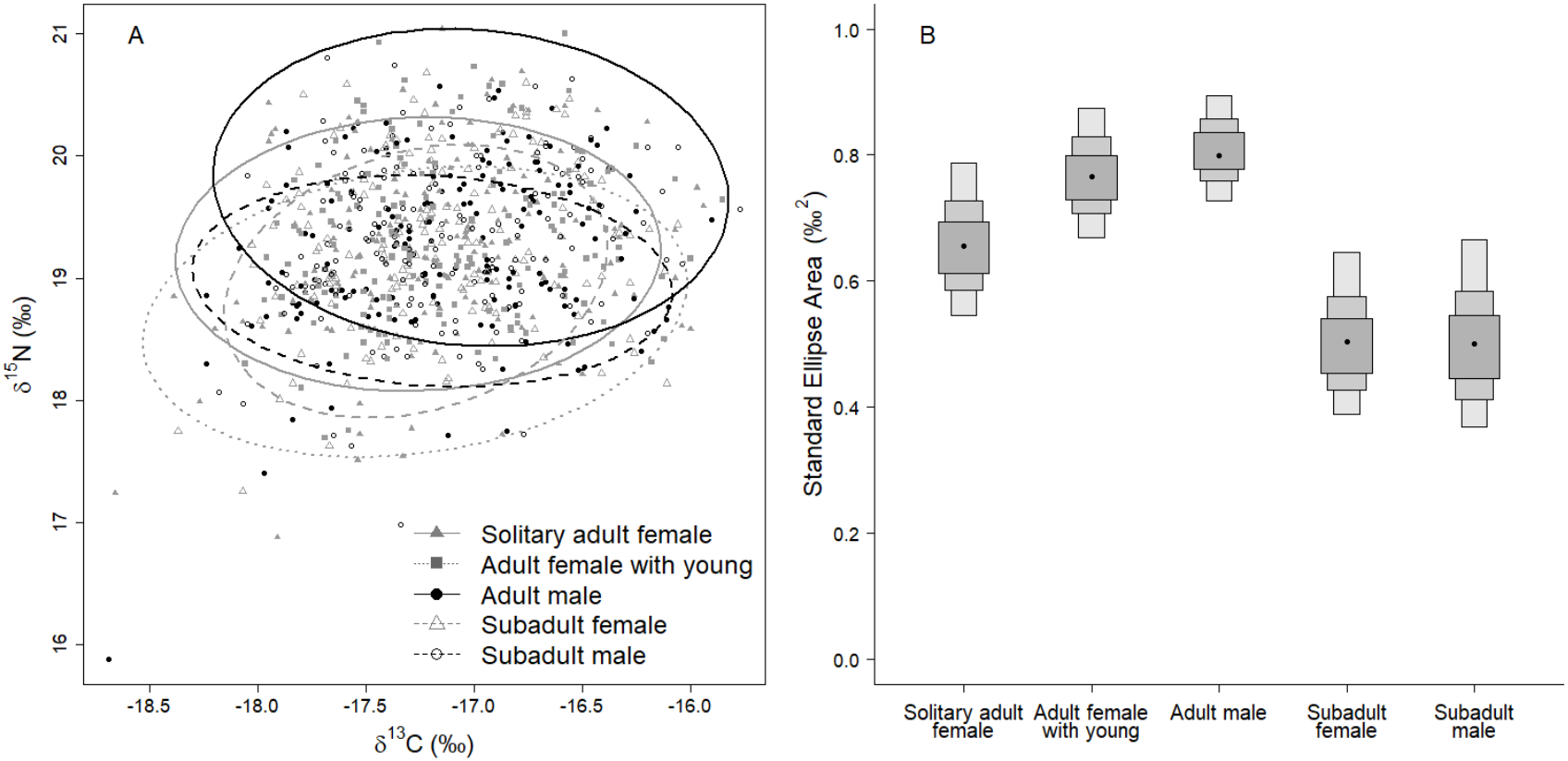

Figure S1. SIBER (Stable Isotope Bayesian Ellipses in R) ellipses showing the isotopic niches (A) and the isotopic niche sizes (i.e., standard ellipse areas) (B) for each of Western Hudson Bay polar bear age/sex classes

