Supplement

Table S1: Number of potential sea otter prey collected throughout three seasons (Spring 2018, Summer 2018, Winter 2019) at each site (Craig and Soda Bay). Supplemental items collected opportunistically at listed locations with a rocky substrate and soft sediment habitat for each location. *Sites nearby Soda Bay used for supplemental collections

Common name	Scientific name	Functional prey group	Season	Craig		Soda Bay				Additional Sites		
				Wadleigh Is	Alberto Is	Soft sediment	Rocky substrate	North Pass*	South Pass*	Nossuk Bay	Maurelle Is	Kaguk Cove
				N 55.5315, W 133.1470	*N 55.5372, W 133.1822*	*N 55.2680, W 133.0026*	*N 55.2490, W 133.0199*	*N 55.2294, W 132.9322*	*N 55.1902, W 132.8530*	*N 55.7284, W 133.3755*	*N 55.6646, W 133.7236*	*N 55.7391, W 133.2993*
Sea cucumber	*Apostichopus californicus*	Sea cucumber	Spring			2	3					
			Summer				5					
			Winter			1	4					
Dungeness crab	*Metacarcinus magister*	Crab	Spring					5				
			Summer	3				3				2
			Winter	4		3						
Graceful rock crab	*Cancer oregonensis*	Crab	Spring		2							
			Summer		2							
Red rock crab	*Cancer productus*	Crab	Spring					5				
			Summer	1	1			2				
			Winter	1								
Leafy Hornmouth	*Ceratostoma foliatum*	Snail	Spring		5		2					
			Summer		1		2					
			Winter		2		2					
Nuttall's cockle	*Clinocardium nuttallii*	Clam	Spring	5						4		
			Summer	5				2	2			
			Winter	1		4						
Mottled sea star	*Evasterias troschelii*	Star	Spring		1							
			Summer				2					
			Winter		2							
Dire whelk	*Lirabuccinum dirum*	Snail	Winter		2							
Puppet margarite snail	*Margarites pupillus*	Snail	Winter		3		3					
Bay mussel	*Mytilus trossulus*	Mussel	Spring	3	3	2	1					
			Summer	3			3	3				
			Winter	3	3	3	3					
Dog winkle	*Nucella lima*	Snail	Spring	5		1						
			Summer	6					2			
			Winter		3							
Ochre sea star	*Pisaster ochraceus*	Star	Spring		3							
			Summer				9					
			Winter		3							

Common name	Scientific name	Functional prey group	Season	Craig		Soda Bay				Additional Sites		
				Wadleigh Is	Alberto Is	Soft sediment	Rocky substrate	North Pass*	South Pass*	Nossuk Bay	Maurelle Is	Kaguk Cove
				N 55.5315, W 133.1470	*N 55.5372, W 133.1822*	*N 55.2680, W 133.0026*	*N 55.2490, W 133.0199*	*N 55.2294, W 132.9322*	*N 55.1902, W 132.8530*	*N 55.7284, W 133.3755*	*N 55.6646, W 133.7236*	*N 55.7391, W 133.2993*
Littleneck clam	*Leukoma staminea*	Clam	Spring	5		5				4		
			Summer	5				5				
			Winter	5		4						
Kelp crab	*Pugettia productus*	Crab	Spring		2							
			Summer		3							
Butter clam	*Saxidomus gigantea*	Clam	Spring	5		5				1		
			Summer	5				5				
			Winter	5		5						
Green sea urchin	*Strongylocentrotus droebachiensis*	Sea urchin	Spring		2		4					
			Summer		4		5					
			Winter				3					
Red sea urchin	*Mesocentrotus franciscanus*	Sea urchin	Spring								2	
			Summer		1		5					
			Winter				4					
Helmet crab	*Telmessus cheiragonus*	Crab	Spring							5		
			Summer		2		1					
			Winter			1						
Turban snail	*Tegula spp.*	Snail	Spring		5							
			Summer		3							
			Winter		1							

Table S2: Stable isotope values ($\delta^{13}C$ and $\delta^{15}N$) for 45 sea otter vibrissae, the mean and standard deviation for each individual sea otter, number of subsections (n), and Pearson's correlation (r) between $\delta^{13}C$ and $\delta^{15}N$ per sea otter.

