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PARASITIC EXAMINATION OF SMALLMOUTH BASS FROM  
POND 21, LYDELL HATCHERY, COMSTOCK PARK, MICHIGAN

by

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In July 1943, an experiment was started at Dr. Leonard Allison's suggestion at Lydell Hatchery to attempt to rear smallmouth bass free from infection of Proteocephalus ambloplites, the bass tapeworm, since conditions considered suitable were present at the time. Pond 21 obtains its water supply from Mill Creek and Strawberry Creek both thought to be free from infection of Proteocephalus ambloplites. A number of bass fry were introduced into the pond and a random sample of the bass at this time showed them to be free from infection. Reference is made to previous IFR reports, No's. 714, 852, and 902, for detailed study of this parasite and eliminative methods in fish cultural practices.

On November 22, 1945 at the request of Claude Lydell, District Supervisor of Fisheries Operations, Lydell Hatchery, twelve of these bass were examined for bass tapeworm. The bass were packed fresh in ice and shipped to Ann Arbor where the examination was made by M. W. Pawlick and E. L. Cooper under the supervision of Dr. G. R. La Rue of University of Michigan. The results of this examination are given below.

The fish were measured and general external parasitism noted. The fish were then opened ventrally and the entire viscera exclusive of air bladder, kidneys and oesophagus removed for examination. Special attention was given to gonads, liver, spleen, mesenteries and spaces between caeca of intestine. The entire intestine and stomach were then opened and examined.

A heavy infection of the cercariae of a fluke, probably Diplostomulum sp(?), commonly known as "Black-spot", was noted externally on all fins of every fish. Later examination of the under surface of the skin revealed an equally heavy infection throughout the whole body of the fish in every case. Anglers catching the fish would undoubtedly not eat them, but would throw them away. Although this parasite produces no definite tissue destruction of the fish, it is felt that an infection of this intensity undoubtedly retards the fishes normal growth and well being. A reduction or possible elimination of the snail population of the pond and water supply would reduce this infection.

The bass tapeworm (Proteocephalus ambloplites) was found in seven of the twelve fish examined. These were all in the plerocercoid or second larval stage of its development and of particular interest because it is in this stage that maximum damage to the fish is done.

No tapeworms were found in the gonads or liver, the preferred sites of infection, pointing to a recent infection. All tapeworms were taken from mesenteries in the immediate vicinity of upper intestine. Examination of developmental stage of the worms indicated that the fish were apparently infected in late summer or early fall of 1945, ruling out the possibility that these parasites might have been introduced in the small bass in 1943. No adult tapeworms of this species were found. The infection undoubtedly came from eating infected copepods.

Proteocephalus sp(?) were found in the intestines of seven of the twelve bass examined. These were all adults. The life cycle of this tapeworm is not sufficiently known to say whether they are harmful or not.

It is evident, from examination of this sample, that this attempt to secure a tapeworm-free stock of breeder smallmouth bass has been a failure. These fish can be used for breeder stock with limitations but continued parasitism might render the fish sterile or materially reduce their breeding potentiality. In the event that they are used as breeder stock, it is essential that they be segregated from small fish of all kinds to prevent the bass from eating an infected fish. The larval stage of the parasite found in the bass examined is incapable of maturing and spreading the parasite, unless the bass are eaten by a larger fish.

These bass could be disposed of by planting without harmful effects provided they are large enough to prevent their being eaten by other bass or fresh water dog-fish. Further development of the parasite to an infectious stage requires that they be eaten by either largemouth or smallmouth bass, fresh water dog-fish or the rock bass.

Summary:

(1) The bass tapeworm was found in 58 per cent of the fish examined. These were in plerocercoid stage and indicate that the water supply to Pond 21 harbors both infected bass with adult tapeworms and infected copepods with proceroid stage, since this is the only way the bass could have become infected with plerocercoid stage in Pond 21.

(2) Proteocephalus sp(?) ---another closely related tapeworm---was found in 58 per cent of the fish examined.

(3) Ninety-two per cent of the fish were infected with one or the other of both tapeworms.

Table 1. Incidence of Tapeworms

<u>Fish No.</u>	<u>Length</u>	<u>Sex</u>	<u>Numbers of Proteocephalus sp?</u>	<u>No. of P. ambloplites (Bass tapeworm)</u>
1	11 1/2"	♀	2	0
2	10 1/2"	♂	3	1
3	11 1/2"	♀	3	1
4	10 1/2"	♀	0	2
5	11"	♂	0	0
6	11 1/2"	♀	0	7
7	11 1/2"	♂	0	1
8	11"	♀	2	1
9	12"	♂	10	0
10	10"	♀	0	6
11	10"	♀	2	0
12	11 1/2"	♀	2	0

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