Table S2. Dunn's test comparing nitrogen stable isotope ratios (δ^{15}N) (‰) between Western Hudson Bay polar bear age/sex classes. Significant differences between age/sex classes are indicated by asterisks (* indicates significant at $p \leq 0.05$; ** significant at $p \leq 0.001$)

	n	Adult female with young	Solitary adult female	Adult male	Subadult female	Subadult male
Adult female with young	218	–	≤ 0.001**	≤ 0.001**	0.002*	0.016*
Solitary adult female	117		–	≤ 0.001**	0.0108*	0.0079*
Adult male	364			–	≤ 0.001**	≤ 0.001**
Subadult female	62				–	0.3741
Subadult male	45					–

Table S3. Dunn's test comparing carbon stable isotope ratios ($\delta^{13}C$) (‰) between Western Hudson Bay polar bear age/sex classes. Significant differences between age/sex classes are indicated by asterisks (* indicates significant at $p \leq 0.05$; ** significant at $p \leq 0.001$)

	n	Adult female with young	Solitary adult female	Adult male	Subadult female	Subadult male
Adult female with young	218	–	0.46	≤0.001**	0.46	0.18
Solitary adult female	117		–	≤0.001**	0.43	0.18
Adult male	364			–	≤0.001**	0.015*
Subadult female	62				–	0.24
Subadult male	45					–

Table S4. Percentage overlap (%) of the isotopic niches between Western Hudson Bay polar bear age/sex classes

	n	Adult female with young	Solitary adult female	Adult male	Subadult female	Subadult male
Adult female with young	218	–	79	50	63	65
Solitary adult female	117		–	75	71	73
Adult male	364			–	43	44
Subadult female	62				–	81
Subadult male	45					–

Supplement 3 Temporal patterns: stable isotope mixing model estimates and isotopic niche sizes

This supplement contains a table comparing yearly isotopic niche sizes (Table S5), a table showing the yearly estimated proportion of each prey species in the diet of Western Hudson Bay polar bears (Table S6), and figures of the population's isotopic niches and niche sizes over time (Figs. S2 and S3). This supplement also contains figures of the yearly isotopic niches and niche sizes for adult females and adult males (Figs. S4 and S5).

Table S5. Comparison of the isotopic niche sizes among years: the probability that the posterior distribution of ellipse area for the year in the first column was smaller than that of the years in the top row (i.e., the proportion of posterior distributions that were smaller)

	1993	1994	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1993	–	57%	97%	99.9%	99.9%	77%	99.8%	97%	97%	72%	46%	57%	91%	94%	93%
1994		–	92%	99.9%	99.9%	69%	99%	92%	93%	64%	38%	49%	84%	89%	87%
2004			–	99.9%	99.9%	9%	98%	54%	58%	3%	0.5%	4%	25%	41%	37%
2005				–	66%	0%	12%	< 0.1%	0.1%	0%	0%	< 0.1%	0%	0.1%	< 0.1%
2006					–	0%	6%	0%	< 0.1%	0%	0%	< 0.1%	0%	< 0.1%	< 0.1%
2007						–	99.6%	91%	91%	40%	15%	28%	75%	84%	81%
2008							–	4%	5%	< 0.1%	0%	0.3%	1%	3%	3%
2009								–	54%	3%	0.6%	4%	24%	39%	34%
2010									–	3%	0.6%	4%	22%	36%	32%
2011										–	18%	34%	86%	92%	90%
2012											–	63%	97%	98%	98%
2013												–	88%	92%	91%
2014													–	64%	60%
2015														–	46%

