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A Survey of the Fish of Irondequoit Bay*

*By: Steven Gittelman & Claire Buchanan  
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Water Pollution

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A Survey of the Fish of Irondequoit Bay\*  
by  
Steven Gittelman and Claire Buchanan

Summary:

It is not true that "only the scavenger carp" exist in Irondequoit Bay. In 1969-1970, 23 species of fish were found in Irondequoit Bay, 14 of them collected in this study for the R.C.S.I., and the remainder identified by the New York State Conservation Department (recently renamed the Department of Environmental Conservation). Comparison with collections taken in 1939 shows that 9 species present then were not detected in 1969-1970 and 7 species have decreased in numbers; these were fish that favor clear, quiet, weedy waters. By contrast, 7 new species were recorded and 5 increased in numbers; these were fish that favor or tolerate silty or brackish water with much vegetation. The most prevalent fish today are emerald shiner, pumpkinseed sunfish and white perch, while the yellow walleye is seemingly gone from the bay.

Methods:

During October, November and December of 1970, a survey was performed on the distribution and abundance of fish species in Irondequoit Bay. Fish were collected with a 12 ft. seine with 1/8" mesh, and a 75 ft. gill net with 1" mesh. The seine was used at twenty-two bay locations, and the gill net was set at two bay locations. The seine was used in shallow, shore waters in depths of up to 3.5 ft. Three seinings were done at each location, covering approximately 150 ft. The gill net was set offshore in line with the current in twenty to thirty feet of water for 21 hours at location 14 and for five hours at location 22. Usually, the fish were preserved on location in a 1:10 formalin solution. Classification of the fish collected was done primarily by Steven Gittelman.

\* This survey is based on the University of Rochester course project report done by the authors. Acknowledgements are due to Dr. Stone of the New York State Department of Environmental Conservation in Avon, New York, who identified the Notropis atherinoides minnow, and to Ned Holmes, also of the New York State Department of Environmental Conservation in Avon, who made the department fish collection records and a gill net available to the authors. The original paper has been submitted to Dr. Thomas Bannister and Dr. George Berg at the University of Rochester.

Realizing that seining, the primary sampling method used, only collected inshore species and therefore biased the findings, the authors obtained records of fish collections for July 1939 (1), May 1969 (2), and May 1970 (3) from the New York State Environmental Conservation Department in Avon, New York. The 1969 and 1970 fish collections were made with 4 ft. and 6 ft. trap nets in offshore locations in surface waters up to 6 ft. The 1939 fish collections were made with a gill net and 15 ft. and 50 ft. seines. The gill net was located 200 ft. offshore at a depth of 12 - 13 ft.; and the seinings were done at distances of up to 100 ft. offshore at depths of 0 - 8 ft.

### Results:

A map of the collection sites is shown in Fig. 1. Table 1 gives a listing of the fish collected. Fourteen species were represented in the 1538 fish collected by the authors at the 24 bay locations. Three species, emerald shiner (Notropis atherinoides), pumpkinseed sunfish (Lepomis gibbosus), and white perch (Roccus americana), constituted over 97% of the individuals collected.

The New York State Conservation Department records for 1969 and 1970, and the authors' data for 1970 show that at least twenty-four fish species presently inhabit Irondequoit Bay. Fish collection records show that at least twenty-five fish species inhabited the bay in 1939. However, only sixteen of the twenty-five species found in the bay in 1939 were found in 1969-1970. (See Table 2)

### Discussion:

This report disproves the misconception of some that "only the scavenger carp" exist in Irondequoit Bay. It should be noted, though, that the quality of the bay waters is changing, and this is indicated by changing abundances of fish species. Since 1939, nine species of fish have seemingly disappeared (six species of minnows, bluegill, northern long perch, yellow walleye) and eight new species have been recorded (rock bass, three species of catfish, white perch, burbot, sea lamprey, banded killifish). There have been reported increases in the abundances of carp, emerald shiner, pumpkinseed, alewife, and northern pike; and decreases in the abundances of golden shiner, largemouth bass, black crappie, johnny darter, yellow perch, gizzard shad, and white sucker. The authors feel that not enough information is presently at hand to say precisely what changes have occurred in the bay since 1939 to cause these changes in the abundances of fish species. It is interesting to note, however, that of the 16 species that reportedly disappeared or decreased, many favor clear, weedy and often quiet waters(4). Of the 12 species reported to have moved in or increased in numbers, two are anadromous (alewife, sea lamprey), one is very tolerant of low oxygen tensions and high temperatures (brown bullhead), and almost all of the others either favor or can tolerate silty, brackish waters with much vegetation(4). This suggests that the bay has become more eutrophic, or nutrient-rich, in character since 1939, but not to the extent of being uninhabitable to all fish species.

### References:

- (1) T. T. Odell, "Fish Collection", N.Y.S. Department of Environmental Conservation, #411.12, 411.13, 411.14, 1939
- (2) Rlordan, King, "Fish Collection - Pond or Lake", N.Y.S. Department of Environmental Conservation, #411.30, 411.31, 411.32, 1969
- (3) R.D. King, "Fish Removal or Transfer Stocking", N.Y.S. Department of Environmental Conservation, May 8, 1970
- (4) E.P. Slastenanko, The Freshwater Fishes of Canada, 1958



