

## Appendix 1. Culture of local food use: supplementary information

Table A1.1. Communities or regional community groups included in this analysis, including cultural and linguistic groupings, and dietary data sources.

Community, Community Pair, or Region included as unit of analyses (indicates abbreviation used in figures)	Culture	First Nations Language Family / Inuit Region	Inuit (I) or First Nations (FN)	Source†
Kugaaruk (KR)	Netsilik	Nunavut Kitikmeot	I	1
Sanikiluaq (SN)	Qikirtamiut	Nunavut Qikiqtaaluk	I	2
Qikiqtarjuak (QI)	Nunatsiarmuit	Nunavut Qikiqtaaluk	I	3
Nunavik - Hudson Bay (HB) (including Akulivik, Puvirnituq, Inukjuak, Umiujaq, Kuujjuarapik)	Nunavimmiut	Nunavik	I	4
Nunavik - Hudson Strait (HS) (including Ivujivik, Salluit, Kangiqsujuaq, Quaqtaq)	Nunavimmiut	Nunavik	I	4
Nunavik - Ungava Bay (UB) (including Kangirsuk, Aupaluk, Tasiujaq, Kuujjuaq, Kangiqsualujjuaq)	Nunavimmiut	Nunavik	I	4
Kangiqsujuaq (KA)	Nunavimmiut	Nunavik	I	5
Old Crow (OC)	Vuntut Gwitchin	Athabaskan	FN	6
Fort Good Hope (FGH) & Colville Lake (CL)	Sahtu Dene & Metis	Athabaskan	FN	7
Fort Providence (FP)	Dehcho Dene	Athabaskan	FN	8
Fort Smith (FSm) & Fort Chipewyan (FC)	Akaiicho Dene & Athabaskan Tribal Council	Athabaskan	FN	9
Haines Junction (HJ)	Champagne & Aishihik	Athabaskan	FN	6
Teslin (TE)	Teslin Tlingit	Tlingit	FN	6
Fort Severn (FSe)	Cree Nishnawbe Aski Nation	Algonquian	FN	10
Mistissini (MI)	Cree Eeyou Istchee	Algonquian	FN	11
Waswanipi (WA)	Cree Eeyou Istchee	Algonquian	FN	12
Eastmain (EA)	Cree Eeyou Istchee	Algonquian	FN	12
Waskaganish (WK)	Cree Eeyou Istchee	Algonquian	FN	12
Chisasibi (CH)	Cree Eeyou Istchee	Algonquian	FN	12
Whapmagoostui (WH)	Cree Eeyou Istchee	Algonquian	FN	12
Wemindji (WE)	Cree Eeyou Istchee	Algonquian	FN	12

†Dietary data sources are:

<sup>1</sup>Lawn, J. & Harvey, D. Nutrition and food security in Kugaaruk, Nunavut. Minister of Indian Affairs and Northern Development, Ottawa, Ont (2003).

<sup>2</sup>Wein, E. E., Freeman, M. M. & Makus, J. C. Use of and preference for traditional foods among the Belcher Island Inuit. *Arctic*, 256-264 (1996).

<sup>3</sup>Kuhnlein, H. V. & Soueida, R. Use and nutrient composition of traditional Baffin Inuit foods. *Journal of Food Composition and Analysis* 5, 112-126 (1992).

<sup>4</sup>Lemire, M. et al. Local country food sources of methylmercury, selenium and omega-3 fatty acids in Nunavik, Northern Quebec. *Science of the Total Environment* 509, 248-259 (2015).

<sup>5</sup>Lawn, J. & Harvey, D. Nutrition and food security in Kangiqsujuaq, Nunavik. Ottawa, ON: Minister of Indian Affairs and Northern Development (2004).

<sup>6</sup>Wein, E. E. & Freeman, M. M. Frequency of traditional food use by three Yukon First Nations living in four communities. *Arctic*, 161-171 (1995).

<sup>7</sup>Morrison, N. et al. Contemporary Sahtu Dene/Metis use of traditional and market food. *Ecology of food and nutrition* 34, 197-210 (1995).

