



Foraging Activity and Movements of GPS-Collared Cattle, Elk, Bison and Deer in the Aspen Parkland of Alberta, Canada

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Rangeland impacts of multi-grazing systems reflect activity and movement patterns of the species assemblages. We compared the activity and movement of foraging of deer, elk, cattle and bison in paddocks (3.27 - 6.69 ha) in an aspen parkland ecosystem at the Precision Ranching Facility at the University of Alberta's Kinsella Ranch southeast of Edmonton, Alberta. In 2005, GPS-collar locations of all 4 species were sampled at 15-minute intervals during two seasons to contrast time budgets and foraging movement paths across the paddocks. Hourly activity patterns of species were measured and compared using two methods: the relative head movement intensity based on mercury tip switches in the collars, and hourly movement rates. We also related directionality, movement tortuosity, and first passage times along movement paths to vegetation characteristics within the aspen parkland. It was hypothesized that browsing species had more tortuous paths related to edges of shrub communities, while grazers had higher first passage times related to the dominant scale of patchiness in graminoid abundance. The implications for pasture utilization in multi-grazing systems were also discussed.

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