

FIDELITY TO A BUILDING HIBERNACULA BY BIG BROWN BATS (*EPTESICUS FUSCUS*)

R. Mark Brigham

Department of Biology

University of Regina

Regina, SK S4S 0A2

mark.brigham@uregina.ca

Gary Falkenstein

For most bat species in Canada, hibernacula are found underground in rock crevices, caves or mines.¹ Big brown bats (*Eptesicus fuscus*) are one of the few species which occur in Canada, including in Saskatchewan, that will successfully hibernate in anthropogenic structures (buildings).^{2,3} In the United States, this species is among the most flexible in terms of types of hibernation sites used⁴ and in a large survey study, from 1 to 87 individuals were found hibernating at the same time in a single building.⁵ However there are few data on whether individual animals re-use the same sites on an annual basis, like they do for summer maternity colony sites in buildings.¹

Over the past 30+ years, the senior author has routinely rescued individuals (4-25 annually) of this species during the winter from a variety of anthropogenic structures across southern Saskatchewan. In the vast majority of instances, the animals became evident to humans due to their activity within buildings. They were typically emaciated and dehydrated, and weigh 16 g or less, suggesting that the hibernaculum being used were not ideal.² Furthermore, the vast majority of individuals rescued were juveniles attempting to hibernate over their first winter.

It was thus of great interest when the senior author was alerted to individuals of this species found

within a hibernation site in a dwelling on 12 March 2021. Nine individuals (eight females and one male), all ~20 g, were uncovered in a basement wall during renovation in a house located in the Lakewood subdivision of northwestern Regina, SK. The animals were collected and kept in hibernation by RMB until the first week of May. All nine bats were then released on the south shore of the lake at the Condie Wildlife Refuge. The Refuge is approximately 7 km from the building where they had been hibernating. Prior to being released, all individuals were injected with passive integrated transponders (PIT) tags following the same protocol used for this species from studies by our group in Cypress Hills, SK.^{6,7} These tags, which are about the size of a grain of rice, are injected under the skin between the scapulae and allow for individual identification using a reader that can scan the tags.

On 20 November 2021, two individuals were discovered hibernating in the chimney of the same dwelling. To the best of our knowledge, no bats spent the summer in the building in which hibernation occurred. They were discovered in the chimney after noise was generated by further basement renovation. Both were healthy and had been PIT tagged. One female (21 g) and one male (20 g) at the time they were removed from the chimney were kept in hibernation over the winter and released again in spring 2022. These data provide some evidence that even when disturbed and relocated during hibernation, individuals will return to the same site to hibernate during the subsequent winter. There is considerable evidence that

females of this species show a high degree of fidelity to anthropogenic summer maternity colony sites and to natural hibernation sites⁵, but further study is needed to determine if our observations are reflective of the same type of winter fidelity to anthropogenic sites.

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