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INSTITUTE FOR FISHERIES RESEARCH
UNIVERSITY MUSEUMS
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN
May 20, 1936

REPORT NO. 359

MERGANSER STUDIES MADE DURING THE WINTER OF 1935-36

by

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The following report is concerned chiefly with findings obtained from an analysis of the stomach contents of 98 American Mergansers and 2 Red-breasted Mergansers, collected in pursuance of the Merganser Control Program of the Department of Conservation.

Mergansers were collected by various members of the Field Administration Force, and were shipped to the Institute for Fisheries Research, or picked up by Institute field workers. The authors devoted some time during January, February and March to stream patrol, with a view to determining centers of merganser concentration. On two occasions they participated in hunts organized by Conservation Officers.

Our observations would indicate that relatively few lower peninsula trout streams had to withstand dangerous merganser concentrations during the past winter. This conclusion is supported by the opinions of a considerable number of Conservation Officers contacted in the field. If the number of birds collected from a given locality may be construed as giving an index to concentration at such a point, it may be concluded that the larger waters, such as the Muskegon River below Big Rapids and the Au Sable below Mio, supported many more ducks per linear mile than did the smaller trout streams, such as the East Branch of Big Creek in Oscoda County, and the North Branch of the Au Sable in Crawford County. An exception to this is offered by the Platte River in Benzie County, where the largest single collection of recovered ducks was made. This exceptional case may well be explained by the fact that the collection was made at a point within 15 miles of Lake Michigan. It is to be expected that ducks driven from the bays and estuaries of the Great Lakes would travel inland no further than necessary.

During late February, practically no ducks of any species were observed on the Pigeon, the Sturgeon, and the Black rivers. The ice formation on these streams was so extensive that very little open water remained available for ducks during their period of greatest winter inland abundance.

On most of the streams which remained at least partly open, Golden-eyes were present in large numbers. The harmlessness of the feeding habits of this species have been discussed in an earlier report (No. 283). It was found, through conversation, that many residents of the state still confuse Golden-eyes with mergansers, a point to be borne in mind when reports of heavy merganser concentration are received from other than competent observers.

The attached pages bear a listing of the contents of each stomach, with volume and percentage of total volume of each item. It will be seen that of the 100 mergansers examined, 56 had eaten trout, and of these 33 had eaten trout exclusively. For the 56 stomachs, the average content was 2.5 trout, the sizes ranging from as small as 3 inches to as large as 15 inches with an average of 6.8 inches, based on estimated lengths. Of 36 birds collected on the Platte River, 28 contained trout, the average number per stomach remaining at approximately 2.5.

Other food organisms taken included frogs, crayfish, insects, and several species of minnows and darters, in addition to yellow perch, sunfish, bass, rock bass, suckers and muddlers. Attention might be directed to the fact that in the stomach of a merganser shot February 19 on the North Branch of the Au Sable, near Lovells, there was found a portion of a trout jaw-tag.

Inasmuch as the winter of 1935-36 just concluded was a most severe one, attended by very extensive ice formation on all inland waters, merganser concentration might have been expected to reach a point near the maximum. To judge from our own observation, from reports of Conservation Officers, and from the numbers of mergansers collected and referred to the Institute, it is our opinion that the present Merganser Control Policy should be retained, pending further investigation. It is a well recognized fact that merganser concentrations vary greatly, depending largely on the extent of

ice formation. For this reason, occasionally it may be found expedient to modify the present control measures to meet special conditions.

It is recommended that deputization of men not in the employ of the Department of Conservation for participation in merganser shoots be resorted to only in extreme cases, and that, when this is done, the greatest care be exercised in selection, so that danger to the valuable Golden-eye may be reduced to a minimum.