<sup>8</sup>Guyot, M. & Chan, H. Impacts of climate change on traditional food security in Aboriginal communities in northern Canada, McGill University, (2006).

<sup>9</sup>Wein, E. E., Sabry, J. H. & Evers, F. T. Food consumption patterns and use of country foods by native Canadians near Wood Buffalo National Park, Canada. *Arctic*, 196-205 (1991).

<sup>10</sup>Lawn, J. & Harvey, D. Nutrition and food security in Fort Severn, Ontario. Minister of Indian Affairs and Northern Development, Ottawa, Ont (2004).

<sup>11</sup>Bonnier-Viger, Y., Dewailly, E., Egeland, G., Nieboer, E. & Pereg, D. Nituuchischaayihititaa Aschii. Multi-community Environment-and Health longitudinal study in Iiyiyiu Aschii: Mistissini. Technical report: Summary of activities, results and recommendations. Montreal, QC: Cree Board of Health and Social Services of James Bay, 389 (2007).

<sup>12</sup>Ayotte, P., Fontaine, J., Martin, I., Nieboer, E. & Lejeune, P. Environmental contaminants in Nituuchischaayihititaa Aschii multi-community environment and health longitudinal study in Eeyou Istchee: Eastmain and Wemindji technical report: Summary of 2007 activities, results and recommendations, ed. E. Nieboer, E. Robinson and K. Petrov, Cree Board of Health and Social Services of James Bay, Chisasibi, Québec, 102-162 (2011).

Table A1.2. Cross-study standardization matrix of community-by-species dietary importance values (%).

Community	Caribou	Moose	Bison	Goat	Mountain sheep	Beaver	Hare	Muskrat
Fort Severn	41.91	7.07	0	0	0	0.49	4.14	0
Mistissini	10.11	15.89	0	0	0	2.64	2.62	0
Waswanipi	2.62	26.77	0	0	0	3.35	8.69	0
Eastmain	5.31	15.61	0	0	0	4.6	4.81	0
Waskaganish	7.51	14.59	0	0	0	3.37	4.45	0
Chisasibi	9.72	6.33	0	0	0	2	3.21	0
Whapmagoostui	17.44	2.23	0	0	0	1.32	0.57	0
Wemindji	9.06	11.66	0	0	0	4.21	4.17	0
Fort Providence	19.83	21.49	0	0	0	4.13	9.09	2.48
Fort Good Hope & Colville Lake	30.81	20.15	0	0	0	3.61	10.19	0
Old Crow	62.6	7.61	0	0	0	0.34	4.68	1.72
Fort Smith & Fort Chipewyan	21.29	23.29	6.02	0	0	1.2	7.23	2.01
Kangiqtujuaq	20.7	0	0	0	0	0	0	0
Nunavik (Eastern Hudson Bay)	28.68	0	0	0	0	0	0.04	0
Nunavik (Hudson Strait)	27.69	0	0	0	0	0	0.06	0
Nunavik (Ungava Bay)	34.89	0	0	0	0	0	0.07	0
Kugaaruk	35.65	0	0	0	0	0	0	0
Sanikiluaq	3.87	0	0	0	0	0	0.31	0
Qikiqtarjuak	12.68	0	0	0	0	0	2.31	0
Teslin	1.58	56.09	0	0.11	2.36	2.19	1.28	0
Haines Junction	2.97	42.34	0.05	0	5.45	0.09	1.17	0.09

Table A1.2. Continued.

