

MULTIPLE BATS ENTANGLED ON CACTUS—

Accidental deaths of bats by entanglement on plants and barbed wire are common (McNicholl 1988, Norquay et al. 2010). It has been hypothesized these incidents involve miscalculations by bats on how close they fly to plants or barbed wire or when chasing insects highly concentrated around vegetation (Norquay et al. 2010). Once the bats hit the plants or barbed wire, they become entangled and or impaled while struggling to free themselves. The earliest reports involved little brown bats (*Myotis lucifugus*) and unidentified bats entangled on burdock, *Arctium* sp. (Lyon 1925, Little 1925). Additional reports of bats becoming entangled in plants or on barbed wired have included the red bat, *Lasiurus borealis* (Johnson 1933), California leaf-nosed bat, *Macrotus californicus* (Stager 1943) and a hoary bat. *L. cinereus* (Iwen 1958, Hibbard 1963, Long 1964). Other reports include the Indiana bat, *M. sodalis* (DeBlase and Cope 1967), big brown bat, *Eptesicus fuscus* (Walley et al. 1969), little brown bat (Verts 1988), and the long-eared bat, *M. evotis* (Hendricks et al. 2003). Additionally, the California leaf-nosed bat has been documented being impaled on the needles of a potted cactus on a porch as it flew between the cactus and the wall of the house (Gronau 2006). Norquay et al. (2010) reported that two silver-haired bats (*Lasionycteris noctivagans*) were found alive on burdock, nursed back to health, and then released. Our report is the second reported death of bats resulting from entanglement on cactus and the first to report multiple bats entangled on one cactus over a two year period.

During March and April 2008, biologists at Fort Carson Military Reservation, El Paso County, Colorado assisted the Colorado Division of Wildlife with a survey of abandoned mines as potential bat habitats. On 2 April 2008, we examined an abandoned clay mine (45–23) located in Pueblo County. Mine 45–23 consisted of an extensive complex with many rooms and support posts. The mine was located in a narrow canyon consisting of a piñon pine-juniper forest at an elevation of 5,692 m and was known to be a maternity roost for Townsend's big-eared bats (*Corynorhinus townsendii*; Gruver and Keinath 2006). During the inspection, we observed partial skeletons of three bats impaled on a candelabra cactus or cholla (*Cylindropuntia imbricata*) 2.1 m in front of the main entrance to the mine.

On 28 April 2008, we returned to the cave to retrieve the bat skeletons and trim the cactus. The cave had an oval shaped entrance with a maximum width of 1.9 m and a maximum height of 0.75 m. The cactus measured 1.5 m tall with a maximum width of 1.0 m that we estimated obscured approximately 35% of the mine entrance. We removed several small canes and four large multi-stemmed canes of the cactus ranging in size from 0.8 m × 0.7 m to 1.1 m × 0.7 m.

The first bat skeleton, identified as *Myotis* spp., consisted of the skull rostrum, disarticulated lower jaw, one humerus, three partial phalanges, and a portion of the vertebral

column surrounded by dried fur. The second bat skeleton consisted of a skull without the left temporal region, a fused basioccipital-basisphenoid suture, one lower limb consisting of the tibia and digits, a partial forelimb, and the lumbar region of the vertebral column with the attached pelvis. The epiphyses on the long bones were closed. The skull suture and the closure of the epiphyses indicated this to be an adult Yuma myotis (*M. yumanensis*). We were unable to identify the third bat skeleton which consisted of the vertebral column, two humeri, and some partial phalanges.

On July 19, 2010, we returned to the cave. The cactus measured 1.9 m tall and 1.4 m wide and a fourth bat, identified as a western small-footed bat (*M. ciliolabrum*), was discovered impaled on the cactus at a height of 1.8 m and 3.0 m from the mouth of the cave. The cactus was removed to prevent more bats from becoming impaled.

This report highlights the possibility that vegetation may interfere with access to suitable roosting sites and may cause bats to become entangled. Norquay et al. (2010) stated that bats may be entangled in vegetation when chasing swarming insects or when flying through “cluttered environments”, which could include vegetation obscuring the entry to a roost. In this case, we consider the latter possibility to be more likely.

We thank D. Armstrong for help in identification of bats. K. Navo, N. LaMantia-Olson, E. Wostl, C. Grover, M. Hayes, R. Day, R. Clawges, C. Caris and A. Estep assisted in the survey. The views presented are those of the authors and do not necessarily represent the views of the Department of Defense (DoD).—Jon C. Pigage^{1,3}, Richard L. Bunn², and Roger D. Peyton². ¹Biology Department, University of Colorado at Colorado Springs, 1420 Austin Bluffs Parkway, Colorado Springs, Colorado 80918, USA; ²1626 O'Connell Blvd., Building 813, Directorate of Public Works-Environmental Division, Fort Carson, Colorado 80913, USA; ³Corresponding author email address: jpigage@uccs.edu.

LITERATURE CITED

- DeBlase, A. F., and J. B. Cope. 1967. An Indiana bat impaled on barbed wire. *American Midland Naturalist* 77:238.
- Gronau, C. W. 2006. Cactus traps California myotis in British Columbia. *Wildlife Afield* 3:14–15.
- Gruver, J. C. and D. A. Keinath. 2006. Townsend's big-eared bat (*Corynorhinus townsendii*): A technical conservation assessment. Rocky Mountain Region, Species Conservation Project, USDA Forest Service, Golden, Colorado, USA.
- Hendricks, P., J. Carlson, and C. Currier. 2003. Fatal entanglement of western long-eared myotis in burdock. *Northwestern Naturalist* 84:44–45.
- Hibbard, E. A. 1963. Another hoary bat found hanging on a fence. *Journal of Mammalogy* 44:265.

- Iwen, F. A. 1958. Hoary bat the victim of a barbed wire fence. *Journal of Mammalogy* 39:438.
- Johnson, P. B. 1933. Accidents to bats. *Journal of Mammalogy* 14:156–157.
- Little, L. T. 1925. Birds caught by burdocks. *Auk* 42:284.
- Long, C. A. 1964. Red Bat impaled on barbed wire. *Transactions of the Kansas Academy of Science* (1903) 67:201.
- Lyon, M. W., Jr. 1925. Bats caught by burdocks. *Journal of Mammalogy* 6:280.
- McNicholl, M. K. 1988. Bats and birds stuck on burdock. *The Prairie Naturalist* 20:157–160.
- Norquay, K. J. O, A. K. Menzies, C. S. McKibbin, M. E. Timonin, D. E. Baloun, and C. K. R. Willis. 2010. Silver-haired bats (*Lasionycteris noctivagans*) found ensnared on burdock (*Arctium minus*). *Northwestern Naturalist* 91:339–342.
- Stager, K. E. 1943. California leaf-nosed bat trapped by desert shrub. *Journal of Mammalogy* 24:396.
- Verts, B. J. 1988. Two bats caught on a plant. *Murrelet* 69:36–38.
- Walley, H. D., W. E. Southern, and J. H. Zar. 1969. Big brown bat entangled in burdock. *American Midland Naturalist* 82:630.

*Submitted 20 February 2011. Accepted 2 May 2011.
Associate Editor was Christopher S. DePerno.*