

Northwest Science Notes

The purpose of "Notes" is to periodically publish short papers (typically less than five pages in length). There is no specific format or content required for articles published here, but all papers will be peer-reviewed and must be scientifically credible. Authors may contact the Editor about the suitability of manuscripts for this section.

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Helminths of the Western Chorus Frog from Eastern Alberta, Canada

Abstract

Western chorus frogs from eastern Alberta, Canada were examined for helminths. Two species of trematode (*Apharyngostrigea pipientis* and *Choledocystus pennsylvaniensis*), one species of cestode (*Cylindrotaenia americana*) and two species of nematode (*Oswaldocruzia leidy* and *Rhabdias ranae*) were found. The western chorus frog represents a new host record for *A. pipientis*. Alberta, Canada, represents a new locality record for each species of helminth found in this study.

Introduction

The western chorus frog (*Pseudacris triseriata* [Wied-Neuwied, 1838]: Hylidae) occurs from Great Bear Lake, Northwest Territories, Canada to central Ontario, Canada south to Georgia and the Texas Gulf Coast and west to central Arizona at elevations from near sea level to 3670 m (Stebbins 1985). It is found throughout Alberta except in alpine habitats (Russell and Bauer 1993). There are reports of helminths in western chorus frogs from Ontario (Adamson 1981; Baker 1977, 1978; Vanderburgh and Anderson 1987), Arizona (Goldberg et al. 1996), Colorado (Ubelaker et al. 1967), Indiana (Whitaker 1971), Iowa (Ulmer 1970), Michigan (Muzzall and Peebles 1991), Nebraska (Brooks 1976), Ohio (Ashton and Rabalais 1978; Odlaug 1954), Texas (Harwood 1932), and Wisconsin (Bolek and Coggins 1998). The purpose of this note is to report helminths found in western chorus frogs from eastern Alberta, Canada.

Methods

Thirty-eight preserved adult specimens of western chorus frogs (mean snout-vent length [SVL] = 25.1 mm ± 0.4 SE) were borrowed from the Museum of Zoology, Department of Zoology, University of Alberta, Edmonton (UAMZ) for helminthological examination. Seventeen female (snout-vent length, SVL = 25.9 mm ± 0.6 SE) and 21 male (SVL = 24.5 mm ± 0.4 SE) frogs were examined. These specimens had been collected in 1950, 1951, and 1968 from eastern Alberta within the area bounded by 49°39'-53°36'N and 110°00'-114°35'W. Accession numbers are: UAMZ 129, 133, 184-186, 233-235, 264, 373-376, 387, 387.1-387.17, 423-425, 455, and 1722-1724.

The frogs had been fixed in 10% formalin and preserved in 70% ethanol. We opened the body cavity, removed the gastrointestinal tract by cutting across the esophagus and rectum and examined the stomach, small intestine, large intestine, body cavity, liver, lungs, and urinary bladder using a dissecting microscope. Nematodes were placed on a glass slide, cleared in undiluted glycerol, and identified using a compound microscope.

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TABLE 1. Helminths of the western chorus frog from eastern Alberta, Canada.

Helminth species	Site of infection	Prevalence (%)	Mean intensity \pm SE	Range	Abundance
Trematodes					
<i>Apharyngostrigea pipientis</i> ¹	kidney	8	5.7 \pm 2.0	2-9	0.45
<i>Choledocystus pennsylvaniensis</i>	small intestine	21	11.3 \pm 4.3	1-35	2.37
Cestodes					
<i>Cylindrotaenia americana</i>	small intestine	3	3.0	3	0.08
Nematodes					
<i>Oswaldocruzia leidy</i>	stomach, small intestine	11	3.0 \pm 0.9	1-5	0.32
<i>Rhabdias ranae</i>	lung	3	1.0	1	0.03

¹new host record

Selected cestodes and trematodes were regressively stained with hematoxylin, cleared in xylene, and mounted in balsam for identification using a compound microscope.

Results

Adults of two trematode species, *Apharyngostrigea pipientis* (Faust, 1918) Olivier, 1939 and *Choledocystus pennsylvaniensis* (Cheng, 1961) Byrd and Maples, 1963; one cestode species, *Cylindrotaenia americana* Jewell, 1916; and two nematode species, *Oswaldocruzia leidy* Travassos, 1917 and *Rhabdias ranae* Walton, 1929 were found. Each helminth species was categorized according to the following criteria (Table 1):

- Prevalence: number of individuals of a host species infected with a particular parasite species divided by the total number of hosts examined and expressed as a percentage;
- Mean intensity: summation of individuals of a particular parasite species in a sample of a host species divided by the number of infected hosts;
- Range: minimum to maximum number of individuals of a particular parasite species in a sample of host species;
- Abundance: total number of individuals of a particular parasite species in a sample of hosts divided by the total number of hosts in the sample;
- Infection site: anatomical position of parasite species within host.

There was no significant difference in SVL between female and male frogs (Kruskal Wallis test = 3.64, 1 df, $P > 0.05$). Thirteen (34%) of 38 frogs harbored 123 helminths. Nine frogs harbored one helminth species and four frogs harbored two

helminth species. There was no significant difference in overall infection rate between female and male frogs. The mean number of helminth species per infected host, mean number of helminth individuals per infected host and overall helminth abundance were 1.3 ± 0.1 SE, 9.5 ± 2.7 SE, and 3.2 ± 1.2 SE. The trematode *Choledocystus pennsylvaniensis* had the highest prevalence, mean intensity, and abundance of all helminths in this sample of western chorus frogs.

Selected specimens of the following helminths were placed in vials of 70% ethyl alcohol, deposited in the United States National Parasite Collection, (USNPC) Beltsville, Maryland, and assigned the following accession numbers: *Apharyngostrigea pipientis* (metacercaria) (90116), *Choledocystus pennsylvaniensis* (90117), *Cylindrotaenia americana* (90118), *Oswaldocruzia leidy* (90119), *Rhabdias ranae* (90120).

Discussion

A list of reported parasites for the western chorus frog was provided by Bolek and Coggins (1998). To that list should be added the reports by Harwood (1932) of *Cylindrotaenia americana*, *Brachycoelium salamandrae* (= *B. daviesi*) and *Megalodiscus temperatus*, and by Ulmer (1970) of *Fibricola cratera*. Our report of *Apharyngostrigea pipientis*, *Choledocystus pennsylvaniensis* (= *Glythelmins pennsylvaniensis*), *Cylindrotaenia americana*, *Oswaldocruzia leidy*, and *Rhabdias ranae* should also be added to that list. The western chorus frog represents a new host record for *Apharyngostrigea pipientis*. Alberta, Canada, represents a new locality record for each species of helminth found in this study.

It appears from the parasite list that the western chorus frog is infected by a variety of generalist helminths that infect a number of host species. We concur with Bolek and Coggins (1998) that treefrog helminths are not host specific.

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Received 10 May 2001

Accepted for publication 17 August 2001

Acknowledgements

We thank Wayne Roberts, Collections Manager (Department of Zoology, University of Alberta) for permission to examine specimens of the western chorus frog.