Community	Arctic fox	Lynx	Ringed seal	Bearded seal	Narwhal	Beluga	Walrus	Unspecified marine mammals
Fort Severn	0	0	0	0	0	0	0	0
Mistissini	0	0	0	0	0	0	0	0
Waswanipi	0	0	0	0	0	0	0	0
Eastmain	0	0	0	0	0	0	0	0
Waskaganish	0	0	0	0	0	0	0	0
Chisasibi	0	0	0	0	0	0	0	0
Whapmagoostui	0	0	0	0	0	0	0	0
Wemindji	0	0	0	0	0	0	0	0
Fort Providence	0	0	0	0	0	0	0	0
Fort Good Hope & Colville Lake	0	0	0	0	0	0	0	0
Old Crow	0	0.03	0	0	0	0	0	0
Fort Smith & Fort Chipewyan	0	0.4	0	0	0	0	0	0
Kangiqsujuaq	0	0	11.35	1.26	0	0	0	7.65
Nunavik (Eastern Hudson Bay)	0.08	0	5.77	0.64	0	6.57	0.49	0.16
Nunavik (Hudson Strait)	0	0	4.56	0.51	0	24.18	0.75	0.23
Nunavik (Ungava Bay)	0	0	5.33	0.59	0	8.3	0.2	0.2
Kugaaruk	0	0	0	0	0	0	0	8.49
Sanikiluaq	0.1	0	12.75	2.61	0	2.72	1.15	0
Qikiqtarjuak	0	0	21.61	7.49	11.24	7.2	12.97	0
Teslin	0	0.11	0	0	0	0	0	0
Haines Junction	0	0.09	0	0	0	0	0	0

Table A1.2. Continued.

Community	Black bear	Polar bear	Grizzly bear	Ground squirrel	Porcupine	Marmot	Trout	Whitefish/Cisco
Fort Severn	0	0	0	0	0	0	6.43	4.14
Mistissini	6.46	0	0	0	0	0	7.1	3.57
Waswanipi	7.96	0	0	0	0	0	2.48	1.4
Eastmain	6.65	0	0	0	0	0	6.57	1.13
Waskaganish	9.17	0	0	0	0	0	6.34	5.43
Chisasibi	9.98	0	0	0	0	0	7.1	9.94
Whapmagoostui	6.57	0	0	0	0	0	9.55	4.21
Wemindji	6	0	0	0	0	0	6.47	5.49
Fort Providence	0	0	0	0	0	0	4.13	17.36
Fort Good Hope & Colville Lake	0	0	0	0	0	0	2.32	21.54
Old Crow	0.05	0	0	0.1	0.26	0	0	5.51
Fort Smith & Fort Chipewyan	0.4	0	0.4	0	0	0	2.41	13.25
Kangiqsujuaq	0	0	0	0	0	0	0	0
Nunavik (Eastern Hudson Bay)	0	0.29	0	0	0	0	1.89	6.53
Nunavik (Hudson Strait)	0	0.17	0	0	0	0	0.35	0.69
Nunavik (Ungava Bay)	0	0.07	0	0	0	0	2.57	2.24
Kugaaruk	0	3.06	0	0	0	0	0	6.79
Sanikiluaq	0	0.31	0	0	0	0	0	6.06
Qikiqtarjuak	0	4.61	0	0	0	0	0	0
Teslin	0.22	0	0	0.28	0.36	0.33	5.8	10.21
Haines Junction	0.09	0	0	8.02	0.05	0.05	3.69	3.96

Table A1.2. Continued.

Community	Suckers	Pike	Burbot	Grayling	Walleye	Goldeye	Salmon	Sturgeon
Fort Severn	0	1.71	2.19	0	0.49	0	0	0
Mistissini	4.17	2.97	3.98	0	3.75	0	0	1.38
Waswanipi	1.47	2.41	0.28	0	6.07	0	0	2.51
Eastmain	2.97	3.81	6.28	0	2.26	0	0	1.72
Waskaganish	0	3.91	0.31	0	4.37	0	0	2.2
Chisasibi	2.1	2.7	0.73	0	2.66	0	0	0.65
Whapmagoostui	0.66	2.29	0.66	0	0.41	0	0	0.25
Wemindji	3.36	3.06	0.72	0	3.79	0	0	1.74
Fort Providence	0	0	8.26	0	0	0	0	0
Fort Good Hope & Colville Lake	0	0.23	2.34	0	0	0	0	0
Old Crow	0.1	0.03	1.69	1.04	0	0	6.72	0
Fort Smith & Fort Chipewyan	0.8	3.61	0.4	0	3.61	0.8	0	0
Kangiqsujaq	0	0	0	0	0	0	0	0
Nunavik (Eastern Hudson Bay)	0	0	0	0	0	0	1.89	0
Nunavik (Hudson Strait)	0	0	0	0	0	0	0.35	0
Nunavik (Ungava Bay)	0	0	0	0	0	0	2.57	0
Kugaaruk	0	0	0	0	0	0	0	0
Sanikiluaq	0	0	0	0	0	0	0	0
Qikiqtarjuak	0	0	0	0	0	0	0	0
Teslin	0	0.44	0.58	1.5	0	0	11.66	0
Haines Junction	0.32	0.32	0.9	1.71	0	0	19.77	0

