Article

Environmental Differences between Migratory and Resident Ungulates-Predicting Movement Strategies in Rocky Mountain Mule Deer (*Odocoileus hemionus*) through Remotely Sensed Plant Phenology, Snow, and Land Cover.

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Supplementary Materials:

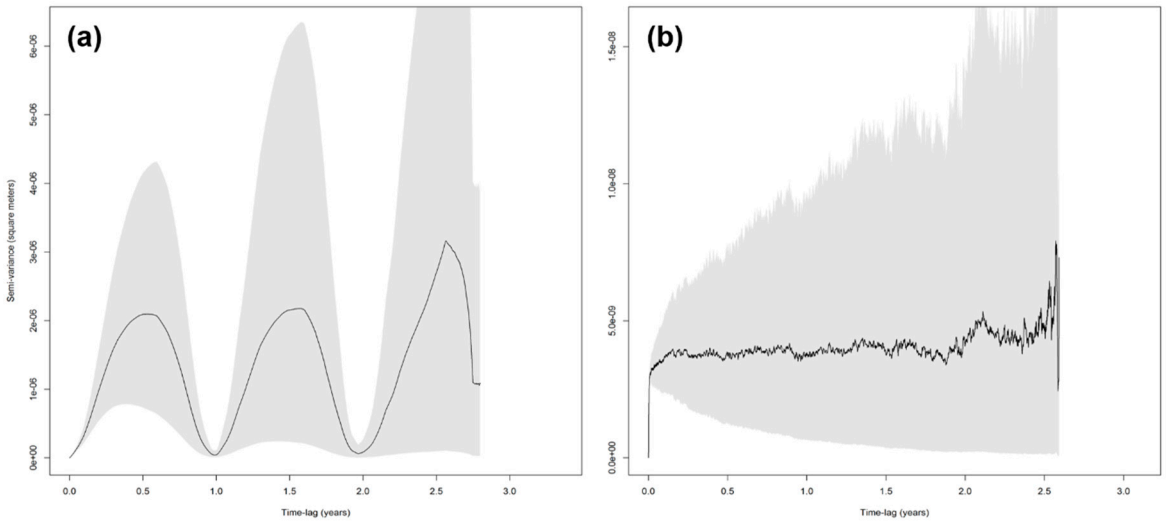

Figure 1. Semivariograms of example migratory and resident mule deer. These semivariograms were created to verify our visual inspection of net squared displacement plots. Panel **a** demonstrates a migratory mule deer, as the semivariance fluctuates throughout. Panel **b** is of a resident mule deer because the semivariance levels off and remains relatively constant.

Table 1. Correlation matrix. To elucidate collinearity between the variables used in the random forest model, we analyzed the correlation between the top ten most important variables selected by the model. Values range between -1 and 1, demonstrating either a perfect negative or positive linear trend between the variables. Here, the highest correlation is between NDSI December and NDSI February.

	Distance Development	NDSI December	Distance Water	Distance Agriculture	NDSI February	NDVI SD July	Distance Wetland	NDVI January	NDSI September	NDVI November
Distance Development	1.00	0.23	0.50	0.47	0.49	0.02	0.08	-0.11	0.17	-0.07
NDSI December	0.23	1.00	0.17	0.44	0.78	0.16	-0.03	-0.09	0.53	0.00
Distance Water	0.50	0.17	1.00	0.41	0.40	-0.01	0.09	-0.07	-0.10	0.01
Distance Agriculture	0.47	0.44	0.41	1.00	0.58	0.13	0.35	0.01	0.30	-0.25
NDSI February	0.49	0.78	0.40	0.58	1.00	0.07	0.02	-0.20	0.52	-0.06
NDVI SD July	0.02	0.16	-0.01	0.13	0.07	1.00	0.12	0.01	0.35	0.01
Distance Wetland	0.08	-0.03	0.09	0.35	0.02	0.12	1.00	0.30	0.00	-0.02
NDVI January	-0.11	-0.09	-0.07	0.01	-0.20	0.01	0.30	1.00	-0.01	0.73
NDSI September	0.17	0.53	-0.10	0.30	0.52	0.35	0.00	-0.01	1.00	0.00
NDVI November	-0.07	0.00	0.01	-0.25	-0.06	0.01	-0.02	0.73	0.00	1.00

