

Appendix 1. Definitions of covariates used in our models of grassland abundance in the Dry Mixed-grass Subregion of southern Alberta, 2013–2018.

Category	Covariate Name	Covariate Description
Management	Range Health min-max: 35 – 100%	The ability of a site to preform ecological functions (Adams et al. 2016). Measured in percent.
	Distance to Water min-max: 0 – 2.7km	Distance to the nearest water including all lentic and lotic temporary, seasonal, ephemeral, and permanent systems. This covariate includes natural and anthropogenic water sources such as dugouts (Alberta Environment and Parks 2011). Measured in kilometers.
Structure	Bare Soil min-max: 0 – 93%	Percent of exposed bare soil naturally occurring as well as exposed soil affecting the stability of the site due to things such as grazing, trails, etc.
	Litter min-max: 5.6 – 2353.7 kg/ha	Standing or fallen dead plant material. Measured in kilograms per hectare.
	Vegetation Height (Robel pole) min-max: 0 – 27cm	Visual Obstruction Method used to estimate vegetation structure. Recorded the lowest interval in centimeters that was completely obscured by vegetation.
	Shrub Cover min-max: 0 – 33.5%	Percent shrub cover in the plant community
	Forb Cover min-max: 0 – 29%	Percent forb cover in the plant community
Anthropogenic	Field Size min-max: 0.2 – 54km <sup>2</sup>	Measure of pasture sizes in square kilometers.
	Distance to Crop min-max: 0.11 – 14.6km	Distance in kilometers from the point count to the nearest crop field (Alberta Environment and Parks 2011)
	Distance to Arterial Roads min-max: 0.12 – 22.6km	Distance in kilometers from the point count to nearest arterial road which is a major thoroughfare with medium to large traffic capacity and in our study area, was 80% paved, 20% gravel. (Government of Canada 2005).

Distance to Collector  
Roads  
min-max: 0 – 6.7km

Distance in kilometers from the point count to nearest collector road which is a minor thoroughfare mainly used to access properties and to feed traffic. Collector roads in our study area are 83% gravel roads. In some locations included larger trails and short stretches of paved roads. (Government of Canada 2005).

Distance to Fences  
min-max: 0.1 – 2.4km

Distance in kilometers from the point count to nearest fence.

Distance to Active Wells  
min-max: 0 – 11.7km

Distance in kilometers from the point-count to nearest active well at the time the point-count was completed (Alberta Environment and Parks 2019).

Distance to Inactive  
Wells  
min-max: 0 – 4.0km

Distance in kilometers from the point count to nearest inactive well at the time the point-count was completed. Includes abandoned and reclaimed sites. (Alberta Environment and Parks 2019).