Supplementary Tables

Supplementary Table S1. Correlations (Spearman rho) between environmental variables (without prey variables) used in habitat use analyses for Eurasian otters. *Correlation significant at 0.05 level.

		Elevation	Population	Water depth	Flow rate	Existence of riparian zone
Yushu_spring	Human population	0.074				
(68km)	Water depth	**-0.266***	0.107			
	Flow rate	**0.573***	**0.297***	**0.248***		
	Riparian zone	**-0.576***	**-0.254***	-0.134	**-0.560***	
	Bank type	0.050	**-0.789***	-0.129	-0.235	0.101
Yushu_autumn	Human population	0.151				
(64km)	Water depth	**-0.287***	**-0.266***			
	Flow rate	**0.394***	0.187	0.018		
	Riparian zone	-0.192	**0.259***	**-0.286***	-0.111	
	Bank type	-0.056	**-0.774***	0.222	-0.217	**-0.324***
Tangjiahe_autumn	Population	**-0.853***				
(50km)	Water depth	**0.552***	**-0.545***			
	Flow rate	**-0.371***	0.209	0.096		
	Bank type	-0.079	-0.163	0.213	**0.404***	

Supplementary Table S2. Correlations (Spearman rho) between environmental variables (including prey variables) used in habitat use analyses for Eurasian otters in spring. *Correlation significant at 0.05 level.

		Prey mass	Fish mass	Fish number	Elevation	Population	Water depth	Flow rate	Bank type
Yushu_spring	Fish mass	**1.000***							
(30 km)	Fish number	**0.876***	**0.876***						
	Elevation	-0.193	-0.193	-0.308					
	Human population	-0.360	-0.36	**-0.509***	**0.376***				
	Water depth	-0.086	-0.086	-0.057	-0.286	-0.131			
	Flow rate	-0.164	-0.164	-0.212	**0.544***	0.300	0.171		
	Bank type	0.204	0.204	0.328	-0.183	**-0.652***	-0.083	**-0.372***	
	Riparian zone	0.272	0.272	0.297	**-0.575***	-0.247	0.009	**-0.389***	0.091
Tangjiahe_spring	Fish mass	**0.956***							
(30 km)	Fish number	**0.759***	**0.789***						
	Elevation	0.039	-0.081	0.214					
	Human population	-0.135	-0.018	-0.195	**-0.952***				
	Water depth	0.115	0.194	0.221	-0.137	0.074			
	Flow rate	-0.021	0.040	-0.069	**-0.365***	**0.429***	-0.155		
	Bank type	0.076	0.117	-0.114	-0.264	0.209	-0.088	0.505	

Supplementary Table S3. *A priori* negative binomial regression models, ranked by ω_i, for environmental variables associated with number of otter sprainting sites in 1 km river sections in Yushu in spring.

Hypothesis	Model structure	df	logLik	AICc	delta	ω_i
Without prey variables (68km)						
Negative influence of elevation and human population	ELE+POP	4	-137.55	283.73	0.00	0.42
Negative influence of elevation	ELE	3	-138.95	284.28	0.55	0.32
Negative influence of elevation and human population, positive influence of water depth	ELE+POP+WD	5	-137.42	285.82	2.08	0.15
Negative influence of elevation, and positive influence of water depth	ELE+WD	4	-138.94	286.52	2.79	0.10
Positive influence of bank type, and negative influence of flow rate	BT+FR	4	-143.50	295.63	11.89	0.00
Negative influence of flow rate	FR	3	-144.90	296.17	12.43	0.00
Positive influence of bank type	BT	3	-146.17	298.71	14.98	0.00
Positive influence of riparian zone	RIP	3	-146.21	298.80	15.07	0.00
Positive influence of bank type, and negative influence of human population	BT+POP	4	-146.16	300.96	17.23	0.00
Negative influence of human population	POP	3	-147.59	301.56	17.83	0.00
Positive influence of water depth	WD	3	-148.27	302.92	19.19	0.00
With prey variables (30km)						
Negative influence of elevation and human population	ELE+POP	4	-63.85	137.31	0.00	0.45
Negative influence of elevation and human population, and Positive influence of water depth	ELE+POP+WD	5	-63.40	139.30	1.99	0.16
Negative influence of elevation	ELE	3	-66.39	139.70	2.39	0.13
Negative influence of elevation and human population, and	ELE+POP+MASS	5	-63.74	139.98	2.67	0.12

positive influence of prey mass						
Negative influence of elevation, positive influence of prey mass	ELE+MASS	4	-65.77	141.14	3.83	0.07
Negative influence of elevation, and positive influence of water depth	ELE+WD	4	-66.09	141.77	4.46	0.05
Negative influence of human population	POP	3	-69.15	145.21	7.90	0.01
Positive influence of water depth	WD	3	-70.00	146.92	9.61	0.00
Negative influence of flow rate	FR	3	-70.14	147.21	9.90	0.00
positive influence of bank type, and negative influence of human population	BT+POP	4	-68.88	147.37	10.06	0.00
Positive influence of riparian zone	RIP	3	-70.80	148.53	11.22	0.00
Positive influence of prey mass	MASS	3	-70.89	148.70	11.39	0.00
Positive influence of bank type, and negative influence of flow rate	BT+FR	4	-69.58	148.76	11.45	0.00
Positive influence of bank type	BT	3	-70.93	148.77	11.46	0.00

