

Parasites of the White Crappie from Lake Wilgreen, Kentucky¹

JOHN P. HARLEY

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

ABSTRACT

A survey of 150 white crappies from Lake Wilgreen, Kentucky, yielded 8 species of parasites. New host records are reported for *Contracaecum brachyurum* and *Ergasilus arthrosis*. New state records in the white crappie are reported for *Crepidostomum cornutum*, *Posthodiplostomum minimum*, *Proteocephalus ambloplitis*, *Camallanus oxycephalus*, *Contracaecum brachyurum*, *C. spiculigerum*, *Pomphorhynchus bulbocolli*, and *Ergasilus caeruleus*.

INTRODUCTION

To the author's knowledge, the only published work on parasites of the white crappie *Pomoxis annularis* in Kentucky is that of Aliff (1977). He reported a 7 percent rate of infestation with only *Proterometra* sp. being recovered. The present study was undertaken to contribute further information on parasites of the white crappie in Kentucky.

MATERIALS AND METHODS

One hundred fifty white crappies were collected between June and October 1976 from Lake Wilgreen, Madison County, Kentucky. The fish were autopsied and the parasites fixed, stained, and identified according to previously reported procedures (Harley and Keefe 1970, White and Harley 1974).

RESULTS

During the sampling period, approximately 7,300 individual parasitic organisms representing 8 species were recovered from the 150 white crappies autopsied. There was an average of nearly 50 parasites per fish. The following is an annotated list of parasites recovered from *P. annularis* (Table 1).

Pomphorhynchus bulbocolli.—A total of 485 individuals was found in the intestine

of 100 (66%) of the fish examined. The second intermediate host for this parasite is small fish (Cyprinidae). Thus, since minnows constitute a major portion of the white crappie's diet, this could possibly explain the high infestation rate.

According to Ribelin and Migaki (1975), the attachment sites of the very damaging proboscis in the intestine are the seat of prominent lesions and malabsorption syndromes. Since the mean intensity of infestation by this acanthocephalan was high (38/fish), this could possibly be one of the reasons for the overall small size and growth rate of the white crappie in Lake Wilgreen.

Crepidostomum cornutum.—Only 63 individuals were recovered from the intestines of 18 white crappies for a mean intensity of infestation of 5. The low numbers recovered are indications of the fact that one of the intermediate hosts for this trematode is sphaeriid clams of which there are few in Lake Wilgreen.

Posthodiplostomum minimum.—Although large numbers (4,500) of metacercariae were recovered, the mean intensity of infestation (104) and the number of fish infested (43) were light when compared to data from *Lepomis* sp. (Harley and Keefe 1970) in Lake Wilgreen. Overall, crappies do not seem to be as suitable a host for the metacercariae as other Centrarchidae (Hoffman 1967) and that may explain the low levels of infestation. Nevertheless, the plentiful quantity of *Physa integra* and the continued presence of herons probably will

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TABLE 1.—MEAN INTENSITY OF INFESTATION BY VARIOUS PARASITES OF 150 WHITE CRAPPIES FROM LAKE WILGREEN, KENTUCKY, INCLUDING NEW HOST AND STATE RECORDS

Parasite	No. fish infested	Mean intensity of infestation	Total parasites	Location in fish	New host record	New state record
ACANTHOCEPHALA						
<i>Pomphorhynchus bulbocolli</i>	100	38	485	intestine		X
TREMATODA						
<i>Crepidostomum cornutum</i>	18	5	63	intestine		X
<i>Posthodiplostomum minimum</i> ¹	43	104	4,500	liver, heart, kidney		X
CESTOIDEA						
<i>Proteocephalus ambloplitis</i> ²	25	6	91	viscera		X
NEMATODA						
<i>Camallanus oxycephalus</i>	121	12	1,001	anus		X
<i>Contracaecum spiculigerum</i> ³	3	4	8	stomach, intestine		X
<i>Contracaecum brachyurum</i> ³	9	5	37	stomach, intestine	X	X
CRUSTACEA						
<i>Ergasilus arthrosis</i>	34	33	1,129	gills	X	X

¹ Encysted larvae. ² Plerocercoids. ³ Larvae.

maintain this parasite in white crappies in this lake.