Table A1.2. Continued.

Community	Eulachon	Arctic char/Dolly varden	Cod	Sculpin	Unspecified fish	Unspecified birds	Ducks	Geese
Fort Severn	0	1.46	0	0	0	0	0	24.85
Mistissini	0	0	0	0	6.21	0	11.45	11.45
Waswanipi	0	0	0	0	5.02	0	6.84	12.04
Eastmain	0	0	0	0	5.52	0	10.63	13.89
Waskaganish	0	0	0	0	10.25	0	7.17	15.65
Chisasibi	0	0	0	0	8.45	0	11.64	15.21
Whapmagoostui	0	0	0	0	7.41	0	6.57	22.47
Wemindji	0	0	0	0	12.98	0	6.94	14.17
Fort Providence	0	0	0	0	0	0	0	0
Fort Good Hope & Colville Lake	0	0	0	0	0	0	7.88	0.46
Old Crow	0.05	0.03	0	0	0	0.21	3.72	2.18
Fort Smith & Fort Chipewyan	0	0	0	0	0.4	0	5.22	2.01
Kangiqsujuaq	0	22.06	0	0	0	0	0	9.25
Nunavik (Eastern Hudson Bay)	0	18.98	1.23	1.07	0	0.62	0	13.68
Nunavik (Hudson Strait)	0	16.7	0.35	2.07	0	0.17	0	7.89
Nunavik (Ungava Bay)	0	19.62	0.13	0.53	0	0.33	0	9.22
Kugaaruk	0	46.01	0	0	0	0	0	0
Sanikiluaq	0	9.4	3.55	3.03	0	1.88	11.81	12.43
Qikiqtarjuak	0	6.34	0	0	0	1.44	2.31	1.15
Teslin	0	0.5	0	0	0	0.22	1.75	0.5
Haines Junction	0.54	0.23	0	0	0	0.09	3.69	0.27

Table A1.2. Continued.

Community	Swan	Ptarmigan/Grouse	Clams	Mussels	Scallops	Sea urchin	Sea cucumber
Fort Severn	0	5.12	0	0	0	0	0
Mistissini	0	4.6	0	0	0	0	0
Waswanipi	0	4.12	0	0	0	0	0
Eastmain	0	4.06	0	0	0	0	0
Waskaganish	0	3.2	0	0	0	0	0
Chisasibi	0	4.36	0	0	0	0	0
Whapmagoostui	0	12.63	0	0	0	0	0
Wemindji	0	5.28	0	0	0	0	0
Fort Providence	0	13.22	0	0	0	0	0
Fort Good Hope & Colville Lake	0	0.46	0	0	0	0	0
Old Crow	0	0.83	0	0	0	0	0
Fort Smith & Fort Chipewyan	0.4	3.21	0	0	0	0	0
Kangiqsujuaq	0	24.99	0	0	0	0	0
Nunavik (Eastern Hudson Bay)	0	5.79	0.08	2.71	0.04	0	0
Nunavik (Hudson Strait)	0	4.55	0.81	4.66	0.4	0	0
Nunavik (Ungava Bay)	0	7.18	0.26	2.96	0.13	0	0
Kugaaruk	0	0	0	0	0	0	0
Sanikiluaq	0	0.31	0	9.93	0	9.09	8.67
Qikiqtarjuak	0	2.59	2.88	3.17	0	0	0
Teslin	0.03	1.19	0	0	0	0	0
Haines Junction	0.09	3.96	0	0	0	0	0