Otter ID	Harvest Location	$\delta^{13}C$		$\delta^{15}N$		n	Pearson's correlation	
		mean	sd	mean	sd		r	p
280	Tonowek	-13.65	0.29	12.40	0.46	14	0.82	<0.001
281	Tonowek	-13.63	0.21	13.52	0.68	9	0.44	0.239
284	Tonowek	-13.40	0.37	12.59	0.43	12	0.48	0.114
285	Tonowek	-13.18	0.29	12.77	0.63	11	0.77	0.006
286	Tonowek	-13.45	0.29	12.68	0.39	10	0.77	0.009
287	Tonowek	-12.84	0.51	13.02	0.54	9	0.97	<0.001
297	Tonowek	-13.06	0.63	13.08	0.77	10	0.87	0.001
298	Tonowek	-13.93	0.37	12.18	0.46	12	0.58	0.048
299	Tonowek	-13.11	0.33	13.09	0.63	10	0.40	0.253
300	Tonowek	-13.80	0.53	12.57	0.49	9	0.90	0.001
478	Tonowek	-13.13	0.66	12.23	0.34	8	0.80	0.016
479	Tonowek	-13.00	0.38	12.98	0.53	9	0.93	<0.001
480	Tonowek	-13.95	0.60	12.61	0.28	9	0.53	0.144
520	Shinaku	-12.92	0.23	13.29	0.40	12	-0.36	0.244
521	Shinaku	-14.03	1.35	12.43	0.83	12	0.78	0.003
522	Shinaku	-13.16	0.33	13.61	0.36	11	0.15	0.659
523	Shinaku	-13.06	0.46	13.67	0.44	10	-0.47	0.167
524	Shinaku	-12.79	0.37	14.20	0.39	9	-0.56	0.118
525	Tonowek	-12.46	0.68	12.29	0.16	11	-0.54	0.085
526	Tonowek	-13.08	0.43	12.65	0.32	10	0.02	0.963
527	Tonowek	-12.92	0.34	13.02	0.37	9	0.88	0.002
528	Tonowek	-13.17	0.16	12.92	0.44	10	0.59	0.071
529	Tonowek	-15.54	0.83	12.21	0.20	8	0.85	0.007
530	Tonowek	-13.43	0.53	12.80	0.60	9	0.92	<0.001
531	Tonowek	-13.92	0.22	12.78	0.26	8	0.24	0.564
533	Tonowek	-13.80	0.34	12.15	0.25	8	0.86	0.007
534	Tonowek	-14.66	1.19	12.84	0.38	9	0.09	0.813
535	Tonowek	-13.19	0.28	13.00	0.50	10	0.45	0.190
536	Tonowek	-14.12	0.51	12.37	0.42	11	0.28	0.409
751	Sukkwan	-13.60	0.36	13.00	0.13	10	-0.43	0.211
752	Sukkwan	-12.94	0.47	13.21	0.30	8	-0.77	0.025
754	Sukkwan	-13.44	0.20	12.88	0.33	8	0.22	0.593
755	Sukkwan	-13.20	0.21	12.80	0.32	8	-0.66	0.074
757	Sukkwan	-13.47	0.14	12.77	0.23	6	-0.10	0.854
758	Sukkwan	-13.59	0.20	12.52	0.52	8	0.74	0.034
760	Sukkwan	-13.66	0.29	13.48	0.20	8	0.66	0.077
762	Sukkwan	-13.35	0.18	13.17	0.22	10	0.60	0.068
763	Sukkwan	-13.10	0.40	12.68	0.10	9	0.03	0.937
765	Sukkwan	-13.17	0.34	12.78	0.26	11	-0.74	0.009
766	Sukkwan	-14.44	0.99	12.78	0.56	10	0.87	0.001
767	Sukkwan	-12.91	0.28	12.74	0.23	8	-0.09	0.831
768	Sukkwan	-13.18	0.35	12.51	0.42	10	-0.45	0.189
769	Sukkwan	-13.45	0.43	13.21	0.05	5	0.14	0.827
771	Sukkwan	-13.15	0.32	12.92	0.57	6	0.50	0.316
772	Sukkwan	-12.66	0.62	12.56	0.50	7	0.82	0.025

Site and seasonal variation in $\delta^{13}C$ and $\delta^{15}N$ prey sources

Availability of sample species across sites was a limiting factor in acquiring all potential sea otter prey types. Because we were unable to collect all species at both sites, we combined the two sites for analysis. Filter feeders, including clams and mussels, had consistent changes in both $\delta^{13}C$ and $\delta^{15}N$ between sites, but this consistency was not seen across all functional prey groups (Figure S1) therefore a correction between sites based on the shift observed in mussels was not appropriate. To confirm that the results of the mixing model would not vary significantly by combining prey across seasons, we ran an analysis to test the response of the model results to seasonal variation in the existing sea otter vibrissa data (Figure S2).

