Table S1. Summary of survey effort and detection of tigers and leopards in Thung Yai Naresuan (East) Wildlife Sanctuary, Thailand. (EV=Evergreen Forest, SG = Secondary Growth Forest, GL = Grassland, BB = Bamboo Forest, MD = Mixed Deciduous Forest, AG = Agricultural area, SW= Swamp Forest, DD= Dry Dipterocarp Forest)

Camera trap survey

Tiger	EV	SG	GL	MD	BB	Total
Number of trap location	67	24	13	1	1	
Number of trap detections	12	5	4	0	0	
Probability of site use (Naïve estimate)	0.18	0.21	0.31	0	0	**0.70**
Leopard	EV	SG	GL	MD	BB	Total
Number of trap location	67	24	13	1	1	
Number of trap detections	13	7	2	0	0	
Probability of site use (Naïve estimate)	0.19	0.29	0.15	0	0	**0.64**

Sign survey (within the same camera sampling area)

Tiger	EV	SD	GL	SW	MD	DD	BB	Total
Number of 1-km^2 grid cells	172	46	22	3	2	1	1	
Number of grid detections	24	14	7	0	0	0	0	
Probability of site use (Naïve estimate)	0.14	0.30	0.32	0	0	0	0	**0.76**
Leopard	EV	SD	GL	SW	MD	DD	BB	Total
Number of 1-km^2 grid cells	172	46	22	3	2	1	1	
Number of grid detections	22	7	2	0	0	0	0	
Probability of site use (Naïve estimate)	0.13	0.15	0.09	0	0	0	0	**0.37**

Sign survey (across study area)

Tiger	EV	MD	SG	GL	AG	BB	SW	DD	Total
Number of 1-km^2 grid cells	255	75	54	24	4	6	3	1	
Number of grid detections	32	0	14	7	0	0	0	0	
Probability of site use (Naïve estimate)	0.13	0	0.26	0.29	0	0	0	0	**0.68**
Leopard	EV	MD	SG	GL	AG	BB	SW	DD	Total
Number of 1-km^2 grid cells	255	75	54	24	4	6	3	1	
Number of grid detections	22	1	7	2	0	0	0	0	
Probability of site use (Naïve estimate)	0.09	0.01	0.13	0.08	0	0	0	0	**0.31**

Table S2. Model selection results (90% model confidence) for estimating tiger habitat use based on a camera trap survey in Thung Yai Naresaun (East) Wildlife Sanctuary, Thailand. Models are ranks by AIC (The Akaike Information Criterion). k is the number of parameters estimated by the model). ΔAIC is the difference in AIC values between each model and the model with the lowest AIC). w_i is AIC model weight. Model likelihood is the likelihood of a model relative to the other models. Deviance is the difference in (-2log × likelihood) of the current model and (-2log × likelihood) of the saturated model. (LC = land cover type, ST = distance to stream, VL = distance to villages, EL = elevation, SL = slope, DB = disturbance activities, PT = patrol efforts, GR = Gaur, SB = Sambar, BD = Barking deer, WB = Wild boar)

Model	k	AIC	ΔAIC	w_i	Likelihood	Deviance
ψ (GR,SB),p(.)	3	164.39	0	0.24	1	158.39
ψ (GR,SB,PT),p(.)	4	165.11	0.72	0.17	0.70	157.11
ψ (GR,SB,DB),p(.)	4	165.24	0.85	0.16	0.65	157.24
ψ (GR,SB,EL),p(.)	4	165.81	1.42	0.12	0.49	157.81
ψ (GR,SB,ST),p(.)	4	165.90	1.51	0.11	0.47	157.90
ψ (GR,SB,SL),p(.)	4	165.91	1.52	0.11	0.47	157.91
ψ (GR,SB,PT,DB),p(.)	5	166.19	1.8	0.10	0.407	156.19

Table S3. Model selection results (90% model confidence) for estimating leopard habitat use based on a camera trap survey in Thung Yai Naresaun (East) Wildlife Sanctuary, Thailand.