Stomach Analyses of Mergansers

1.	Red-breasted Merganser, imm. ♀ T 26 N, R 14 W, Platte R. Feb. 17, 1936	1 perch, measured length 2.5" . . . unidentifiable fish remains, including 1 minnow	1.50 cc. 3.50	30% 70%
		Total vol. . . .	5.00 cc.	
(All following are American Mergansers)				
2.	Adult ♂, 1500 gms. T 26 N, R 14 W, Platte R. Feb. 17, 1936	Skeletal remains of crayfish, estimated 3" long, + a very few fish bones, apparently trout . . .	5.00 cc.	100%
3.	♀, 1010 gms. T 26 N, R 14 W, Platte R. Feb. 18, 1936	4 rainbow trout, est. average length, 4". Remains,	16.00 cc.	100%
4.	Adult ♂, 1485 gms. T 26 N, R 14 W, Platte R. Feb. 18, 1936	1 crayfish . . . remains (50-50). 1 trout est. 4"	5.00 cc.	100%
5.	Adult ♂, 1710 gms. T 26 N, R 14 W, Platte R. Feb. 17, 1936	Well digested remains of 3 trout, probably rainbows, probably 3-6", .	35.00 cc.	100%
6.	Adult ♂, 1470 gms. T 26 N, R 14 W, Platte R. Feb. 17, 1936	Remains of 1 crayfish	5.80 cc.	100%
7.	Adult ♂, 1470 gms. T 26 N, R 14 W, Platte R. Feb. 18, 1936	1 <u>Lethocerus americanus</u> (Giant Water Bug), 2.5" 1 small trout, est. 4",	5.00 cc. 4.00	55.5% 44.5%
		Total vol. . . .	9.00 cc.	
8.	♀, 943 gms. T 26 N, R 14 W, Platte R. Feb. 17, 1936	1 brook t., est. 5" 3 small rainbows (remains) 4" ave. est. Partially digested flesh & bones . . .	10.00 cc. 6.50 3.50	50.0% 32.5% 17.5%
		Total vol. . . .	20.00 cc.	
9.	Adult ♂, 1583 gms. T 26 N, R 14 W, Platte R. Feb. 17, 1936	Remains of at least 6 trout, probably rainbows, 4" ave. est. Remains of crayfish & trout . . .	87.00 cc. 15.00	85.3% 14.7%
		Total vol. . . .	102.00 cc.	

10. Imm. ♂, 1470 gms. T 26 N, R 14 W, Platte R. Feb. 17, 1936	Digested remains of 3 small (3" ave. est.) trout 15.00 cc. 93.75% Digested remains of 1 unidentified fish 1.00 6.25%
11. ♀, weight not listed. T 26 N, R 14 W, Platte R. Feb. 18, 1936	1 partially digested rainbow, 4.5" . . 18.00 cc.) 1 " " " 5.0 . . 10.00) 1 " " " 6.0 . . 10.00) 100% trout 1 " " brook T. 4.0 . . 5.00) 1 " " " 6.0 . . 15.00) Bones & remains including at least 1 more trout 7.00) Total vol. . . 65.00 cc.
12. Sex ? Platte R. Feb. 17, 1936	1 undigested crayfish, measured length 2.5" 8.00 cc.) 11.5% 1 partially digested rainbow, 8.0" . . 22.00) 1 " " " 5.0 . . 7.50) 63 % 1 " " " 4.5 . . 10.00) 1 " " " 4.0 . . 2.50) Fish & crayfish debris 15.00) 1 minnow, about 3", remains 2.00) 25.5% Total vol. . . 67.00 cc.
13. ♀, 1130 gms. T 26 N, R 14 W, Platte R. Feb. 18, 1936	1 rainbow, 6" measured length 26.00 cc.) 1 " 5" " " 25.00) 1 " 5-6" estimated " 24.00) 100% 1 " 3-4" " " 5.00) 1 " 4-5" est., + flesh & bones . 20.00) (1 trout egg found in stomach) Total vol 100.00 cc.
14. Adult ♂, 1575 gms. T 26 N, R 14 W, sec. 16 Platte River March 2, 1936	1 trout, probably rainbow, estimated length 10" 45.00 cc. 100%
15. T 26 N, R 13 W, Sec. 7 Platte River Adult ♂, 1465 gms. March 2, 1936	Remains of at least 2 trout, est. 7", probably rainbows 40.00 cc. 100%
16. Sex ?, 1075 gms, (C-124) T 26 N, R 13 W, Sec. 6 Platte River March 2, 1936	1 crayfish leg 1 mud minnow, 4" measured length . . . 11.00 cc.) 100% partially digested fish remains . . . 3.00) Total vol. . . 14.00 cc.
17. Imm. ♂, T 26 N, R 14 W, Platte R. Feb. 25, 1936	1 brown trout, measured length 10.25" 133.00 cc.) 1 " " " " 4.50" 10.00) 1 " " " " 3.50" 8.00) 100% 1 " " estimated " 7.00" 58.00) 1 " " " " 10.00") Total 209.00 cc.
18. ♂, 1366 gms., K-388 T 26 N, R 14 W, Platte R. Feb. 25, 1935	Gravel only 3.00 cc. 100%
19. Adult ♂, T 26 N, R 14 W, Sec. 16. Platte River March 3, 1936	Bones of 1 small trout 2.00 cc. 100%

