

Supplementary Material for

**Snow leopard dietary preferences and livestock predation revealed by
fecal DNA metabarcoding: no evidence for apparent competition
between wild and domestic prey**

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1. Supplementary Tables

Supplementary Table 1 Sampling sites and sample size information.

Study site	County	Latitude (N)	Longitude (E)	Altitude (m)	No. of fecal samples	No. of dietary samples	No. of diet. samples/season		No. of diet. samples/year							
							Warm	Cold	2009	2010	2011	2012	2013	2014	2015	2017
Suojia	Zhiduo	33.881–34.327	93.876–94.280	4,438–5,362	203	165	104	61	25	45	71	6	10	8	—	—
Zhaqing	Zaduo	32.990–33.439	94.482–95.365	4,120–5,734	86	70	52	18	—	—	—	—	11	15	10	34
Angsai	Zaduo	32.609–32.865	95.600–96.012	3,829–5,324	72	64	24	40	—	—	—	—	—	3	—	61
Baizha	Nangqian	32.067–32.134	96.267–96.357	4,099–5,126	22	20	8	12	—	—	—	—	15	5	—	—
Xialaxiu	Yushu	32.712–32.789	96.676–96.796	4,144–5,159	15	13	12	1	—	—	—	—	4	9	—	—
Zhongda	Yushu	33.166–33.191	96.863–96.935	4,208–5,150	11	10	8	2	—	—	—	—	4	6	—	—
Haxiu	Yushu	33.572–33.627	96.368–96.422	3,974–5,102	10	9	8	1	—	—	—	—	2	7	—	—
Xueshan	Maqin	34.832–34.884	99.594–99.771	4414–4879	—	—	—	—	—	—	—	—	—	—	—	—
Total					419	351	216	135	25	45	71	6	46	53	10	95

No. of fecal samples refer to the number of snow leopard fecal samples confirmed by molecular species identification; No. of dietary samples refer to the number of samples that generated dietary data by DNA metabarcoding. — indicates no sample.

Supplementary Table 2 Sequence filtering processes of dietary metabarcoding data from four sequencing libraries (SL1–SL4).

	SL1	SL2	SL3	SL4	Program
Assembled sequences	10,964,899	11,156,535	10,145,168	20,405,720	<i>illuminapairedend</i>
Aligned sequences	10,913,754	11,101,823	10,089,730	20,082,249	<i>obigrep</i>
Assigned sequences	10,108,519	10,291,982	9,364,531	18,642,270	<i>ngsfilter</i> & <i>obiuniq</i>
Sequences length ≥ 80 bp & count ≥ 100)	9,642,048	9,866,027	8,782,263	17,704,385	<i>obigrep</i>
Cleaned sequences	7,616,786	7,874,978	7,003,574	14,426,004	<i>obiclean</i>
Prey sequences	4,240,167	4,068,228	2,973,606	4,269,494	—
Mean sequence reads/PCR	41,982	39,885	26,789	40,662	—

Supplementary Table 3 SIMPER results.

