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EXAMINATION OF LARGE-MOUTHED BLACK BASS FROM
RAILROAD LAKE, KINNE CREEK CLUB

Eight large-mouthed black bass collected by Mr. William Loutit from Railroad Lake, Kinne Creek Club, Michigan, May 18, 1937 were examined for general condition and parasites.

Parasites

Several types of parasites were found in the fish, some of them in considerable numbers. In general, it may be said that these fish are more heavily parasitized than is usual, but not excessively so.

Eradication of these parasites from the fish, while highly desirable, is apt to be complex and would need detailed study to determine its feasibility.

None of these parasites are injurious to man in any way except possibly to his esthetic sense.

The following is a brief discussion of the various parasites present in the bass of this lake:

Black spot (Neascus ambloplitis):

This parasite, which appears as a small black spot in the flesh and on the fins and skin, was found in all of the bass examined, varying in numbers from 9 to 41, with an average of 21.5 parasites per fish.

This parasite was most abundant in the flesh, with an average of 9.4 black spots in the flesh of each fish, followed in order of abundance

by the caudal or tail fin (average 3.6), pectoral fins (2.4), and the dorsal fin (1.1). The distribution of this parasite in the fish is shown in Table 1.

It is hard to say whether this particular parasite does much damage to the fish. Certainly the presence of black cysts through the flesh do not add to its attractiveness as food. Whether the parasite itself affects the condition or rate of growth of the fish cannot be determined from the data available on the bass from Railroad Lake.

There are grounds for believing that this parasite when entering the fish in large numbers may cause a severe temporary sickness or even death. However, this fact needs experimental verification.

Table 1

Distribution of Parasites in Body of Large-mouthed Black Bass
From Railroad Lake, May 18, 1937
Neascus ambloplitis

Fish No.	Skin	Head	Eye Socket	Pectoral Fins	Pelvic Fins	Anal Fin	Dorsal Fin	Tail Fin	Musculature	Total
P 629	0	4	0	4	1	1	1	5	3	19
P 622	0	4	0	3	1	2	2	9	20	41
P 626	1	2	1	6	0	0	2	4	8	24
P 628	0	5	0	3	0	0	1	3	13	25
P 624	1	3	1	3	0	1	0	4	11	24
P 627	4	1	0	0	1	0	1	0	7	14
P 623	0	6	0	0	0	0	2	0	8	16
P 625	0	0	0	0	0	0	0	4	5	9
Average	.75	3.1	.25	2.4	.37	0.5	1.1	3.6	9.4	21.5

Spiny headed worms (Acanthocephala):

The spiny headed worms or acanthocephala (acanthos = spine, cephalos = head) were present in all fish examined, ranging in number from 9 to 149, with an average number of 57.2 worms per fish.

These worms live in the intestine, with the spiny head buried in the wall of the gut. Under these conditions, somewhat comparable to a severe case of hookworm in man, it is hard to conceive how the worms could fail

to do considerable damage to the fish, at the very least causing a loss of blood due to the puncture of the intestine wall, at the worst causing impairment of the digestive processes and perforating ulcers.

In the case of the bass from Railroad Lake, the heavy infection would lead one to suspect damage to the fish, but as in the case of the black spot parasite, the material available is inadequate to either confirm or disprove this view, although there is a suggestion in the available data that the higher the number of acanthocephala, the lower the percentage increase in length, or in other words, as the parasites increase the growth rate decreases.

Bass tapeworm (Proteocephalus sp.)

This was present in 75% of the fish examined, and while difficult to count, the average number was about 3.

The form found in this particular group of bass was the adult tapeworm and was present in the intestine. The larval tapeworm, which is the form that does the damage to the ovaries and testes of the bass, is not found in the intestine, but is present in the body cavity. It was not found in this particular group of bass, but is present in the lake.

The life history of this worm is rather interesting. The adult worm living in the intestine sheds eggs which passing out into the water hatch out into a free swimming larva. This is eaten by a small crustacean (water flea) in which it develops further and remains until the crustacean is eaten by a small bass. The parasite is then digested out of the crustacean, bores through the intestinal wall and becomes a larval tapeworm in the body cavity, where it may do considerable damage to the ovaries. If the small bass is now eaten by a larger bass, the larval tapeworm is released and grows to an adult in the intestine, starting the cycle anew.

Yellow grub (Clinostom marginatum)

This form was found in only 2 out of 8 fish (25%) and the average number per fish was 0.5. This worm may cause injury when present in large

numbers, but in the present case is too scarce to consider.

The accompanying table gives a summary of the examination of the fish.

Table 2

General Summation of Parasites

Large-mouthed Black Bass from Railroad Lake, May 18, 1937

Fish No.	Std. Length	Total Wt.	K	Sex	Annuli	Black Spiny		Bass	Yellow
	mm.	Grams				Spot	Worms	Tapeworm	Grub
P 629	214	204.6	2.09	♀ M	IV	19	9	—	0
P 622	223	228.9	2.06	♂ M	IV	41	83	—	0
P 626	228	248.1	2.09	♂ M	V	24	122	+	0
P 628	229	257.3	2.14	♂ M	V	25	18	+	3
P 624	232	279.1	2.24	♀ M	III	24	26	+	0
P 627	236	296.4	2.25	♂ M	IV	14	16	+	0
P 623	237	263.2	1.98	♀ M	III	16	35	+	1
P 625	238	302.8	2.25	♀ M	IV	9	149	+	0
Average			2.14			21.5	57.2		0.5

K is a measure of the condition of the fish. The average value of 2.14 is not very high, which indicates that the fish are relatively thin.

Growth rate

The following table gives the calculated growth history of the fish examined in this and the previous report. As the normal growth of the bass in Michigan is not known, it cannot be said whether this is above or below normal.

Table 3

Calculated Total Length in Inches

Large-mouthed Black Bass From Railroad Lake

Annuli	No. of Specimens	Average Total Length	Calculated length at the end of each year				
			I	II	III	IV	V
V	2	10.9 in.	2.06 in.	5.6 in.	7.2 in.	8.6 in.	9.5 in.
IV	4	10.8	2.8	5.9	8.0	9.6	
III	5	10.3	2.9	6.2	8.8		
II	1	8.5	2.2	6.6			
I	1	8.0	5.6				
Average		10.2 in.	2.9 in.	6.05 in.	8.2 in.	9.3 in.	9.5 in.

Number of Eggs in ovary:

To determine the number of eggs carried by a female in this lake, the ovary of bass No. P 625 was weighed and found to have a weight of 12.6 grams. One gram of ovary was then measured on an analytical balance, and the mature eggs counted, 1020 being present.

The number of eggs in this ovary then was found to be 12,852 ($12.6 \times 1020 = 12,852$).

Recommendations

If further studies are desired on the bass from Railroad Lake, it is suggested that a larger number, 20 or more (preferably more) of all sizes, be collected and sent in, packed in ice. Fresh specimens are much easier to examine and the results are more accurate.

With a larger number of fish, more definite answers could be given to the questions raised.

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