Table 2. Fish Species Found in Irondequoit Bay in 1939 and 1970

<u>Species</u>	<u>Family</u>	<u>1939</u>	<u>1970<sup>a</sup></u>	<u>Common USA Uses</u>
Stoneroller	minnow	+	-	
Mimic shiner	minnow	+	-	forage, bait
Black chin shiner	minnow	+	-	forage
Spotfin shiner	minnow	+	-	good forage, bait
Brook silverside	minnow	+	-	excellent forage
Bluntnose minnow	minnow	+	-	excellent forage, bait
Bluegill	sunfish	+	-	pan
Northern long perch	perch-darter	+	-	forage, bait
Yellow walleye	perch-darter	+	-	game
Golden shiner	minnow	+	A, N	
Spottail shiner	minnow	+	A	excellent forage, bait
Carp	minnow	+	A, N	
Emerald shiner	minnow	+	A	excellent forage, bait
Largemouth bass	sunfish	+	A, N	game
Smallmouth bass	sunfish	+	N	game
Black crappie	sunfish	+	N	game
Pumpkinseed	sunfish	+	A, N	pan
Johnny darter	perch-darter	+	A	forage
Yellow perch	perch-darter	+	A, N	pan
Alewife	herring	+	A	forage
Gizzard shad	herring	+	A	forage
White sucker	sucker	+	A	forage, bait
Northern pike	pike	+	N	game
Long nose gar	gar	+	N	
Bowfin	bowfin	+	N	bait
Rock bass	sunfish	-	N	game
Brown bullhead	catfish	-	N	food

Table 2, Continued

<u>Species</u>	<u>Family</u>	<u>1939</u>	<u>1970</u>	<u>Common USA Uses</u>
Black bullhead	catfish	-	A	food
Channel catfish	catfish	-	N	food
White perch	bass	-	A,N	commercial
Burbot	cod	-	N	
Sea lamprey	lamprey	-	N	
Eastern banded killifish	killifish	-	A	

a. A: caught by authors

N: caught by N.Y.S. Department of Environmental Conservation

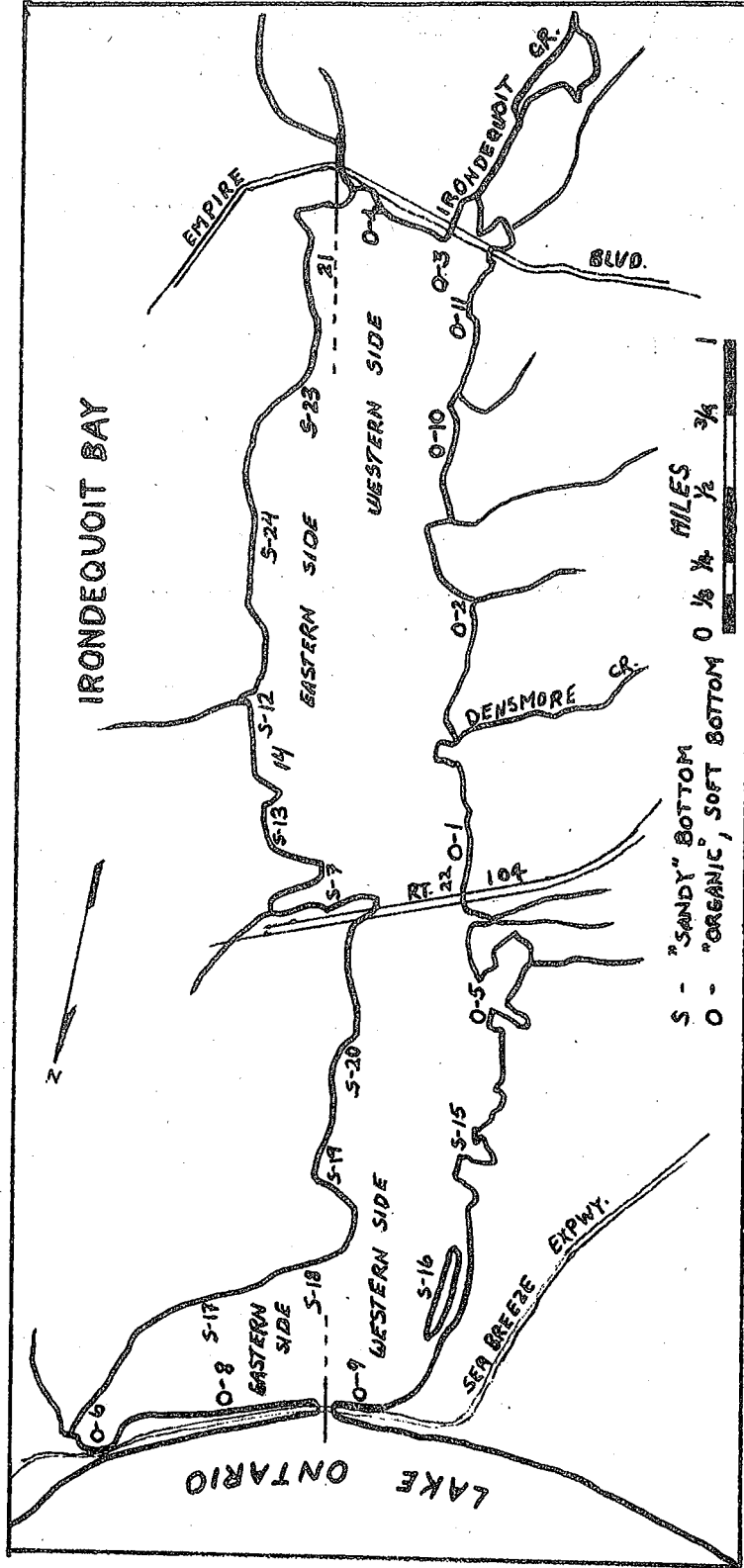


Fig 1

Map of Collection Sites in Irondequoit Bay  
with indications of bottom sediment