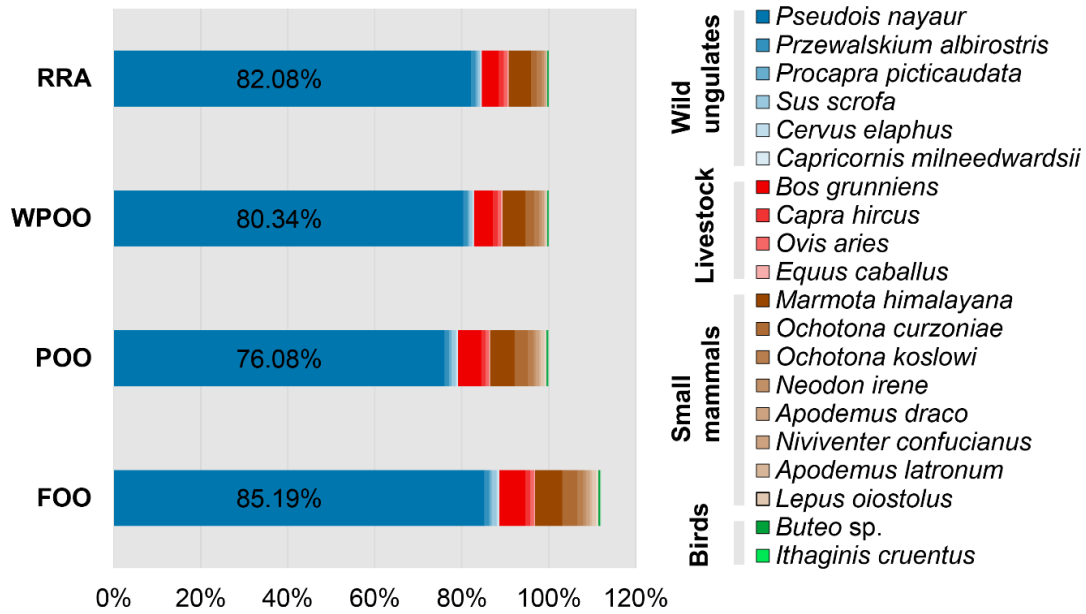
Prey species	Common name	Average dissimilarity	Contribution (%)	Cumulative (%)
<i>Pseudois nayaur</i>	Bharal	6.91	27.45	27.45
<i>Marmota himalayana</i>	Himalayan marmot	4.13	16.41	43.86
<i>Capra hircus</i>	Domestic goat	3.35	13.32	57.18
<i>Przewalskium albirostris</i>	White-lipped deer	2.00	7.95	65.13
<i>Bos grunniens</i>	Domestic yak	1.97	7.83	72.96
<i>Sus scrofa</i>	Wild boar	1.66	6.59	79.55
<i>Cervus elaphus</i>	Red deer	1.10	4.36	83.91
<i>Ochotona koslowi</i>	Kozlov's pika	0.90	3.57	87.48
<i>Equus caballus</i>	Domestic horse	0.71	2.84	90.32
<i>Ovis aries</i>	Domestic sheep	0.61	2.43	92.75
<i>Ochotona curzoniae</i>	Plateau pika	0.44	1.76	94.51
<i>Procapra picticaudata</i>	Tibetan gazelle	0.35	1.41	95.92
<i>Apodemus draco</i>	South China field mouse	0.34	1.34	97.25
<i>Neodon irene</i>	Chinese scrub vole	0.15	0.61	97.86
<i>Niviventer confucianus</i>	Confucian niviventer	0.14	0.56	98.42
<i>Capricornis milneedwardsii</i>	Chinese serow	0.13	0.52	98.94
<i>Apodemus latronum</i>	Large-eared field mouse	0.11	0.42	99.36
<i>Buteo</i> sp.	Buteonine hawk	0.09	0.34	99.71
<i>Lepus oiostolus</i>	Woolly hare	0.04	0.17	99.88
<i>Ithaginis cruentus</i>	Blood pheasant	0.03	0.12	100.00

Supplementary Table 4 Values of the response and explanatory variables for linear models at the sampling sites.

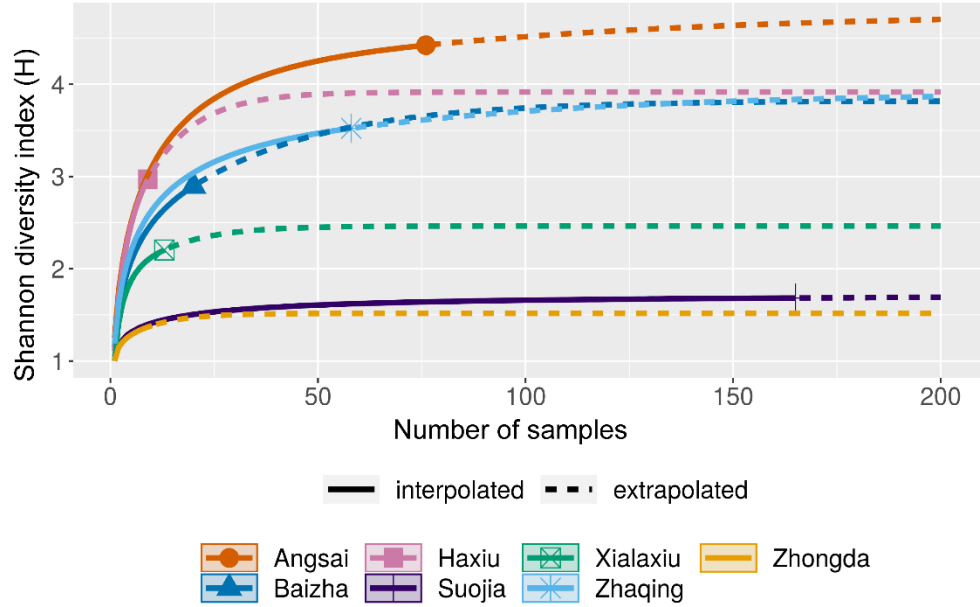
Study site	Township area (km²)	Snow leopard density (independent captures/camera day)	Bharal density (individuals/km²)	Livestock biomass (sheep units)	Livestock density (individuals/km²)	Livestock RRA (%)	Bharal RRA (%)
Suojia	65,062	0.0706	10.46	130,069	1.20	2.86	91.87
Zhaqing	5,988	0.0407	3.34	313,637	13.74	13.44	70.32
Angsai	1,683	—	—	271,808	37.05	3.95	76.53
Baizha	1,634	0.0369	5.45	244,619	46.24	10.00	74.84
Xialaxiu	2,828	0.0496	2.98	640,729	47.90	23.08	69.23
Zhongda	704	0.0346	1.80	115,600	35.25	0.00	90.00
Haxiu	1,363	0.0473	8.24	177,400	27.14	0.00	59.39
Xueshan	1,351	0.0327	3.83	135,000	43.67	—	—

—, no data.