Table A1.3b. Pairwise community ecological relatedness measure ranging from a maximum value of 3 for community pairs sharing a biome and ecoregion to a minimum value of 1 for community pairs differing in biomes. Community or region name abbreviations are: Fort Severn (Fse), Mistissini (MI), Waswanipi (WA), Eastmain (EA), Waskaganish (WK), Chisasibi (CH), Whapmagoostui (WH), Wemindji (WE), Teslin (TE), Haines Junction (HJ), Old Crow (OC), Fort Good Hope & Colville Lake (FGH & CL), Fort Providence (FP), Fort Smith & Fort Chipewyan (FSm & FC), Kangiqsujuaq (KA), Hudson Bay (HB, including Akulivik, Puvirnituaq, Inukjuak, Umiujaq, Kuujjuarapik), Hudson Strait (HS, including Ivujivik, Salluit, Kangiqsujuaq, Quaqtuaq), Ungava Bay (UB, including Kangirsuk, Aupaluk, Tasiujaq, Kuujjuaq, Kangiqsualujjuaq), Sanikiluaq (SN), Qikiqtarjuaq (QI), Kugaaruk (KR).

Community	Fse	MI	WA	EA	WK	CH	WH	WE	TE	HJ	OC	FGH & CL	FP	FSm & FC	KA	HB	HS	UB	SN	QI	KR	
Fse																						
MI	2																					
WA	2	3																				
EA	3	2	2																			
WK	3	2	2	3																		
CH	2	2	2	2	2																	
WH	2	2	2	2	2	3																
WE	2	2	2	2	2	3	3															
TE	2	2	2	2	2	2	2	2														
HJ	2	2	2	2	2	2	2	2	3													
OC	2	2	2	2	2	2	2	2	2	2												
FGH & CL	2	2	2	2	2	2	2	2	2	2	2											
FP	2	2	2	2	2	2	2	2	2	2	2	3										
FSm & FC	2	2	2	2	2	2	2	2	2	2	2	2	2									
KA	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
HB	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3							
HS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2						
UB	2	2	2	2	2	3	3	3	2	2	2	2	2	2	1	1	1					
SN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	2	1				
QI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2			
KR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	1	2	2		

Table A1.3c. Pairwise community geodesic distance (km) estimated using the central latitude and longitude coordinates of each community. Community or region name abbreviations are: Fort Severn (FSe), Mistissini (MI), Waswanipi (WA), Eastmain (EA), Waskaganish (WK), Chisasibi (CH), Whapmagoostui (WH), Wemindji (WE), Teslin (TE), Haines Junction (HJ), Old Crow (OC), Fort Good Hope & Colville Lake (FGH & CL), Fort Providence (FP), Fort Smith & Fort Chipewyan (FSm & FC), Kangiqsujuaq (KA), Hudson Bay (HB, including Akulivik, Puvirnituaq, Inukjuak, Umiujaq, Kuujjuarapik), Hudson Strait (HS, including Ivujivik, Salluit, Kangiqsujuaq, Quaqtuaq), Ungava Bay (UB, including Kangirsuk, Aupaluk, Tasiujaq, Kuujuaq, Kangiqsualujuaq), Sanikiluaq (SN), Qikiqtarjuaq (QI), Kugaaruk (KR).