20. Adult ♂, 1594 gms, K-398 T 26 N, R 14 W, Platte River Feb. 25, 1936	1 lamprey ammocoete, 5" meas. length . 3.00 cc. Remains of 6 rainbows, est. lgth. 4-8" 75.00 Total vol. 78.00 cc.	4% 96%
21. Imm. ♂, T 26 N, R 14 W, Sec. 16. Platte River March 3, 1936	Remains of 1 crayfish, and of 1 small trout11.00 cc.	100%
22. ♀, T 26 N, R 14 ", Sec. 16. Platte River. March 3, 1936	1 crayfish (remains) 1.00 cc. Partially digested remains of 4 rainbows, estimated to range in length from 5-9" 61.00 Total vol. 62.00 cc.	2% 98%
23. ♀, T 26 N, R 14 W, Platte R. Feb. 25, 1936	Remains of 3 rainbows, estimated to range in size from 5 - 9" 21.00 cc.	100%
24. Sex ?, 1047 gms. T 26 N, R 14 W, Platte R. Feb. 17, 1936	Gravel + a few unidentifiable fish bones 1.50 cc.	100%
25. ♀, T 26 N, R 14 W, Platte R. Feb. 17, 1936	1 log-perch (<i>Percina caprodes</i>), measured length 3.25" 3.00 cc. At least 1 trout, + unidentifiable fish remains 70.00 Total 73.00 cc.	2.7% 97.3%
26. Imm. ♂, 1387.5 gms, T 26 N, R 14 W, Platte R. Feb. 17, 1936	1 brown trout, 5" est. length . . . 7.50 cc.) 1 " " 10" " " . . .) 60.00 1 " " 3.5" " " . . .) Partially digested flesh and bones 12.50 Total 80.00 cc.	100%
27. Imm. (♂) 939 gms, T 26 N, R 14 W, Platte R. Feb. 18, 1936	Gravel only 1.50 cc.	100%
28. Adult ♂, 1456 gms, T 26 N, R 14 W, Platte R. Feb. 17, 1936	1 rainbow, 8" estimated length . . 21.00 cc.) Partially digested remains of above trout, + remains of 1 crayfish . . 10.50 Total 31.50 cc.	100%
29. Adult ♂, 1614 gms, T 26 N, R 14 W, Platte R. Feb. 18, 1936	1 rainbow, 6" estimated length . . 7.00 cc.) 1 " 5" " " . . . 5.00 1 " 4" " " . . . 3.50 Remains of 3 others 37.00 Total 52.50 cc.	100%
30. Imm. ♀, 1633 gms, T 26 N, R 14 W, Sec. 7, Platte River, March 1, 1936	Remains of 5 rainbows estimated to average 6" in length 57.00 cc.	100%
31. Imm. ♀, T 26 N, R 13 W, Sec. 6 Platte River, March 2, 1936	Remains of 2 trout, probably rainbows, estimated 4-6" in length, + 1 muddler, + 1 minnow 20.00 cc.	75% trout 25% other fish