Table S6. The mean estimated proportion (%) of each prey item in the diet of Western Hudson Bay polar bears (all age/sex classes) in each year from the stable isotope mixing model (and 95% Bayesian credible intervals)

Year	Sample size	Ringed seal	Bearded seal	Harbour seal	Harp seal
1993	22	21 (11, 34)	23 (12, 38)	2.8 (0.1, 10)	53 (37, 67)
1994	17	17 (7.8, 28)	24 (12, 41)	3.1 (0.1, 11)	56 (40, 70)
2004	106	39 (26, 53)	15 (8.0, 26)	12 (5.1, 22)	34 (22, 47)
2005	73	25 (15, 37)	0.8 (0, 2.9)	45 (32, 60)	29 (18, 41)
2006	67	59 (44, 71)	20 (12, 33)	0.5 (0, 1.9)	21 (12, 31)
2007	40	66 (50, 79)	8.2 (2.0, 17)	23 (12, 37)	2.9 (0.1, 9.7)
2008	51	72 (56, 82)	26 (15, 41)	2.3 (0, 8.0)	0.6 (0, 2.7)
2009	72	32 (20, 46)	0.6 (0, 2.3)	45 (32, 60)	22 (13, 33)
2010	62	55 (38, 70)	0.6 (0, 24)	44 (29, 61)	0.3 (0, 1.2)
2011	67	70 (51, 79)	1.1 (0, 4.1)	32 (20, 48)	0.6 (0, 2.4)
2012	44	65 (47, 81)	7.0 (0.5, 18)	19 (7.2, 35)	8.9 (0.6, 19)
2013	26	38 (21, 56)	29 (16, 46)	15 (3.1, 31)	18 (7.3, 31)
2014	64	44 (29, 60)	24 (14, 39)	27 (15, 43)	4.3 (0.2, 12)
2015	46	53 (35, 69)	11 (3.0, 23)	28 (14, 45)	8.1 (0.9, 17)
2016	49	48 (31, 64)	24 (13, 39)	18 (7.2, 31)	11 (3.3, 20)

