Factors Influencing Pronghorn Migration Behavior and Plasticity

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Pronghorn (*Antilocapra americana*) exhibit substantial variation and plasticity in migration behaviors, which can enhance population resiliency to unpredictable environmental conditions. Using GPS collar data from 516 adult females across eight herds in Montana (2019–2023), we characterized spring migration behaviors and evaluated environmental, demographic, and anthropogenic drivers of migration behavior, winter range plasticity, and migration behavior plasticity. Most animal-years were non-migratory, with pronghorn remaining as residents (77%) or showing gradual range shifts (11%), while others migrated to single (18%) or multiple (4%) summer ranges. We documented plasticity in both migration behavior and winter range fidelity: 5.5% of non-migrant animal-years switched to migrant behavior, 27.7% of migrant animal-years switched to non-migrant behavior, and 15.4% of animal-years shifting to new winter range than used prior. The probability of expressing a migrant behavior increased with higher winter–spring precipitation and road density and decreased with stronger green-wave dynamics and greater agricultural subsidy. Agricultural subsidy also increased the probability of switching from migrant to non-migrant behavior, suggesting that consistent forage associated with agriculture can reduce the need for spring migration. Together, these results demonstrate that pronghorn occupying montane-valley and prairie environments use a range of migratory strategies and retain notable behavioral flexibility, supporting adaptive capacity in variable and human-altered landscapes. Conservation strategies that maintain landscape connectivity and accommodate diverse, plastic migration behaviors will be critical for sustaining pronghorn populations under ongoing environmental and anthropogenic change.