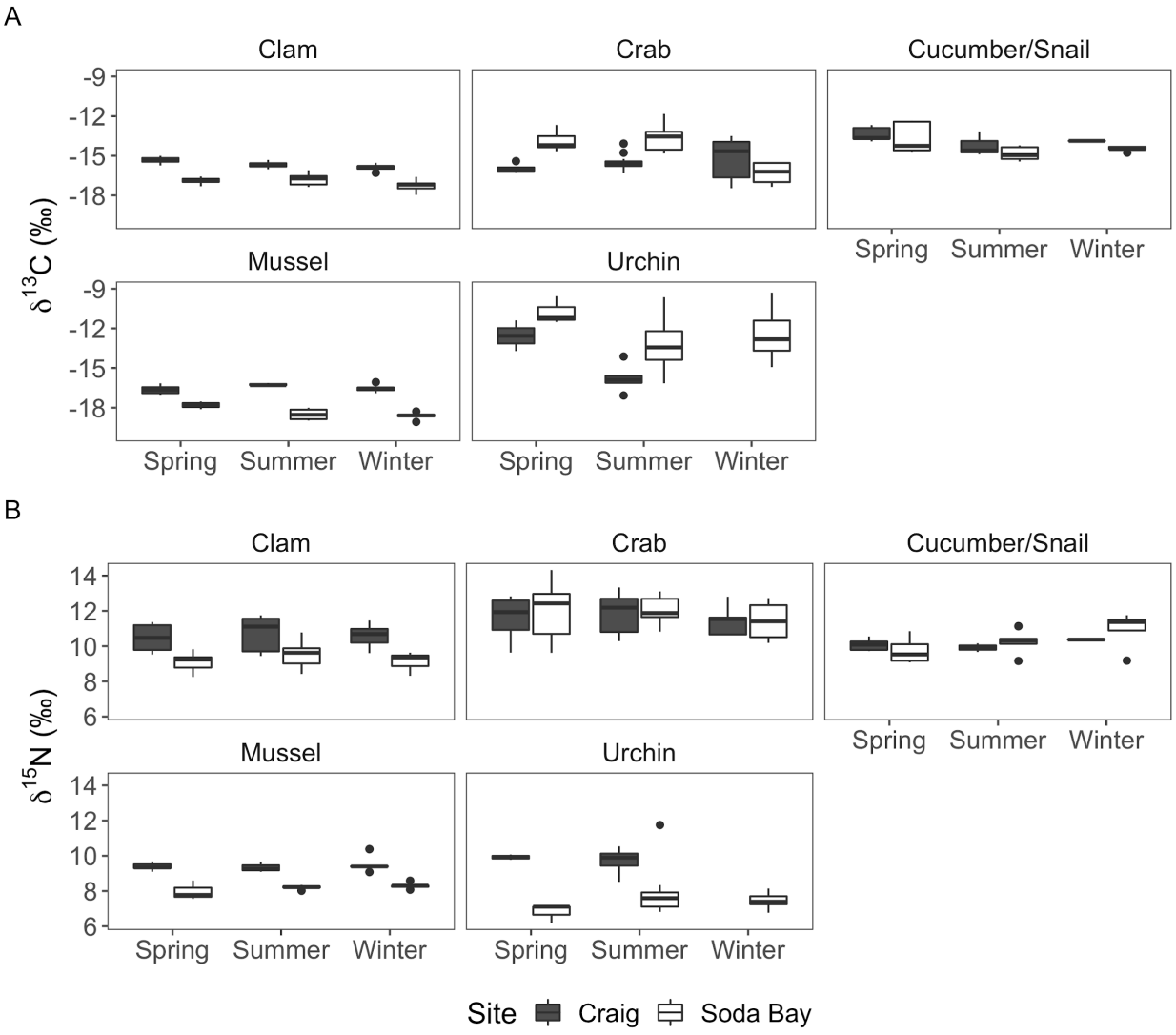

Figure S1: Sea otter prey stable isotope ratios $\delta^{13}C$ (A) and $\delta^{15}N$ (B) by site and season for each functional group. Boxes denote upper and lower quantiles with a mean horizontal line and 95% credible interval. No sea urchins were collected in Craig during winter.