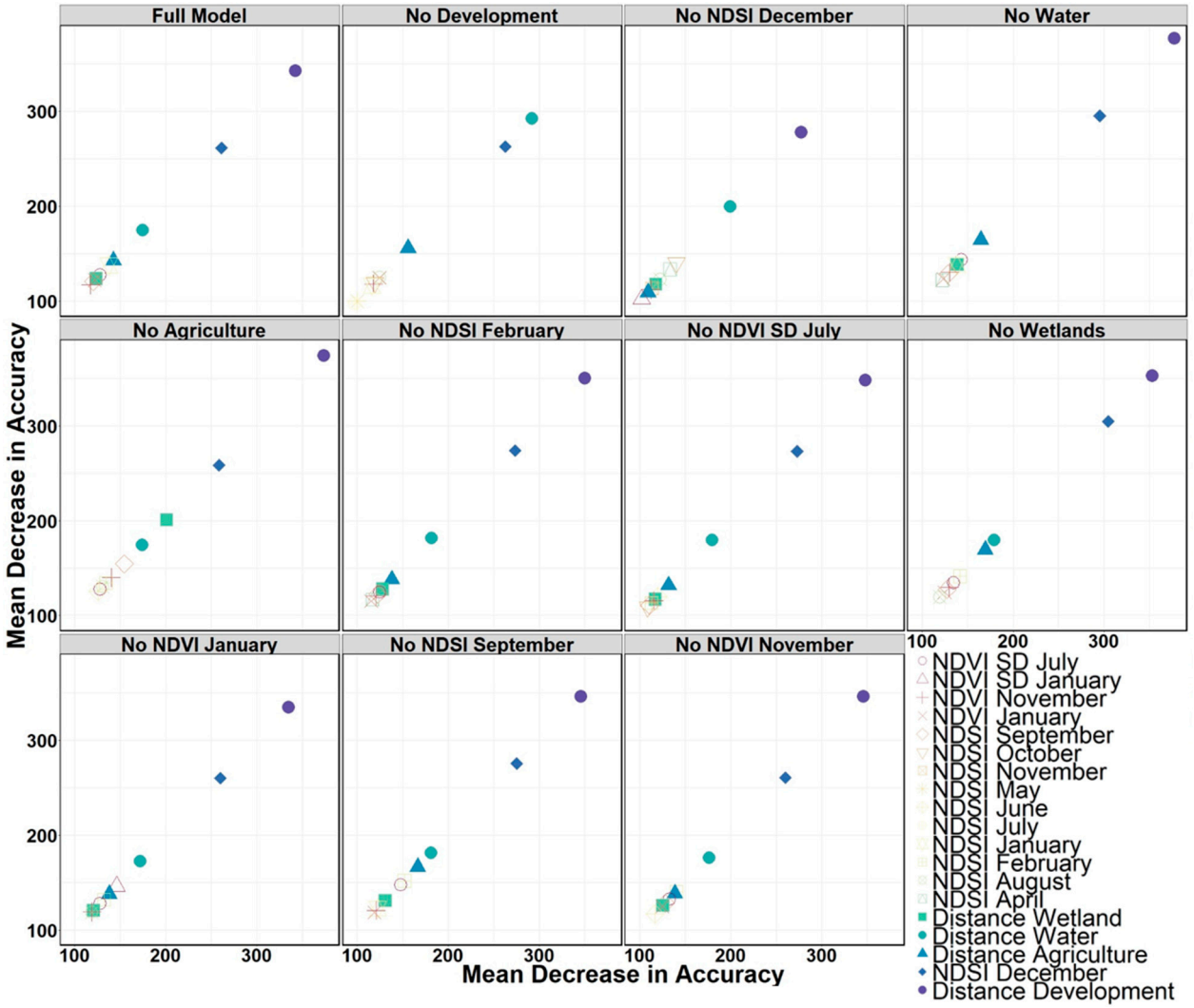

Figure 2. Variable importance of the full random forest and the take-one-out random forests, each missing one of the top ten most important predictors. The x-axis and y-axis are the mean decrease in accuracy, so a large mean decrease in accuracy suggests higher importance to the random forest. Across random forests, distance to development was always the most important variable and snow cover in December the second most important variable when they were available (i.e. not removed from the take-one-out random forest).