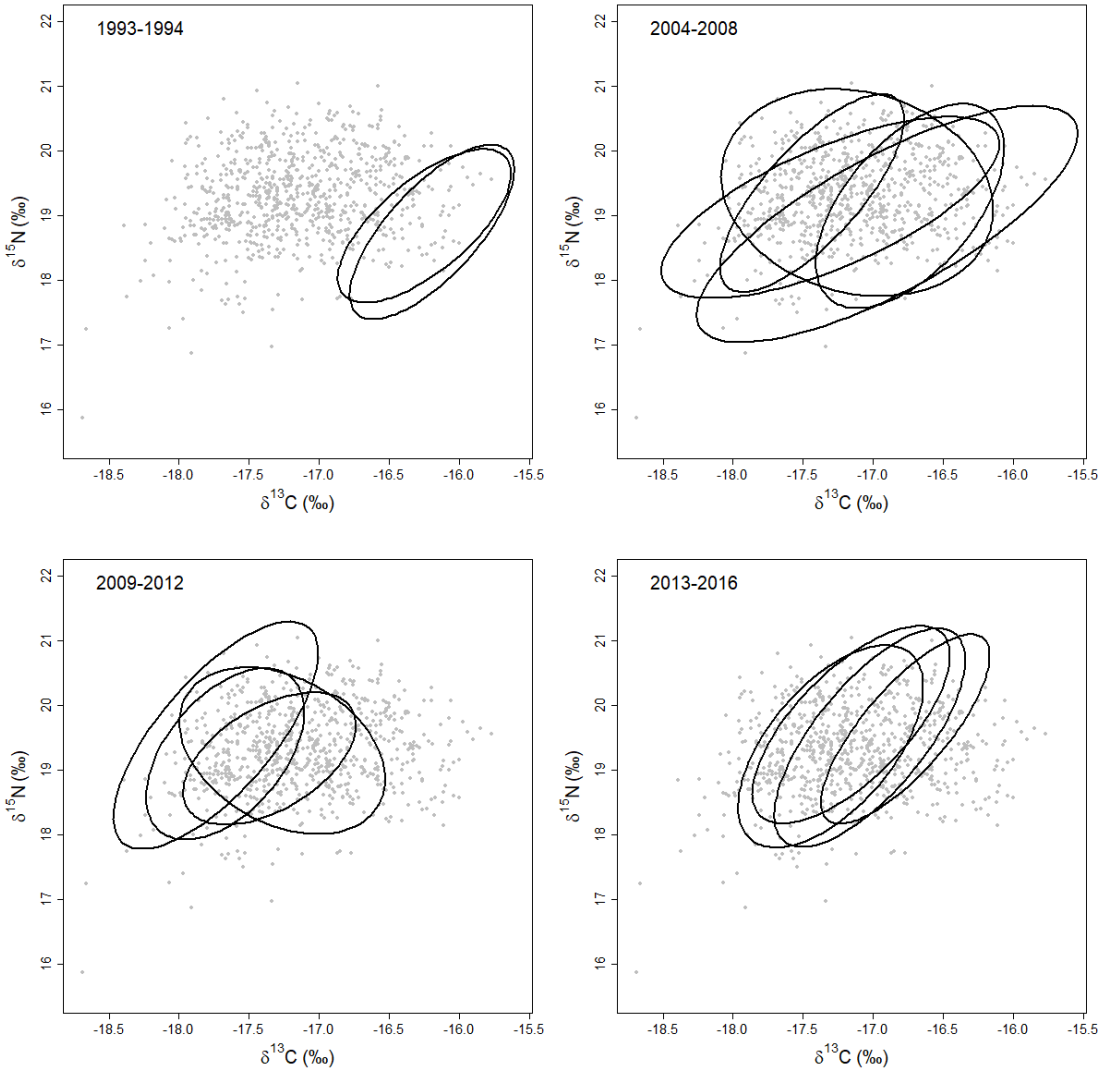

Figure S2. SIBER (Stable Isotope Bayesian Ellipses in R) ellipses showing the isotopic niches of the Western Hudson Bay polar bear population for each year

