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FOOD OF 131 BOWFINS (Amia calva)

FROM WATERS IN SOUTHERN MICHIGAN

by

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This report is based on the analyses of food contained in the stomachs of each of 131\* bowfins collected in fifteen lakes and the Muskegon River in the Lower Peninsula. The stomachs of thirty-five additional specimens were empty. Most of the specimens were obtained by field workers of the Institute, Conservation Officers, and fish hatchery employees during the months from April through September (Table 1). Those from which food was examined and for which length-weight data were obtained ranged in length from 12 to 33 1/4 inches and in weight from 3/4 to 9 pounds.

By volume, about six-tenths of all the food eaten by these 131 bowfins is comprised by game species (Table 2), mostly yellow perch. Game fishes were eaten in the following numbers: yellow perch, 62; bullheads, 5; small-mouthed bass, 1; rock bass, 1; bluegills, 11; pumpkinseeds, 7; other sunfishes, 8; northern pike, 1. Less than half (53) of the bowfins contained game fishes which averaged 1.75 for each bowfin which contained

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\* Twenty-four of these specimens (i.e. those from the Muskegon River) have been previously reported by Lagler and Watts in I. F. R. Report No. 569, December 15, 1939.

TABLE 1. COLLECTION DATA FOR BOWFINS STUDIED FOR FOOD\*

County	Lake and Number of Specimens	Month and Year	Collector
Cass	Christiann Lake (13)	April, '39 - 1 July, '39 - 12	H. Bowditch - 13
Hillsdale	Baw Beese Lake (14)	April, '39 - 1 June, '31 - 13	I. F. R. - 14
	Bear Lake (40)	July, '39 - 7 Aug., '39 - 8 Sept., '39 - 25	L. H. Bush - 40
	Second Lake (2)	June, '31 - 2	I. F. R. - 2
	Third Lake (3)	June, '31 - 3	I. F. R. - 3
	Fourth Lake (1)	June, '31 - 1	I. F. R. - 1
Livingston	Hamburg Lake (1)	April, '31 - 1	I. F. R. - 1
Mason	Hamlin Lake (2)	Aug., '39 - 1 July, '32 - 1	G. L. McCrimmon - 1
Oakland	Cass Lake (2)	June, '30 - 2	Cons. Dept. - 2
	Lake Sixteen (4)	July, '39 - 4	R. A. Peacock - 4
Ottawa	Black Lake (13)	April, '38 - 13	Lydell - 13
	Stearns Bayou (4)	July, '39 - 1 Aug., '39 - 3	O. Falk - 4
Roscommon	Muskegon River (25)	Summer, '39 - 9 April, '39 - 1 May, '39 - 13 June, '39 - 2	H. Bowditch - 6 Bowditch and Carbine - 7 Hazzard and Lagler - 1
Washtenaw	Frains Lake (5)	May, '39 - 5	
?	near Manchester	May, '31 - 1	J. C. Salyer - 1
?	Gratton Twsp.	May, '37 - 1	

\* No account is included for the many specimens which contained no food.

them. The average for the 131 dogfish is about three-fourths of a game fish each. The perch were mostly between three and four inches long; a few were more than five inches.

TABLE 2. FOOD OF 131 BOWFINS FROM WATERS IN  
SOUTHERN MICHIGAN

Food Item	Volume	Average % of Total Volume	Frequency Number	Average Frequency %
Game fish	1080.6	59.7	55	41.4
Forage fish	300.1	16.6	18	13.5
Fish remains	58.7	3.2	17	12.8
Carrion	2.5	0.1	2	0.2
Frogs	104.2	5.8	6	4.5
Earthworms	0.1	---	55	41.4
Crayfish	255.9	14.1	85	63.9
Insects	8.7	0.5	19	14.3
Snails	1.2	0.1	2	0.2
Vegetable matter	0.1	---	2	0.2
Vegetable debris	Trace	---	1	0.1

Other apparently important foods of the bowfin are forage fishes, and other fish such as carp and mud pickeral. Crayfish are also an important food and appeared in more stomachs than did any other food item. They averaged about one each for the 131 bowfins.

There is some evidence that dogfish feed in the deeper waters in the daytime as well as in the shallows at night. Twenty-three day-time specimens in this series, mostly taken on hook and line from deeper water, contained food. Thirty specimens, mostly speared at night on the shoals, also contained food. Time of collection was not recorded for the remaining specimens. Indications are that an adult bowfin consumes from one to two game fish per day in addition to eating many fish-food organisms.

Depending on local circumstances (population relations of noxious and game fishes and angling intensity) such predation and competition may or may not be deleterious to the sport fishery. The problem of noxious fishes is doubtless an individual one for most waters but it is probable that a study of certain representative situations would yield information which would be useful in the formulation of a general program for the management of these forms.

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