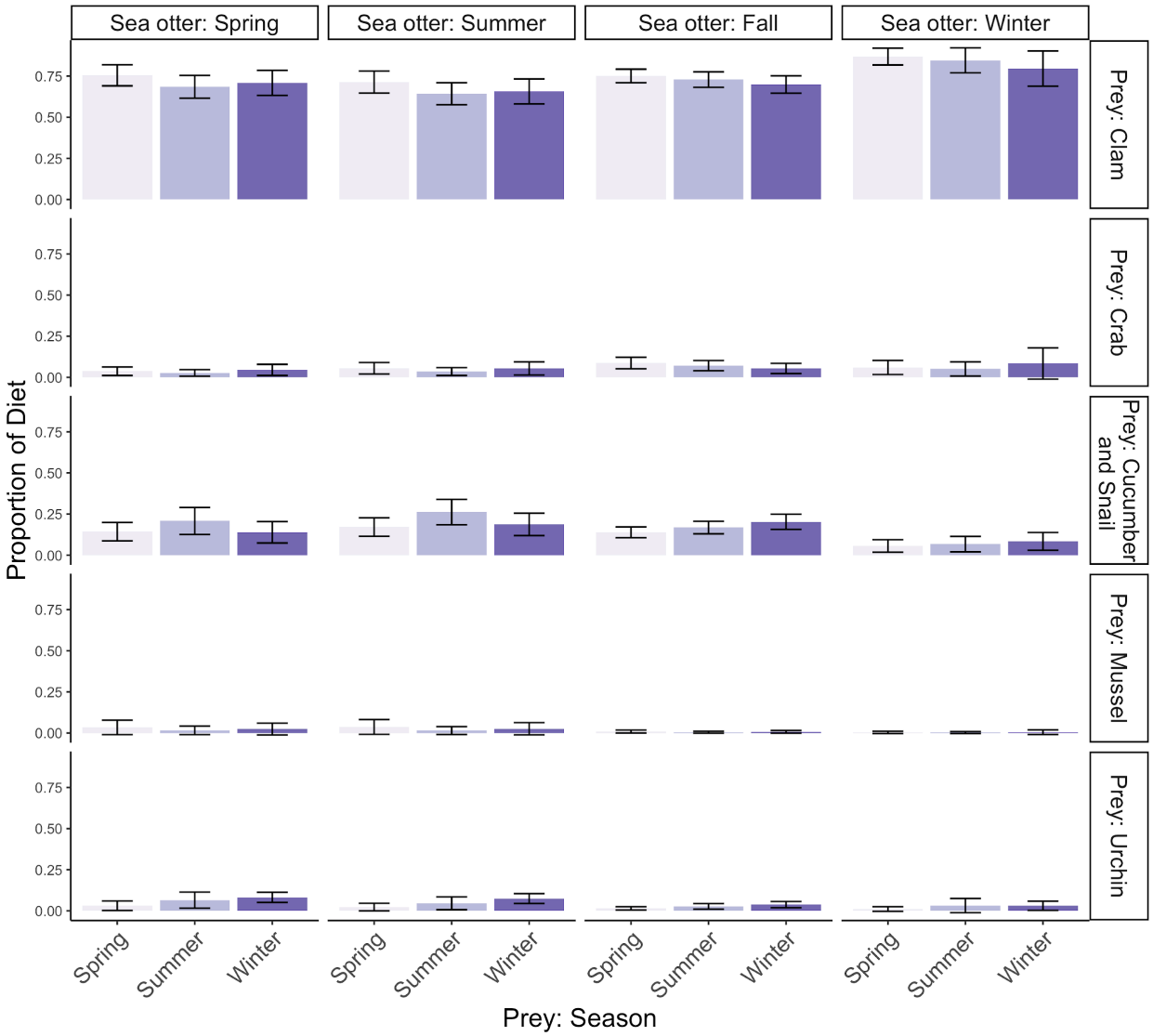

Figure S2: Mean and standard deviation proportion of sea otter diet by season for the five functional prey groups from an informed mixing model. Colors represent the season prey isotopic samples were collected. Each model was run with only isotope values from one season. There is no significant variation for each prey group according to season, which indicates that variation in seasonal effects of prey isotope signatures does not change the mixing model output.