Community	Fse	MI	WA	EA	WK	CH	WH	WE	TE	HJ	OC	FGH & CL	FP	FSm & FC	KA	HB	HS	UB	SN	QI	KR
Fse																					
MI	1106																				
WA	1051	170																			
EA	727	381	334																		
WK	782	355	269	97																	
CH	612	508	498	174	269																
WH	628	598	630	340	436	179															
WE	663	444	419	92	187	82	253														
TE	2646	3752	3689	3373	3421	3252	3224	3309													
HJ	2893	3997	3939	3620	3671	3495	3459	3553	272												
OC	2926	3989	3965	3631	3700	3482	3407	3552	895	768											
FGH & CL	2428	3503	3472	3140	3205	2995	2928	3063	709	754	511										
FP	1823	2927	2870	2550	2602	2425	2394	2483	830	1070	1261	766									
FSm & FC	1492	2598	2534	2219	2267	2101	2081	2155	1155	1407	1594	1089	350								
KA	1096	1250	1348	1115	1211	962	783	1034	3183	3378	3146	2728	2386	2147							
HB	636	935	984	692	789	522	357	602	3027	3249	3133	2671	2202	1915	490						
HS	972	1317	1393	1124	1221	957	784	1036	2977	3174	2954	2529	2179	1943	206	440					
UB	1145	940	1066	907	993	794	631	845	3487	3695	3505	3072	2673	2405	388	523	555				
SN	524	768	792	482	577	308	171	390	3070	3303	3239	2762	2241	1934	700	223	663	639			
QI	1771	1985	2098	1879	1974	1726	1547	1798	3287	3432	3028	2705	2581	2432	764	1235	810	1051	1454		
KR	1402	2196	2231	1913	2003	1740	1604	1822	2213	2365	2032	1656	1520	1416	1135	1262	961	1514	1439	1075	

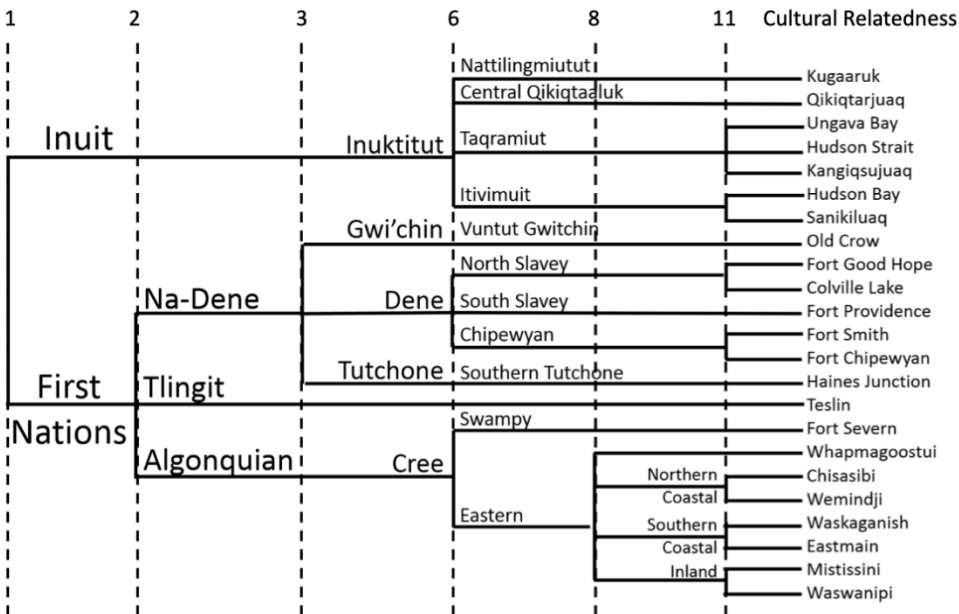


Fig. A1.1. Alternative measure of cultural relatedness used to assess whether conclusions are robust to inclusion of more and different levels of cultural and ecological differentiation. The cultural-linguistic terms and relationships used here are from the same source as the main analysis (Mithun 2001) but with more levels and groupings included here. The alternative ecological relatedness (ER) metric assigned ER = 1 for coastal vs. non-coastal communities, ER = 2 if coastal proximity was shared but biomes differed, ER = 3 if coastal proximity and biomes were shared but ecozones differed and were non-adjacent, ER = 4 if coastal proximity and biomes were shared and ecozones differed but were adjacent, and ER = 5 if coastal proximity, biomes, and ecozones were all shared.

