

A 23-year-old little brown bat record from southwest Saskatchewan, Canada

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Abstract:

After accounting for body size, bats have the longest lifespan of all mammals. Little Brown Bats (*Myotis lucifugus*) are one of the most common and widely distributed mammals in Canada; however, little is known of their longevity. We captured bats in Cypress Hills Interprovincial Park, Saskatchewan in May 2015, as part of long-term bat research in the Park that began in 1991. On 31 May 2015, we captured 16 female Little Brown Bats in a maternity colony, including a bat that was originally captured and banded as an adult in 1993. This capture record indicates that the female bat was at least 23 y old and this record represents the oldest bat record in Saskatchewan. Little Brown Bats in eastern North America have declined dramatically due to white-nose syndrome, a fungal disease responsible for the quickest wildlife die-off in history. Pre-infection natural history data for Little Brown Bats are important as the disease spreads through central Canada.

Keywords: Chiroptera | Cypress Hills | Little Brown Bat | Longevity | Maternity colony | *Myotis lucifugus* | southwest Saskatchewan

Article:

Longevity of mammalian species is highly variable. For example, the Least Shrew (*Cryptotis parva*) rarely lives longer 2 y (Mock 1982), whereas Bowhead Whales (*Balaena mysticetus*) have been estimated to live >200 y (George and others 1999). Generally, larger animals have longer lifespans; however, after accounting for body size, bats (order Chiroptera) have the longest lifespan of all mammals (Bouliere 1958; Austad and Fischer 1991). The ability to fly may reduce the risk of predation, therefore reducing extrinsic mortality (Austad and Fischer 1991; Holmes and Austad 1994), and hibernation of some species may prolong longevity (Wilkinson and South 2002).

The longest-lived bat ever recorded was a male Brandt's Bat (*Myotis brandtii*) that was recaptured 41 y after original capture in the Biryusa Karst region of Siberia in Russia (Podlutsky and others 2005). The oldest Little Brown Bat on record in the United States was banded in New

York in 1961 and recaptured in 1995, making it at least 34 y old (Davis and Hitchcock 1995). In Canada, 3 Little Brown Bats aged 16, 29, and 30 were recaptured in an abandoned mine tunnel near Craigmont, Ontario (Keen and Hitchcock 1980), and 1 Little Brown Bat was re-sighted 35 y after its original capture in Cadomin Cave, Alberta (D Hobson, pers. comm.).

Bats have been studied since 1991 in the West Block of Cypress Hills Interprovincial Park, Saskatchewan (40°42'N 74°0'W). As part of our ongoing field work, we captured free-flying bats in mist nets between 18 May and 27 August, 2015. On 31 May 2015 we netted around a wooden gazebo with a tin roof used as a day roost. We captured 16 female Little Brown Bats, including an individual banded as an adult between 22 June and 23 July 1993. This bat was recaptured in good condition, making her at least 23 y of age. At the time of banding in 1993 and at the time of recapture, we recorded age (adult or young of the year) based on the degree of ossification of the 3rd metacarpal-phalangeal joint (Anthony 1988). We also recorded sex and reproductive status as pregnant or non-pregnant by gently palpating the abdomen (Racey 1988). All bats we caught on 31 May 2015 were adult females, and of the 16 bats captured, 15 were pregnant, which is indicative of a maternity colony.

This recaptured bat was in good condition with no apparent effects of the band evident on her wrist or forearm. The bat was banded with a plastic split-ring numeric band (National Band and Tag Company, New Port, Kentucky, USA). Although we could not find the original capture card, we could determine that she was captured in Cypress Hills based on the band number (#76). We have the original capture cards for chronological bands that come before and after #76, and all records are from Cypress Hills. Also, based on our capture records flanking this band number, this bat had to have been banded between 22 June and 23 July 1993. That the bat was recaptured in Cypress Hills, roughly 1 to 31 km from the site of the original capture, underscores site fidelity for maternity colonies of Little Brown Bats in Cypress Hills, despite their ability to make large seasonal movements (such as >600 km; Norquay and others 2013).

Little Brown Bats (*Myotis lucifugus*) are one of the smallest, most common, and widely distributed bat species in North America. Since the emergence of white-nose syndrome (WNS) in 2007, a fungal disease caused by *Pseudogymnoascus destructans*, several populations of hibernating bats, including Little Brown Bats, in eastern North America have been decimated (Blehert and others 2009; Frick and others 2010, 2015; Lorch and others 2011; Langwig and others 2015; Warnecke and others 2012; Verant and others 2014). WNS is responsible for the fastest wildlife die-off in history (Frick and others 2010), and is the main reason why Little Brown Bats are now listed as endangered in Canada (COSEWIC 2012). The disease has been spreading westward (Sleeman 2016), but so far there are no records for Saskatchewan.

The record of a 23-y-old bat appears to be the oldest Little Brown Bat recorded for Saskatchewan. Despite being federally endangered due to WNS, we document the presence of a maternity colony of Little Brown Bats, including a female bat banded as an adult in 1993, in Cypress Hills Interprovincial Park, Saskatchewan in summer of 2015. Pre-infection data on the natural history of Little Brown Bats in southwestern Saskatchewan is of increasing importance as WNS expands through North America. In general, only long-term studies facilitate the collection of life-history information, such as longevity, for these important and long-lived mammals.

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