Measuring the realized niches of animals using stable isotopes: from rats to bears
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Supplemental Table S1. Stable isotope values (δ^{13}C and δ^{15}N, reported in ‰) and digestible elemental concentrations ([C], [N]) for Norway rats from the Aleutian Islands, AK, and American black bears from Yosemite National Park, CA. All raw isotope values corrected for isotopic discrimination (Kurle et al. 2014; see summary below and "□□□□□□□-corr" in table below). We corrected isotope values for all foods using discrimination factors for Norway rat muscle (A), liver (B), and hair (C). Digestible elemental concentrations for rat foods were derived from the formulas below. We adjusted feather isotope values ("Feather-muscle diff") to muscle isotope values in A using the difference in mean discrimination factors for feathers and muscle of ring-billed gulls (citation; see details in paper).

Digestible elemental concentrations:

Digest DM = mean data compiled by Robbins et al. (2002)
Digest C = determined by Phillips and Koch (2002)
Digest [C] = (Digest C/Digest DM) x100 for plants (Koch and Phillips 2002) & amphipods (Phillips and Koch 2002)
%N = estimated during SIA for plant and animal tissue
Digest N = %N x 1 (animals) or 0.9 (plants)
Digest [N] = (Digest N/Digest DM) x100 (Koch and Phillips 2002)

	□□□		□□□□□□□□-corr		Feather-muscle diff							
Foods	*$\delta^{13}C$*	*$\delta^{15}N$*	*$\delta^{13}C$*	*$\delta^{15}N$*	*$\delta^{13}C$ (+□□□□)*	*$\delta^{15}N$ (-□.6)*	Digest DM	Digest C	Digest [C]	% N	Digest N	Digest [N]
A.												
Honkenya peploides	-26.0	6.0	-24.3	8.3			35	15.8	45.0	1.9	1.7	4.8
Honkenya peploides	-26.9	5.6	-25.2	7.9			35	15.8	45.0	1.3	1.2	3.3
Honkenya peploides	-27.7	4.9	-26.0	7.2			35	15.8	45.0	2.6	2.3	6.6
Honkenya peploides	-25.4	2.9	-23.7	5.2			35	15.8	45.0	0.8	0.7	2.0
Honkenya peploides	-27.0	1.8	-25.3	4.1			35	15.8	45.0	0.8	0.7	2.0
Honkenya peploides	-27.1	1.6	-25.4	3.9			35	15.8	45.0	1.0	0.9	2.5
Leymus mollis	-26.1	4.4	-24.4	6.7			35	15.8	45.0	1.2	1.1	3.1
Leymus mollis	-25.3	5.7	-23.6	8.0			35	15.8	45.0	0.7	0.6	1.8
Leymus mollis	-26.5	6.0	-24.8	8.3			35	15.8	45.0	1.1	1.0	2.8
Leymus mollis	-25.6	3.5	-23.9	5.8			35	15.8	45.0	0.8	0.7	2.0
Leymus mollis	-24.9	5.8	-23.2	8.1			35	15.8	45.0	0.6	0.5	1.5
Leymus mollis	-25.6	4.9	-23.9	7.2			35	15.8	45.0	0.6	0.5	1.5
Amphipods	-17.7	8.3	-16.5	11.4			100	51.5	51.5	7.4	7.4	7.4
Amphipods	-17.7	9.2	-16.5	12.3			100	51.5	51.5	8.6	8.6	8.6
Amphipods	-17.5	9.2	-16.3	12.3			100	51.5	51.5	8.7	8.7	8.7
Amphipods	-16.9	10.3	-15.7	13.4			100	51.5	51.5	8.6	8.6	8.6
Amphipods	-17.4	9.8	-16.2	12.9			100	51.5	51.5	8.5	8.5	8.5
Amphipods	-19.5	8.2	-18.3	11.3			100	51.5	51.5	7.4	7.4	7.4
Amphipods	-18.9	6.0	-17.7	9.1			100	51.5	51.5	6.9	6.9	6.9
Amphipods	-18.1	6.5	-16.9	9.6			100	51.5	51.5	7.7	7.7	7.7
Amphipods	-18.2	6.7	-17.0	9.8			100	51.5	51.5	8.7	8.7	8.7
Amphipods	-18.4	6.8	-17.2	9.9			100	51.5	51.5	9.7	9.7	9.7
Larus glaucescens	-16.6	12.3	-15.4	15.4			100					
Larus glaucescens	-16.5	12.2	-15.3	15.3			100			See calculations below		
Larus glaucescens	-18.6	12.6	-17.4	15.7	-17.3	14.1	100					
Larus glaucescens	-16.3	11.5	-15.1	14.6	-15.0	13.0	100					
Larus glaucescens	-18.7	12.0	-17.5	15.1	-17.4	13.5	100					

B.

