

# Assessment of Species Diversity and Habitat for Bats in the Limestone Hills of Central Montana

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Bat species use a diversity features as day roosts including man-made structures, caves, trees, and rock outcrops which provide crevices and cavities to shelter in during the day. While roosts such as caves and mines are relatively well studied, roosts in rocks are poorly described. In July and August 2021 we conducted visual encounter surveys of rock outcrops within the Limestone Hills Training Area east of Townsend, Montana to detect roosting bats. Surveyors traversed small cliffs and talus examining cracks and crevices for roosting animals and guano. Across 10 surveys we detected three species of bat: Western Small-footed Myotis (*Myotis ciliolabrum*), Long-eared Myotis (*M. volans*), and Little Brown Myotis (*M. lucifigus*). Roosts were typically in horizontal or vertical crevices between 1 and 3 cm in width with good solar exposure. We found roosts occupied by single individuals as well as females and pups. We also use mist net deployed over water sources and acoustic detector/ recorders placed across the landscape to assess species diversity, allowing the opportunity to compare effectiveness of these methods. The same three species were detected with both roost surveys and mist nets. Using acoustic methods we recorded six species across five sites. While acoustic methods were more effective for assessing diversity than the other methods, detection of bats at rock outcrops and water sources allow assessment of the importance of the features for roosting and drinking respectively, important information for managing these species and the landscapes they inhabit.