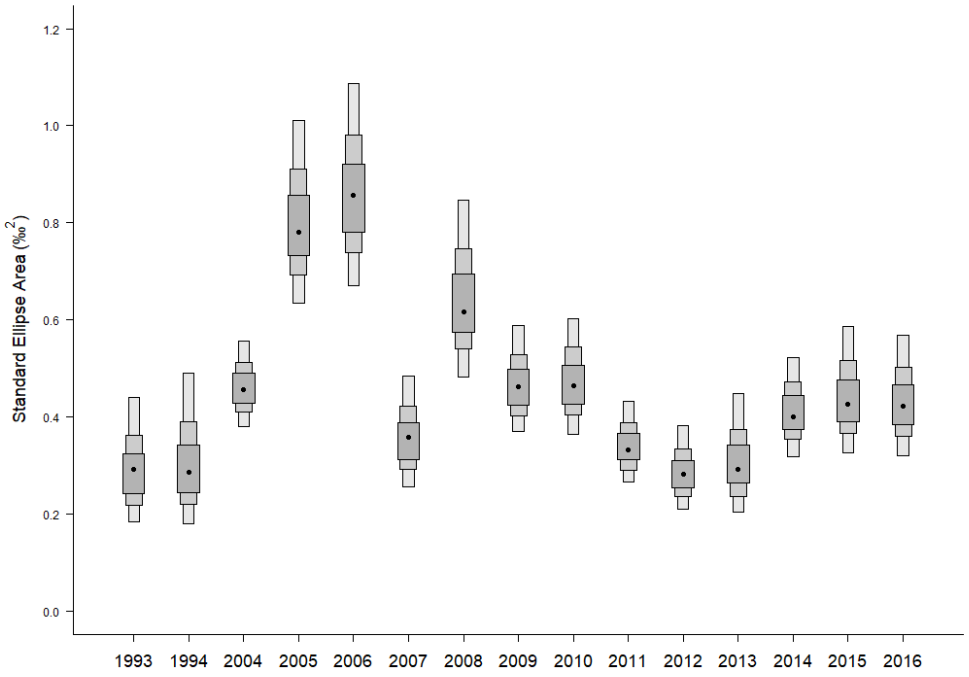

Figure S3. The yearly isotopic niche sizes (i.e., standard ellipse areas) for Western Hudson Bay polar bears. The boxplots for the standard ellipse areas show the Bayesian credible intervals (dark grey = 50%, medium grey = 75%, and light grey = 95%)

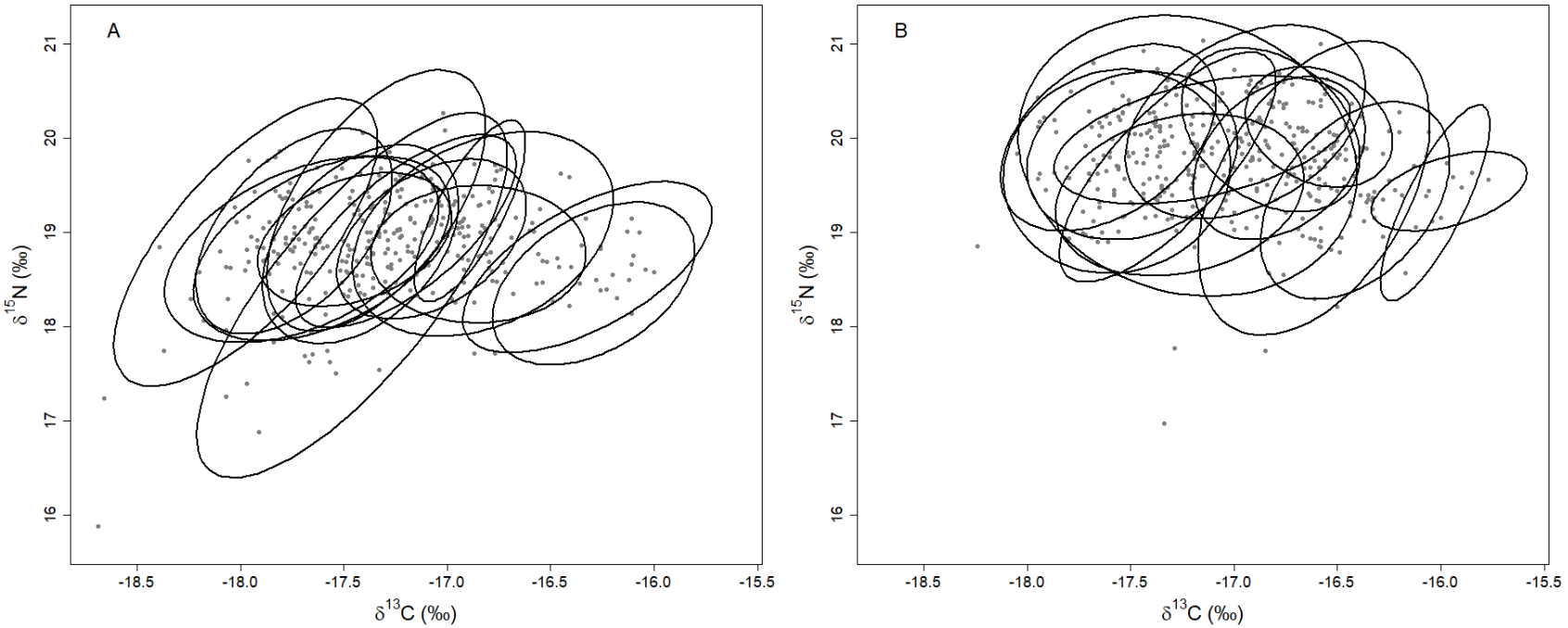

Figure S4. SIBER (Stable Isotope Bayesian Ellipses in R) ellipses showing the isotopic niches for all adult female (A) and adult male (B) Western Hudson Bay polar bears over time (1993-1994, 2004-2016)

