

Table S1. Quality control data for Pacific walrus cranium/mandible pairs, including collagen yield (percent of original sample mass), sample composition (percent nitrogen and carbon), carbon/nitrogen ratio, $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$.

UAM ID	Element	Collagen Yield (%)	% N	% C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
3382	Cranium	--	15.2	43.8	3.4	11.2	-12.6
	Mandible	25.6	14.2	40.0	3.3	11.3	-12.1
7277	Cranium	20.0	17.2	47.8	3.2	13.0	-12.9
	Mandible	21.8	16.9	45.8	3.2	13.2	-13.0
11512	Cranium	25.6	16.0	44.7	3.3	14.5	-12.6
	Mandible	24.4	16.2	45.0	3.3	14.3	-12.6
11517	Cranium	32.1	14.1	38.5	3.2	14.0	-14.0
	Mandible	27.0	16.9	46.9	3.2	13.6	-14.2
11519	Cranium	23.3	14.3	39.8	3.2	14.3	-12.6
	Mandible	23.6	16.3	46.5	3.3	13.9	-12.1
11684	Cranium	25.6	14.3	39.2	3.2	12.8	-12.8
	Mandible	25.8	16.1	44.0	3.2	12.7	-13.0
11689	Cranium	25.9	15.6	44.0	3.3	12.4	-14.2
	Mandible	16.6	15.1	41.5	3.2	12.8	-14.1
11699	Cranium	26.9	15.2	44.8	3.4	12.7	-13.3
	Mandible	--	15.5	42.6	3.2	13.0	-13.4
12079	Cranium	22.7	13.1	35.9	3.2	12.6	-13.3
	Mandible	22.8	12.1	33.4	3.2	12.5	-13.3
16593	Cranium	22.8	16.6	46.5	3.3	13.4	-13.7
	Mandible	21.3	16.6	45.6	3.2	13.2	-13.7

Table S2. Quality control data for the first collagen extraction and analysis of the representative elements of seal/sea otter skeletons, including collagen yield (percent of original sample mass), sample composition (percent nitrogen and carbon), carbon/nitrogen ratio, $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$. *Low collagen yield in the vertebra of the *Phoca* spp. resulted from sample loss during filtering.

Extraction 1

<i>P. hispida</i>	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	16.7	14.7	42.0	3.3	18.4	-15.2
Humerus	20.6	15.5	44.7	3.4	18.1	-15.1
Scapula	17.4	15.5	44.4	3.3	18.2	-15.0
Innominate	21.5	14.1	39.1	3.2	18.4	-15.1
Tarsal	21.8	17.1	49.1	3.4	19.0	-15.0
Rib	19.8	11.0	29.9	3.2	18.6	-15.6
Vertebra	20.3	13.8	39.2	3.3	18.3	-15.3
Mandible	17.7	15.8	46.6	3.4	18.8	-14.8
Phalanx	24.7	16.1	45.9	3.3	18.9	-14.4
Calcaneus	21.5	16.1	48.2	3.5	18.8	-15.1
<i>Phoca</i> spp.	% Collagen	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	18.1	15.4	43.5	3.3	17.7	-15.7
Humerus	17.2	15.3	43.0	3.3	17.8	-15.5
Scapula	24.5	12.6	35.4	3.3	17.6	-15.4
Innominate	19.4	16.2	46.5	3.4	17.6	-15.7
Tarsal	--	--	--	--	--	--
Rib	--	--	--	--	--	--
Vertebra	4.7*	15.8	45.5	3.4	17.4	-15.4
Mandible	25.0	15.9	46.6	3.4	18.3	-15.8
Phalanx	30.6	9.6	26.6	3.2	17.8	-15.6
<i>E. lutris</i>	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	36.8	6.8	18.8	3.2	11.9	-11.4
Humerus	13.9	16.5	47.3	3.3	12.2	-10.7
Scapula	21.8	16.0	45.2	3.3	12.6	-10.4
Innominate	22.8	15.3	43.1	3.3	12.0	-11.2
Tarsal	23.5	15.0	43.4	3.4	12.1	-11.1
Rib	26.8	14.8	41.7	3.3	12.0	-10.7
Vertebra	24.3	16.2	46.0	3.3	12.2	-10.3
Mandible	15.9	16.3	47.0	3.4	11.9	-11.0

Table S3. Quality control data for the second collagen extraction and analysis of the representative elements of seal/sea otter skeletons, including collagen yield (percent of original sample mass), sample composition (percent nitrogen and carbon), carbon:nitrogen ratio, $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$.

