

Effects of habitat alteration and disturbance by humans and exotic species on fosa *Cryptoprocta ferox* occupancy in Madagascar's deciduous forests

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SUPPLEMENTARY TABLE 1 Detection probability (p) models for the fosa *Cryptoprocta ferox* in Ankarafantsika National Park and Andranomena Special Reserve, Madagascar (Fig. 1), with Akaike information criterion corrected for a small sample size (AICc), relative change in Akaike information criterion compared to the top model (Δ AICc), Akaike weight (AICc wt), number of parameters (K), and $-2 \log$ likelihood.

p models	AICc	Δ AICc	AICc wt	K	$-2 \log$ likelihood
p (site + effort)	1038.16	0	0.71	4	0
p (effort)	1041.22	3.06	0.15	3	0
p (site)	1042.1	3.93	0.1	3	0
p (.)	1044.07	5.91	0.04	2	0

SUPPLEMENTARY TABLE 2 Correlation matrix of occupancy model covariates (correlated covariates denoted in bold).

	Road distance	Elevation	Water distance	Village distance	GFC20	VCF	Forest edge distance	Drainage	TE	TCA	NP	LPI	Human TS	Dog TS	Cat TS	Zebu TS	Bird TS	Civet TS	Lemur TS
Road distance	1	0.124	0.18	0.364	-0.338	-0.353	-0.116	-0.103	0.142	0.094	0.007	-0.213	-0.037	-0.089	0.162	-0.061	0.033	0.084	0.129
Elevation	0.124	1	0.447	-0.695	-0.527	-0.041	-0.742	0.693	0.347	-0.101	0.318	-0.469	0.206	0.16	-0.393	0.078	-0.271	0.155	-0.098
Water distance	0.18	0.447	1	-0.352	-0.517	-0.32	-0.481	0.182	0.346	-0.026	0.275	-0.414	0.277	0.093	-0.27	0.268	-0.173	0.228	-0.184
Village distance	0.364	-0.695	-0.352	1	0.249	-0.233	0.753	-0.741	-0.415	0.292	-0.509	0.316	-0.338	-0.271	0.401	-0.214	0.269	-0.137	0.147
GFC20	-0.338	-0.527	-0.517	0.249	1	0.706	0.467	-0.454	-0.528	-0.034	-0.271	0.777	-0.085	-0.045	0.25	0.039	0.159	-0.328	0.129
VCF	-0.353	-0.041	-0.32	-0.233	0.706	1	0.01	0	-0.315	-0.172	0.013	0.54	0.073	0.091	0.026	0.177	0.009	-0.235	0.071
Forest edge distance	-0.116	-0.742	-0.481	0.753	0.467	0.01	1	-0.62	-0.531	0.269	-0.557	0.529	-0.387	-0.293	0.277	-0.204	0.189	-0.218	0.083
Drainage	-0.103	0.693	0.182	-0.741	-0.454	0	-0.62	1	0.247	-0.072	0.237	-0.358	0.044	0.053	-0.255	-0.034	-0.237	0.256	-0.085
TE	0.142	0.347	0.346	-0.415	-0.528	-0.315	-0.531	0.247	1	-0.542	0.869	-0.789	0.305	0.186	-0.312	0.047	-0.018	0.238	-0.068
TCA	0.094	-0.101	-0.026	0.292	-0.034	-0.172	0.269	-0.072	-0.542	1	-0.617	0.256	-0.247	-0.216	0.144	-0.269	-0.052	-0.026	-0.019
NP	0.007	0.318	0.275	-0.509	-0.271	0.013	-0.557	0.237	0.869	0.617	1	-0.501	0.3	0.209	-0.261	0.12	-0.073	0.136	0.007
LPI	-0.213	-0.469	-0.414	0.316	0.777	0.54	0.529	-0.358	-0.789	0.256	-0.501	1	-0.213	-0.111	0.326	0.044	0.015	-0.34	0.146
Human TS	-0.037	0.206	0.277	-0.338	-0.085	0.073	-0.387	0.044	0.305	-0.247	0.3	-0.213	1	0.667	0.006	0.508	-0.025	0.074	-0.128
Dog TS	-0.089	0.16	0.093	-0.271	-0.045	0.091	-0.293	0.053	0.186	-0.216	0.209	-0.111	0.667	1	-0.009	0.608	-0.093	0.142	-0.059
Cat TS	0.162	-0.393	-0.27	0.401	0.25	0.026	0.277	-0.255	-0.312	0.144	-0.261	0.326	0.006	-0.009	1	-0.093	0.098	-0.108	0.042
Zebu TS	-0.061	0.078	0.268	-0.214	0.039	0.177	-0.204	-0.034	0.047	-0.269	0.12	0.044	0.508	0.608	-0.093	1	-0.088	0.138	-0.051
Bird TS	0.033	-0.271	-0.173	0.269	0.159	0.009	0.189	-0.237	-0.018	-0.052	-0.073	0.015	-0.025	-0.093	0.098	-0.088	1	-0.022	0.078
Civet TS	0.084	0.155	0.228	-0.137	-0.328	-0.235	-0.218	0.256	0.238	-0.026	0.136	-0.34	0.074	0.142	-0.108	0.138	-0.022	1	-0.059
Lemur TS	0.129	-0.098	-0.184	0.147	0.129	0.071	0.083	-0.085	-0.068	-0.019	0.007	0.146	-0.128	-0.059	0.042	-0.051	0.078	-0.059	1

TS, species trap success (total detections/total sampling days × 100); GFC20, % global forest cover at 20% threshold level (30 m resolution); VCF, vegetation continuous field (% forest cover at 250 m resolution); Drainage, distance (m) to nearest drainage point (lowest point of elevation); TE, sum of all edge segments in camera-trap buffer; TCA, total core area in each patch (m²); NP, total patches of a class type; LPI, landscape patch index (% of landscape in the largest patch).

SUPPLEMENTARY TABLE 3 The summed model weights for the fosa model. Model data were from camera-trap surveys conducted in Ankarafantsika National Park and Andranomena Special Reserve, Madagascar (Fig. 1) during 2014–2015.

Covariate	Weight
Cat trap success	0.94
Dog trap success	0.77
Global forest cover (20%)	0.69
Total core area	0.57
Lemur trap success	0.25
Trail width	0.23
Road distance	0.08
Village distance	0.07
Total edge	0.07