3-15-2017

Hitching a ride: First record of a Least Chipmunk (*Tamias minimus*) in eastern Nebraska

Keith Geluso

University of Nebraska—Kearney, gelusok1@unk.edu

Michael L. Forsberg

Michael Forsberg Photography, forsberg.mike@gmail.com

Follow this and additional works at: <http://digitalcommons.unl.edu/tnas>

Part of the [Biodiversity Commons](#), [Biology Commons](#), and the [Population Biology Commons](#)

Geluso, Keith and Forsberg, Michael L., "Hitching a ride: First record of a Least Chipmunk (*Tamias minimus*) in eastern Nebraska" (2017). *Transactions of the Nebraska Academy of Sciences and Affiliated Societies*. 509.
<http://digitalcommons.unl.edu/tnas/509>

This Article is brought to you for free and open access by the Nebraska Academy of Sciences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Transactions of the Nebraska Academy of Sciences and Affiliated Societies by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Hitching a ride: First record of a Least Chipmunk (*Tamias minimus*) in eastern Nebraska

Keith Geluso¹ and Michael L. Forsberg²

¹ Department of Biology, University of Nebraska at Kearney, Kearney, Nebraska 68849, USA

² Michael Forsberg Photography, Lincoln, Nebraska 68502, USA

Corresponding author: Keith Geluso, Department of Biology, University of Nebraska at Kearney, Kearney, Nebraska 68849; tel (308) 440-3430; email gelusok1@unk.edu

Abstract: On 10 October 2016, a Least Chipmunk (*Tamias minimus*) was discovered in a residential area of Lincoln, Lancaster County, Nebraska. The closest populations of Least Chipmunks reside > 640 km to the west in northwestern Nebraska and southeastern Wyoming. The most parsimonious explanation for this unusual observation is that the chipmunk was transported to the city by humans. A likely scenario is that the chipmunk hitched a ride to Lincoln in a motor vehicle on 2 October 2016, when one of us drove 1500 km in a single day from Jackson, Teton County, Wyoming, after residing in that area for 10 days. To further support this hypothesis, the chipmunk ran multiple times to the wheel of a vehicle in the driveway when fleeing from a nearby birdfeeder in Lincoln. Seeking refuge in the wheel demonstrates that the individual was familiar with this unusual retreat and likely was a stowaway in the vehicle. We predict this dispersal event will not lead to an isolated, disjunct population in Lincoln.

Keywords: dispersal, human-mediated dispersal, introduction, Least Chipmunk, Nebraska, *Tamias minimus*, stowaway, transport, vehicle

doi: 10.13014/K2HT2M7B

Humans transfer organisms across the world deliberately or inadvertently, introducing species into areas where they do not occur naturally (Heinsohn 2003, Jeschke and Strayer 2005, Nathan et al. 2008, Krysko et al. 2016). Plants, especially their seeds, commonly are moved inadvertently (Hodkinson and Thompson 1997, Mack and Lonsdale 2001, Nathan et al. 2008), but vertebrates also are occasionally transported unintentionally by humans (Heinsohn 2003, Short and Petren 2011). Human-mediated dispersal generally enables species to move greater distances than by natural dispersal events (Short and Petren 2011). Some human introductions lead to new established populations, but others do not. Proportions of introduced animals that successfully become established vary by study and by organismal group, but generally establishment is > 10% (see Fig. 2 in Jeschke and Strayer 2005). For example, about 30% of nonindigenous amphibians and reptiles have become established in Florida after being introduced (Krysko et al. 2016), > 50 % of vertebrates have become established when transported between North American and Europe (Jeschke and Strayer 2005), and about 25% of introduced vertebrates worldwide have become established pest species (Wilson 2016).

On 10 October 2016, a Least Chipmunk (*Tamias minimus*) was observed in a residential area of Lincoln, Lancaster County, Nebraska (near 27th Street and High Street,

40.7808°N, 96.6825°W; WGS 84). We observed and photographed the individual for a single day (Figs. 1-3) and have not observed the chipmunk since. We originally suspected that the chipmunk might be an Eastern Chipmunk (*Tamias striatus*) because that species is known from deciduous forests along the Missouri River in eastern Nebraska (Jones 1964, Genoways et al. 2008), albeit the species has not been observed in the state for decades and might be extirpated (Benedict et al. 2000). However, body size, coloration, and facial stripe patterns were not consistent with external characteristics of Eastern Chipmunks. The chipmunk observed in Lincoln was small, had four white or nearly white stripes on its dorsum, dark dorsal stripes continuous to the tail, and distinct facial stripes (Fig. 1). Eastern Chipmunks have a larger body size, two white stripes and two gray stripes on the dorsum, dark dorsal stripes not continuous to tail, and indistinct facial stripes (Jones et al. 1983). The chipmunk in Lincoln is best described as a western species, but the closest western chipmunk species resides > 640 km to the west in northwestern Nebraska and southeastern Wyoming (Long 1965, Jones et al. 1983). Based on external characteristics described herein and the potential source area for this individual (see below), we propose the individual is best referred to as a Least Chipmunk. In addition to the characters described above, the individual had a white venter,

Fig. 1. A Least Chipmunk (*Tamias minimus*) observed on 10 October 2016 in a residential area of Lincoln, Lancaster County, in eastern Nebraska. (Copyright: Michael Forsberg)

a relatively long tail, and five dark dorsal stripes. These are all characteristics of Least Chipmunks that help distinguish this species from other chipmunks in Montana and Wyoming (Long 1965, Foresman 2001, Buskirk 2016).

