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FEEDING HABITS OF BROOK TROUT FRY IN NATURAL WATERS*

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The purpose of this brief note is to place on record certain findings in regard to brook trout (Salvelinus fontinalis) fry feeding habits which are at variance with other published observations.

On March 24, 1936, Mr. D. S. Shetter of the Institute and myself made a census of brook trout fry in the North Branch of the Au Sable River near Lovells, in Crawford County, Michigan. The section of stream selected was one in which we had observed heavy concentrations of spawning brook trout during the two preceding spawning seasons.

Of the fish secured at this time, a series was preserved for study. Stomach analyses were conducted on 50 individuals, ranging in standard length from 17 to 22 mm., average 19.18 mm.

A survey of the literature indicates that relatively few studies of trout feeding habits have been extended to very young fish. Exceptions are the work of Clemens (1928), Ricker (1930), and White (1930). The relation of my findings to those of Clemens are somewhat obscured by his method of recording, whereby he considered together all fish 2 inches or less in length. Ricker's studies showed that the diet of brook trout 0.8 to 1.0 inches in length was made up of Chironomidae to the extent of 28%, the

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inches
 remainder being largely ostracods and copepods; in fry 1.0-1.5₁ the diet had changed to 73% Chironomidae and only small amounts of the other two groups mentioned. White, working on fry obtained from a small stream on Prince Edward Island, found chironomid larvae made up almost 70% of the total stomach contents, with small amounts of copepods, black-fly larvae, mayfly nymphs, and oligochaete worms.

The results of the present analysis may be tabulated as follows:

CRUSTACEA	
Copepoda	3.4%
INSECTA	
Collembola	3.8%
Ephemeroptera	
Baetidae (nymph)	0.7%
Odonata	
Gomphidae (nymph)	0.2%
Plecoptera	
Capniidae (nymph)	1.5%
Trichoptera	
Limnephilidae (larvae)	0.1%
Diptera	
Chironomidae (larvae)	11.4%
Chironomidae (pupae)	78.6%
Undetermined (2 larvae)	0.3%
Total	
100.0%	

Thus it may be seen that 90% of the food taken in the North Branch was composed of midge larvae and pupae. It is interesting to observe that the pupae bulked approximately seven times as large as the larvae, although bottom samples taken not far away had contained from forty to three hundred times as many larvae as pupae. One species of midge, apparently an Orthocladus, made up most of the volume. Three specimens of a second Orthocladus, and one of Tanytarsus, were encountered among the pupae.

The high percentage of chironomids in the stomachs is quite striking, indicating that they may become preferred items of diet for trout fry less than one inch in length.

Literature Cited

- CLEMENS, W. A. 1928. The food of trout from the streams of Oneida County, New York State. Trans. Amer. Fish. Soc., 58:183-197.
- NEEDHAM, P. R. 1930. Studies on the seasonal food of brook trout. Trans. Amer. Fish. Soc., 60: 73-86.
- RICKER, W. E. 1930. Feeding habits of speckled trout in Ontario waters. Trans. Amer. Fish. Soc., 60: 64-72.