

2008

FIRST RECORD OF *PLAGIORCHUS*  
*MICRACANTHOS*  
(TREMATODA:PLAGIORCHIIDAE) FROM  
THE WESTERN SMALL-FOOTED MYOTIS,  
*MYOTIS CILIOLABRUM* (CHIROPTERA:  
VESPERTILIONIDAE)

Chris T. McAllister  
*RapidWrite*, cmcallister@se.edu

Charles R. Bursey  
*Pennsylvania State University - Shenango*, cxb13@psu.edu

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

 Part of the [Life Sciences Commons](#)

McAllister, Chris T. and Bursey, Charles R., "FIRST RECORD OF *PLAGIORCHUS MICRACANTHOS* (TREMATODA:PLAGIORCHIIDAE) FROM THE WESTERN SMALL-FOOTED MYOTIS, *MYOTIS CILIOLABRUM* (CHIROPTERA: VESPERTILIONIDAE)" (2008). *Transactions of the Nebraska Academy of Sciences and Affiliated Societies*. 35. <http://digitalcommons.unl.edu/tnas/35>

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.

FIRST RECORD OF *PLAGIORCHUS MICRACANTHOS* (TREMATODA:PLAGIORCHIIDAE) FROM  
THE WESTERN SMALL-FOOTED MYOTIS, *MYOTIS CILIOLABRUM* (CHIROPTERA:  
VESPERTILIONIDAE)

Chris T. McAllister

RapidWrite  
102 Brown Street  
Hot Springs National Park, Arkansas 71913  
drctmcallister@aol.com

and

Charles R. Bursey

Department of Biology  
The Pennsylvania State University, Shenango Campus  
Sharon, Pennsylvania 16146  
cxb13@psu.edu

**ABSTRACT**

A western small-footed myotis (*Myotis ciliolabrum*) from South Dakota harbored 2 plagiorchiid trematodes in its small intestine. Both trematodes were identified as *Plagiorchis micracanthos* Macy, 1931. This is the first report of *P. micracanthos* from *M. ciliolabrum*, and the first time this parasite has been reported in a bat from South Dakota. At least 10 other parasites are known to infect and/or infest *M. ciliolabrum* in North America.

† † †

The western small-footed myotis, *Myotis ciliolabrum* (Merriam 1886), is a small vespertilionid that occurs over much of western North America from central British Columbia, southern Alberta, and southwestern Saskatchewan, Canada, southward to Chihuahua, Coahuila, and Zacatecas, Mexico (Holloway and Barclay 2001). Two subspecies are recognized, *M. c. ciliolabrum* in the east and *M. c. melanorhinus* in the western part of the range (Hall 1981; van Zyll de Jong 1984).

Previous reports of parasites from this host include coccidia (Scott and Duszynski 1997; Scott et al. 1999), chiggers and mites (Krutzsch 1955; Bradshaw and Ross 1961; Jones et al. 1973), and nematodes (Measures 1994; Table 1). Herein, we

document a new host and a new distributional record for a trematode parasite that is known to infect bats in North America.

**METHODS**

On 13 September 2006, an adult female *M. ciliolabrum* was collected by hand from the Prairie Wind Casino, located 16.1 km E Oglala in the Pine Ridge Indian Reservation, Shannon County, South Dakota (43°11.1'N, 102°59.3'W). We euthanized the bat by cervical dislocation and examined it for helminths by opening the gastrointestinal tract from the esophagus to anus. We then placed the GI tract in a Petri dish containing a 0.9% saline solution. We also examined feces for coccidial parasites following previously published methods (McAllister et al. 2004). The GI tract plus the liver, heart, reproductive tract, and urinary tract were examined using a stereomicroscope. Two trematodes were recovered in the small intestine, placed briefly in distilled water for egg ejection, and preserved in 70% ethanol. Trematodes were stained with Semichon's acetocarmine, dehydrated through a series of graded ethanols, cleared with xylene, and mounted in Canada Balsam.

