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Observations on a Resident Population of Myotis lucifugus, in Jackson County, Arkansas

M. Doug Fletcher
Arkansas State University

J. D. Wilhide
Arkansas State University

R. B. McAllister
Arkansas State University

General Notes

HYPERINFESTATATION OF SMALLMOUTH BASS *(MICROPTERUS DOLOMIEUI)* BY THE TREMATODE *CLINOSTOMUM MARGINATUM*

Over 500 black bass from Crooked Creek, an Ozark stream in North Central Arkansas (Marion Co.), were necropsied and examined for *Clinostomum marginatum* metacercariae during the late spring, summer, and early fall seasons of 1988-1990. In this survey three smallmouth bass, collected in the late summer of 1990, were found to have individual parasite intensities greater than the heaviest previously recorded. The number of metacercariae found and the standard length (cm) of the hosts were 2500, 24.2; 852, 15.2; and 627, 15.2. All three bass were taken from near the juncture of Crooked Creek and the White River. Previously the largest number of *C. marginatum* reported from fish hosts were 500 from a bullhead *(Ictalurus nebulosus)* in Pennsylvania (Torres and Price, Tenn. Acad. Sci. 46:131, 1971), 325 and 191 found in yellow perch *(Perca flavescens)* from Lake Oneida, New York (Van cleave and Mueller, Roosevelt Wildlife Annals 3:230, 1934). Another heavy infection of 230 metacercariae was reported in a spotted bass *(Micropterus punctulatus)* from Missouri (Taber, Prog. Fish-Cult. 34:119, 1972).

Other heavily infected smallmouth bass collected from Crooked Creek in 1977 and 1987 (Daly *et al.*, Proc. Ark. Acad. Sci. 41:29, 1987) and in 1988-90, wre found to have 324, 282, 179, 144, 143, 126, 112, 105, and 101 metacerariae, respectively. The most severe pathology produced by *C. marginatum* was found in the smallmouth bass that had 627 parasites. Damage to the fish was similar to that reported on the Pennsylvanian bullhead where metacercariae were similarly being extruded externally through perforations in the weakened abdominal wall.

JAMES J. DALY, BRUCE DEYOUNG, and TERRY HOSTETLER, Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock, AR 72205.

OBSERVATIONS ON A RESIDENT POPULATION OF *MYOTIS LUCIFUGUS*, IN JACKSON COUNTY, ARKANSAS

The little brown bat *(Myotis lucifugus)* is one of the three most common bat species found to infest man-made structures in North America. The other species are the big brown bat *(Eptesicus fuscus)* and the Brazilian free-tailed bat *(Tadarida brasiliensis)*. These three bat species are commonly referred to as "house bats" by the pest control industry. The destruction of roosting sites and the indiscriminate use of pesticides are believed to adversely affect these species.

The little brown bat, *M. lucifugus*, is typically considered to be a northern bat species (Davis, *et al.*, Am. Midl. Nat. 73(1):161-165, 1965). However, it has been reported as far south as Oklahoma, Louisiana, and Arkansas. *M. lucifugus* has been reported to be widely distributed in Missouri (Schwartz and Schwartz, The wild mammals of Missouri. pp. 53-62, 1981), but is seldom reported in central or southern Arkansas (Saugey, *et al.*, Proc. Ark. Acad. Sci. 43:71-77, 1989). This species is known to use barns, sheds, attics, and other man-made structures as maternity colonies and hibernacula.

Observations contained herein are based on resident colonies of *M. lucifugus* in Jackson County, Arkansas. The initiation of this study was prompted by the preliminary efficacy testing of Varpel Rope™, a purported bat repellent. These findings are in support of and in conjunction with the registration of this product with the Environmental Protection Agency.

The colonies were located in the attics of privately owned residences (Sites 1 and 2) in Jackson County, Arkansas. Observations were taken from visits conducted from July 9, 1990, to January 8, 1991. Large numbers of bats have occupied these buildings for several years as evidenced by the large volume of guano covering the floor of the attics. The depth of the guano ranged from 3 cm to over 38 cm, with the average depth approximately 8 cm. It was also apparent that several unsuccessful attempts had been made to eliminate the colonies, resulting in the deaths of numerous bats.

On July 9, 1990, approximately 300-500 bats were observed in the attic of Site 1, and approximately 500 bats were in the attic of Site 2. It was also noted that due to the weight of the guano, the ceilings of the structures were collapsing in some sections. On July 18, 1990, the sites were revisited to further assess the extent of the infestation. Several hundred *M. lucifugus* were observed in the attics of both structures. On August 24, 1990, the size of the colony in Site 1 was estimated at 200 individuals. The bats remained inactive until after 10:30 pm, when they left the building individually. On August 25, 1990, the colony at Site 1 was estimated to contain 300-500 bats.

On September 6, 1990, a modified funnel trap was constructed at Site 2, at 5:45 pm. Bats began to exit the structure at 7:45 pm and trapping continued until 9:15 pm. The bats were counted, identified, and then released at the site. Five hundred *M. lucifugus* were trapped with additional bats observed leaving the structure after the trap had been disassembled.

Following the removal of the trap, approximately 53 meters of Varpel Rope™ was placed in the attic of Site 2. The openings in the structure were left open to allow access to the house by the bats.

On September 11, 1990, the access point of the structure was observed and only seven bats were seen to exit the structure. A visit inside the structure confirmed that no additional bats remained in the attic and that the product still retained the repellent qualities.

On September 13, 1990, the trap was reassembled at 7:00 pm and trapping continued until 9:30 pm. Thirty-one *M. lucifugus* were trapped with additional bats observed leaving the structure after the trap had been disassembled. The Varpel Rope™ was apparently no longer effective and the access points were sealed to prevent reinfestation.

On November 1, 1990, the size of the colony, at Site 1 was estimated to contain 50 *M. lucifugus*. Skulls were removed from the attic floor and 49 adult *M. lucifugus*, 15 juvenile *M. lucifugus* and one adult *Nycticeius humeralis* were found. On November 9, 1990, the size of the colony, at Site 1 was estimated to contain 20 *M. lucifugus*. Additional adult (23) and juvenile (12) *M. lucifugus* skulls were collected. Subsequent visits on December 23 and January 8, 1991 revealed no bats.

M. lucifugus generally disperse from the summer roosts by October each year (Humphrey and Cope, Population ecology of the little brown bat, *M. lucifugus*, in Indiana and North-Central Kentucky. p. 1-2, 1976). The above observations demonstrated that the bats were still inhabiting Site 1 well past the normal autumn swarming times.

Voucher specimens were retained as necessary and are deposited in the Collection of Recent Mammals at Arkansas State University Museum of Zoology.

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M. DOUG FLETCHER, J.D. WILHIDE, and R.B. McALLISTER, Department of Biological Sciences, Arkansas State University, State University, AR 72467
