

BRIEF NOTE

CHARACTERISTICS OF ANCHOR PARASITES FROM FISHES OF NORTH POND, KELLEY'S ISLAND, OHIO¹

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In 1977, initial results of a study conducted at North Pond, Kelleys Island, Ohio on the population ecology of anchor parasites, a copepod which is parasitic among freshwater fishes, was published (Eisen 1977). The species monitored on the goldfish of North Pond was designated as *Lernaea cyprinacea*.

Fishes were collected from 18 July 1975 to 25 October 1975 and from 8 May 1976 to 16 October 1976. Immediately after being seined from the pond, the fish were fixed in formalin and two days later preserved in 70% ethanol. Parasites were removed from the following species: *Lepomis cyanellus* (green sunfish); *Lepomis macrochirus* (bluegill sunfish); *Lepomis gibbosus* (pumpkinseed); *Micropterus salmoides* (largemouth bass); and *Carassius auratus* (goldfish).

from the tip of the cephalic region to the end of the abdomen but did not include the posterior setae. Egg sacs were measured from their point of origin below the pregenital prominence to the tip. For each of these parameters, 95% confidence intervals were calculated in order to determine the degree of overlap between each host species.

The configuration of the dorsal arms showed 6 dorsal arm configurations that differed in the shapes formed by and the relative sizes of the dorsal arm branches. Three classes of pregenital prominence were recognized, differing in how many lobes were present and in how distinctly separated the lobes were. For both characteristics, each specimen was examined with a dissecting microscope and matched with the configuration type that most closely resembled it.

TABLE 1

Mean and 95% confidence interval of characteristics of anchor worms removed from different host species from North Pond, Kelleys Island, Ohio.*

Parameter (in mm)	<i>Carassius auratus</i>			<i>Lepomis macrochirus</i>			<i>Lepomis cyanellus</i>			<i>Lepomis gibbosus</i>			<i>Micropterus salmoides</i>		
	No.	\bar{X}	95% C.I.	No.	\bar{X}	95% C.I.	No.	\bar{X}	95% C.I.	No.	\bar{X}	95% C.I.	No.	\bar{X}	95% C.I.
Total Length	(45)	8.5	2.19	(50)	7.3	1.76	(50)	7.3	2.02	(7)	8.0	1.96	(17)	8.9	2.22
Egg Sac Length	(25)	2.0	1.51	(31)	1.9	1.17	(33)	1.9	1.40	(6)	2.3	1.44	(11)	2.1	1.75
Dorsal Arm Length	(43)	1.4	1.16	(50)	0.9	0.40	(48)	1.0	0.56	(5)	1.2	1.45	(17)	1.4	0.74
Ventral Arm Length	(34)	0.7	0.34	(50)	0.6	0.27	(47)	0.6	0.28	(5)	0.8	0.67	(17)	0.8	0.41

*C.I. = Confidence Interval, No. = Number of measurements, \bar{X} = mean.

Parasite dorsal arm, ventral arm length, total body length, and egg sac length were measured in millimeters. Dorsal arm length was measured from the point of origin to the tip of the further branch and ventral arm length from the point of origin to its tip. Total body length was measured

Some specimens were damaged during removal from their hosts and as a result, all the parameters listed in tables 1 and 2 could not be measured. Each parameter, therefore, was considered separately and no attempt was made to correlate different parameters together. This procedure accounts for the differences in total numbers of measurements reported in tables 1 and 2.

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TABLE 2

Frequencies of dorsal arm and pregenital prominence configurations of anchor worms from fishes of North Pond, Kelleys Island, Ohio.

	<i>Carassius auratus</i>		<i>Lepomis macrochirus</i>		<i>Lepomis cyanellus</i>		<i>Lepomis gibbosus</i>		<i>Micropterus salmoides</i>	
	No.	%	No.	%	No.	%	No.	%	No.	%
Pregenital prominence										
Bilobed	28	61	5	11	6	13	4	57	15	88
Intermediate	5	11	10	23	8	17	1	14	1	6
Single	13	28	29	66	33	70	2	29	1	17
Total	46	—	44	—	47	—	7	—	17	—
Dorsal arm configuration										
Y-even	4	9	1	2	5	11	1	17	4	24
Y-uneven	29	68	29	58	26	55	2	33	12	70
T-even	4	9	0	0	5	11	1	17	0	0
T-uneven	2	5	0	0	1	2	0	0	1	6
Unbranched straight	3	7	4	8	6	13	2	33	0	0
Unbranched angular	1	2	16	32	4	8	0	0	0	0
Total	43	—	50	—	47	—	6	—	17	—

Total length, egg sac length, dorsal arm length, and ventral arm length were similar in all species (table 1). All host species except *Lepomis gibbosus* exhibited the "Y-uneven" dorsal arm configuration. The most common pregenital prominence configuration among specimens from *Carassius auratus*, *Lepomis gibbosus*, and *Micropterus salmoides* was the bilobed one, whereas the most common configuration found among *Lepomis macrochirus* and *Lepomis cyanellus* was the single one (table 2).

The similarities in metric characteristics and dorsal arm configurations suggest that there is only one species of anchor worm parasite found in North Pond, Kelleys Island, Ohio, and that species corresponds to Harding's 1950 redescription of *Lernaea cyprinacea* Linnaeus (1758). The variability in the dorsal anchors of this single species con-

trasts with work conducted in the Soviet Union, where there may be two related species, one with "T"-shaped dorsal anchors and one with "Y" shaped anchors (Poddubnaya 1974).

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