32.	Imm. ♂, 1255 gms, T 26 N, R 13 W, sec. 6 Platte River, March 3, 1936	Skeletal fragments of 1 crayfish, about 2" in length	3.00 cc. 100%
33.	Sex ? (brownhead) T 26 N, R 13 W, Sec. 7, Platte River, March 2, 1936	1 rainbow, 8" estimated length . . . 1 " 4" " " " + remains Total	35.00 cc.) 10.00) 100% 45.00 cc.
34.	Adult ♂, 1707 gms, T 26 N, R 13 " , Sec. 7, Platte River, March 1, 1936	Bony remains of 2 small trout, probably 3-5" in length	9.00 cc. 100%
35.	Adult ♂, 1603 gms, T 26 N, R 13W, Sec. 7, Platte River March 8, 1936	Remains of 1 rainbow at least 12" long	22.00 cc. 100%
36.	♀, 1167 gms, T 26 N, R 14 W, Sec. 13, Platte River, March 8, 1936	3 small rainbows, averaging about 5" Ducks from Boardman River	25.00 cc. 100%
37.	Adult ♂, T 26 N, R 10 W, Sec. 17, March 1, 1936	Remains of 1 trout, est. length 9" . .	6.00 cc. 100%
38.	Sex ? T 27 N, R 11 W, Sec. 15, March 1, 1936	Sand and gravel only	1.20 cc. 100%
39.	Adult ♂, (K-395) T 27 N, R 11 W, Sec. 11, March 1, 1936	Partially digested remains of a very large rainbow, est. 15" length, + a very few crayfish remains	40.00 cc. 100%-
40.	♀, T 27 N, R 11 W, Sec. 15 March 1, 1936	1 rainbow, 12" estimated length . . . 1 " 10" " " . . . 1 " 6" " " . . . 1 " 4" " " . . . 1 muddler, 3.25" measured " . . . Total	53.00 cc.) 147.00) 97.7% 8.00) 4.00) 5.00) 2.3% 217.00 cc.
41.	Sex ? T 27 N, R 11 W, Sec. 15, March 1, 1936	Remains of 3 small perch, estimated length 2" Partially digested flesh & bones, + gravel Total	3.00 cc.) 5.00) 100% 8.00 cc.
42.	♀, T 26 N, R 10 W, Sec. 17, March 1, 1936	1 brown trout, 10.25" measured length 1 " " 4.50" " " . . . 1 " " 3.50" " " . . . 1 " " 7.00" estimated " . . . 1 " " 10.00" " " . . . Total	133.00 cc.) 10.00) 8.00) 100% 58.00) 209.00 cc.

43.	Imm. ♂, 1357 gms, T 27 N, R 11 W, Sec. 15, March 1, 1936	Sand, + partially digested aquatic vegetable matter, apparently filamentous algae	5.00 cc.	100%
44.	Adult ♂, 1540 gms, T 26 N, R 10 W, Feb. 21, 1936	Gravel only	6.00 cc.	100%
45.	♀, 953 gms, (K-387) T 26 N, R 10 W, Sec. 17, March 1, 1936	Gravel, + bits of unidentifiable aquatic plants	2.50 cc.	100%
46.	♀, 945 gms, T 26 N, R 11 W, Sec. 11, March 1, 1936	Gravel, + a few bony remains of 1 small trout (est. 4" long), + a few remains of 1 small crayfish	1.30 cc.	est. 50% trout " 50% cray- fish and gravel
47.	♀, 1101 gms, T 26 N, R 11 W, Sec. 13, March 1, 1936	Gravel only	0.80 cc.	100%
48.	♂, 1623 gms, T 27 N, R 11 W, Sec. 27. March 8, 1936	Remains of 1 yellow perch, estimated length at least 9"	70.00 cc.	100%
49.	Adult ♂, 1580 gms. T 27 N, R 11 W. March 1, 1936	Mostly gravel, + a few crayfish remains	1.00 cc.	100%

Ducks from West arm of Grand Traverse Bay, in Traverse City:

50.	♀, Feb. 24, 1936	13 yellow perch, 2.25-2.75" 3 great lakes shiners (<u>N. atherinoides</u>) (ave. 2")	27.00 cc. 2.00	92% 8%
		Total	29.00 cc.	
51.	♀, Feb. 24, 1936	Remains of at least 1 perch, + sand and debris	4.00 cc.	
52.	♀, Feb. 24, 1936	1 perch, 2.25" measured length Remains of 1 larger perch	3.00 cc.) 3.00	100%
		Total	6.00 cc.	
53.	♀, Feb. 24, 1936	Completely digested mass of flesh and undeterminable bones	7.50 cc.	100%
54.	♀, Feb. 24, 1936	About 1 cc of fine sand and scant remains, including portion of back- bone and few scales of a small perch		100%
55.	♀, Feb. 24, 1936	17 partially digested perch, ranging between 2-3.5" in length Partially digested flesh + perch bones	29.00 cc.) 6.50	100%
		Total	35.50 cc.	

