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# A Dilepid Tapeworm (Cestoda: Cyclophyllidea: Dilepididae) from Willow Flycatcher, *Empidonax traillii* (Passeriformes: Tyrannidae) from Nevada County, Arkansas

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**Abstract:** During August 2024, a single willow flycatcher, *Empidonax traillii* was found dead in Nevada County, Arkansas, salvaged, and examined for parasites. A single dilepid tapeworm was found in the small intestine. Unfortunately, it was an immature dilepid that could not be identified to genus. The specimen had 14 hooks in a single row on the rostellum (26  $\mu$ m long), irregularly alternating genital pores, and about 10 testes. There are no previous reports of dilepids from *E. traillii*. We document the first report of a tapeworm from *E. traillii*.

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## Introduction

The willow flycatcher, *Empidonax traillii* (Audubon) is a small insectivorous neotropical migrant bird of the tyrant flycatcher family native to North America (Sibley 2016). The North American range extends from southern Canada throughout the USA. There are four subspecies and the taxon that occurs in Arkansas is the eastern nominate subspecies, *E. t. traillii* that breeds from the eastern coast of the USA to the western Rocky Mountains (Dunn and Alderfer 2011). It occurs in brushy habitats of wetlands as well as pastures and mountainous meadows. They may

also be found in semi-arid landscapes, the borders of forests, dry, upland areas, mountain meadows and riparian forests. Willow flycatchers inhabit a variety of areas, their preferred habitat is within low growing willow thickets, but they also favor short, shrubby areas.

This bird is parasitized by quill mites (*Syrinogophilopsis*), ticks (Ixodida), and brood-parasitic brown-headed cowbirds, *Molothrus ater* (Boddaert) (Skoracki et al. 2008; Uyehara and Narins 1995; Hamer et al. 2012; Hendricks et al. 2013). There are two species of cestodes (Paraterinidae) from tyrant flycatchers, *Anonchotaenia prolixa* Phillips, Georgiev, Waeschenbach,

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and Mariaux, 2014 found in a single white-crested elaenia, *Elaenia albiceps chilensis* Hellmayr flycatcher in Chile (Phillips et al. 2014) and *A. vaslata* Phillips, Georgiev, Waeschenbach, and Mariaux, 2014 found in a tropical kingbird, *Tyrannus melancholicus* (Vieillot) and streaked flycatcher, *Myiodynastes maculatus* (Stadius Müller) from Paraguay. However, we are unaware of any reports of helminth parasites of *E. trailli*. Here we document the first report of a dilepid tapeworm from a willow flycatcher.

### Methods

#### Host collection and processing

During August 2024, a single willow flycatcher was found dead on the road off co. rd. 210, 9.0 km N of Prescott, Nevada County, Arkansas (33°53'18.69"N, -93°22'16.37"W). It was salvaged and taken to the laboratory for necropsy. The feathers were vigorously brushed over a white enamel tray to collect any ectoparasites. A mid-ventral incision was made from the cloaca to throat to expose the trachea, lungs, air sacs, esophagus, proventriculus, gizzard, gallbladder, liver, kidneys, and intestines. Feces from the lower intestine were placed in a vial containing 2.5% (w/v) aqueous potassium dichromate ( $K_2Cr_2O_7$ ) for examination of coccidia. Organs were placed in individual Petri dishes containing 0.9% (v/v) saline, opened, and their contents rinsed of mucus. Several 100 mm sections of the tissues were cut, split lengthwise, and examined under a stereomicroscope at 20 to 30× to aid in locating endoparasites. A live cestode was fixed in nearly boiling tap water without coverslip pressure, transferred to 70% (v/v) DNA grade ethanol, stained with acetocarmine, dehydrated in a graded ethanol series, cleared in methyl salicylate or xylene, and mounted in Canada balsam.

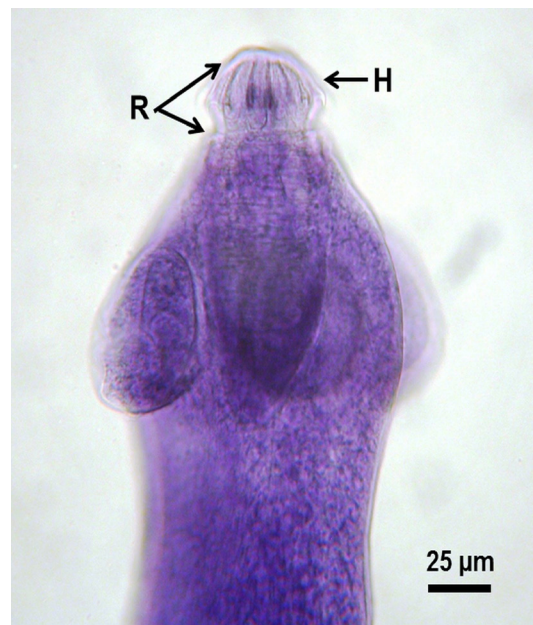
Voucher specimens (photomicrograph and slide) of the cestode was deposited in the Harold W. Manter Laboratory of Parasitology (HWML), University of Nebraska-Lincoln, Lincoln, NE. A host voucher specimen (in ethanol) was deposited in the Northeast Texas Community College Vertebrate Collection (NTCCVC), Mt. Pleasant, TX.

### Results

A single cestode parasite (Fig. 1) with characters of the order Cyclophyllidea van Beneden in Braun, 1900 and the family Dilepididae Fuhrmann, 1907 was found in the small intestine of the willow flycatcher. Because it was an immature specimen, a generic diagnosis was not possible. However, a morphometric description is provided below.

#### Brief Description (Fig. 1; HWML photovoucher 217891; slide HWML 217895)

Immature specimen, no uterus or paraterine organ observed; individual with 14 hooks in single row on rostellum (26  $\mu$ m long), irregularly alternating genital pores, and ~10 testes.



**Figure 1.** Dilepid tapeworm from willow flycatcher, *Empidonax trailli* from Arkansas. Whole mount of scolex showing armed rostellum (R) with hooks (H).

### Discussion

Cestodes of the family Dilepididae have a cosmopolitan distribution and occur in most orders of birds; however, they are particular-

ly diverse in the Passeriformes (Mariaux et al. 2017). The general life-cycle of dilepids includes a single intermediate host, usually an arthropod although annelids and molluscs also serve as intermediate hosts. The finding of this parasite in *E. trailli* represents a new host record and the first report, to our knowledge, of any helminth in this host.

## Acknowledgments

The Arkansas Game and Fish Commission issued a Scientific Collecting Permit to CTM. We thank Dr. John M. (Mike) Kinsella, Missoula, Montana, for assistance in processing this tapeworm as well as providing the photomicrograph and an identification. Drs. Scott L. Gardner and Gabor R. Rasz (HWML) provided expert curatorial assistance.

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