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

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ABSTRACT

A western small-footed myotis (*Myotis ciliolabrum*) from South Dakota harbored 2 plagorchiid 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[a]	Reference
Apicomplexa			
Eimeria pilarensis	NM	1/12 (8%)	Scott and Duszynski, 1997
Eimeria rioarribaensis	NM	4/22 (18%)	Scott et al., 1999
	MX[b]	1/21 (5%)	Scott et al., 1999
Trematoda			
Plagiorchis micracanthos	SD	1/1 (100%)	This study
Nematoda			
Longibucca lasiura	CAN[d]	1/10 (10%)	Measures, 1994
Acari			
Leptotrombidium myotis	SD	not stated	Turner and Jones, 1968
	MT	1/6 (17%)	Jones et al., 1973
	OR	not stated	Whitaker et al., 1983
Macronyssidae (nymphs)	CA	1/1 (100%)[c]	Krutzsch, 1955
Macronyssus crosbyi	NM	1/1 (100%)	Ritzi et al., 2002
Ornithodoros sp.	AZ	not stated	Bradshaw and Ross, 1961
Spinturnix americanus	AZ	not stated	Bradshaw and Ross, 1961
Spinturnix carloshoffmanni	AZ	not stated	Bradshaw and Ross, 1961
Trombicula myotis	AZ	not stated	Bradshaw and Ross, 1961
Insecta			
Cimex pilosellus	SD	not stated	Turner, 1974

[a]Prevalence = number infected/number examined (%).
[b]Baja California Norte and Sonora.
[c]Other *M. ciliolabrum* taken from near San Diego, California were uninfected; number not given.
[d]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 Plagorchiidae 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.

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