Same as A

Honkenya peploides	-26.0	6.0	-24.8	9.1
Honkenya peploides	-26.9	5.6	-25.7	8.7
Honkenya peploides	-27.7	4.9	-26.5	8.0
Honkenya peploides	-25.4	2.9	-24.2	6.0
Honkenya peploides	-27.0	1.8	-25.8	4.9
Honkenya peploides	-27.1	1.6	-25.9	4.7
Leymus mollis	-26.1	4.4	-24.9	7.5
Leymus mollis	-25.3	5.7	-24.1	8.8
Leymus mollis	-26.5	6.0	-25.3	9.1
Leymus mollis	-25.6	3.5	-24.4	6.6
Leymus mollis	-24.9	5.8	-23.7	8.9
Leymus mollis	-25.6	4.9	-24.4	8.0
Amphipods	-17.7	8.3	-17.0	11.4
Amphipods	-17.7	9.2	-17.0	12.3
Amphipods	-17.5	9.2	-16.8	12.3
Amphipods	-16.9	10.3	-16.2	13.4
Amphipods	-17.4	9.8	-16.7	12.9
Amphipods	-19.5	8.2	-18.8	11.3
Amphipods	-18.9	6.0	-18.2	9.1
Amphipods	-18.1	6.5	-17.4	9.6
Amphipods	-18.2	6.7	-17.5	9.8
Amphipods	-18.4	6.8	-17.7	9.9

C.

See below or Hopkins et al. (2012)

Agrostis sp.	-28.2	-1.8	-24.8	0.6	35.0	15.8	45.0	1.7	1.5	4.3
Agrostis sp.	-28.2	-1.6	-24.8	0.8	35.0	15.8	45.0	1.7	1.5	4.3
Agrostis sp.	-28.3	-1.8	-24.9	0.6	35.0	15.8	45.0	1.5	1.4	3.9
Agrostis sp.	-28.0	0.4	-24.6	2.8	35.0	15.8	45.0	1.8	1.6	4.7
Agrostis sp.	-28.7	0.2	-25.3	2.6	35.0	15.8	45.0	1.5	1.3	3.8
Agrostis sp.	-28.4	1.6	-25.0	4.0	35.0	15.8	45.0	1.6	1.4	4.1
Agrostis sp.	-29.3	0.1	-25.9	2.5	35.0	15.8	45.0	1.5	1.4	3.9
Agrostis sp.	-29.2	0.2	-25.8	2.6	35.0	15.8	45.0	1.6	1.5	4.2
Agrostis sp.	-29.2	0.1	-25.8	2.5	35.0	15.8	45.0	1.6	1.4	4.1
Avena spp.	-27.6	2.2	-24.2	4.6	35.0	15.8	45.0	0.3	0.3	0.9
Avena spp.	-26.9	0.8	-23.5	3.2	35.0	15.8	45.0	0.4	0.3	1.0
Avena spp.	-27.0	1.2	-23.6	3.6	35.0	15.8	45.0	0.4	0.4	1.0
Trifolium spp.	-29.7	-0.9	-26.3	1.5	35.0	15.8	45.0	2.7	2.4	7.0

