

[10.1071/WR23035](https://doi.org/10.1071/WR23035)

Wildlife Research

Supplementary Material

Influence of wildfire and feral horse use on mule deer summer range occupancy

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Supplementary Information

Covariates selection process in development of models to assess mule deer summer habitat occupancy.

Species competition candidate models and $\sum w_i$

Model	K	ΔAIC_c	$AIC_c w_i$
p (Closed Rd + Game Trail) Ψ (Elk + Feral Horse)	6	0.00	0.46
p (Closed Rd + Game Trail) Ψ (Feral Horse)	5	1.01	0.28
p (Closed Rd + Game Trail) Ψ (Cattle + Elk + Feral Horse)	7	2.09	0.16
p (Closed Rd + Game Trail) Ψ (Cattle + Feral Horse)	6	3.10	0.10
p (Closed Rd + Game Trail) Ψ (Elk)	5	9.14	0.00
p (Closed Rd + Game Trail) Ψ (.)	4	10.07	0.00
p (Closed Rd + Game Trail) Ψ (Cattle + Elk)	6	11.24	0.00
p (Closed Rd + Game Trail) Ψ (Cattle)	5	12.15	0.00

	$\sum w_i$
Feral Horse	1.00
Elk	0.62
Cattle	0.26

Vegetation candidate models and $\sum w_i$

Model	K	ΔAIC_c	$AIC_c w_i$
p (Closed Rd + Game Trail) Ψ (Edge Distance + Wildfire)	6	0.00	0.49
p (Closed Rd + Game Trail) Ψ (Edge Distance + Wildfire + Canopy Cover)	7	1.52	0.23
p (Closed Rd + Game Trail) Ψ (Canopy Cover + Wildfire)	6	1.97	0.18
p (Closed Rd + Game Trail) Ψ (Wildfire)	5	3.08	0.10
p (Closed Rd + Game Trail) Ψ (Canopy Cover + Edge Distance)	6	16.20	0.00
p (Closed Rd + Game Trail) Ψ (Edge Distance)	5	16.60	0.00
p (Closed Rd + Game Trail) Ψ (Canopy Cover)	5	17.88	0.00
p (Closed Rd + Game Trail) Ψ (.)	4	25.05	0.00

	$\sum w_i$
Wildfire	1.00
Edge Distance	0.71
Canopy Cover	0.41

Abiotic candidate models and $\sum w_i$

Model	K	ΔAIC_c	$AIC_c w_i$
p (Closed Rd + Game Trail) Ψ (Sine Aspect)	5	0.00	0.27
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Stream Distance)	6	1.87	0.10
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation)	6	1.93	0.10
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Cosine Aspect)	6	2.00	0.10
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Slope)	6	2.01	0.10
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation+ Stream Distance)	7	3.83	0.04
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Steam Distance + Cosine Aspect)	7	3.93	0.04
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation + Cosine Aspect)	7	3.94	0.04
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Stream Distance + Slope)	7	3.95	0.04
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation + Slope)	7	3.96	0.04
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Cosine Aspect + Slope)	7	4.04	0.04
p (Closed Rd + Game Trail) Ψ (.)	4	5.80	0.01
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation + Stream Distance + Cosine Aspect)	8	5.90	0.01
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation + Stream Distance + Slope)	8	5.93	0.01
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation + Cosine Aspect + Slope)	8	6.01	0.01
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Stream Distance + Slope + Cosine Aspect)	8	6.04	0.01
p (Closed Rd + Game Trail) Ψ (Slope)	5	7.52	0.01
p (Closed Rd + Game Trail) Ψ (Stream Distance)	5	7.56	0.01
p (Closed Rd + Game Trail) Ψ (Elevation)	5	7.59	0.01
p (Closed Rd + Game Trail) Ψ (Cosine Aspect)	5	7.89	0.01
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Elevation + Slope + Stream Distance + Cosine Aspect)	9	8.03	0.00
p (Closed Rd + Game Trail) Ψ (Slope + Elevation)	6	9.34	0.00
p (Closed Rd + Game Trail) Ψ (Stream Distance + Elevation)	6	9.38	0.00

p (Closed Rd + Game Trail) Ψ (Stream Distance + Slope)	6	9.42	0.00
Model	K	ΔAIC_c	$AIC_c w_i$
p (Closed Rd + Game Trail) Ψ (Slope + Cosine Aspect)	6	9.64	0.00
p (Closed Rd + Game Trail) Ψ (Stream Distance + Cosine Aspect)	6	9.67	0.00
p (Closed Rd + Game Trail) Ψ (Cosine Aspect + Elevation)	6	9.71	0.00
p (Closed Rd + Game Trail) Ψ (Stream Distance + Elevation + Slope)	7	11.26	0.00
p (Closed Rd + Game Trail) Ψ (Slope + Elevation + Cosine Aspect)	7	11.48	0.00
p (Closed Rd + Game Trail) Ψ (Stream Distance + Elevation + Cosine Aspect)	7	11.51	0.00
p (Closed Rd + Game Trail) Ψ (Stream Distance + Slope + Cosine Aspect)	7	11.54	0.00
p (Closed Rd + Game Trail) Ψ (Stream Distance + Elevation + Slope + Cosine Aspect)	8	13.41	0.00

	$\sum w_i$
Sine Aspect	0.94
Stream Distance	0.58
Elevation	0.28
Slope	0.27
Cosine Aspect	0.27

Final candidate models

Model	K	ΔAIC_c	$AIC_c w_i$
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Feral Horse + Edge Distance + Wildfire)	8	0.00	0.75
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Feral Horse + Wildfire)	7	3.33	0.14
p (Closed Rd + Game Trail) Ψ (Feral Horse + Edge Distance + Wildfire)	7	4.19	0.09
p (Closed Rd + Game Trail) Ψ (Feral Horse + Wildfire)	6	8.94	0.01
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Edge Distance + Wildfire)	7	11.27	0.00
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Wildfire)	6	13.23	0.00

p (Closed Rd + Game Trail) Ψ (Edge Distance + Wildfire)	6	15.50	0.00
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Feral Horse + Edge Distance)	7	17.34	0.00
Model	K	ΔAIC_c	AIC_{cwi}
p (Closed Rd + Game Trail) Ψ (Wildfire)	5	18.58	0.00
p (Closed Rd + Game Trail) Ψ (Feral Horse + Edge Distance)	6	20.72	0.00
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Feral Horse)	6	26.11	0.00
p (Closed Rd + Game Trail) Ψ (Sine Aspect + Edge Distance)	6	28.04	0.00
p (Closed Rd + Game Trail) Ψ (Feral Horse)	5	31.49	0.00
p (Closed Rd + Game Trail) Ψ (Edge Distance)	5	32.10	0.00
p (Closed Rd + Game Trail) Ψ (Sine Aspect)	5	34.75	0.00
p (Closed Rd + Game Trail) Ψ (.)	4	40.55	0.00

	β	Lower 95% CI	Upper 95% CI
Sine Aspect	0.14	0.03	0.25
Feral Horse	-0.24	-0.40	-0.09
Edge Distance	-0.14	-0.25	-0.02
Wildfire	0.56	0.32	0.80