Ducks from Muskegon River below Croton Dam:

56.	♀, Feb. 23, 1936	1 mud minnow (<u>U. limi</u>), est. 2"	0.40 cc.)	
		1 unidentified fish (non-game) 5" est.	1.80)	100%
		Partially digested flesh & bones	4.00)	
		Total	<u>6.20 cc.</u>	
57.	Imm. ♂, Muskegon R., below Croton Dam Feb. 25, 1936	Mud minnow (<u>U. limi</u>) 2.875" meas.	3.00 cc.)	
		" " " " 3.500 "	6.00)	8.75%
		" " " " 1.625 "	0.50)	
		Killifish (<u>F. d. menona</u>) 2.00 "	0.50)	
		" " " " 2.25 "	1.00)	1.85%
		" " " " 1.75 "	0.50)	
		Digested remains of many unidentifiable fish, mostly small	51.00	46.9%
		Bones of many small suckers	46.00	42.5%
	(At least 11 small suckers, range from 2-6 inches, mostly between 2 and 3 inches.)	Total	<u>108.50 cc.</u>	

58.	Adult ♂, 1503 gms, Feb. 23, 1936	1 brown trout, 12" estimated length, about 3/4 digested	55.00 cc.	100%
59.	♀, Feb. 25, 1936	Mud minnows 1 measured 3.25"	6.00 cc.	18.5%
		1 measured 4.25"	7.00	21.5%
		Remains of 3 others of similar size	12.00	36.5%
		1 sunfish (<u>Eu. gibbosus</u>), 1.25"	1.00	3.5%
		1 large phryganeid caddis larva, <u>Neuronia</u> sp. or close	0.50	1.5%
		Partially digested remains	6.00	18.5%
		Total	<u>32.50 cc.</u>	
60.	♂, Feb. 25, 1936	Gravel only	2.00 cc.	100%

Ducks from the Betsie River:

61.	♂, T 25 N, R 13 W, Sec. 16 Big Betsie R., March 19, 1936	Bones of 1 trout, probably rainbow, estimated 5" length	12.00 cc.	100%
62.	♀, 1027 gms, T 25 N, R 14 W, SW 1/4 Sec. 35, March 1, 1936	Minnow bones + sand	1.80 cc.	100%
63.	♀, 1213 gms, T 25 N, R 14 W, Feb. 17, 1936	2 darters (<u>Hadropterus maculatus</u>) 1 meas. length 3.25"	3.50 cc.)	47%
		1 " " 3.50"	5.00)	
		Remains of 1 crayfish, + unidentifiable fish remains	9.50	53%
		Total	<u>18.00 cc.</u>	
64.	Adult ♂, 1562 gms, T 25 N, R 14 W, Feb. 17, 1936	Remains of 2 crayfish, estimated to be between 2 and 3 inches in length	12.00 cc.	100%

Ducks from Middle Branch River, Osceola County:

65.	♀, T 20 N, R 7 W, Feb. 23, 1936	Crayfish remains, + pharyngeal bones of small suckers	3.00 cc.	est. 50% cray- fish " 50% suckers
66.	♀, T 20 N, R 7 W, Feb. 23, 1936	Gravel, + a few unidentifiable fragments of fish bones	2.00 cc.	100%
67.	♀, T 20 N, R 7 W, Sec. 21, Feb. 23, 1936	1 brown trout, est. length 8" 1 " " " " 5.50" 1 " " " " 5" 1 brook trout, " " 4.50" 1 black-nosed dace (<i>Rhinichthys</i>) 3" 1 muddler (<i>Cottus cognatus</i>), 3" Partially digested fish remains Total175.00 cc.) 15.00 10.00 12.00 3.00 5.00 27.00 247.00 cc.	85% 15%
68.	Adult ♂, T 23 N, R 4 W, Sec. 10, Roscommon County, Feb. 28, 1936	3 dytiscid beetles 2 muddlers, est. length 2" Sand + partially digested remains Total	1.50 cc. 4.50 13.00 19.00 cc.	7% 24% 69%
69.	Imm. ♀, 995 gms, T 23 N, R 4 W, Sec. 10, Roscommon County, Mar. 1, 1936	Remains of dytiscid beetles, 2 large, 1 small 2 minnows (<i>Notropis sp.</i>) 1.5" long Total	8.00 cc. 0.20 cc. 8.20 cc.	97% 3%
70.	♀, 1020 gms, T 21 N, R 12 W, Sec. 25, Pine River, Feb. 29, 1936	Gravel + unidentified bones of small fish	3.00 cc.	100%
71.	Sex ?, wt. 1386 gms. T 13 N, R 12 W, Newaygo County White River Feb. 21, 1936	Remains of 1 small sucker (<i>C. commersonni</i>)	4.50 cc.	100%
72.	Adult ♂, T 28 N, R 1 W, Sec. 32, N. Br. Au Sable River, Feb. 25, 1936	1 brown trout, 8" est. length Remains of 2 other brown trout, estimated 6-10", + remains of 1 frog Total	30.00 cc. 65.00 cc. 95.00 cc.	31% 69%
3 hatchery-killed ducks:				
73.	Marquette State Hatchery Ponds, Feb. 29, 1936 ♀,	1 brook trout, est. 14"	97.00 cc.	100%
74.	Adult ♂, Wolf Lake Hatchery, Mattawan Feb. 27, 1936	1 brook trout, 6.5" measured Remains of another brook trout about same size as first Total	50.00 cc.) 16.00 66.00 cc.	100%

75. Imm. ♂, 1520 gms, Wolf Lake Hatchery, Feb. 29, 1936	1 bass, estimated length 8" + several smaller bass, estimated between 2-4", + 1 trout, est. 5", + 1 phryganeid caddis larvae, cf. <u>Neuronia sp.</u>	bass 75% est. trout 23% est. caddis 2% est.	60.00 cc.
76. Adult ♂, 1814 gms, S. Br. Au Sable, Crawford Co., Sec. 22. Date ?	1 brown trout, estimated 12-14", fleshy parts Partially digested flesh and bones of above Total	100%	85.00 cc.) 20.00) <u>105.00 cc.</u>
77. Adult ♂, 1926 gms, T 25 N, R 2 W, Sec. 14, S. Br. Au Sable, Feb. 26, 1936	1 brown trout, est. 14" long Partially digested remains of same Total	100%	120.00 cc.) 15.00) <u>135.00 cc.</u>
78. Adult ♂, 1829 gms, T 25 N, R 2 W, Sec. 29, S. Br. Au Sable, Feb. 29, 1936	1 brown trout, est. 12"	100%	63.00 cc.
79. ♂, Crawford Co., S. Br. Au Sable, Feb. 26, 1936	6 brown trout, est. range from 6-15" + remains of 1 small crayfish (stomach of large trout contained 2 <u>Physa</u>)	est. trout 99% Crayfish 1%	100.00 cc.
80. ♀, Crawford Co., S. Br. Au Sable, Feb. 26, 1936	Remains of four brown trout, all at least 7"	100%	80.00 cc.
81. Adult ♂, 1590 gms, T 25 N, R 2 W, Sec. 29, Crawford Co., S. Br. Au Sable, Feb. 29, 1936	1 brown trout, est. length 9" 1 " " " " 6"	100%	50.00 cc.
82. Adult ♂, 1703 gms, T 25 N, R 2 W, Sec. 29, Crawford Co., S. Br. Au Sable, Feb. 29, 1936	1 brown trout, est. length 12" Remains of smaller trout, probably brown	100%	80.00 cc.
83. Adult ♂, 1875 gms, T 25 N, R 2 W, Sec. 29, Crawford Co., S. Br. Au Sable, Feb. 29, 1936	Remains of 2 suckers (<u>C. commersonni</u>), estimated between 6-9"	100%	25.00 cc.
84. Imm. ♂, T 25 N, Crawford Co., S. Br. Au Sable, Date ?	1 brown trout, est. length 14" 1 unidentified darter	Trout est. 98% Darter " 2%	97.00 cc.
85. ♀, T 17 N, R 13 W, Lake Co., Baldwin Creek, Feb. 18, 1936	1 brown trout, est. 12" long	100%	67.00 cc.

