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INSTITUTE FOR FISHERIES RESEARCH
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Report 313

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ANALYSIS OF THE STOMACH CONTENTS OF THIRTEEN AMERICAN MERGANSERS TAKEN FROM
THE ESCANABA RIVER, MICHIGAN DURING SEPTEMBER 1935

Thirteen American mergansers (identified as such by Mr. Milton B. Trautman) were received by the Institute for Fisheries Research on September 18. On the date of their arrival, the ducks were dissected and their stomachs preserved in formalin. Analysis of the stomach contents of these birds was made on September 19 and 20 by the writer.

According to a letter received from Clare Farwell and data given on a label accompanying the shipment of mergansers, these birds were shot during the morning and afternoon of September 15, 1935 on the Escanaba River (T. 41 N., R. 23 and 24 W., Delta County, Michigan) by members of the Wolverine Sportsman's Club of Escanaba accompanied by three Conservation Officers. The birds were shipped from Escanaba on September 16. Mr. Farwell, in his letter, stated that "the ducks were shot after numerous reports were sent in that they were destroying the trout planted on the river about a month ago".

The task of identifying the contents of these stomachs was unusually difficult since the Institute did not receive the birds until approximately three days after they had been shot. A considerable amount of decomposition of the stomach contents took place during those three warm days intervening between the shooting of the birds and the preservation of their stomachs. Under such circumstances, it is extremely advisable that the birds be packed in ice during their transportation.

Each stomach contained from one to six or more fish which were more or less intact and could be identified to the species or subspecies, and usually, in addition, a diffuse mass of pulverized fish flesh and bones representing the remains of one to

several fish. Among such masses of remains, the identification of the fish (based on features of the bones of the head) was sometimes difficult: the remains of the two trout, which were encountered, could be identified as either brook trout (Salvelinus f. fontinalis) or brown trout (Salmo fario), but the writer was not certain which of these two species was represented; ⁽¹⁾ among the minnows, it was often possible to identify them only as members of the "minnow family" (Cyprinidae). The contents of the stomach of each merganser are listed separately in the following Table I.

Summary

The following summary remarks are based solely on those food items which were identified. However, since more than three-fourths (by volume) of the total contents of all of the thirteen stomachs was accurately identified, these following summary conclusions are probably fairly accurate in depicting the diet of these American mergansers on the Escanaba River in September.

The stomachs of all 13 birds contained fish remains.

Of the stomachs of these 13 birds, 7 contained fan-tailed darters (Catostomus flabellaris lineolatus); 7 contained smallmouth black bass (Micropterus dolomieu); 7 contained minnows (family Cyprinidae); 5 contained common suckers (Catostomus commersonii commersonii); 2 contained trout (either brook or brown — probably brook trout); 2 contained crayfish, and 2 contained snails (Physa sp.).

The total contents of the 13 stomachs (those food items which could be identified) included: 24 smallmouth black bass, 17 minnows (representing 4 species) of the family Cyprinidae, 8 fan-tailed darters, 6 common suckers, 3 snails, 2 trout and 2 crayfish.

There is, of course, the possibility that some of the fish, contained in the merganser stomachs, had been captured by the ducks while on some other stream, and that only a portion of the items listed were taken by the birds from the Escanaba River. The chances of this being the situation are not so great as one might

(1) However, it seemed most probable that they were both brook trout.

Table I

Merganser	Food item	Body length of food item in inches	Volume of food item in c.c.	Remarks
Adult female in "flapper stage". Wing feathers one-fourth grown.	Fan-tailed darter (<u>Catopterus f. lineolatus</u>)	1.8	1.0	Few scattered remains. Teeth 4,1-0,4
	" " " " " "	1.5*	0.2	
	Crayfish	-	-	
	River chub (<u>Nocomis biguttatus</u>)	3.3	8.5	
Adult female in "flapper stage".	Fish remains	2.0*	1.5	Fish almost completely digested; could not be identified.
Female adult.	Common shiner (<u>Notropis cornutus</u>)	5.2	45.0	3 years old (2 annuli). Young of 1935. " Had apparently been partly swallowed by the bass at the time the bass was eaten by the bird.
	Smallmouth black bass (<u>Micropterus dolomieu</u>)	3.2	12.0	
	" " " " "	3.1	10.0	
	" " " " "	2.8	5.0	
	" " " " "	2.9	7.0	
	" " " " "	3.1	6.0	
	" " " " "	2.8	9.0	
	" " " " "	3.1	10.0	
	Fan-tailed darter (<u>Catopterus f. lineolatus</u>)	1.7	1.0	
	Female	Smallmouth black bass (<u>Micropterus dolomieu</u>)	2.3*	
Fan-tailed darter (<u>Catopterus f. lineolatus</u>)		1.7	0.7	
Female	Smallmouth black bass (<u>Micropterus dolomieu</u>)	3.1	11.0	Young of 1935. " " " " " " " " " Teeth 4,2-2,4 Teeth 4,2-1,4
	" " " " "	3.7	8.0	
	" " " " "	3.3	12.0	
	Fan-tailed darter (<u>Catopterus f. lineolatus</u>)	0.9	0.2	
	Horned dace (<u>Semotilus a. atromaculatus</u>)	2.5	4.0	
	" " " " "	2.4*	1.0	
	Black-nosed dace (<u>Rhinichthys a. atronasus</u>)	1.3	0.5	
	" " " " "	1.3*	0.4	
	" " " " "	1.2	0.5	
	" " " " "	1.3*	0.7	