A voucher specimen of the trematode was deposited in the United States National Parasite Collection (USNPC), Beltsville, Maryland (USNPC 99004). The *M. ciliolabrum* (skin and skull) was

deposited in the Angelo State Natural History Collection (ASNHC), San Angelo, Texas (ASNHC 13038).

Table 1. Parasites reported from *M. ciliolabrum*.

Parasite	Location	Prevalence <sup>a</sup>	Reference
<b>Apicomplexa</b>			
<i>Eimeria pilarensis</i>	NM	1/12 (8%)	Scott and Duszynski, 1997
<i>Eimeria rioarribaensis</i>	NM	4/22 (18%)	Scott et al., 1999
	MX <sup>b</sup>	1/21 (5%)	Scott et al., 1999
<b>Trematoda</b>			
<i>Plagiorchis micracanthos</i>	SD	1/1 (100%)	This study
<b>Nematoda</b>			
<i>Longibucca lasiura</i>	CAN <sup>d</sup>	1/10 (10%)	Measures, 1994
<b>Acari</b>			
<i>Leptotrombidium myotis</i>	SD	not stated	Turner and Jones, 1968
	MT	1/6 (17%)	Jones et al., 1973
	OR	not stated	Whitaker et al., 1983
<b>Macronyssidae (nymphs)</b>			
<i>Macronyssus crosbyi</i>	CA	1/1 (100%) <sup>c</sup>	Krutzsch, 1955
<i>Macronyssus crosbyi</i>	NM	1/1 (100%)	Ritzi et al., 2002
<i>Ornithodoros</i> sp.	AZ	not stated	Bradshaw and Ross, 1961
<i>Spinturnix americanus</i>	AZ	not stated	Bradshaw and Ross, 1961
<i>Spinturnix carloshoffmanni</i>	AZ	not stated	Bradshaw and Ross, 1961
<i>Trombicula myotis</i>	AZ	not stated	Bradshaw and Ross, 1961
<b>Insecta</b>			
<i>Cimex pilosellus</i>	SD	not stated	Turner, 1974

<sup>a</sup>Prevalence = number infected/number examined (%).

<sup>b</sup>Baja California Norte and Sonora.

<sup>c</sup>Other *M. ciliolabrum* taken from near San Diego, California were uninfected; number not given.

<sup>d</sup>Alberta, Canada.

## RESULTS AND DISCUSSION

No coccidia were found in the feces; however, the two trematodes found in the small intestine of *M. ciliolabrum* belonged to the family Plagiorchiidae and were identified as *Plagiorchis micracanthos* Macy, 1931. This bat parasite has been previously reported from other vespertilionids including the little brown myotis (*Myotis lucifugus*) in New Mexico (Cain and Studier 1974) and Minnesota (Macy 1931), big brown bat (*Eptesicus fuscus*) in Minnesota (Macy 1931), gray myotis (*Myotis grisescens*) in Kansas (Ubelaker 1966), western pipistrelle (*Pipistrellus hesperus*) in Nevada, and eastern pipistrelle (*Pipistrellus* [= *Perimyotis*] *subflavus*) in Nebraska (Nickel and Hansen 1967). Interestingly, Manter and Debus (1945) reported this species of trematode from the California myotis

(*Myotis californicus*) in Louisville, Cass County, Nebraska. However, the range of *Myotis californicus* is > 1,000 km to the west, so their host must be considered a misidentification (see Fig. 3 in Simpson 1993). Unfortunately, the identity of this bat will remain an enigma because a voucher specimen is not available.

A variety of parasites has been reported to infect/infest *Myotis californicus*, including 2 species of coccidia, 6 species of Acari, one insect, and a single species each of trematode and nematode in North America (Table 1). We have provided a new host and distributional record for *P. micracanthos*. Additional studies on helminths of bats of the northern Great Plains are warranted to further advance our knowledge of chiropteran parasites and their geographic distribution.

