Supplementary material for: Bolton J.L., White P.A., Burrows D.G., Lundin J.I. & Ylitalo G.M. 2017. Food resources influence levels of persistent organic pollutants and stable isotopes of carbon and nitrogen in tissues of Arctic foxes (*Vulpes lagopus*) from the Pribilof Islands, Alaska. *Polar Research 36.* Contact: Jennie L. Bolton, Environmental and Fisheries Sciences Division, Northwest Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, 2725 Montlake Boulevard East, Seattle, WA 98112, USA. E-mail: jennie.bolton@noaa.gov

Supplementary Table S1. Life history parameters for Pribilof foxes collected as part of this study, including island, sex, age in months (estimated by tooth eruption pattern or tooth cementum annuli count), age class, body condition and weight, fat sampling location, collection year and probability of access to anthropogenic food sources (see main text).

Collection site	Animal ID	Sex	Age (m)	Age class	Body condition	Body weight (kg)	Sampling location	Collection year	Access to anthropogenic foods
St. George Island	D-01-10	F	18	adult	good	3.5	dorso-posterior	2001	possible
	D-01-19	M	6	juvenile	excellent	5.7	dorso-posterior	2001	possible
	D-01-25	M	18	adult	good	3.75	dorso-posterior	2001	possible
	D-06-24	M	6	juvenile	good	2.5	dorso-posterior	2006	possible
	D-06-25	F	3	pup	good	3.05	dorso-posterior	2006	possible
	D-06-27	M		adult	very good	4	dorso-posterior	2006	low
	D-06-29	M		adult	very good	not available	dorso-posterior	2006	high
	D-06-30	M		adult	very good	not available	dorso-posterior	2006	low
	D-06-31	M	6	juvenile	very good	4.6	dorso-posterior	2006	low
	D-06-32	F	12	adult	excellent	4.75	dorso-posterior	2006	low
	D-06-33	F		adult	very good	3.6	dorso-posterior	2006	low
	D-06-35	F		adult	excellent	3.9	dorso-posterior	2006	low
	D-06-36	M		adult	very good	4.4	dorso-posterior	2006	low
St. Paul Island	D-99-14	F	3.5	pup	excellent	3.2	dorso-posterior	1999	high
	D-99-15	F	3.5	pup	excellent	2.9	dorso-posterior	1999	high
	D-00-11	F	34	adult	excellent	3.4	dorso-posterior	2000	high
	D-00-12	F	80	adult	good	4.5	dorso-posterior	2000	high
	D-00-13	M	22	adult	excellent	5.1	dorso-posterior	2000	possible
	D-00-14	F	10	juvenile	very good	4.1	dorso-posterior	2000	possible
	D-00-17	M	4	pup	excellent	3.6	dorso-posterior	2000	possible
	D-00-21	M	11	juvenile	very good	3.8	dorso-posterior	2000	low
	D-00-22	M	92	adult	excellent	5.3	dorso-posterior	2000	possible
	D-00-23	F	26	adult	fair	3.1	abdominal	2000	high
	D-01-01	F	12	adult	very good	3.4	dorso-posterior	2001	low
	D-01-05	F	26	adult	very good	3.9	dorso-posterior	2001	low
	D-01-06	M	8	juvenile	excellent	5.1	dorso-posterior	2001	possible
	D-01-07	M	31	adult	excellent	5	dorso-posterior	2001	low
	D-01-11	M	12	adult	very good	5.1	dorso-posterior	2001	low
	D-01-16	M	11	juvenile	good	3.4	dorso-posterior	2001	high

D-01-17	F	11	juvenile	very good	4.5	dorso-posterior	2001	high
D-01-21	M	39	adult	very good	5.2	dorso-posterior	2001	possible
D-01-23	F	24	adult	fair/good	3.5	abdominal	2001	high
D-01-24	F	12	adult	good	3.5	dorso-posterior	2001	low
D-01-29	unk	≥ 12	adult	very good	not available	dorso-posterior	2001	possible
D-02-08	F	13	adult	very good	4.4	dorso-posterior	2002	high
D-02-09	F	18	juvenile	good	4.75	dorso-posterior	2002	possible
D-02-14	F	6	juvenile	good	3.8	dorso-posterior	2002	possible
D-02-18	F	14	adult	good	3.5	dorso-posterior	2002	low
D-03-03	F	10	juvenile	good	not available	dorso-posterior	2003	high
D-03-04	F	11	juvenile	very good	4.3	dorso-posterior	2003	high
D-03-05	M	12	adult	fair/good	2.9	mid-ventral	2003	high
D-03-06	F	22	adult	excellent	4.5	dorso-posterior	2003	high
D-03-09	F	72	adult	fair/good	3.8	mid-ventral	2003	high
D-03-10	F	36	adult	good/pregnant	6.9	dorso-posterior	2003	high
D-03-11	F	24	adult	good/pregnant	4.9	dorso-posterior	2003	high
D-03-12	M	36	adult	good	5	dorso-posterior	2003	high
D-03-16	M	14	adult	fair	3.1	abdominal	2003	low
D-03-20	M	3	pup	very good	2.8	dorso-posterior	2003	high
D-06-07	M	18	adult	very good	4.6	dorso-posterior	2006	possible
D-06-20	F	24	adult	fair	2.75	mid-ventral	2006	low
D-06-21	M	24	adult	fair	4	mid-ventral	2006	low