Trifolium spp.	-26.7	-0.6	-23.3	1.8	35.0	15.8	45.0	2.9	2.6	7.4
Trifolium spp.	-26.6	-0.7	-23.2	1.7	35.0	15.8	45.0	2.7	2.4	7.0
Perideridia parishii	-26.9	2.6	-23.5	5.0	35.0	15.8	45.0	0.5	0.5	1.4
Perideridia parishii	-26.8	2.4	-23.4	4.8	35.0	15.8	45.0	0.5	0.5	1.4
Perideridia parishii	-27.4	4.9	-24.0	7.3	35.0	15.8	45.0	0.4	0.4	1.0
Lupinus spp.	-28.9	0.2	-25.5	2.6	35.0	15.8	45.0	3.7	3.3	9.5
Lupinus spp.	-28.9	-0.1	-25.5	2.3	35.0	15.8	45.0	3.0	2.7	7.6
Lupinus spp.	-28.9	0.1	-25.5	2.5	35.0	15.8	45.0	3.4	3.1	8.7
Lupinus spp.	-27.7	0.2	-24.3	2.6	35.0	15.8	45.0	3.4	3.0	8.7
Lupinus spp.	-27.7	0.2	-24.3	2.6	35.0	15.8	45.0	3.3	3.0	8.5
Lupinus spp.	-27.6	0.2	-24.2	2.6	35.0	15.8	45.0	3.4	3.1	8.8
Lupinus spp.	-29.7	-0.1	-26.3	2.3	35.0	15.8	45.0	3.0	2.7	7.8
Lupinus spp.	-29.7	-0.1	-26.3	2.3	35.0	15.8	45.0	3.3	3.0	8.5
Lupinus spp.	-29.8	-0.1	-26.4	2.3	35.0	15.8	45.0	2.9	2.6	7.5
Arctostaphylos spp.	-25.6	-1.3	-22.2	1.1	63.4	28.5	45.0	0.8	0.8	1.2
Arctostaphylos spp.	-24.5	-1.9	-21.1	0.5	63.4	28.5	45.0	0.5	0.5	0.8
Arctostaphylos spp.	-25.2	-1.0	-21.8	1.4	63.4	28.5	45.0	0.4	0.4	0.6
Arctostaphylos spp.	-26.2	-0.1	-22.8	2.3	63.4	28.5	45.0	0.6	0.5	0.8
Arctostaphylos spp.	-26.2	-0.7	-22.8	1.7	63.4	28.5	45.0	0.7	0.7	1.0
Arctostaphylos spp.	-26.1	-0.8	-22.7	1.6	63.4	28.5	45.0	0.8	0.7	1.1
Arctostaphylos spp.	-27.5	-1.0	-24.1	1.4	63.4	28.5	45.0	1.0	0.9	1.4
Arctostaphylos spp.	-28.6	-1.4	-25.2	1.0	63.4	28.5	45.0	1.0	0.9	1.4
Arctostaphylos spp.	-28.7	-1.3	-25.3	1.1	63.4	28.5	45.0	1.0	0.9	1.4
Quercus kelloggii	-24.5	-0.9	-21.1	1.5						
Quercus kelloggii	-24.7	-0.2	-21.3	2.2						
Quercus kelloggii	-27.1	-1.4	-23.7	1.0						
Quercus kelloggii	-26.8	0.1	-23.4	2.5						
Quercus kelloggii	-26.7	0.1	-23.3	2.5						
Quercus kelloggii	-25.0	0.3	-21.6	2.7						
Quercus kelloggii	-26.2	-0.4	-22.8	2.0						
Quercus kelloggii	-25.8	-0.4	-22.4	2.0						
Quercus kelloggii	-24.3	-1.2	-20.9	1.2						
Quercus wislizenii	-22.8	-1.9	-19.4	0.5						
Quercus wislizenii	-23.1	-0.4	-19.7	2.0						
Quercus wislizenii	-22.9	-0.6	-19.5	1.8						
Quercus wislizenii	-29.3	-0.8	-25.9	1.6						
Quercus wislizenii	-26.6	0.0	-23.2	2.4						
Quercus wislizenii	-29.1	-1.8	-25.7	0.6						
Quercus chrysolepis	-26.2	-3.3	-22.8	-0.9						
Quercus chrysolepis	-26.2	-3.0	-22.8	-0.6						

