** Habitat Patches, Leks, and Nesting Areas Shape Dispersal Movements of Translocated Sharp-Tailed Grouse

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Extensive post-release dispersal has challenged prairie grouse reintroductions, because long movements expose grouse to high mortality. GPS transmitters now allow us to identify ecological drivers of these movements and refine release strategies. We monitored 149 female sharp-tailed grouse released in the Bitterroot and Blackfoot Valleys during 2023–2025 within a 5-year reintroduction effort to evaluate how translocation characteristics and habitat features influenced post-release movements. We distinguished dispersing from settled movements using behavioral change point analysis, then classified dispersal into exploratory and encamped states using hidden Markov models. Dispersal differed between sites: grouse released in the Bitterroot traveled an average of 147 km over 26 days prior to settling, while those in the Blackfoot traveled 47 km over 10 days. As increasing lek attendance provides stronger social attraction, we expected movements in the Blackfoot to decrease over time but observed little interannual change. Translocation attributes – including age, release group size, timing, and source population – did not influence distance moved. During dispersal, grouse moved through valleys using patches of grassland and shrubland as stepping-stones, and 30% of birds in the Bitterroot and 42% in the Blackfoot ultimately settled and established home ranges. Settlement locations were typically in large, continuous grassland or shrubland patches and near leks or nesting areas, and females nested an average of 8 days after settling. Availability and proximity to grassland and shrubland nesting habitat, rather than individual or translocation characteristics, may drive movement distances. Managers should prioritize releasing grouse near leks and established nesting areas.