86. Imm. ♀, 1011 gms, T 18 N, R 13 W, Lake Co. Baldwin Creek, Date ?	1 redhorse (<u>Moxostoma</u>), est. 9" . . . 4 common sunfish (<u>Eu. gibbosus</u>), 1.25-1.375" 1 rock bass (<u>Am. rupestris</u>), 1.125" . 1 black-sided darter (<u>Hadropterus</u>) 1.75" Fragments of 2 unidentified minnows, + 1 <u>Notropis volucellus</u> , est. 2" . . . Miscellaneous bones Total	75.00 cc. 2.10 0.30 0.50 1.50 6.00 <hr/> 85.40 cc.	87.75% 2.45% 0.35% 0.60% 1.75% 7.10%
87. ♂, Lake County, T 17 N, R 13 W, Sec. 10 Baldwin Creek Feb. 18, 1936	1 muddler, length 2.75" 1 " " 2.50" 1 brown trout, length 5.00" (meas.) . 1 " " " 9.00" (est.) . . . 1 " " " 3.00" (est.) . . . 1 crayfish, remains Total	3.00 cc.) 5.00) 15.00 50.00) <hr/> 73.00 cc.	11% 89%
88. ♂, 1200 gms. Lake Co., Baldwin Creek. Feb. 25, 1936	Remains of crayfish + bones of unidentifiable game fish	1.60 cc.	est. 50% cray- fish est. 50% fish
89. Adult ♂ T 18 N, R 13 W, Sec. 20 Lake County. Feb. 20, 1936	1 sucker (<u>C. commersonni</u>) (est. length 12") Partially digested head bones of above sucker Total	220.00 cc.) 30.00) <hr/> 250.00 cc.	100%
90. Adult ♂ Oscoda County, Au Sable 3 mi. below Mio Dam Feb. 23, 1936	1 brown trout, est. length 8" 1 " " " " 11" Total	20.00 cc.) 45.00) <hr/> 65.00 cc.	100%
91. ♀, T 13 N, R 12 W, Sec. 5. White River Feb. 21, 1936	1 common sunfish (<u>E. gibbosus</u>), est. length 7.00"	28.00 cc.	100%
92. ♂ Au Sable main stream, below Mio dam. Feb. 23, 1936	A few frog bones Remains of 1 brown trout est. to have been 14" long 1 brown trout 14" long, only head digested off Total	2.00 cc. 61.00 200.00 <hr/> 263.00 cc.	0.8% 23.2% 76.0%
93. Imm. ♂, Au Sable below Mio dam, Feb. 23, 1936	Some vegetable remains + a very few unidentifiable fish bones	2.00 cc.	100%
94. Adult ♂, 1738 gms. 2 miles above Lovells, near stonecrusher, N. Br. Au Sable. Feb. 19, 1936	Remains of 1 large crayfish Portion of trout jaw tag.	15.00 cc.	100%

95.	♂	Red breasted merganser, 902.7 gms. N. Br. Au Sable, in front of Lovells hotel. (Found dead on March 21, 1936)	Stomach empty save for a little gravel	100%
96.	♂	Adult ♂, T 28 N, R. 11 W. Sec. 33, W. Arm Gd. Traverse Bay. March 17, 1936	Small amount of gravel only	100%
97.		Remainder from E. Branch of Big Creek, 26-1-13, Oscoda Co., Feb. 22, 1936		
	♂		Frog bones 2.00 cc. 20%	
			Remains of 1 small trout, probably brook, est. length 5" 8.00 80%	
			Total 10.00 cc.	
98.	♂	" " " "	Remains 1 trout, probably brook, est. 4" long 6.00 cc. 100%	
99.	♀	" " " "	1 green frog (<u>Rana clamitans</u>) 25.00 cc. 100%	
100.	♂	" " " "	Remains of 2 brown trout, 1 est. 14", another 12" 130.00 cc. 100%	

Summary

Number of mergansers examined	100
" " " containing trout	56
" " " " " exclusively	33
Average number of trout per stomach	2.5
Average length of trout taken	6.8 inches

INSTITUTE FOR FISHERIES RESEARCH

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