See calculations below

Quercus chrysolepis	-26.8	-3.1	-23.4	-0.7						
Quercus chrysolepis	-22.1	0.5	-18.7	2.9						
Quercus chrysolepis	-23.0	0.1	-19.6	2.5						
Pinus spp.	-21.6	1.4	-18.2	3.8						
Pinus spp.	-21.4	1.2	-18.0	3.6						
Pinus spp.	-20.8	1.3	-17.4	3.7						
Pinus spp.	-21.1	1.3	-17.7	3.7						
Pinus spp.	-21.3	1.2	-17.9	3.6						
Pinus spp.	-21.9	1.1	-18.5	3.5						
Odocoileus hemionus	-24.5	2.7	-22.4	6.6	100	51.5	51.5	15.2	15.2	15.2
Odocoileus hemionus	-24.0	1.6	-21.9	5.5	100	51.5	51.5	15.7	15.7	15.7
Odocoileus hemionus	-25.3	3.6	-23.2	7.5	100	51.5	51.5	14.6	14.6	14.6
Odocoileus hemionus	-25.4	3.7	-23.3	7.6	100	51.5	51.5	15.0	15.0	15.0
Odocoileus hemionus	-25.4	3.7	-23.3	7.6	100	51.5	51.5	14.3	14.3	14.3
Apidae	-24.7	4.1	-22.6	8.0	100	51.5	51.5	11.9	11.9	11.9
Apidae	-24.7	4.5	-22.6	8.4	100	51.5	51.5	12.1	12.1	12.1
Apidae	-24.7	4.4	-22.6	8.3	100	51.5	51.5	12.0	12.0	12.0
Camponotus spp.	-23.5	1.1	-21.6	7.6	100	51.5	51.5	12.9	12.9	12.9
Camponotus spp.	-23.5	1.3	-23.2	7.2	100	51.5	51.5	12.6	12.6	12.6
Camponotus spp.	-23.5	1.6	-23.2	7.4	100	51.5	51.5	12.8	12.8	12.8
Camponotus spp.	-23.9	1.4	-23.0	7.5	100	51.5	51.5	11.6	11.6	11.6
Camponotus spp.	-23.9	2.6	-21.8	6.3	100	51.5	51.5	10.1	10.1	10.1
Camponotus spp.	-23.4	3.2	-21.8	6.2	100	51.5	51.5	9.8	9.8	9.8
Camponotus spp.	-23.4	3.3	-22.5	6.4	100	51.5	51.5	10.3	10.3	10.3
Lasius spp.	-23.7	3.7	-21.6	8.1	100	51.5	51.5	10.7	10.7	10.7
Lasius spp.	-23.7	3.8	-21.6	7.9	100	51.5	51.5	10.6	10.6	10.6
Isoptera	-23.7	3.7	-21.7	7.5	100	51.5	51.5	12.1	12.1	12.1
Isoptera	-25.3	3.3	-21.1	8.1	100	51.5	51.5	12.1	12.1	12.1
Isoptera	-25.3	3.5	-21.8	8.0	100	51.5	51.5	12.1	12.1	12.1
Isoptera	-25.1	3.6	-21.4	5.0	100	51.5	51.5	9.7	9.7	9.7
Isoptera	-23.9	2.4	-21.4	5.2	100	51.5	51.5	9.9	9.9	9.9
Isoptera	-23.9	2.3	-21.4	5.5	100	51.5	51.5	9.8	9.8	9.8
Hymenoptera	-24.6	2.5	-21.8	5.3	100	51.5	51.5	12.0	12.0	12.0
Vespula spp.	-23.7	4.2	-21.8	6.5	100	51.5	51.5	12.5	12.5	12.5
Vespula spp.	-23.7	4.0	-21.3	7.1	100	51.5	51.5	12.3	12.3	12.3
Vespula spp.	-23.8	3.6	-21.3	7.2	100	51.5	51.5	12.2	12.2	12.2
Vespula spp.	-23.2	4.2	-21.6	7.6	100	51.5	51.5	13.7	13.7	13.7
Vespula spp.	-23.9	4.1	-21.6	7.7	100	51.5	51.5	12.2	12.2	12.2

Digestible [C] and [N] derived from wild duck (for gulls) macronutrient data from the USDA nutrient database: www.nal.usda.gov/fnic/foodcomp/search (see calculations below). Digestible concentrations of elements for *Quercus* spp. (acorns) and *Pinus* spp. (pine nuts) from Hopkins et al. (2012).

Factors for calculating macronutrient dry weight from Robbins (1993) unless specified

Protein [C] = Protein (% dry weight) x 0.52
Digest Protein [C] = Protein C x 0.466 (Mealey 1980)
Lipid [C] = Lipid (% dry weight) x 0.75
Carbo [C] = Carbohydrate (% dry weight) x 0.45
Digest [C] = Digest Protein [C] + Lipid [C] + Carbohydrate (carbo) [C]
Protein [N] = Protein (% dry weight) x 0.16
Digest [N] = Protein N * 0.466 (digestibility of pinenuts; used also for acorns) from Mealey (1980) or 1 for wild duck

			Units = gm X/100 gm wet weight					
FOOD	**DESCRIPTION**	**NBD#**	**WATER**	**PROTEIN**	**LIPID**	**CARBO**	**ASH**	**TOTAL**
Wild duck	meat and skin, raw	05144	66.52	17.42	15.20	0	1.16	100.03
Acorns	acorns, raw	12058	27.90	6.15	23.86	40.75	1.35	100.01
Pine nuts	pine nuts, dried	12147	2.28	13.69	68.37	13.08	2.59	100.01

	% dry macronutrient dry weight				
FOOD	**PROTEIN**	**LIPID**	**CARBO**	**ASH**	**TOTAL**
Wild duck	53.40	46.60	0	3.43	100.00
Acorns	8.53	33.09	56.51	1.87	100.00
Pine nuts	14.01	69.96	13.38	2.65	100.00

Units = gm X/100 gm dry weight

FOOD	**PROTEIN [N]**	**DIGEST [N]**	**PROTEIN [C]**	**DIGEST PROTEIN [C]**	**LIPID [C]**	**CARBO [C]**	**DIGEST [C]**
Wild duck	8.25	8.25	26.82	12.50	33.75	0	46.24
Acorns	1.36	0.64	4.43	2.07	24.82	25.43	52.31
Pine nuts	2.24	1.04	7.28	3.39	52.47	6.02	61.89

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