



Effect of Lunar Phase on Summer Activity Budgets of Rocky Mountain Elk (*Cervus elaphus nelsonii*)

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Rocky Mountain elk (*Cervus elaphus nelsonii*) exist in a complex biological and social environment that is marked by necessary diurnal activities such as foraging, ruminating, and resting. It has long been understood that elk demonstrate circadian rhythms. One of the most predictable variables that could affect an elk's environment is night-time illumination by the moon. Moonlight is moderated by clouds and atmospheric conditions; however, it regularly alters night-time visibility. We hypothesize that elk exhibit different innate diurnal movements and spatio-behavioral activities in new and full moon periods. We studied 24-hour foraging and travel activity budgets during a full moon and new moon period in the summer of 2008. Our objective was to quantify: 1) Daily distance traveled by hour throughout the day and night, 2) Day travel, 3) Night travel, 4) Time spent moving at specific velocities. The study pastures are located 35 km west of La Grande, Oregon (45.2422°N, 118.5124°W) and consisted of two pastures: Cuhna West (16.6 ha) and Cuhna East (17.1 ha). During a new moon elk traveled an average of 5073 m/day with 4210 m occurring during daylight and 863 m occurring at night (end of civil twilight to the beginning of civil twilight the next morning). During a full moon, elk traveled an average of 4807 m/day with 3938 m occurring during daylight and 869 m occurring at night. Mean night travel velocities averaged by hour were similar between full and new moon periods (new moon = 118.2 m/hr, full moon = 116.3 m/hr, $P=0.8573$).

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