Model	k	AIC	ΔAIC	w_i	Likelihood	Deviance
ψ (BD,WB,DB),p(.)	4	189.96	0	0.21	1	181.96
ψ (BD,WB,DB,SL),p(.)	5	189.98	0.02	0.21	0.99	179.98
ψ (BD,W),p(.)	3	190.22	0.26	0.19	0.88	184.22
ψ (BD,WB,SL),p(.)	4	191.14	1.18	0.19	0.55	183.14
ψ (BD,WB,PT),p(.)	4	191.68	1.72	0.09	0.42	183.68
ψ (BD,WB,DB,EL),p(.)	5	191.71	1.75	0.09	0.42	181.71
ψ (BD,WB,DB,SL,PT),p(.)	6	191.72	1.76	0.09	0.41	179.72

Table S4. Model averaged parameter estimates, SE, odds-ratio (OR), lower and upper odds-ratio interval, and summed weights of evidence for tiger and leopard based on camera trap and sign surveys in Thung Yai Naresaun (East) Wildlife Sanctuary, Thailand.

Parameter	Coefficient	SE	OR	Lower 95% CI	Upper 95% CI	Importance of variable
Tiger (Camera trap survey)						
Intercept	-1.85	0.034	0.16	0.15	0.17	1.00
Gaur	1.01	0.013	2.73	2.66	2.81	1.00
Sambar	0.87	0.015	2.38	2.31	2.45	1.00
patrol	0.18	0.018	1.20	1.16	1.24	0.26
disturbance	-0.19	0.018	0.83	0.80	0.86	0.25
elevation	0.06	0.009	1.06	1.05	1.08	0.12
stream	0.06	0.008	1.06	1.04	1.08	0.11
slope	-0.04	0.006	0.96	0.94	0.97	0.11
Leopard (Sign survey within camera trap sampling area)						
Intercept	-1.74	0.04	0.18	0.16	0.19	1.00
Barking deer	0.91	0.03	2.47	2.33	2.63	1.00
Wild boar	0.45	0.01	1.56	1.53	1.59	1.00
Disturbance	-0.75	0.04	0.47	0.43	0.52	0.60
Slope	0.31	0.03	1.36	1.30	1.43	0.42
Patrol	0.05	0.004	1.05	1.04	1.06	0.18
Elevation	-0.02	0.003	0.98	0.97	0.98	0.09
Tiger (Sign survey within camera sampling area)						
Intercept	-2.89	0.286	0.06	0.03	0.10	0.90
Gaur	0.98	0.089	2.66	2.23	3.17	0.90
Sambar	0.14	0.038	1.15	1.07	1.24	0.90
Stream	0.43	0.061	1.54	1.37	1.74	0.90
Elevation	-0.59	0.127	0.55	0.43	0.71	0.66
Patrol	0.62	0.131	1.85	1.43	2.40	0.66
Slope	-0.01	0.003	0.99	0.99	1.00	0.18
Leopard (Sign survey within camera trap sampling area)						
Intercept	-3.45	0.24	0.03	0.02	0.05	0.95
Sambar	1.64	0.14	5.14	3.89	6.78	0.95
Wild boar	1.23	0.09	3.41	2.84	4.11	0.95
Stream	0.97	0.07	2.63	2.27	3.04	0.95
Elevation	-1.14	0.07	0.32	0.28	0.36	0.95
Patrol	0.12	0.03	1.13	1.06	1.19	0.20
Slope	0.06	0.01	1.06	1.03	1.09	0.16
Disturbance	-0.14	0.04	0.87	0.81	0.93	0.16
Tiger (Sign survey across study area)						
Intercept	-3.41	0.11	0.03	0.03	0.04	0.91
Sambar	0.90	0.03	2.46	2.33	2.59	0.91

