

****Evaluating the Motus Wildlife Tracking System for Monitoring Ground-Dwelling Birds**

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The Motus Wildlife Tracking System is a collaborative research network that uses Automated radio telemetry arrays to record transmitter detections remotely and distribute the data to researchers through the Motus database system. While Motus technologies have successfully been used to track the phenology and large-scale habitat use of migrating birds via Motus towers placed strategically worldwide, they have not yet been assessed for use in evaluating fine-scale space use, particularly of ground-dwelling birds. Our goal is to estimate the accuracy, precision, detection rates, and effective detection distances of Motus compatible transmitters relative to standard VHF transmitters. We completed 222 triangulations of transmitters using handheld Motus compatible and VHF radio telemetry technologies during the 2022 and 2023 field seasons. We fit a preliminary set of generalized linear (GLM) models to 180 successful triangulations. The data supported strong effects of transmitter type on all measures of transmitter performance metrics. Estimated location precision was greater for the Motus compatible technology at short distances but VHF technology was more precise at farther observer distances. Estimated locations of the Motus compatible technology were more accurate than VHF technology across all observed distances. However, the maximum observable distance of VHF transmitters was nearly twice that of the Motus compatible transmitters. Our results have important implications for monitoring of ground-dwelling birds, including the space use and habitat selection of reintroduced sharp-tailed grouse in western Montana.