Supplementary Table S2. PCA rotated component-loading weights for POPs contaminant classes in Pribilof foxes (*n* = 50). This analysis does not include stable isotopes. Only weights > 0.5 were reported.

	Factor 1	Factor 2	Factor 3
% variance	62.5	21.3	12.2
eigenvalue	3.1	1.1	0.6
∑PCBs	0.58		
∑CHLs	0.61		
∑HCHs	0.51		
∑DDTs			0.99
HCB		0.99	

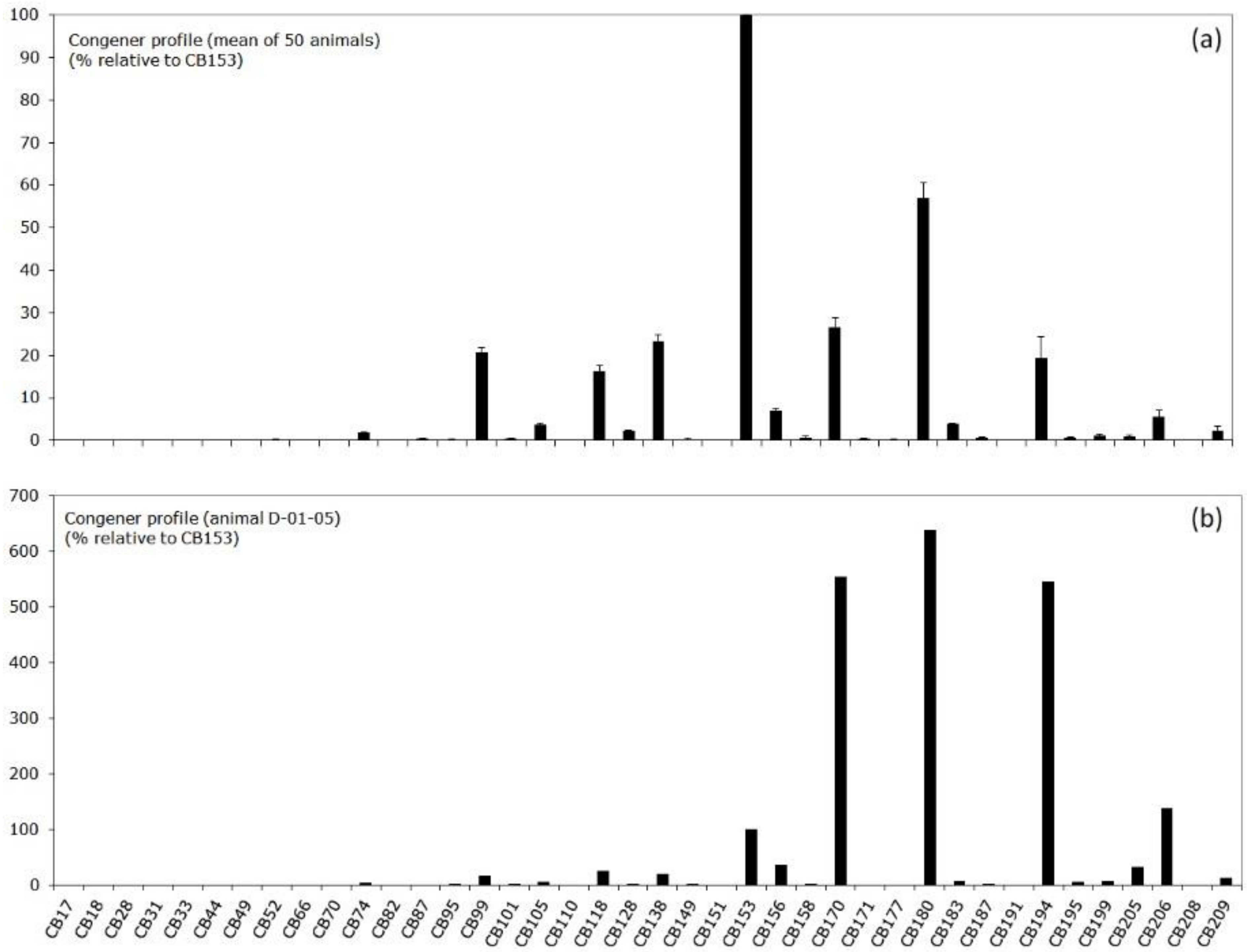
Supplementary Table S3. Full GLM parameters and coefficients for PCA Factors 1-3 for POPs in Pribilof foxes (n = 50). Age class (adult vs. juvenile/pup), sex, island and access to human foods were included as potential covariates. This analysis does not include stable isotopes. Results with p values < 0.05 are shown in boldface.

