

Monitoring Movements of Montana Bat Species Using the Motus Wildlife Tracking System

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Since 2018, Tetra Tech and MPG Ranch have collaborated to investigate local and migratory movements of bats using the Motus Wildlife Tracking System (Motus) across the Bitterroot Valley and the continental United States. Motus relies on coded VHF radio transmitters and a world-wide array of automated receivers to detect individual movements. Our project, based in the intermountain west, produces key insights that fill research gaps about bats in Montana and the surrounding region. Home ranges are one of many research gaps surrounding local bat populations, and the Motus network's passive monitoring system offers a unique tool to study this important element of bat ecology. The little brown bat (*Myotis lucifugus*) has a relatively small home range and therefore represents an excellent test species. This study provides the first analysis of little brown bat home ranges in Montana, despite the species being widely distributed and relatively common across the state. This research also evaluated how many tagged little brown bats are needed to capture the variation in individual home ranges. Evaluating the best tools to study and monitor this species is particularly relevant given the species is under discretionary review by the U.S. Fish and Wildlife Service for protection under the Endangered Species Act.