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EXAMINATION OF THE STOMACH CONTENTS OF COMMON SUCKERS (Catostomus c. commersonnii) AND MUD PUPPIES (Necturus maculosus) FROM BEAR LAKE, KALKASKA COUNTY, FOR PRESENCE OF EGGS OF RAINBOW TROUT (Salmo gairdneri).

by

Leonard N. Allison

During the spawning activity of the rainbow trout in Bear Lake, Kalkaska County, in the spring of 1947, numerous sportsmen noticed a great abundance of common suckers in the vicinity of the redds. Since the spawning season of both species occurs at about the same time and place, the situation is not unusual. The sportsmen, many of them trampling the redds as they fished, were concerned about the possibility of the suckers feeding on the eggs of the rainbow trout. To satisfy their curiosity and to convict or acquit the sucker of charges of predation, a spearing party was organized to spear suckers on the night of May 20, 1947. Conservation Officer Charles Hicking of Kalkaska secured permission for the spearing party. The party was composed of five boats of two men each. Conservation Officer Clarence Roberts of Grayling assisted in supervision of the activity.

A strong east wind developed on the night chosen for spearing by jack-light and visibility was very poor, except in very limited areas near the east shore. Very few suckers were running, in comparison to the nights prior to and following May 20, 1947. Only thirteen suckers were collected by the spearing party in approximately five hours of spearing.

Numerous mud puppies (Necturus maculosus) were observed in the vicinity of the rainbow trout redds so it was decided to collect a sample for possible implication in predation of trout eggs. Accordingly, 55 mud-puppies were speared.

The stomach contents of all specimens were examined in the laboratory for presence of trout eggs. No attempt was made to make a complete stomach analysis. The following tables give the findings of the examinations:

Necturus maculosus

	Length (inches)	Sex	Stomach contents	
			Trout Eggs	Other
1.	9.7	male	negative	insect larvae crayfish, worms
2.	11.2	male	negative	empty
3.	11.6	female	negative	insect larvae worms, fish remains
4.	11	female	negative	insect larvae worms
5.	12	male	negative	fish remains
6.	9.8	female	negative	insect larvae crayfish
7.	12.6	female	negative	insect larvae fish remains
8.	13	female	negative	insect larvae
9.	12.8	female	negative	insect larvae sucker eggs
10.	12.6	female	negative	insect larvae
11.	12.3	female	negative	insect larvae
12.	10.1	female	negative	fish remains
13.	11	female	negative	insect larvae worms
14.	11.4	female	negative	insect larvae crayfish

Necturus maculosus

	Length (inches)	Sex	Stomach contents: Trout Eggs	Stomach contents: Other
15.	10.5	male	negative	insect larvae
16.	12.2	female	negative	insect larvae
17.	9.6	male	negative	insect larvae
18.	12	female	negative	insect larvae
19.	11.7	female	negative	insect larvae
20.	10.5	male	negative	insect larvae sucker eggs (white)
21.	11.5	male	negative	insect larvae
22.	11.7	female	negative	insect larvae
23.	12.2	female	negative	insect larvae crayfish
24.	11.3	female	negative	insect larvae
25.	9	female imm.	negative	insect larvae
26.	11.4	male	negative	insect larvae minnow, sucker eggs
27.	10.8	female	negative	insect larvae
28.	9.3	male	negative	insect larvae
29.	11.5	male	negative	insect larvae fish remains, crayfish
30.	11.1	female	negative	insect larvae
31.	10.5	female spent	negative	insect larvae
32.	11	female ripe	negative	insect larvae
33.	13.2	male ripe	negative	crayfish
34.	8.8	female imm.	negative	Iowa darter
35.	12	female ripe	negative	insect larvae
36.	12.4	male	empty	...
37.	8.5	male imm.	negative	insect larvae
38.	8.3	male imm.	empty	...
39.	11.5	female imm.	negative	insect larvae
40.	11.3	male ripe	negative	insect larvae
41.	12.5	female ripe	negative	insect larvae
42.	11.8	female ripe	negative	insect larvae
43.	14	female ripe	negative	fish remains
44.	11.8	female spent	negative	insect larvae
45.	10.1	male ripe	negative	insect larvae
46.	9.7	male ripe	negative	insect larvae
47.	11.5	male ripe	negative	insect larvae
48.	13.1	female ripe	negative	fish remains
49.	14.5	female ripe	negative	insect larvae
50.	13.3	male ripe	negative	perch - 5"
51.	14.1	female ripe	negative	fish remains
52.	11.5	female spent	negative	insect larvae
53.	11.9	male ripe	negative	insect larvae
54.	11.8	female ripe	negative	insect larvae
55.	11.2	male ripe	negative	three crayfish