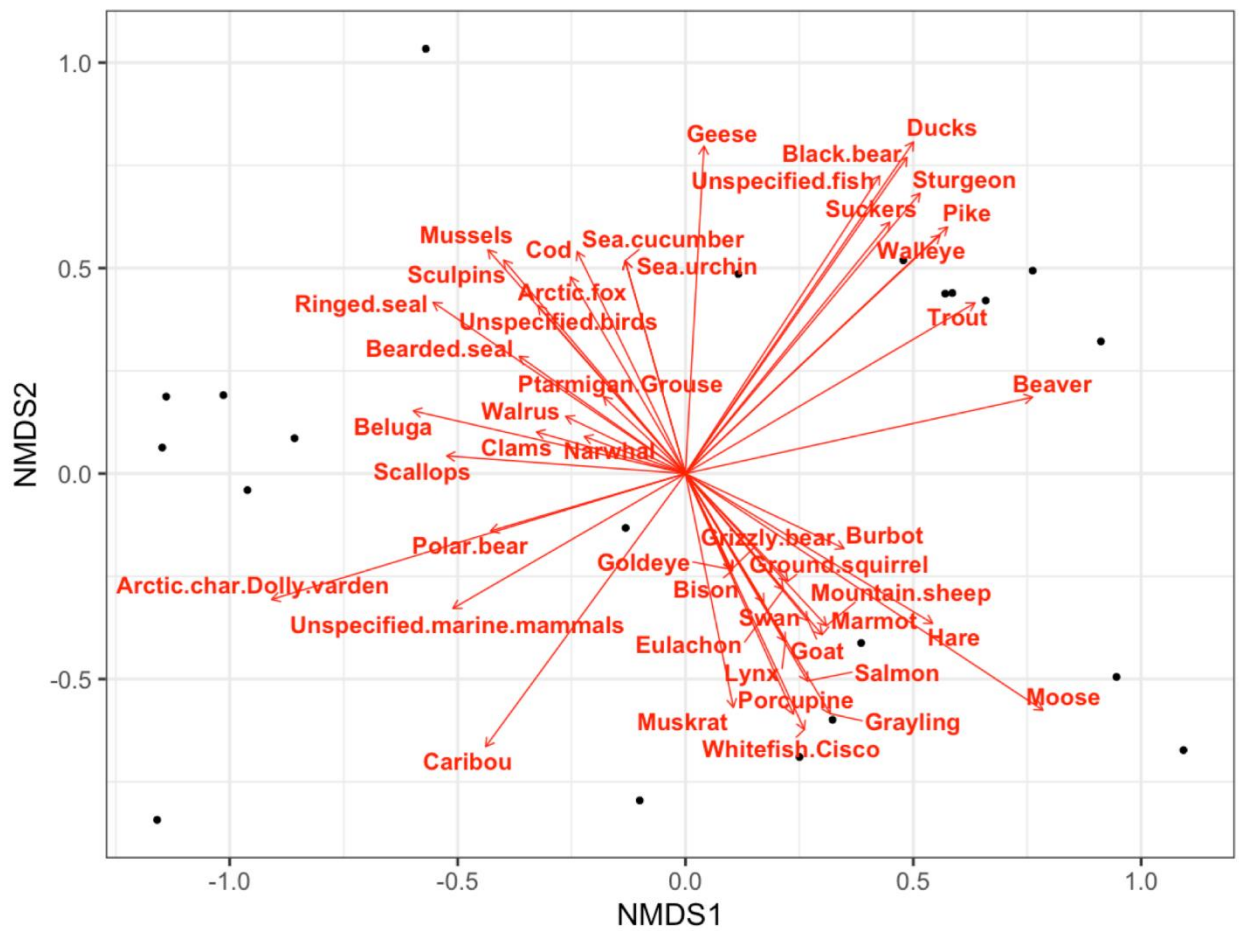


Fig. A1.2. Non-metric multidimensional scaling (NMDS) based on community-by-species standardized dietary importance matrix across 21 Indigenous communities or regional groups of communities and 45 species or groups of species. Communities are shown as black circles positioned along two NMDS axes of variation in the dietary importance of species consumed, with closer communities having more similar diets. Species are indicated as red vectors positioned according to how dietary importance of each species is correlated with each NMDS axis (longer vectors indicating stronger correlations).

