

Predation on Smallmouth Bass (*Micropterus dolomieu*) by Walleye (*Stizostedion vitreum*) in the Eastern Basin of Lake Ontario, 1998.

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Smallmouth bass and other warm water fishes supported an important recreational fishery in the eastern basin of Lake Ontario (Stone et al 1951, Jolliff and LeTendre 1968, Panek 1981, Anonymous 1984). During the 1990s, however, smallmouth bass and other members of the warm water fish community declined and are now near their lowest levels of abundance (Chrisman and Eckert 1998, Eckert 1998). The one exception to this pattern is the walleye population. Since the early 1980s, the relative abundance of walleye increased approximately eight fold, as measured with annual, summer gillnet surveys (Eckert 1998). At the same time as these changes occurred in the eastern basin fish community, the double-crested cormorant population at Little Galloo Island increased exponentially, peaking at 8,000 pairs of adults in 1996 and 5,839 nesting pairs in 1998 (NYSDEC 1998). Several studies were undertaken in 1998 to assess the relationship between double-crested cormorant predation and the declines noted in smallmouth bass and other species (Adams et al 1998, Eckert 1998, Johnson et al 1998, Lantry et al 1998, McCullough and Einhouse 1998, and Schneider and Adams 1998). However, if walleye feed on smallmouth bass, then the marked increase in abundance of walleye in the eastern basin in recent years may be related to the declines observed in the smallmouth bass population. The purpose of this study is to determine if eastern basin walleye feed on smallmouth bass, and if they do, to what extent.

Methods

In May 1998, 48 walleye stomachs were collected at a cleaning station located at Henchen's Marina in Henderson Harbor, New York. The stomach samples were labeled, bagged and frozen for later analysis. During

August gillnet assessment surveys within the eastern basin (Eckert 1998), 68 walleye stomachs were examined. In the fall, another 51 stomachs were examined from walleye captured incidentally in large mesh gillnets set for chinook salmon between Henderson Harbor and Stony Point (McCullough 1997). In all three collections, prey material in each stomach was identified, enumerated, and measured to the nearest mm, where possible.

Results

Of the 167 stomachs examined during 1998, none contained smallmouth bass (Table 1). Most stomachs in each of the three survey collections were empty -- contained no fish or other food remains. The fish species that were identified included: alewife (*Alosa pseudoharangus*), yellow perch (*Perca flavescens*), sculpin (*Cottus sp.*), spottail shiner (*Notropis hudsonius*) and rainbow smelt (*Osmerus mordox*). Mayflies (*Hexagenia sp.*) were also found in the stomachs of several walleye during the spring.

Discussion

Too few fish were recovered from stomachs to adequately describe the walleye diet in New York waters of the eastern basin of Lake Ontario in 1998. Although the diet information is limited, the results are typical of other walleye diet descriptions for Lake Ontario. From 1992 to 1997, NYSDEC conducted fall chinook salmon gillnetting surveys, similar to that done in 1998, and captured 276 walleye. No smallmouth bass were noted in any of the walleye stomachs collected during these fall surveys. In Ontario waters of the eastern basin, no smallmouth bass were recovered from 2,240

walleye stomachs collected from 1986 to 1998, and no smallmouth bass were seen in 3,161 stomachs examined from Bay of Quinte walleye taken between 1958 and 1998 (J. Hoyle, Glenora Fisheries Station, Picton, Ontario, personal communication).

Based on the extensive experience in Canadian waters of the eastern basin and adjoining waters of Lake Ontario, and our limited sample of walleye stomachs in New York waters in 1998, we believe that walleye predation on smallmouth bass in the eastern basin of Lake Ontario is not a major component of smallmouth bass mortality.

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Table 1. Frequency of occurrence of prey items in walleye stomachs from the Eastern Basin of Lake Ontario during 1998.

Item	Percent Occurrence of Prey Items					
	Spring		Summer		Fall	
	Total	Percentage	Total	Percentage	Total	Percentage
Alewife	4	20.0%	6	50.0%	1	8.3%
Hexagenia	5	25.0%		0.0%		0.0%
Mudpuppy	1	5.0%		0.0%		0.0%
Sculpin	4	20.0%		0.0%	2	16.7%
Smelt	1	5.0%		0.0%		0.0%
Spottail Shiner	1	5.0%		0.0%		0.0%
Yellow Perch		0.0%		0.0%	2	16.7%
Unidentified Fish	4	20.0%	6	50.0%	7	58.3%
Total	20	100%	12	100%	12	100%
Empty Stomachs	28		56		39	
Grand Total:	48		68		51	