Oikos

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Frey, S., Volpe, J. P., Heim, N. A., Paczkowski, J. and Fisher, J. T. 2020. Move to nocturnality not a universal trend in carnivore species on disturbed landscapes. – Oikos doi: 10.1111/oik.07251

Appendix 1

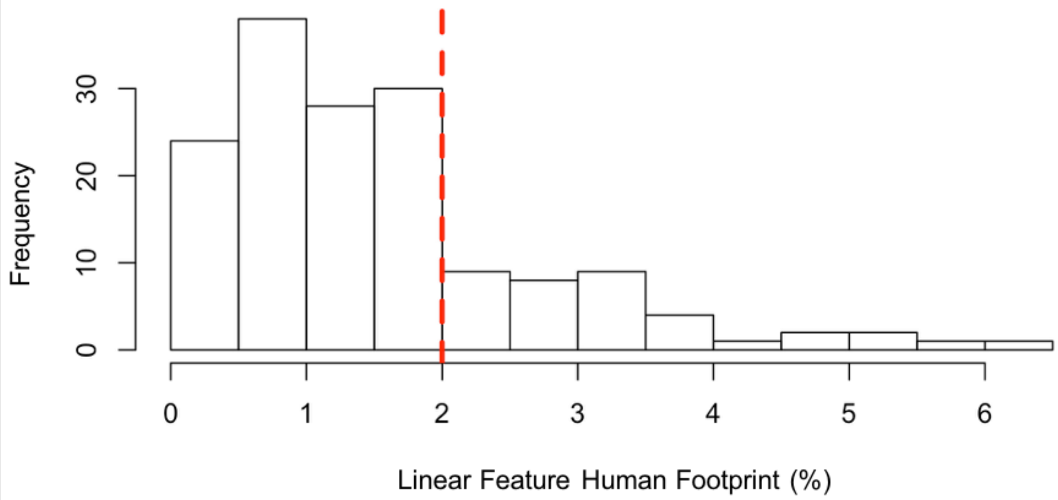

Figure A1. Distribution of percent area covered by anthropogenic linear features within a 5000m radius buffer across camera sites in the Kananaskis Region. Camera sites were designated as 'low' disturbance if percent area of linear features was less than 2%, while 'high' disturbance sites contained >2\% linear features.

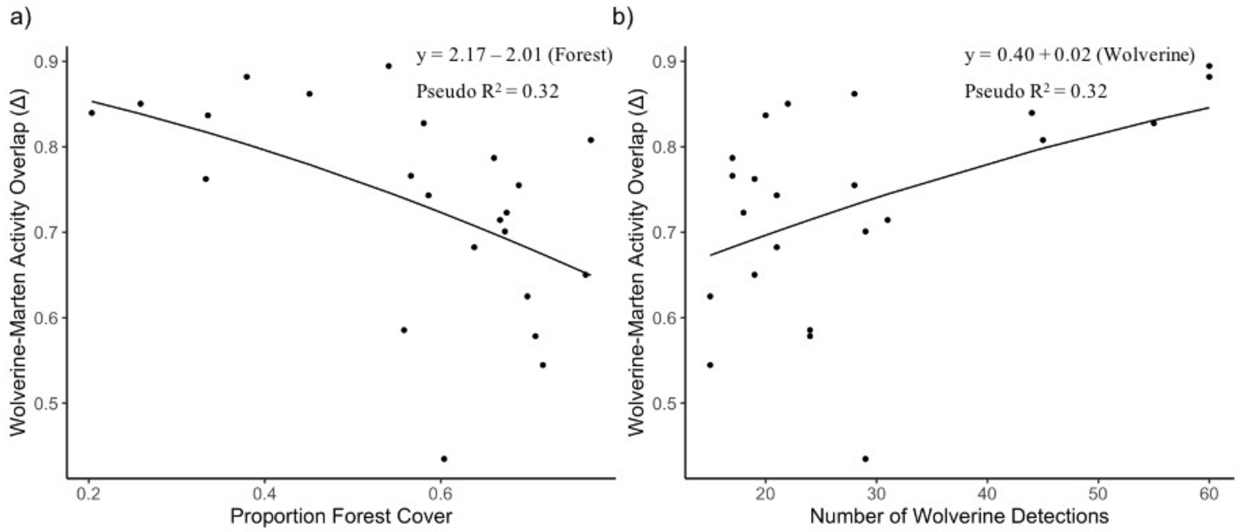

Figure A2. Relationship between camera site-level wolverine-marten activity overlap and a) proportion of forest cover within a 5000m radius buffer and b) number of wolverine detections. Each dot represents wolverine-marten activity overlap (Δ_4) for each of the 23 Willmore Wilderness camera sites included in this analysis. Candidate model selection identified proportion forest cover and number of wolverine detections as the best model predicting site-level wolverine-marten activity overlap.

