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Rabies Prevalence Among and New Distribution Records of Arkansas Bats

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Rabies has been known from Arkansas bats since 1961 and approximately 18% of cases of animal rabies in the state are accounted for by bats (Heidt 1982; Sasse 2004). General statistics on total bat submissions and rabies prevalence were summarized for 1950-1981 by Heidt (1982). McChesney et al. (1983) was the first to provide detailed information on this disease at the species level in Arkansas, though only for a single year. Heidt et al. (1987) reported on rabies in Arkansas bat species based on specimens submitted to the Arkansas Department of Health from 1982-1986 and later reported on specimens collected from 1982-1990 (Heidt et al. 1991). While most recent cases of human rabies in Arkansas and the United States come from contact with rabid bats, people in Arkansas are 17 times more likely to come in contact with rabid domestic animals such as cats and dogs (Sasse 2004).

In this paper, we describe rabies prevalence in Arkansas bat species and new bat species records from counties from which they had not been previously observed.

From 1983 to 2007, 2,566 bats were submitted to and tested for rabies by the Arkansas Department of Health and identified to species, sex, and age. Deteriorated specimens that could not be tested or could not be identified to species were not included in this study.

Bats were submitted for testing from all Arkansas counties except Clay, although only 7 counties, all of which contained urban areas, averaged more than 2 bat submissions per year. Most bats came from Pulaski (34.5%) and Garland (9.9%) Counties with no other county representing more than 4% of total submissions. Four species, *Lasiurus borealis*, *Eptesicus fuscus*, *Nycticeius humeralis*, and *Tadarida brasiliensis*, accounted for 87.8% of total submissions.

Overall rabies prevalence among all species was 9.5% (244/2566) and was highest in solitary tree-roosting species such as *L. seminolus* (44.4%), *L. cinereus* (29.4%), and *L. borealis* (16.8%) and was low in *E. fuscus* (3%) and *T. brasiliensis* (7.4%), colonial species which are most commonly found in Arkansas homes and other buildings. Care should be taken in interpreting rabies prevalence data for bats, especially

for those species with small sample sizes, as specimens are collected in a biased manner, most often after exhibiting some form of unusual activity in the vicinity of human dwellings prior to being submitted for testing and true prevalence rates in bats are probably much lower (Blanton et al. 2007; Caire 1998).

Corynorhinus rafinesquii (Rafinesque's big-eared bat)

Eleven specimens, including a single rabid individual (9.1%), were received from 10 counties. One new distribution record was obtained from Howard County.

Eptesicus fuscus (Big brown bat)

Seven hundred twenty six specimens, including 22 (3.0%) rabid individuals, were received from 50 counties. New county distribution records were obtained from Boone, Calhoun, Crawford, Dallas, Fulton, Greene, Jackson, Jefferson, Johnson, Logan, Marion, Ouachita, Randolph, Union, Van Buren, and White Counties.

Lasionycteris noctivagans (Silver-haired bat)

Twenty-five non-rabid specimens were received from 14 counties. Specimens were submitted from September through March only, with the majority (52%) in November and December. New county distribution records were obtained from Carroll, Faulkner, Lawrence, Newton, Van Buren, and White Counties.

Lasiurus borealis (Red bat)

Nine hundred and forty seven specimens, including 159 (16.8%) rabid individuals, were received from 68 counties. Although this species comprised only 37% of total submission, it represented 65% of all rabid bats. Prevalence varied by age with 23.2% of adults and only 4% of juveniles testing positive for rabies. New county distribution records were obtained from Boone, Fulton, Madison, Marion, Searcy, and St. Francis Counties.

Lasiurus cinereus (Hoary bat)

Fifty-one specimens, including 15 (29.4%) rabid individuals, were received from 17 counties. Fourteen

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juveniles submitted for rabies testing during the months of June and July from Jefferson, Pulaski, Saline, and Sebastian Counties provide additional evidence that this species breeds in Arkansas (Perry and Thill 2007). New county distribution records were obtained from Arkansas, Clark, Columbia, Howard, Lonoke, Randolph, and White Counties.

Lasiurus seminolus (Seminole bat)

Nine specimens, including 4 (44.4%) rabid individuals, were received from 7 counties. New county distribution records were obtained from Columbia, Randolph, Union, and Woodruff Counties.

Myotis austroriparius (Southeastern bat)

Four specimens, none of which were rabid, were received from 4 counties.

Myotis grisescens (Gray bat)

Thirty-three specimens of this endangered species, including 1 rabid individual (3.0%), were received from 10 counties. New county distribution records were obtained from Sebastian and Van Buren Counties. The specimen from Sebastian County, which represents a small range extension to the southwest, was a non-rabid adult male collected in Fort Smith on September 17, 2004.

Myotis leibii (Small-footed bat)

A single non-rabid adult male was obtained from Mena in Polk County on September 16, 1992.

Myotis lucifugus (Little brown bat)

Twenty-one specimens, none of which were rabid, were received from 13 counties. New county distribution records were obtained from Benton, Boone, Cleburne, Little River, Lonoke, Randolph, Van Buren, and White Counties.

Myotis septentrionalis (Northern long-eared bat)

Twenty-four specimens, none of which were rabid, were received from 11 counties. New county distribution records were obtained from Boone and Van Buren Counties.

Nycticeius humeralis (Evening bat)

Three hundred fifty specimens, including 7 rabid individuals (2.0%), were received from 45 counties. New county distribution records were obtained from Boone, Conway, Dallas, Faulkner, Jefferson, Johnson, Madison, Randolph, and Van Buren Counties.

Perimyotis subflavus (Eastern pipistrelle)

One hundred thirty three specimens, including 18 rabid individuals (13.5%), were received from 38 counties. New county distribution records were obtained from Arkansas, Cleburne, Columbia, Conway, Cross, Dallas, Desha, Grant, Hempstead, Hot Spring, Jefferson, Johnson, Randolph, and Sebastian Counties.

Tadarida brasiliensis (Brazilian free-tailed bat)

Two hundred thirty one specimens, including 17 rabid individuals (7.4%), were received from 21 counties. New county distribution records were obtained from Drew, Hot Spring, Perry, Saline, and Scott Counties.

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