

**** Integrating UAS Thermal Imagery into Sharp-Tailed Grouse Nest and Brood Monitoring (Poster)**

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Prairie grouse management requires accurate vital rates, but traditional methods for assessing nest and brood success, relying upon ground-based telemetry of radio-marked hens, are cost and time intensive. We explored unmanned aerial systems (UAS, hereafter “drones”) paired with thermal imagery as an alternative or complementary tool to conventional techniques. Our objectives were to evaluate performance of drones and thermal imagery in detecting sharp-tailed grouse nests, to identify mechanisms that modulate detection, and to assess the utility of drones for monitoring broods. We captured 60 female sharp-tailed grouse at 9 leks in Phillips County, Montana, fitted them with VHF and GPS collars, and monitored nesting attempts. During June–August 2025, we conducted drone flights over 17 active nests and 7 broods, collecting thermal imagery and video footage. To identify factors influencing nest detection, we recorded nest site vegetation characteristics, height of flight, time of flight, and temperature. Volunteers reviewed thermal media, and we recorded their responses to measure nest detection and brood counts. Reviewers correctly identified the presence of a nesting grouse in 58% of trials and incorrectly concluded that a grouse was present in 20% of trials. In 60% of trials, reviewers indicated a grouse was absent, suggesting reviewers were more likely to conclude absence than presence. We will present results regarding nest detection performance, mechanisms of detection, and the comparison of telemetry-based and drone-based brood counts to provide guidance concerning drone integration into prairie grouse monitoring.