

Helminth Parasites of the White Sucker (Pisces: Catostomidae) in the Kentucky River Drainage

GLENN WHITE AND JOHN P. HARLEY

Department of Biological Sciences, Eastern Kentucky University, Richmond, Kentucky 40475

ABSTRACT

The following helminths were recovered from 100 white suckers (*Catostomus commersoni*) from the Kentucky River drainage system: Acanthocephala, *Acanthocephalus jacksoni* and *Octospinifer macilentus*; Trematoda, *Clinostomum marginatum*, *Neascus* sp., *Phyllodistomum lysteri*, *Plagioporus serotinus*, and *Triganodistomum attenuatum*; Cestoidea, *Glaridacris catostomi*, *Hunterella nodulosa*, and *Monobothrium hunteri*; and Nematoda, *Contracaecum* sp. and *Philometra cylindracea*. *Octospinifer macilentus*, *P. serotinus*, *M. hunteri*, *Contracaecum* sp., and *P. cylindracea* are new state records. *Philometra cylindracea* is also a new host record.

INTRODUCTION

As stated in a previous paper (Bauer and Harley 1973), the helminth parasites of Kentucky fishes have, overall, been grossly neglected when compared with data from other states. A review of the literature indicates that only 2 published works exist on the parasites of the white sucker *Catostomus commersoni* Lacépède in Kentucky: Aliff (1973, unpublished doctoral dissertation, University of Kentucky, Lexington, Kentucky) reported the digenetic trematode *Lissorchis attenuatum* and White and Harley (1973) reported the acanthocephalan *Acanthocephalus jacksoni*, the trematodes *Clinostomum marginatum* and *Neascus* sp., and the cestode *Glaridacris catostomi*.

As a result, it was felt that a more complete study of the parasites should be done on the white suckers in Kentucky. Secondly, *C. commersoni* was chosen for study because it is considered a nonsport or "rough" fish and thus has been neglected in many studies.

MATERIALS AND METHODS

Representative numbers of fish were collected from Boone (11), Eagle (19), Otter (14), Silver (13), and Tate creeks (14), the main channel of the Kentucky River (11), and Kentucky River Lock No. 3 (18). Collections were made over a 13-month period from May 1972 through June 1973.

Fish were either autopsied in the field or were transported alive back to the labora-

tory for autopsy. Internal organs were placed in separate Petri dishes of saline and teased apart. When recovered, cestodes, nematodes, and trematodes were placed in saline. Acanthocephalans were placed in distilled water to evert the proboscis.

Fixation and relaxation of nematodes were accomplished by dropping them in hot 70 percent ethyl alcohol. Cestodes were first relaxed in 4 percent chloretone (Hargis 1953) and then fixed in hot standard AFA solution. Trematodes were placed under a coverslip with slight pressure and flooded with hot AFA. The acanthocephalans were fixed in hot AFA.

Adult acanthocephalans and trematodes were stained with both Harris' hematoxylin and Mayer's paracarmine. Cestodes were stained only with Mayer's stain or placed in polyvinyl alcohol according to Hoffman (1954). All staining was regressive. Destaining, dehydration, and clearing were done by the standard techniques (Guyer 1953). Mounting, except for PVA, was done in permount.

RESULTS AND DISCUSSION

Catostomus commersoni, the common white sucker of the Kentucky River drainage system, has a diverse parasite fauna. Twelve species of helminths were recovered (Table 1). These represented all the major taxa of animal parasites in fishes.

TABLE 1.—NUMERICAL ANALYSIS OF PARASITES OF *CATOSTOMUS COMMERSONI* INCLUDING NEW HOST AND STATE RECORDS. ONE HUNDRED FISH WERE AUTOPSIED. IMM DESIGNATES IMMATURE WORMS