### ACKNOWLEDGMENTS

We thank members of the Oglala Sioux Nation, Prairie Wind Casino for donating the bat to the senior author and the South Dakota Game, Fish and Parks for issuing our scientific collecting permit (No. 42). We also thank Drs. Loren Ammerman and Robert Dowler (ASNHC) for verifying the identity of the bat and Dale W. Sparks (Indiana St. University) and an anonymous reviewer for improving the ms.

### LITERATURE CITED

- Bradshaw, G., and A. Ross. 1961. Ectoparasites of Arizona bats. *Journal of the Arizona Academy of Science* 1:109-112.
- Cain, G. D., and E. H. Studier. 1974. Parasitic helminths of bats from the southwestern United States and Mexico. *Proceedings of the Helminthological Society of Washington* 41:113-114.
- Duszynski, D.W., D. T. Scott, J. Aragon, A. Leach, and T. Perry. 1999. Six new *Eimeria* species from vespertilionid bats of North America. *Journal of Parasitology* 85: 496-503.
- Hall, E. R. 1981. *The Mammals of North America*, 2<sup>nd</sup> edition. New York, John Wiley and Sons: 600 pp.
- Holloway, G. L., and R.M.R. Barclay. 2001. *Myotis ciliolabrum*. *Mammalian Species* No. 670:1-5.
- Jones, J. K., Jr., R. P. Lampe, C. A. Spenrath, and T. H. Kunz. 1973. Notes on the distribution and natural history of bats in southeastern Montana. *Occasional Papers of the Museum, Texas Tech University* 15:1-12.
- Krutzsch, P. H. 1955. Ectoparasites from some species of bats from western North America. *Journal of Mammalogy* 36:457-458.
- Macy, R. W. 1931. New bat trematodes of the genera *Plagiorchis*, *Limatulum*, and *Dicrocoelium*. *Journal of Parasitology* 18:28- 33.
- Manter, H. W., and J. S. Debus. 1945. Two trematodes from a hibernating bat, *Myotis californicus*. *Transactions of the American Microscopical Society* 64:297-299.
- McAllister, C. T., S. J. Upton, and C. R. Bursey. 2004. Parasites (Coccidia, Trematoda, Nematoda) from selected bats of Arkansas. *Journal of the Arkansas Academy of Science* 58:133-136.
- Measures, L. N. 1994. Seasonal dynamics of the bat stomach worm, *Longibucca lasiura* (Nematoda: Rhabditoidea), in Alberta. *Canadian Journal of Zoology* 72:791-794.
- Nickel, P. A., and M. F. Hansen. 1967. Helminths of bats collected in Kansas, Nebraska, and Oklahoma. *American Midland Naturalist* 8:481-486.
- Ritzi, C. M., E. W. Valdez, and D. W. Sparks. 2002. New host and locality records of bat ectoparasites from Arizona and New Mexico. *Southwestern Naturalist* 47:453-456.
- Scott, D. T., and D. W. Duszynski. 1997. *Eimeria* from bats of the world: two new species from *Myotis* spp. (Chiroptera: Vespertilionidae). *Journal of Parasitology* 83:495-501.
- Simpson, M. R. 1993. *Myotis californicus*. *Mammalian Species* No. 428:1-4.
- Turner, R. W. 1974. Mammals of the Black Hills of South Dakota and Wyoming. *Miscellaneous Publications, Museum of Natural History, University of Kansas* 60:1-178.
- Turner, R. W., and J. K. Jones, Jr. 1968. Additional notes on bats from western South Dakota. *Southwestern Naturalist* 13:444-447.
- Ubelaker, J. E. 1966. Parasites of the gray bat, *Myotis grisescens*, in Kansas. *American Midland Naturalist* 75:199-204.
- Van Zyll de Jong, C. G. 1984. Taxonomic relationships of Nearctic small-footed bats of the *Myotis leibii* group (Chiroptera: Vespertilionidae). *Canadian Journal of Zoology* 62:2519-2526.
- Whitaker, J. O., Jr., C. E. Yunker, and C. Maser. 1983. Acarine ectoparasites (mites) of bats of Oregon. *Northwest Science* 57:97-106.