Extraction 2

<i>P. hispida</i>	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	18.4	10.8	30.2	3.3	18.0	-15.3
Humerus	17.7	14.4	40.2	3.3	17.6	-15.4
Scapula	20.4	11.8	32.2	3.2	17.7	-15.3
Innominate	23.4	15.3	41.5	3.2	18.0	-15.3
Tarsal	29.7	13.7	37.2	3.2	18.8	-15.4
Rib	27.6	12.0	32.4	3.1	18.1	-15.3
Vertebra	17.2	13.4	37.1	3.2	18.2	-15.3
Mandible	24.2	17.0	47.5	3.3	18.0	-15.8
Phalanx	27.1	9.7	25.7	3.1	18.3	-15.2
Calcaneus	24.8	13.0	37.4	3.4	18.9	-15.6
<i>Phoca</i> spp.	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	16.4	15.3	42.1	3.2	17.3	-16.0
Humerus	21.1	15.3	43.6	3.3	17.4	-16.2
Scapula	23.8	16.2	44.8	3.2	17.3	-15.6
Innominate	22.6	15.4	42.4	3.2	17.5	-16.0
Tarsal	26.4	14.1	40.3	3.3	17.9	-16.3
Rib	26.0	16.9	46.2	3.2	17.0	-15.9
Vertebra	20.5	16.6	45.6	3.2	17.3	-15.7
Mandible	28.0	15.4	42.9	3.2	17.9	-16.0
Phalanx	24.8	15.7	43.3	3.2	17.6	-15.8
<i>E. lutris</i>	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	17.0	15.3	42.2	3.2	12.0	-11.5
Humerus	15.6	16.5	45.3	3.2	12.0	-11.1
Scapula	27.1	16.4	44.8	3.2	12.2	-10.6
Innominate	24.9	13.3	36.6	3.2	12.0	-11.1
Tarsal	26.1	16.1	45.4	3.3	11.9	-11.8
Rib	24.2	16.5	45.3	3.2	12.0	-11.4
Vertebra	23.1	16.2	44.7	3.2	12.5	-9.9
Mandible	28.3	11.2	31.5	3.3	11.7	-11.5

Table S4. Quality control data for the third collagen extraction and analysis of the representative elements of seal/sea otter skeletons, including collagen yield (percent of original sample mass), sample composition (percent nitrogen and carbon), carbon:nitrogen ratio, $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$.

<i>Extraction 3</i>						
<i>P. hispida</i>	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	18.5	13.5	35.3	3.1	18.3	-15.4
Humerus	18.1	15.7	40.5	3.0	17.9	-15.3
Scapula	20.6	15.5	40.1	3.0	17.8	-16.0
Innominate	23.8	16.3	42.4	3.0	18.3	-15.1
Tarsal	26.3	13.2	37.2	3.3	19.1	-15.4
Rib	24.0	14.1	39.9	3.3	18.5	-15.3
Vertebra	18.1	15.2	44.4	3.4	18.3	-15.5
Mandible	22.0	12.7	37.8	3.5	18.5	-15.2
Phalanx	--	--	--	--	--	--
Calcaneus	21.6	15.2	43.7	3.3	18.7	-15.5
<i>Phoca</i> spp.	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	19.4	16.4	40.9	2.9	17.4	-15.8
Humerus	23.5	14.7	36.5	2.9	17.6	-16.0
Scapula	16.9	17.2	42.5	2.9	17.4	-15.5
Innominate	23.5	17.3	43.7	2.9	17.3	-15.6
Tarsal	26.2	14.8	37.5	3.0	18.4	-16.0
Rib	19.8	15.5	43.8	3.3	17.1	-15.9
Vertebra	19.5	16.5	46.1	3.3	17.2	-15.8
Mandible	28.2	15.3	47.0	3.6	18.4	-15.7
Phalanx	21.2	15.7	43.3	3.2	17.9	-15.8
<i>E. lutris</i>	Collagen Yield (%)	%N	%C	C/N	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)
Femur	21.4	16.9	45.0	3.1	11.7	-11.3
Humerus	22.4	17.1	45.1	3.1	12.0	-11.4
Scapula	26.2	17.0	46.3	3.2	12.3	-10.9
Innominate	26.0	15.3	41.3	3.1	12.1	-11.2
Tarsal	26.0	15.2	44.8	3.4	12.1	-11.6
Rib	26.6	16.4	48.4	3.4	12.1	-11.4
Vertebra	18.4	16.0	50.4	3.7	11.9	-11.2
Mandible	19.8	14.9	43.6	3.4	11.8	-11.6