Supplementary Table S4. *A priori* negative binomial distribution models, ranked by ω_i, for environmental variables associated with number of otter spraining sites in 1 km river sections in Yushu in autumn.

Hypothesis (64km)	Model structure	df	logLik	AICc	delta	ωi
Negative influence of elevation and human population	ELE+POP	4	-150.25	309.18	0.00	0.36
Negative influence of elevation	ELE	3	-151.42	309.23	0.05	0.35
Negative influence of elevation and human population, and positive influence of water depth	ELE+POP+WD	5	-150.11	311.25	2.07	0.13
Negative influence of elevation, and positive influence of water depth	ELE+WD	4	-151.30	311.28	2.10	0.13
Negative influence of flow rate	FR	3	-154.22	314.83	5.65	0.02
Positive influence of bank type, and negative influence of flow rate	BT+FR	4	-154.12	316.92	7.74	0.01
Negative influence of human population	POP	3	-157.37	321.14	11.96	0.00
Positive influence of water depth	WD	3	-157.59	321.57	12.39	0.00
Positive influence of existing riparian zone	RIP	3	-158.38	323.16	13.98	0.00
Positive influence of bank type, and negative influence of human population	BT+POP	4	-157.25	323.18	14.00	0.00
Positive influence of bank type	BT	3	-158.58	323.56	14.38	0.00

Supplementary Table S5. *A priori* negative binomial distribution models, ranked by ω_i, for environmental variables associated with number of otter spraining sites in 1 km river sections in Tangjiahe in spring.

Hypothesis	Model structure	df	logLik	AICc	delta	*ωi*
Negative influence of human population	POP	3	-75.62	158.16	0.00	0.42
Negative influence of human population, and positive influence of Total mass	POP+MASS	4	-74.9	159.40	1.24	0.23
Negative influence of human population and of flow rate	POP+FR	4	-75.17	159.94	1.78	0.17
Negative influence of human population, and positive influence of water depth and total mass	POP+WD+MASS	5	-74.87	162.24	4.07	0.05
Positive influence of total mass	MASS	3	-77.85	162.62	4.46	0.04
Negative influence of human population and flow rate, and positive influence of water depth	POP+FR+WD	5	-75.09	162.68	4.52	0.04
Positive influence of water depth	WD	3	-79.16	165.24	7.08	0.01
Negative influence of flow rate	FR	3	-79.2	165.31	7.15	0.01
Positive influence of bank type	BT	3	-79.26	165.44	7.28	0.01
Negative influence of flow rate, and positive influence of water depth	FR+WD	4	-79.12	167.83	9.67	0.00
Negative influence of flow rate, and positive influence of bank type	FR+BT	4	-79.19	167.99	9.83	0.00

Supplementary Table S6. *A priori* negative binomial distribution models, ranked by ω_i, for environmental variables associated with number of otter sprainting sites in 1 km river sections in Tangjiahe in autumn.

Hypothesis	Model structure	df	logLik	AICc	delta	*ωi*
Negative influence of human population	POP	3	-179.46	365.45	0.00	0.42
Negative influence of human population and flow rate	POP+FR	4	-178.89	366.67	1.22	0.23
Negative influence of flow rate	FR	3	-180.86	368.24	2.79	0.10
Negative influence of human population and flow rate, and positive influence of water depth	POP+FR+WD	5	-178.68	368.73	3.28	0.08
Positive influence of water depth	WD	3	-181.51	369.53	4.08	0.05
Positive influence of bank type	BT	3	-181.55	369.62	4.17	0.05
Negative influence of flow rate, and positive influence of water depth	FR+WD	4	-180.74	370.38	4.93	0.04
Negative influence of flow rate, and positive influence of bank type	FR+BT	4	-180.82	370.53	5.08	0.03

Supplementary Table S7. Model-averaged coefficients (±SE) for environmental variables associated with number of otter sprainting sites in 1 km river sections in Yushu in spring. *Variables were removed from final model due to larger SE than coefficient.

	Coefficient	*SE*	Relative variable importance based on *ωi*
(Intercept)	14.07	3.983	
Elevation	-0.004	0.001	1.00
Population	0.078	0.032	0.78
Water depth	0.01	0.01	0.20
Prey mass*	-0.00007	0.0001	0.18