Common suckers

	Length (inches)	Weight	Sex	Blindness	Trout eggs in stomach
1.	18.5	2 lbs. 2 oz.	male	partial	12 eggs
2.	16.5	1 lb. 5 oz.	female	total	negative
3.	16.8	1 lb. 10 oz.	male	total	negative
4.	20	2 lbs. 8 oz.	male	total	negative
5.	16.9	1 lb. 10 oz.	male	total	negative
6.	17.1	1 lb. 11-1/2 oz.	female	total	negative
7.	18.4	2 lbs. 1-1/2 oz.	female	total	negative
8.	16.9	1 lb. 10 oz.	female	total	negative
9.	16.5	1 lb. 7 oz.	male	total	negative
10.	16.2	1 lb. 2-1/2 oz.	male	total	negative
11.	19	2 lb. 3-1/2 oz.	male	total	negative
12.	17.4	1 lb. 5 oz.	female	total	negative
13.	17.9	1 lb. 12-1/2 oz.	female	total	negative

It may be noted that only one of the suckers had consumed trout eggs, and that no trout eggs were found in the mud-puppies, although two had dined on sucker eggs. A larger collection of suckers during the spawning activity of rainbow trout would be necessary before definite conclusion as to frequency of trout egg predation could be made. The number of mud puppies collected from the vicinity of trout redds is adequate to conclude that they are not an important predator of trout eggs in Bear Lake.

Another interesting phenomenon that was checked by the collection of suckers, was verification of the report of Mr. Arnold Hubbell of the Grayling Fish Hatchery staff that many suckers in Bear Lake were blind. All thirteen suckers collected were affected by the cataract worm (Diplostomum sp.). The lenses of both eyes of all specimens were white and opaque and contained cataract worms. Three additional suckers have been examined and they also appeared to be totally blind. A larger collection of suckers from this lake would be desirable to check the percentage of blindness present and to compare their coefficient of condition with normal suckers on the state average.

The presence of a high percent of infection with cataract worm among suckers has serious potentialities in relation to game fish and fishing. The same cataract worm also infects trout and there is a possibility that trout in the lake may also become blind. Should such a thing occur, the trout would be very difficult to catch. However, the difference in habitat between suckers and trout may be sufficient to protect the trout. The stage of the cataract worm infective to fish is carried by a snail, and warm water favors its development in the snail. The adult worm is carried by herring gulls, which are occasional visitors to Bear Lake.

Considerable research has been done at the University of Michigan Biological Station, Douglas Lake, Michigan, on the cataract worm in suckers from Douglas Lake. The percentage of infection here was over 90 percent. Studies of the infection in snail hosts revealed that only species of lymnaeid snails (Stagnicola emarginata angulata (Sowerby), S. emarginata canadensis (Sowerby), Lymnaea stagnalis appressa Say, L. stagnalis perampla Walker, Bulminea megasoma (Say), Stagnicola exilis (Lea), S. palustris elodes (Say), Fossaria abrussa (Say), and F. humilis modicella (Say)) became infected and that the snails were infected early in the spring. Cercariae were not liberated until late summer and fall, and very few were liberated in the spring. Since rainbow trout spawn early in the spring, they may escape being infected by the cataract worm to as great a degree as the suckers are in Bear Lake.

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