Table A1: Number of temporally independent carnivore species' detections (number of camera sites with detections) between the Willmore Wilderness (WW) and Kananaskis Region (KR) study areas. All sampling occurred during October-March during 2007-2008 for the WW and 2011-2014 for the KR.

Species	**Willmore Wilderness**	**Kananaskis Region**
	66 cameras	157 cameras
Wolf	32 (11)	42 (24)
Cougar	68 (8)	66 (36)
Wolverine	993 (57)	16 (12)
Coyote	18 (6)	655 (99)
Lynx	197 (16)	29 (12)
Red fox	226 (21)	91 (36)
Marten	9939 (61)	241 (50)
Stoat	410 (16)	10 (4)
Fisher	199 (14)	0
Bobcat	0	49(17)

Table A2: Number of temporally independent carnivore species' detections (number of camera sites with detections) between low disturbance (n = 32) versus high disturbance (n = 34) camera sites within the Willmore Wilderness. Species for which we captured sufficient detections ($n \geq 10$) to apply the MWW-test differences and for which we included kernel density estimation of diel activity patterns are shown in bold.

Species	Low Disturbance	High Disturbance
Wolf*	9 (4)	23 (7)
Cougar	2 (2)	66 (6)
Wolverine	**395 (30)**	**598 (27)**
Coyote	2 (2)	16 (4)
Lynx	**25 (5)**	**172 (11)**
Red fox	**191 (7)**	**35 (14)**
Marten	**6857 (33)**	**3082 (28)**
Stoat	4 (1)	406 (15)
Fisher	**11 (4)**	**188 (10)**

*Kernel density estimate of activity pattern included in analysis despite low sample sizes (n<10).

Table A3: Number of temporally independent carnivore species' detections (number of camera sites with detections) between low disturbance (n = 37) versus high disturbance (n = 120) camera sites within the Kananaskis Region. Species for which we captured sufficient detections ($n \geq 10$) to apply the MWW-test differences and for which we included kernel density estimation of diel activity patterns are shown in bold.

Species	Low Disturbance	High Disturbance
Wolf	36 (19)	7 (5)
Cougar	**37 (24)**	**29 (12)**
Wolverine	15 (11)	1 (1)
Coyote	**419 (68)**	**236 (31)**
Lynx	23 (9)	6 (3)
Red fox	**48 (23)**	**43 (13)**
Marten	**175 (43)**	**66 (7)**
Bobcat	**38 (12)**	**11 (5)**
Stoat	10 (4)	0

Table A4. Site-level detections and activity overlap for wolverine and marten. Activity overlap modelled against fisher occurrences, proportion of anthropogenic features (seismic lines), and natural landscape features (forest and natural open land cover) within a 5000 m-radius at each site.

Site	Overlap	Marten	Wolverine	Fisher	Seismic	Forest	Open
W02	0.62	149	15	0	0.00	0.70	0.17
W08	0.59	181	24	0	0.03	0.56	0.14
W16	0.65	379	19	0	0.00	0.76	0.10
W17	0.75	223	28	0	0.00	0.69	0.14
W18	0.58	173	24	0	0.00	0.71	0.11
W19	0.71	290	31	0	0.00	0.67	0.06
W27	0.54	245	15	0	0.00	0.72	0.04
W28	0.70	34	29	0	0.00	0.67	0.07
W34	0.88	58	60	0	0.05	0.38	0.16
W35	0.77	110	17	1	0.00	0.57	0.12
W36	0.43	55	29	1	0.21	0.60	0.15
W39	0.81	174	45	1	0.44	0.77	0.18
W41	0.86	76	28	1	0.04	0.45	0.42
W42	0.79	217	17	1	0.13	0.66	0.26
W45	0.74	198	21	0	0.00	0.59	0.23
W46	0.68	100	21	0	0.03	0.64	0.15
W52	0.84	62	20	1	0.22	0.34	0.26
W55	0.89	70	60	1	0.22	0.54	0.09
W56	0.83	56	55	1	0.08	0.58	0.13
W57	0.76	96	19	0	0.08	0.33	0.22
W60	0.72	171	18	1	0.00	0.67	0.04
W63	0.84	243	44	1	0.00	0.20	0.70
W65	0.85	117	22	0	0.00	0.26	0.63