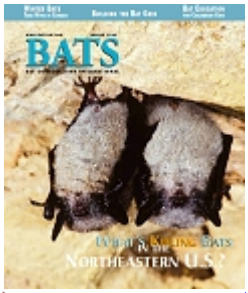

View PDF version
[4.35 MB]

VOLUME 26, NO. 1 Spring 2008

Bats on the Wing in the Canadian Winter
Cori Lausen

With a pickax in hand and a toque (a stocking cap) on my head, I strung my mist nets across Little Sandhill Creek in Albertaâ€™s Dinosaur Provincial Park. It was early February on the Canadian prairie and the creek was frozen over. But the ice was flimsy, as I had discovered â€“ to my chilled dismay â€“ the previous night, when I fell through the ice into the frigid waters while untangling a bat from a net. Icy winds and frozen streams are not part of traditional bat research, but I was intrigued by the mystery of where prairie bats hibernated in winter. I wound up discovering much more than that.

I started radiotracking bats in autumn, hoping they would lead me to likely hibernation sites. But tracking bats that were on the move to mating grounds proved more difficult than I had expected. So I switched tactics and instead began acoustic monitoring in the Red Deer River Valley when the Chinook winds brought bouts of unusually warm winter temperatures to the prairies of southern Alberta. To my delight, the bat detectors recorded bats flying about during these warm stretches.

I began leaving bat detectors (powered by solar panels) along the river during winter months, figuring that if a warm Chinook wind moved through, I might learn where bats were hibernating along the river valleys. Sure enough, I found several hibernation sites. More importantly, I discovered that, based on recorded echolocation calls, bats were far more active during wintertime on the prairie than most biologists had imagined. In fact, bats were active in river valleys throughout the winter, not just when the warm Chinooks were blowing.

The longest time during which I detected no active bats was a two-week cold snap that dropped overnight temperatures to 49 degrees below zero F (-45 degrees C). Activity did not seem at all related to daytime temperatures; as long as ambient nighttime temperatures remained at 17.7 degrees F (-8 degrees C) or warmer, bats were flying.

I discovered this wholly unexpected level of bat activity when I downloaded acoustic data from my Anabat-detector stations in January. I live in a small town in British Columbia, a 10-hour drive from my Alberta study area. Iâ€™d had my heart set on a winter filled with skiing, but thoughts of ski slopes were abandoned as soon as I saw what those prairie bats had been doing throughout December. I packed a suitcase and moved to Alberta for the rest of the winter. And that is how I came to be setting mist nets along the precariously frozen Little Sandhill Creek.

Winter netting requires a special kind of patience. There are no buzzing insects or running water to keep you company, just 12 hours of sitting alone in the cold, silent darkness. But it was certainly worth it.

After six hours of waiting during my first night of netting, I began taking down the nets and feeling very disheartened and foolish for thinking that I could catch bats in the middle of winter. Then to my great surprise and excitement, I discovered a squirming big brown bat (Eptesicus fuscus) in my net. This male bat was soon released with a tiny radio transmitter

stuck to his back. A blizzard swept the prairies the next day, and temperatures plummeted to 4 degrees below zero F (-20 degrees C). But it would have taken much more than this to keep me from searching for my radiotagged bat. I found him alongside a river valley, on an embankment so high and steep that I had to dig out my ropes and rappelling gear.

Determined to locate the first natural bat hibernaculum known in the prairies, I rappelled over the edge and down the embankment with receiver and antenna in hand. The beeping signal led me right to his lair â€“ a deep, narrow crack in the rock where a pile of guano suggested either use by many bats or long-term use in the summer and fall.

I remained in the park for several winter months, capturing a total of nine big brown bats and radiotracking three of them. Interestingly, I tracked another male big brown bat to the same rock-crevice roost as the first, but the only female I captured was roosting in an erosion hole about three miles (five kilometers) from where I netted her. The hole was more than 10 feet (three meters) deep and probably let her roost below the frost line.

The obvious question now is why bats would be flying around in the dead of winter? Since there are no insects to eat, it seems crazy to waste precious stores of fat. Are they desperate for food? No. The body weights of captured individuals varied greatly, but a few, including the female big brown, were obviously still packing a great deal of fat.

After my first bat capture, I devised a little experiment to see if the bats were coming out to drink. After all, the prairies are very dry and, unlike many cave hibernacula with small pools or streams, hibernation sites in narrow rock crevices arenâ€™t likely to contain much in the way of water supplies. I offered a drink of water to all the bats I captured. Unfortunately, all but one of my captures came late at night, when the bats were heading back to the crevice roosts. These bats never drank water when offered; in fact, most urinated in the net or in my hand. They obviously had water to spare.

Luckily, I captured one bat as it was leaving the rock crevice at dusk. This bat drank water like there was no tomorrow. While it is always bad practice to base conclusions on a sample of one, this is the only bit of evidence I have to suggest bats flying over the prairies in winter may be out to quench their thirst.

There are of course other possibilities for winter bat flight, such as switching roosts in search of better temperature or humidity conditions. Perhaps the bats are continuing to mate. Further study obviously is needed to solve this mystery.

Since that winter, I have spoken with bat biologists in New Mexico and Arizona who have documented winter bat flight at high altitudes in cold, dry weather with no insect activity. That suggests dry climates may induce big brown bats to fly in winter.

CORI LAUSEN recently completed her Ph.D. at the University of Calgary in Alberta. This research was published with Robert Barclay in the Canadian Journal of Zoology.