Proteocephalus ambloplitis.—Only 91 plerocercoids of this proteocephalid were recovered from 25 crappies with a mean intensity of infestation of 6. These plerocercoids have been reported from the viscera of many species of small fishes (Hoffman 1967) which act as "carriers." Thus, in Lake Wilgreen, the white crappie is a carrier for the plerocercoid of the bass tapeworm and does not harbor the adult worm.

Camallanus oxycephalus.—This nematode was the most prevalent parasite recovered. Eighty percent of the autopsied fish harbored this worm with a mean intensity of infestation of 12. By comparison, Harley and Keefe (1970) found a mean intensity of infestation in *Lepomis* sp. of 4 with only 10 percent of the fish being infested. Thus, in Lake Wilgreen, *Pomoxis annularis* seems to harbor more *C. oxycephalus* than *Lepomis* sp. The reason for this difference cannot be explained based on available data.

Contracaecum spiculigerum.—This nematode was the least prevalent of all parasites

recovered. Only 8 were recovered from 3 crappies for a mean intensity of infestation of 4 with 2 percent of the autopsied fish being infested. Since the larvae have been reported from many species of fishes (Hoffman 1967), there probably is no fish host specificity. The finding of *C. spiculigerum* can be accounted for by the occasional appearance of gulls (Laridae) on the lake. Gulls normally harbor the adults.

Contracaecum brachyurum.—Only 37 larvae were recovered from 9 crappies for a mean intensity of infestation of 5 with 6 percent of the autopsied fish being infested. Like for *C. spiculigerum*, gulls normally harbor the adults, the larval forms infesting the fish that eat them.

Ergasilus arthrosis.—This parasitic copepod was very prevalent on the gills of the autopsied white crappies. Twenty-three percent of the fish surveyed harbored this parasite with a mean intensity of infestation of 33. This was slightly higher than the mean intensity (24) reported by Edwards et al. (1977) for the channel catfish from the Kentucky River. The difference can be accounted for in that *E. arthrosis*

shows seasonal variation with the highest infestation occurring during summer. In this survey, all crappies were collected during summer, while in the survey by Edwards et al. (1977), the channel catfish were collected over a period of 14 months, including winter, which lowered their average rate of infestation.

DISCUSSION

Contracaecum brachyurum and *Ergasilus arthrosis* from the white crappie are new host records for the United States. Those 2 parasites, along with all others recovered, constitute new state records for *Pomoxis annularis* as a host.

With the exception of *Crepidostomum cornutum* and *Ergasilus arthrosis*, all the other parasites have been reported previously from other sunfishes (*Lepomis*) from Lake Wilgreen (Harley and Keefe 1970).

The finding of the parasitic copepod, *E. arthrosis*, is the second report for Kentucky. Edwards et al. (1977) reported it from channel catfish in the Kentucky and Ohio rivers and explained why it has been mistaken for *E. versicolor*.

When compared to other studies on the white crappie (Dechtiar 1972, Becker and Houghton 1969, Arnold et al. 1968, Allison and McGraw 1967) in different parts of the country, the present study has shown a wider diversity and number of parasites recovered. A possible explanation for this is the large number and variety of invertebrate hosts present in Lake Wilgreen (Sugantharaj 1972, unpublished master's thesis, Eastern Kentucky University, Richmond, Kentucky) that the white crappie feeds upon. Also, the lake is highly polluted (Otero and Leung 1972) and this may have something to do with the high diversity of micro- and macroorganisms that serve as food for the white crappie. Apparently, the high rate of parasitic infes-

tation is not unusual for fish in central Kentucky as indicated by other studies (Aliff 1977, Combs et al. 1977, Edwards et al. 1977, White and Harley 1974).

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