	Model	Estimate	Standard error	p value
Factor 1	(Intercept)	-0.96	0.55	0.086
	Access (high vs. low)	-1.42	0.56	**0.015**
	Access (possible vs. low)	-0.86	0.58	0.145
	Island (St. Paul)	1.61	0.53	**0.004**
	Sex (male)	1.40	0.45	**0.004**
	Age class (adult vs. nonadult)	-0.15	0.49	0.761
Factor 2	(Intercept)	0.78	0.36	0.037
	Access (high vs. low)	0.30	0.37	0.423
	Access (possible vs. low)	-0.36	0.38	0.344
	Island (St. Paul)	-1.02	0.34	**0.005**
	Sex (male)	-0.26	0.30	0.386
	Age class (adult vs. nonadult)	0.28	0.32	0.389
Factor 3	(Intercept)	0.62	0.23	**0.010**
	Access (high vs. low)	-0.68	0.23	**0.006**
	Access (possible vs. low)	0.31	0.24	0.201
	Island (St. Paul)	-0.54	0.22	**0.017**
	Sex (male)	-0.24	0.19	0.218
	Age class (adult vs. nonadult)	0.21	0.20	0.307

Supplementary Table S4. Concentrations of selected POPs (ng/g, lw) and stable isotope values in tissues of Arctic foxes from various regions, summarized from the literature.

	Sampling year(s)	∑PCBs	∑CHLs	∑HCHs	∑DDTs	$\delta^{13}C$	$\delta^{15}N$	Reference, notes
Pribilof Islands, AK	1999-2006							this study
mean		5300	4600	740	190	-19.0	15.5	
range		190 – 61,350	200 – 98,200	37 – 7360	nd – 890	-17.3 – -21.8	11.0 – 19.0	
n, tissue		51, fat	51, fat	51, fat	51, fat	39, muscle	39, muscle	muscle not lipid extracted for SI
Barrow, AK	1999-2001							Hoekstra et al. 2003
mean		1600	3100	285	113	-23.5	11.2	
n, tissue		18, liver	18, liver	18, liver	18, liver	18, muscle	18, muscle	muscle not lipid extracted for SI
Holman, NT	1999-2001							Hoekstra et al. 2003
mean		1350	2400	120	43	-24.5	9.3	
n, tissue		20, liver	20, liver	20, liver	20, liver	20, muscle	20, muscle	muscle not lipid extracted for SI

Arviat, NU	1999-2001							Hoekstra et al. 2003
mean		1700	1100	230	93	-23.5	8.0	
n, tissue		20, muscle	20, muscle	20, muscle	20, muscle	20, muscle	20, muscle	muscle not lipid extracted for SI
Iceland, coastal	1993							Klobes et al. 1998
mean		72,500	61,400	254	767			assuming 6% lipid
range		11,200 – 136,000	9133 – 131,117	150 – 317	117 – 2750			assuming 6% lipid
n, tissue		4, liver	4, liver	4, liver	4, liver			
Svalbard	1997-2013							Andersen et al. 2015
range		76 – 53,129	121 – 48,722	3.1 – 527	0.19 – 19,633	-19.1 – -25.4		p, p'-DDE, β-HCH only
n, tissue		141, liver	141, liver	141, liver	141, liver	141, muscle		muscle not lipid extracted for SI
Svalbard	1998-99							Fuglei et al. 2007
mean		8,946	3942.4		50.5			p, p'-DDE only
range		600 – 36,048	400 – 19,489		0.9 – 1267	~-19 – ~-23	~8 – ~15	
n, tissue		20, subcutaneous fat	20, subcutaneous fat		20, subcutaneous fat	20, muscle	20, muscle	muscle was lipid-extracted for SI
Svalbard	1983-84							Wang-Andersen et al. 1993
mean		8300						
range		500 – 41,000						
n, tissue		17, fat						
Svalbard	1974							Norheim 1978
mean		12,600						
n, tissue		44, fat						



Supplementary Fig. S1. (a) PCB congener patterns in Pribilof foxes. Relative contributions of measured congeners (numbered according to the scheme by Ballschmiter et al. 1992) are shown relative to CB153 (mean of 50 animals, error bars are standard error), compared with (b) one animal with an unusual pattern (D-01-05, an adult female from St. Paul with very good body condition and low probability of access to anthropogenic food resources). All 40 chromatographic peaks, with coeluting congeners, are shown.