

Bat versus Ant: The First Report of Evening Bat/Ant Interaction in Arkansas

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This paper documents the first reported occurrence of bat/ant agonistic interaction in Arkansas and the second report involving Evening Bats (*Nycticeius humeralis*). An adult male Evening Bat was captured during a presence / absence mist net survey along Highway 412 in Black Rock, Lawrence County, Arkansas on 4 June 2023. The bat weighed 12.0 g and had a forearm length of 36.94 mm which is in the mid-range for evening bats in Arkansas (Sealander and Heidt 1990). The evening bat had two ant head capsules attached to its right cheek and at the tip of the lower lip (Fig. 1).



Figure 1. Evening Bat (*Nycticeius humeralis*) with ants attached. Photo by J.D. Wilhide

The head capsule attached to the bat's cheek was easily removed during examination, the one attached to the point of the lower lip was more difficult and the mandibles had to be pried open with forceps to be removed. There did not appear to be any swelling or obvious damage to the bat other than a small hole at the point of the lower lip. As with many piercings, the injury should close once the object is removed. Other than that, the bat was unharmed and released at the

capture site (Fig. 2). Initial identification of ants was presumed to be carpenter ants (*Camponotus* sp.). Identification was confirmed by David E. General (National Museum of Natural History, National Museum of the Philippines) (Fig. 3).



Figure 2. Evening Bat (*Nycticeius humeralis*) with ants removed. Photo by J.D. Wilhide

This predator-prey interaction was first documented as "Bat verses Ant" in 1956 by Handley (1956). Since then, there have been few published accounts documenting this type of interaction between bats and ants. We found six published cases and one unpublished observation. These interactions have been documented for five bat species: Big Brown Bats (*Eptesicus fuscus*) (Handley 1956, Wilson 1958, Pine 1975, and Cunningham *et al.* 2016); Brazilian Free-tailed Bat (*Tadarida brasiliensis*) and California Leaf-nosed Bat (*Macrotus californicus*) (Ross 1961); Western Pipistrelle (*Parastrellus hesperus*) (Harris 1971); and Evening Bat (Bender *et al.* 2009). In all reported cases, captured bats were found with carpenter ant (*Camponotus* sp.) head capsules attached to the facial area of the bats.



Figure 3. Removed Carpenter Ant head capsules (*Camponotus* sp.). Photo by J.D. Wilhide

The one constant to all these reports seems to be the type of ant (Carpenter Ant *Camponotus* sp.) that was found on these bats. Handley (1956) suggested that the ant attached while the Big Brown Bat (*Eptesicus fuscus*) was feeding. This “death grip” has also been reported to have been used to close wounds (Gudger 1925). Ross (1961) reported that bats fed on the softer portions of larger insects such as the abdomens and discarded the harder parts such as head capsules, legs, thoracic segments, and wings under night roosts. Bender *et al.* (2009) agreed with Handley’s (1956) assumption that the interaction between bats and ants occurred during flight, when foraging bats interacted with mature reproductive winged male and female ants during a swarming event to establish new colonies. They also postulate that this interaction could have occurred during roost/nest sharing of a tree cavity, but state that it is unlikely.

Although not a preferred food item, Evening Bats may consume ants (Whitaker and Clem 1992, Whitaker 2002) if they are in large numbers such as a swarming event (Carter *et al.* 2004). Bats can distinguish and choose insect prey based on taste (Hristov and Conner 2005), size, and type (Agosta *et al.* 2003). However, these bats risk the after-effects of an ant swarm that may cause injuries or more permanent ant facial piercings.

Literature Cited

Agosta, SJ, D Morton, and KM Kuhn. 2003. Feeding ecology of the bat *Eptesicus fuscus*: “Preferred” prey abundance as one factor influencing prey selection and diet breadth. *Journal of Zoology*, London 260:169–177. DOI: <https://doi.org/10.1017/S0952836903003601>

Bender, MJ, SB Castleberry, DA Miller, and TB Wigley. 2009. Antagonistic Behavior Between Evening Bats and Carpenter Ants. *Southwestern Naturalist*. 8: 179–181.

Carter, TC, MA Menzel, BR Chapman, and KV Miller. 2004. Partitioning of food resources by syntopic Eastern Red (*Lasius borealis*), Seminole (*L. seminolus*) and Evening *Nycticeius humeralis* Bats. *American Midland Naturalist* 151:186–191.

Cunningham, KA, JE Curry, TC Newman, and JD Wilhide. 2016. Bat Versus Ant: The Struggle continues. *Southeastern Bat Diversity Network Annual Meeting*. Unpublished Presentation.

Gudger, EW 1925. Stitching wounds with mandibles of ants and beetles. A minor contribution to the history of surgery. *Journal American Medical Association*. 84 (24): 1861–1864.

Handley, Jr., CO 1956. Bat versus ant. *Journal of Mammalogy* 37:279.

Harris, AH 1971. *Pipistrellus hesperus* (Chiroptera) versus ant. *Southwestern Naturalist* 15: 396–397.

Hristov, N, and WE Conner. 2005. Effectiveness of tiger moth (*Lepidoptera, Arctiidae*) chemical defenses against an insectivorous bat (*Eptesicus fuscus*). *Chemoecology* 15:105–113. DOI: <https://doi.org/10.1007/s00049-005-0301-0>

Pine, RH, DR Clark, Jr., and T Lufriu. 1975. Yet Another Instance of Bat Versus Ant. *Mammalia* Vol. 39, No. 3. 509–510.

Ross, A 1961. Notes on the food habits of bats. *Journal of Mammalogy* 42:66–71.

Sealander, JA and GA Heidt. 1990. Arkansas Mammals: Their Natural History, Classification, and Distribution. Univ. of Arkansas Pres. 308 p.

Whitaker, Jr., JO 2002. Prey selection in a temperate-zone insectivorous bat community. *Journal of Mammalogy* 85:460–469. DOI: <https://doi.org/10.1644/1383943>

Whitaker, Jr., JO, and P Clem. 1992. Food of the Evening Bat, *Nycticeius humeralis*, from Indiana. *American Midland Naturalist* 127:211–214.

Wilson, N 1958. Another instance of bat versus ant. *Journal of Mammalogy* 39:438.