Table continued

Merganser	Food item	Body length of food item in inches	Volume of food item in c.c.	Remarks
Previous bird continued.	A mass of fish flesh and bones containing the remains of: 2 Black-nosed dace (<u>Rhinichthys a. atronasus</u>) 1 Minnow At least 2 other small fish		} 2.7	
Male	Common shiner (<u>Notropis cornutus</u>)	6.0*	21.0	Teeth 4,2-2,4
Male	Common sucker (<u>Catostomus c. commersonii</u>)	9.0*	64.0	
Male	Smallmouth black bass (<u>Micropterus dolomieu</u>) Fan-tailed darter (<u>Catnotus f. lineolatus</u>) Snail (<u>Physa</u> sp.) A mass of fish flesh and bones, containing the remains of: 2 minnows (Cyprinidae), probably common shiners 2 smallmouth black bass (<u>Micropterus dolomieu</u>) Crayfish Several other small fish	3.0 1.8 4.0* 6.0* 4.0* & ?	11.0 1.5 } 22.0	Young of 1935. 1 specimen. Teeth 4,1-1,4 Teeth 4,1-2,4 Young of 1935 Few remains
Sex ?	Fan-tailed darter (<u>Catnotus f. lineolatus</u>) Snail (<u>Physa</u> sp.) A mass of fish flesh and bones containing the remains of: 1 trout (either brook or brown - probably a brook trout) Common sucker (<u>Catostomus c. commersonii</u>)	1.8 4.5* 5.0*	1.2 } 49.0	2 specimens. This mass also contained one small fish (about 3 inches long) and probably several other small fish.
Sex ?	Common sucker (<u>Catostomus c. commersonii</u>)	8.0*	78.0	
Sex ?	Smallmouth black bass (<u>Micropterus dolomieu</u>) 1 minnow (Cyprinidae) Teeth 4,1-0,4		} 3.0	This stomach contained only a small mass of fish bones and flesh.

Table 1 continued

Merganser	Food item	Body length of food item in inches	Volume of food item in c.c.	Remarks
Sex ?	Smallmouth black bass (<u>Micropterus dolomieu</u>)	2.4	6.0	Young of 1935
	" " " " "	2.3	5.0	" " "
	" " " " "	2.4	4.0	" " "
	" " " " "	2.5	3.0	" " "
	" " " " "	2.6	4.0	" " "
	" " " " "	2.4	6.0	" " "
	" " " " "	2.3	6.0	" " "
	" " " " "	1.5	1.0	" " "
	Common sucker (<u>Catostomus c. commersonii</u>)	2.7*	2.2	
	A mass of fish flesh and bones containing the remains of:			
	Common sucker (<u>Catostomus c. commersonii</u>)	4.0*	} 32.0	Teeth 4,2-2,4 Teeth 4-4
	Common shiner (<u>Notropis cornutus</u>)	6.0*		
	Chub (Cyprinidae) (<u>Nocomis?</u>)	7.0*		
	At least 3 other fish	3* to 6 *		
Sex ?	Smallmouth black bass (<u>Micropterus dolomieu</u>)	2.5	6.0	Young of 1935
	Fan-tailed darter (<u>Catnotus f. lineatus</u>)	1.5*	2.0	3 specimens
	A mass of fish flesh and bones containing the remains of:			
	One trout (either brook or brown — probably a brook trout)	5.0*	} 54.0	
	Common sucker (<u>Catostomus c. commersonii</u>)	5.0*		
	At least 4 other small fish	3* to 6 *		

* Length estimated.

expect, for birds, having a relatively high body temperature, digest their food very rapidly. If, however, some of the fish were captured from some other stream before the birds arrived on the Escanaba River, then it appears probable that most of the bass and darters (which had undergone very little digestion up to the time the birds were shot) originated in the Escanaba River, while the two trout (which were almost completely digested) may have originated in some other stream.

This evidence does not confirm the local fears that the mergansers in the Escanaba were feeding very heavily on the recently planted trout fingerlings. It may be pointed out that no general conclusions should be drawn from this report, since it covers only a small part of the Institute's investigation of the status of the merganser as a fish predator in Michigan.

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