

Occupancy patterns of prey species in a biological corridor and inferences for tiger population connectivity between national parks in Bhutan

LETRO LETRO, KLAUS FISCHER, DORJI DUBA and TANDIN TANDIN

SUPPLEMENTARY TABLE 1 Results of goodness-of-fit tests for determining the optimal number of trapping days per species. The table shows the χ^2 probability ($\chi^2\pi$) and overdispersion statistics (\hat{c}) of the goodness-of-fit tests (MacKenzie & Bailey, 2004) for principal prey species occupancy models with different collapsing periods (no. of days per sampling period). The collapsing periods with the overdispersion statistics (\hat{c}) closest to 1 are marked with * and were used for analysis.

Collapsing period (days)	$\chi^2\pi$	\hat{c}
Sambar <i>Rusa unicolor</i>		
10*	0.32	1.10
12	0.06	1.47
15	0.10	1.33
Barking deer <i>Muntiacus muntjak</i>		
10	0.16	1.18
12	0.27	1.13
15*	0.31	1.09
Wild boar <i>Sus scrofa</i>		
10	0.84	0.78
12*	0.37	1.04
15	0.43	0.88

SUPPLEMENTARY TABLE 2 Pearson's correlation matrix (r -values) of the continuous covariates. Pairs of site covariates were considered highly correlated when $|r| > 0.6$ (marked with *).

Covariates ¹	LU	ELE	SLO	ASP	PA	ROA	RIV	SET
LU	1.00							
ELE	-0.88*							
SLO	-0.14	0.10						
ASP	-0.03	-0.02	-0.11					
PA	-0.16	0.20	0.20	0.03				
ROA	-0.05	0.09	0.48	-0.28	0.04			
RIV	-0.47	0.58	-0.01	-0.03	0.68*	0.25		
SET	0.06	0.01	0.17	-0.10	-0.01	0.71*	0.21	1.00

¹ASP, aspect; ELE, elevation; LU, land-use type; PA, distance to nearest protected area; RIV, distance to nearest river; ROA, distance to nearest road; SET, distance to nearest settlement; SLO, slope.

SUPPLEMENTARY TABLE 3 Results of univariate occupancy (Ψ) models for the principal prey species of the tiger *Panthera tigris*. The table shows the Akaike information criterion (AIC), difference of AIC to the best-performing model (Δ AIC), model weight and likelihood, number of parameters (K), and twice the negative log-likelihood (-2LogLik) for each model.

Model ¹	AIC	Δ AIC	Model weight	Model likelihood	K	-2LogLik
Sambar						
$\Psi(\text{SLO}), P(\cdot)$	73.48	0	0.68	1.00	2	69.48
$\Psi(\cdot), P(\cdot)$	77.42	3.94	0.08	0.14	2	73.42
$\Psi(\text{ELE}), P(\cdot)$	77.68	4.2	0.08	0.12	2	73.68
$\Psi(\text{PA}), P(\cdot)$	77.70	4.22	0.08	0.12	2	73.70
$\Psi(\text{ASP}), P(\cdot)$	77.83	4.35	0.08	0.11	2	73.83
$\Psi(\text{SET}), P(\cdot)$	77.84	4.35	0.07	0.11	2	73.84
Barking deer						
$\Psi(\text{ELE}), P(\cdot)$	106.65	0	0.32	1.00	2	102.65
$\Psi(\text{RIV}), P(\cdot)$	108.23	1.58	0.14	0.45	2	104.23
$\Psi(\text{ASP}), P(\cdot)$	108.94	2.29	0.10	0.34	2	104.94
$\Psi(\text{ROA}), P(\cdot)$	110.03	3.38	0.06	0.18	2	106.03
$\Psi(\cdot), P(\cdot)$	110.24	3.59	0.05	0.17	2	106.24
$\Psi(\text{SLO}), P(\cdot)$	110.47	3.82	0.05	0.15	2	106.47
Wild boar						
$\Psi(\text{ELE}), P(\cdot)$	74.72	0	0.91	1.00	2	70.72
$\Psi(\text{RIV}), P(\cdot)$	79.69	4.97	0.07	0.08	2	75.69
$\Psi(\text{SLO}), P(\cdot)$	84.52	9.8	0.01	0.01	2	80.52
$\Psi(\text{ROA}), P(\cdot)$	86.17	11.45	0.01	0.01	2	82.17
$\Psi(\cdot), P(\cdot)$	86.58	11.86	0.01	0.01	2	82.58
$\Psi(\text{ASP}), P(\cdot)$	86.75	12.03	0.01	0.01	2	82.75

¹ASP, aspect; ELE, elevation; LU, land-use type; PA, distance to nearest protected area; RIV, distance to nearest river; ROA, distance to nearest road; SET, distance to nearest settlement; SLO, slope.