Parasite	% infested	Mean intensity of infestation	Total parasites	Location in fish	New host record	New state record
ACANTHOCEPHALA						
<i>Acanthocephalus jacksoni</i>	58	17	1,005	Intestine		
<i>Octospinifer macilentus</i>	2	6	12	Intestine		×
TREMATODA						
<i>Clinostomum marginatum</i> (Imm)	7	3	19	Fins, musculature, mouth, gill arches		
<i>Neascus</i> sp. (Imm)	11	59	644	External surface		
<i>Phyllodistomum lysteri</i>	4	5	19	Urinary bladder		
<i>Plagioporus serotinus</i>	10	73	729	Intestine		×
<i>Triganodistomum attenuatum</i>	2	3	6	Intestine		
CESTOIDEA						
<i>Glaridacris catostomi</i>	37	3	121	Intestine		
<i>Hunterella nodulosa</i>	8	11	87	Intestine		
<i>Monobothrium hunteri</i>	2	2	3	Intestine		×
NEMATODA						
<i>Contracaecum</i> sp.	9	2	14	Mouth (under epithelial layer)		×
<i>Philometra cylindracea</i>	2	3	6	Body cavity	×	×

The acanthocephalan, *A. jacksoni*, was the most abundant and widespread parasite found. Of the 5 trematodes recovered, the adult fluke *P. serotinus*, as well as the metacercaria of *Neascus* sp., were abundant. Four cestodes were found with *G. catostomi* being the one most commonly encountered. Nematodes were scarce, with only 2 species being found. However, *Contracaecum* sp. proved unusual in having cuticular papillae, and all were found under the epithelial layer of the mouth.

Five of the 12 parasites recovered constituted new range extensions, with Kentucky being a new locality record. In addition, *C. commersoni* is a new host record for *P. cylindracea* in the United States.

The drainage system as a whole appeared to be relatively unpolluted if the diversity and abundance of parasites were used as an index. Clean water is essential for the existence of molluscan and arthropod inter-

mediate hosts, which helminths require for completion of their life cycles.

Two streams in this study deserve special note. Boone Creek lies in Fayette County, an area of rapid growth. This has led to the construction of 4 sewage treatment plants, 2 tertiary and 2 secondary, along this creek. Nevertheless, 10 of the 12 species of parasites were collected at this site. Eagle Creek was unusual because *O. macilentus* and *P. cylindracea* were collected here, but not from the other study areas in the Kentucky River drainage. This possibly could be a result of the piracy of Eagle Creek from the Ohio River during the Pliocene Epoch (Jillson 1949).

Acknowledgments are due Dr. John S. Mackiewicz (SUNY), Professor W. L. Bullock (University of New Hampshire), Dr. John V. Aliff (Georgia College), and Dr. John C. Williams (Eastern Kentucky University).

LITERATURE CITED

BAUER, B. H., AND J. P. HARLEY. 1973. Intestinal parasites from two species of catfishes (Ictaluridae) from Lake Wilgreen in Kentucky. Trans. Ky. Acad. Sci. 34(3,4):55-56.

GUYER, M. F. 1953. Animal Micrology. Univ. Chicago Press, Chicago, Ill. 327 pp.

HARGIS, W. J. 1953. Chloretona as a trematode relaxer, and its use in mass collecting techniques. J. Parasit. 39:224-225.

HOFFMAN, G. L. 1954. Polyvinyl alcohol-fixative adhesive for small helminths and protozoans. Trans. Amer. Microsc. Soc. 73:328-329.

JILLSON, W. R. 1949. The piracy of Eagle Creek. Roberts Printing Co., Frankfort, Ky. 16 pp.

WHITE, G. E., AND J. P. HARLEY. 1973. Helminth parasites of the common white sucker, *Catostomus commersoni*, from Lake Wilgreen in Kentucky. Trans. Ky. Acad. Sci. 34(3,4):53-54.



White, Glen E. and Harley, John P. 1974. "Helminth Parasites of the White Sucker (Pisces: Catostomidae) in the Kentucky River Drainage." *Transactions of the Kentucky Academy of Science* 35(1-2), 24-26.

View This Item Online: <https://www.biodiversitylibrary.org/item/107531>

Permalink: <https://www.biodiversitylibrary.org/partpdf/336977>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: Permission_to_digitize_granted_by_rights_holder

Rights Holder: Kentucky Academy of Science

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.