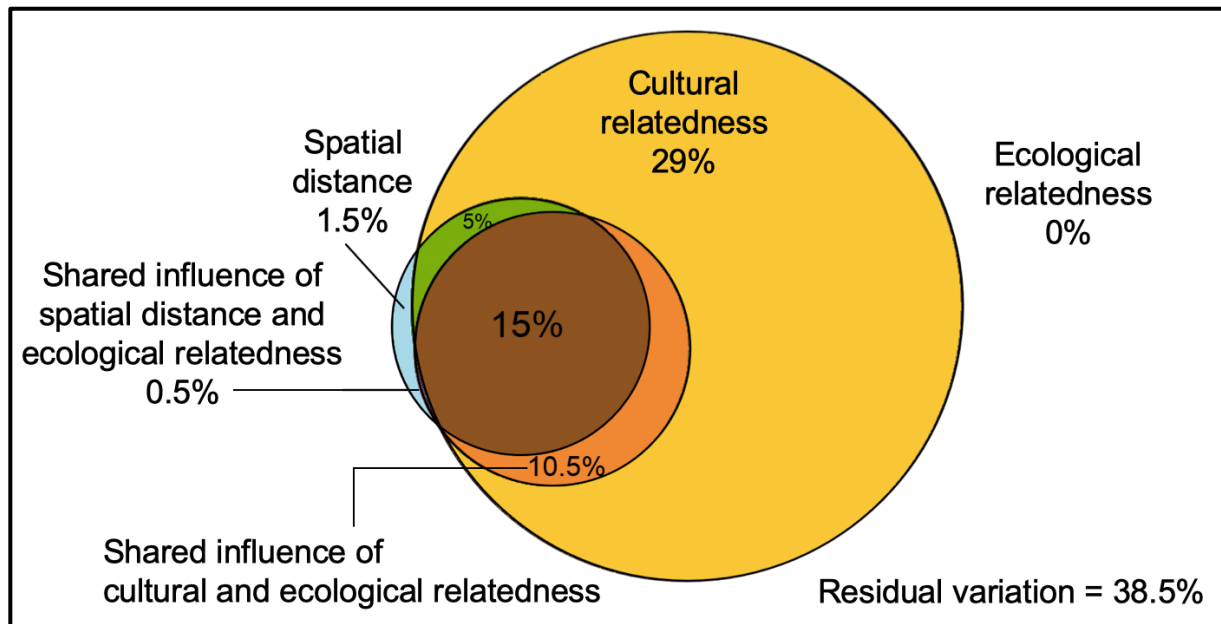


Fig. A1.3. Venn diagram summarizing variance partitioning of the predictive power of spatial distance combined with alternative measures of cultural and ecological relatedness. The alternative cultural relatedness metric is as presented in Fig. A1.1. The alternative ecological relatedness (ER) metric assigned ER = 1 for coastal vs. non-coastal communities, ER = 2 if coastal proximity was shared but biomes differed, ER = 3 if coastal proximity and biomes were shared but ecozones differed and were non-adjacent, ER = 4 if coastal proximity and biomes were shared and ecozones differed but were adjacent, and ER = 5 if coastal proximity, biomes, and ecozones were all shared. Despite both alternative metrics being more detailed than those presented in the main text, the variance partitioning analysis using these alternatives had less explanatory power (residual variation 38.5% vs. 30% for the analysis presented in the main text). At the same time, this alternative model reinforces the importance of culture as a predictor of diet similarity, with cultural relatedness contributing 59.5% of the 61.5% of the total variation explained by all three variables. The only predictive power not associated with cultural relatedness was 1.5% contributed independently by spatial distance and 0.5% contributed by a combination of ecological relatedness and spatial distance.