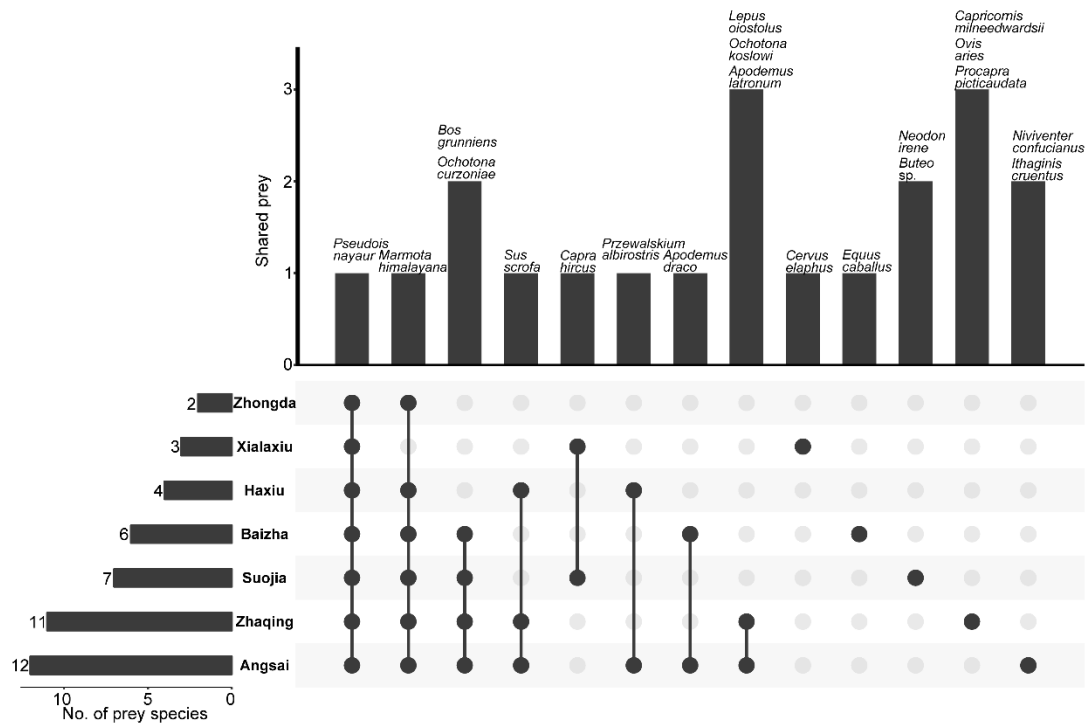
2. Supplementary Figures



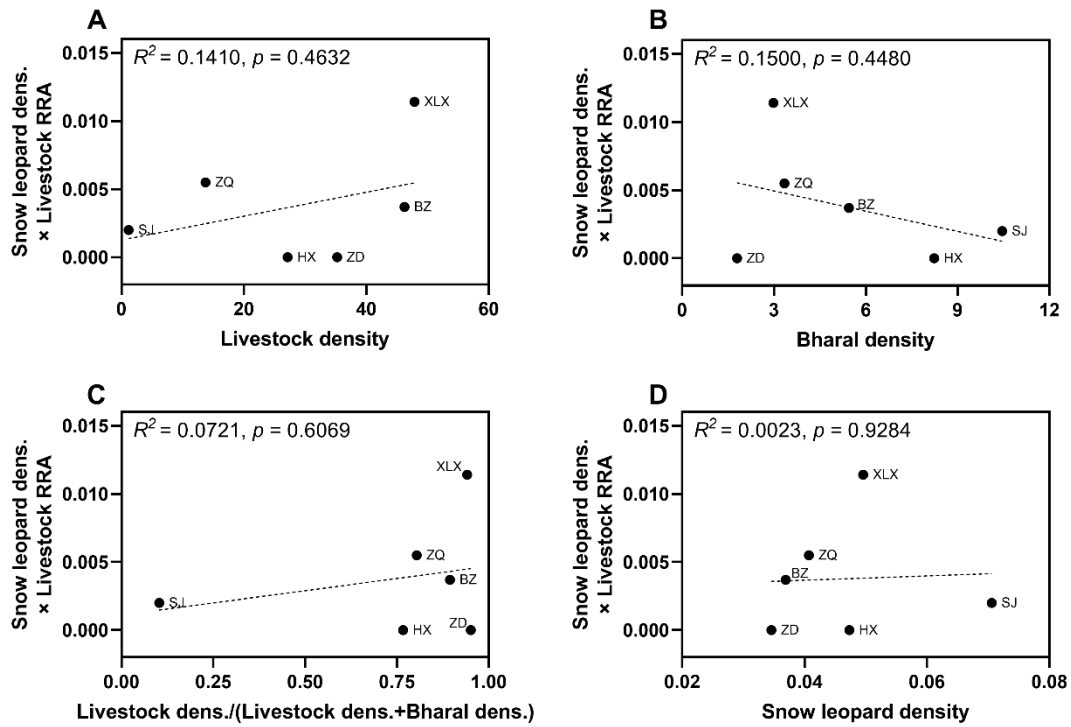
Supplementary Figure 1 Dietary composition of snow leopards in Sanjiangyuan summarized using four different metrics. RRA, relative read abundance; POO, percent of occurrence; wPOO, weighted percent of occurrence; FOO, frequency of occurrence. Proportions represent the total samples from all seven sampling sites. See Methods for calculation of the metrics.