Gaur	0.76	0.02	2.14	2.04	2.23	0.91
Patrol	0.66	0.03	1.93	1.82	2.06	0.79
Stream	0.20	0.02	1.23	1.17	1.29	0.45
Disturbance	-0.07	0.01	0.93	0.91	0.94	0.22
Slope	0.005	0.001	1.00	1.00	1.01	0.09
Leopard (Sign survey across study area)						
Intercept	-3.95	0.11	0.02	0.02	0.02	0.96
Barking deer	1.18	0.03	3.27	3.06	3.49	0.96
Wild boar	0.80	0.03	2.22	2.11	2.33	0.96
Village	1.42	0.05	4.12	3.73	4.56	0.85
Disturbance	0.17	0.01	1.19	1.16	1.22	0.34
Patrol	0.25	0.03	1.28	1.21	1.35	0.23
Slope	-0.09	0.01	0.92	0.90	0.93	0.20
Elevation	0.05	0.01	1.05	1.04	1.07	0.12

Table S5. Model selection results (90% model confidence) for estimating tiger habitat use based on a sign survey in the same sampling scale with a camera trap survey in Thung Yai Naresaun (East) Wildlife Sanctuary, Thailand.

Model	k	AIC	ΔAIC	W_i	Likelihood	Deviance
ψ (GR,SB,ST,PT,EL),p(.)	6	369.91	0	0.48	1	357.91
ψ (GR,SB,ST),p(.)	4	371.27	1.36	0.24	0.51	363.27
ψ (GR,SB,EL,SL,ST,PT),p(.)	7	371.90	1.99	0.18	0.37	357.90

Table S6. Model selection results (90% model confidence) for estimating leopard habitat use based on sign survey in the same sampling scale with a camera trap survey Thung Yai Naresaun (East) Wildlife Sanctuary, Thailand.

Model	k	AIC	ΔAIC	W_i	Likelihood	Deviance
ψ (SB,WB,ST,EL),p(.)	5	212.91	0	0.42	1	202.91
ψ (SB,WB,ST,EL,PT),p(.)	6	214.42	1.51	0.20	0.47	202.42
ψ (SB,WB,ST,EL,SL),p(.)	6	214.79	1.88	0.16	0.39	202.79
ψ (SB,WB,ST,EL,DB),p(.)	6	215.11	2	0.14	0.33	203.11

Table S7. Model selection results (90% model confidence) for estimating tiger habitat use based on a sign survey across Thung Yai Naresaun (East) Wildlife Sanctuary, Thailand.

Model	k	AIC	ΔAIC	W_i	Likelihood	Deviance
ψ (GR,SB,PT),p(LC)	4	478.83	0	0.25	1	470.83
ψ (GR,SB,PT,ST),p(LC)	5	478.93	0.1	0.24	0.95	468.93
ψ (GR,SB,PT,DB),p(LC)	5	480.20	1.37	0.13	0.50	470.20
ψ (GR,SB,ST),p(LC)	4	480.34	1.51	0.12	0.47	472.34
ψ (GR,SB,PT,ST,DB),p(LC)	6	480.81	1.98	0.09	0.37	468.81
ψ (GR,SB,PT,SL),p(LC)	5	480.82	1.99	0.09	0.37	470.82

Table S8. Model selection results (90% model confidence) for estimating leopard habitat use based on a sign survey across Thung Yai Naresaun (East) Wildlife Sanctuary, Thailand.

Model	k	AIC	ΔAIC	W_i	Likelihood	Deviance
ψ (BD,WB,VL),p(LC)	4	280.98	0	0.27	1	272.98
ψ (BD,WB,VL,DB),p(LC)	5	282.27	1.29	0.14	0.52	272.27
ψ (BD,WB,VL,SL),p(LC)	5	282.63	1.65	0.12	0.44	272.63
ψ (BD,WB,VL,PT),p(LC)	5	282.64	1.66	0.12	0.45	272.64
ψ (BD,WB,PT),p(LC)	4	282.70	1.72	0.12	0.42	274.70
ψ (BD,WB,VL,EL,DB),p(LC)	6	283.43	2.45	0.08	0.29	271.43
ψ (BD,WB,VL,DB,SL),p(LC)	6	283.45	2.47	0.08	0.29	271.45