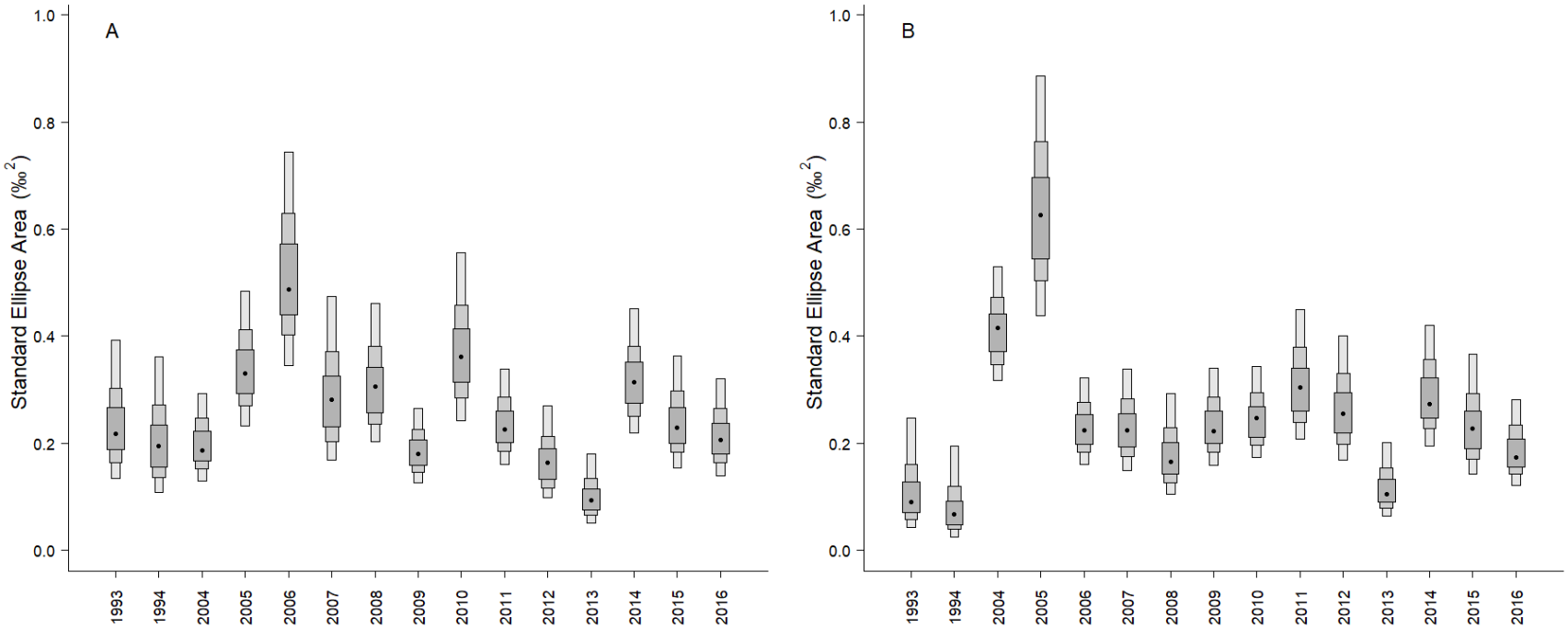

Figure S5. Isotopic niche sizes (i.e., standard ellipse areas) for all adult female (A) and adult male (B) Western Hudson Bay polar bears. The boxplots for the standard ellipse areas show the Bayesian credible intervals (dark grey = 50%, medium grey = 75%, and light grey = 95%)