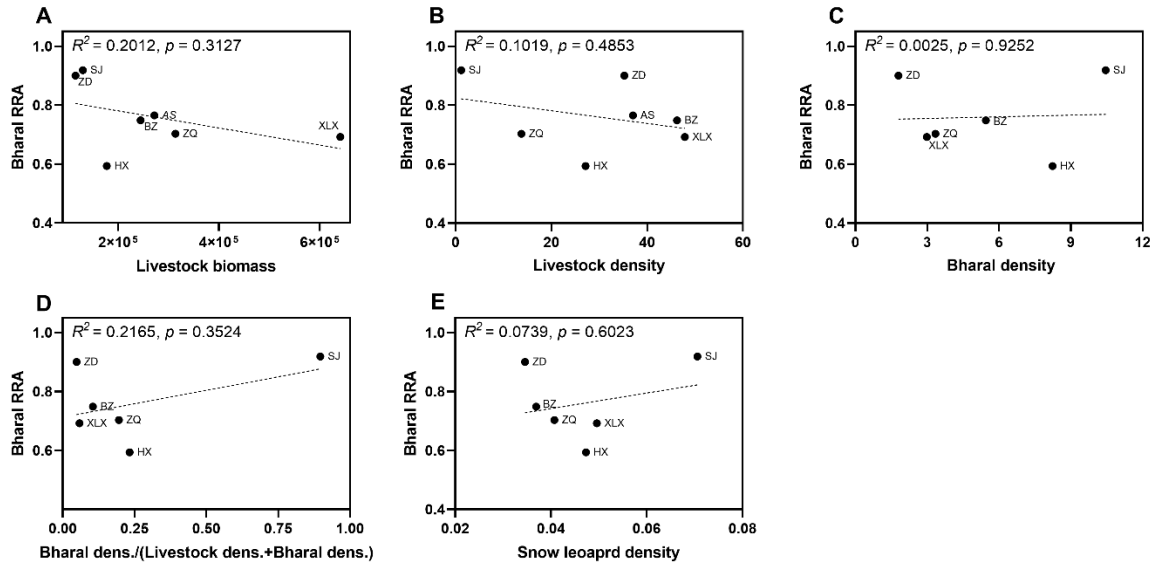
Supplementary Figure 2 Sample-based rarefaction curves of prey species diversity recovered from snow leopard fecal samples at seven sampling sites in Sanjiangyuan. Prey species diversity was measured by the Shannon diversity index (H) estimated using relative read abundance data. The estimated sample coverage: Angsai, 0.963; Haxiu, 0.820; Xialaxiu, 0.923; Zhongda, 0.900; Baizha, 0.826; Suojia, 0.988; Zhaqing, 0.953.



Supplementary Figure 3 UpSet plot displaying the shared and unique prey species of snow leopards at seven sampling sites in Sanjiangyuan. Vertical bars with dots and lines below show the prey species detected and shared among sites. The horizontal histograms next to site names show the total number of prey species detected at each site.



Supplementary Figure 4 Correlations between total livestock consumption by snow leopards and **(A–C)** prey (livestock and bharal) density and **(D)** snow leopard density at six study sites. See Figure 5 for explanations of data sources, sampling sites, and graphical elements and interpretations.



Supplementary Figure 5 Correlations between the proportion of bharaal (RRA) in snow leopard diets and **(A–D)** prey (livestock and bharaal) abundance and **(E)** snow leopard density at six study sites. See Figure 5 for explanations of data sources, sampling sites, and graphical elements and interpretations.