Greater Sage Grouse Ecology in the Upper Big Hole Valley

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We used greater sage grouse (GSG) movement data generated from GPS-marked hens 2018 – 2022 to increase our understanding of GSG ecology within the Upper Big Hole Valley (UBHV), define seasonal habitat use and characterize the UBHV population's genetic contribution to the wider GSG population in SW Montana. We used movement data to define seasons that represent biologically meaningful separations. We calculated the mean net displacement of all individuals from their point of capture over the entire calendar year to determine consolidated changepoints in net displacement, i.e. breaks between periods of relative movement consistency. Changepoints suggested the following seasons specific to the UBHV GSG population: (1) 2/13–4/13 = spring staging & migration; (2) 4/14–7/05 = breeding/nesting/early brood rearing; (3) 7/05–10/29 = late brood rearing & fall staging; (4) 10/29–11/14 = fall migration; (5) 11/14–02/12 = winter. We used these seasonal dates for subsequent analyses of habitat and landownership use. Lastly, we examined the genetics of the GSG population in the UBHV relative to within the study area and across SW Montana. The leks in the UBHV are part of the Southwestern-North subpopulation identified by Cross et al. (2017) and the greater Central Rockies subpopulation identified by Oyler-McCance et al. (2022). Per-locus and overall genetic diversity within the UBHV population indicates genetic diversity has been maintained despite the UBHV's peripheral location relative to the overall species range and within the UBHV we found finescale genetic structure reflective of lek philopatry.