We suspect this Least Chipmunk was transported to the city of Lincoln by humans because the distance between the closest native population to the city is beyond natural dispersal distances by a non-volant, terrestrial small-mammal over inhospitable habitats. The most parsimonious explanation for this observation is that one of us (MLF) inadvertently transported the chipmunk to Lincoln on 2 October 2016, after driving about 1500 km in a single day from Jackson, Teton County, Wyoming, to Lincoln. Prior to this single-day trip, the vehicle remained in the Jackson area for 10 days. To further support this hypothesis, the chipmunk was observed fleeing from a bird-feeder either to nearby shrubs or to the wheel of a vehicle in the driveway in Lincoln. Seeking refuge in a wheel of a vehicle supports that the individual was familiar with this unusual retreat and likely was a stowaway in a motorized vehicle. We predict that this observation ultimately will

result in a failed human-mediated dispersal event and will not lead to an isolated, disjunct population in Lincoln. Only a single chipmunk was observed, and even if the individual was a female, it is unlikely it was pregnant at this time of year (Jones et al. 1983, Foresman 2001).

Inadvertent human-mediated dispersal events likely are relatively common, but few introductions have documented when and how individuals were transported. Moreover, such dispersal events generally stand out when a species is moved large distances beyond their natural distributional limits. Dispersal by motorized vehicles is a known mechanism of dispersal (Miller Baker 1994, Hodgkinson and Thompson 1997). In Nebraska, we are aware of at least one other likely inadvertent dispersal of a mammal by humans. On 20 September 1990, a Bushy-tailed Woodrat (*Neotoma cinerea*) was trapped from a building at Crescent Lake National Wildlife Refuge, which is out of the typical habitat and range for the species (Benedict et al. 2000). It seems that the individual was transported to the refuge when furniture was moved to the refuge from within the known distribution of this species. Such

Fig. 2. Least Chipmunk (*Tamias minimus*) showing the white venter, which aids in distinguishing this species from other small western chipmunk species occurring in the United States. (Copyright: Michael Forsberg)

examples demonstrate that vertebrates continue to be moved inadvertently, thus some of the purported natural range expansions reported in the literature might in fact represent those mediated by humans. Examples, such as the chipmunk in Lincoln, are easy to recognize as mediated by humans due to the extreme distance the species was from its natural geographical range. Shorter distances traveled by such inadvertent movements, however, will be less likely to be identified as accidental. Thus, knowledge of the natural history of species is important to first identify distributional changes, and also to distinguish between natural and human-mediated dispersal events.

Literature Cited

- Benedict RA, Genoways HH, and Freeman PW. (2000) Shifting distributional patterns of mammals in Nebraska. *Transactions of the Nebraska Academy of Sciences* 26:55–84.
- Buskirk SW. (2016) *Wild Mammals of Wyoming and Yellowstone National Park*. (Oakland, CA: University of California Press)
- Foresman KR. (2001) *The Wild Mammals of Montana*. American Society of Mammalogists, Special Publication 12:1–278.
- Genoways HH, Hoffman JD, Freeman PW, Geluso K, Benedict RA, and Huebschman JJ. (2008) Mammals of Nebraska: Checklist, key, and bibliography. *Bulletin of the University of Nebraska State Museum* 23:1–92.
- Heinsohn T. (2003) Animal translocation: Long-term human influences on the vertebrate zoogeography of Australasia (natural dispersal versus ethnophoresy). *Australian Zoologist* 32(3):351–376.
- Hodkinson DJ and Thompson K. (1997) Plant dispersal: The role of man. *Journal of Applied Ecology* 34(6):1484–1496.
- Jeschke JM and Strayer DL. (2005) Invasion success of vertebrates in Europe and North America. *Proceedings of the National Academy of Sciences* 102(20):7198–7202.
- Jones JK Jr. (1964) Distribution and taxonomy of mammals of Nebraska. *University of Kansas Publication, Museum of Natural History* 16(1):1–356.
- Jones JK Jr, Armstrong DM, Hoffmann RS, and Jones C. (1983) *Mammals of the Northern Great Plains*. (Lincoln, NE: University of Nebraska Press)
- Krysko KL, Somma LA, Smith DC, Gillette CR, Cueva D, Wasilewski JA, Enge KM, Johnson SA, Campbell TS, Edwards JR, Rochford MR, Tompkins R, Fobb JL, Mullin S,

Fig. 3. Least Chipmunk (*Tamias minimus*) in the wheel of a vehicle in which it likely hitched a ride from its native habitat in Wyoming to eastern Nebraska. (Copyright: Michael Forsberg)

- Lechowicz CJ, Hazelton D, and Warren A. (2016) New verified nonindigenous amphibians and reptiles in Florida through 2015, with a summary of over 152 years of introductions. *Reptiles and Amphibians: Conservation and Natural History* 23(2):110–143.
- Long CA. (1965) The mammals of Wyoming. *University of Kansas Publications, Museum of Natural History* 14(18):493–758.
- Mack RN and Lonsdale WM. (2001) Humans as global plant dispersers: Getting more than we bargained for. *BioScience* 51(2):95–102.
- Miller Baker AE. (1994) Stowaway transport rates of House Mice (*Mus domesticus*) and Deermice (*Peromyscus maniculatus*). *Proceedings of the Sixteenth Vertebrate Pest Conference* 16:106–112.
- Nathan R, Schurr FM, Spiegel O, Steinitz O, Trakhtenbrot A, and Tsoar A. (2008) Mechanisms of long-distance seed dispersal. *Trends in Ecology and Evolution* 23(11):638–647.
- Short KH and Petren K. (2011) Multimodal dispersal during the range expansion of the tropical house gecko *Hemidactylus mabouia*. *Ecology and Evolution* 1(2):181–190.
- Wilson EO. (2016) *Half-earth: Our Planet's Fight for Life*. (New York, NY: Liveright Publishing Corporation).