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Fisheries Division

Technical Report: No. 81-1

February, 1981

A 1979 FISHERIES SURVEY OF THE ST. MARY'S RIVER SYSTEM IN CHIPPEWA
COUNTY, AND COMPARISONS WITH 1975 RESULTS

Barry R. Miller, Great Lakes Fisheries Biologist

SUMMARY

During August 1979, a fisheries survey of the St. Mary's River was conducted by the Marquette Great Lakes Unit. Thirty-two stations were sampled with gill nets from above the Sault locks down through Potagannissing Bay. The purpose of the survey was to determine if any changes in the fish population of the river had occurred in the four years since an identical survey was completed in 1975.

Results of the 1979 survey were compared to the 1975 results and it was apparent that few changes in size or abundance of the major game fish species (yellow perch, walleye and northern pike) had occurred. Effects of fishing on the size distributions of the perch, walleye and pike populations were observed at several locations. Sharp declines in abundance were evident after the fish reached catchable size. Potagannissing Bay contained the most abundant and well balanced fish populations of any area.

Growth analyses of the perch, walleye and northern pike populations in various locations in the river system are presented. Yellow perch grow faster in the downriver areas than at upstream sites. Walleye growth generally followed the same pattern except that their growth was best in Lake George rather than Potagannissing Bay. Northern pike did not exhibit such a pattern. Pike growth in all locations was well below the state average.

The herring population appears to be higher now than in 1975, but brown bullheads show a marked decline in abundance. However, it could not be proven statistically that either of those changes are real and not due to sampling variations.

In general, the St. Mary's River system continues to be a fine, warmwater fishing area. Anglers should find the best fishing in Potagannissing Bay and Lake George.

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A 1979 FISHERIES SURVEY OF THE ST. MARY'S RIVER SYSTEM IN CHIPPEWA COUNTY, AND COMPARISONS WITH 1975 RESULTS

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INTRODUCTION

In 1975, the Marquette Great Lakes Unit of the Michigan Department of Natural Resources, conducted a fisheries survey of the St. Mary's River system to determine the status of the various fish stocks. Thirty-two stations were sampled with gill nets from above the Sault locks down through Potagannissing Bay. Information was obtained on the location, growth and abundance of the various fish species encountered.

Because four years had elapsed since the previous survey, it was decided to replicate the 1975 survey in 1979. The same stations were sampled in 1979 and the time frame was nearly identical to the 1975 survey so that major changes in abundance could be considered to be real changes in the density of the fish stocks. Additional information on the age structure and growth rates of the major game fish species was also sought.

The objective of this report is to present the results of the most recent survey and compare it to the previous one to show similarities and differences that were encountered. It is also intended that this report will be available to inform anglers interested in fishing the St. Mary's River system.

METHODS

The St. Mary's River survey was conducted with the vessel M/V Bluefin from Marquette. Fish samples were collected by gill nets set at the 32 sites established for the 1975 survey (Figure 1). One 1,200-foot gang of nets consisting of 300-foot panels of 2, 2½, 3, and 4½ inch stretch mesh was set at each site and lifted the following day. Usually two sites were fished each day.

Individual lengths (inches) and total weights (pounds) were obtained for all game fish. A length range and total weight was obtained for all rough fish species. Scale samples also were taken from selected species for age determination. The scales were aged using a microfiche reader and the results subjected to computer analyses for determination of growth rates.

CATCH SUMMARIES

The results of this survey are discussed by area, beginning with the Upper St. Mary's River (above the Sault locks) and proceeding downriver through Lake Nicolet and Lake George, Munuscong Bay, Raber Bay and, finally, Potagannissing Bay.

A catch summary for each survey period is presented in Table 1. Although the catch rates of the major sport fish species in the St. Mary's River system (yellow perch, walleye and northern pike) often varied considerably at individual

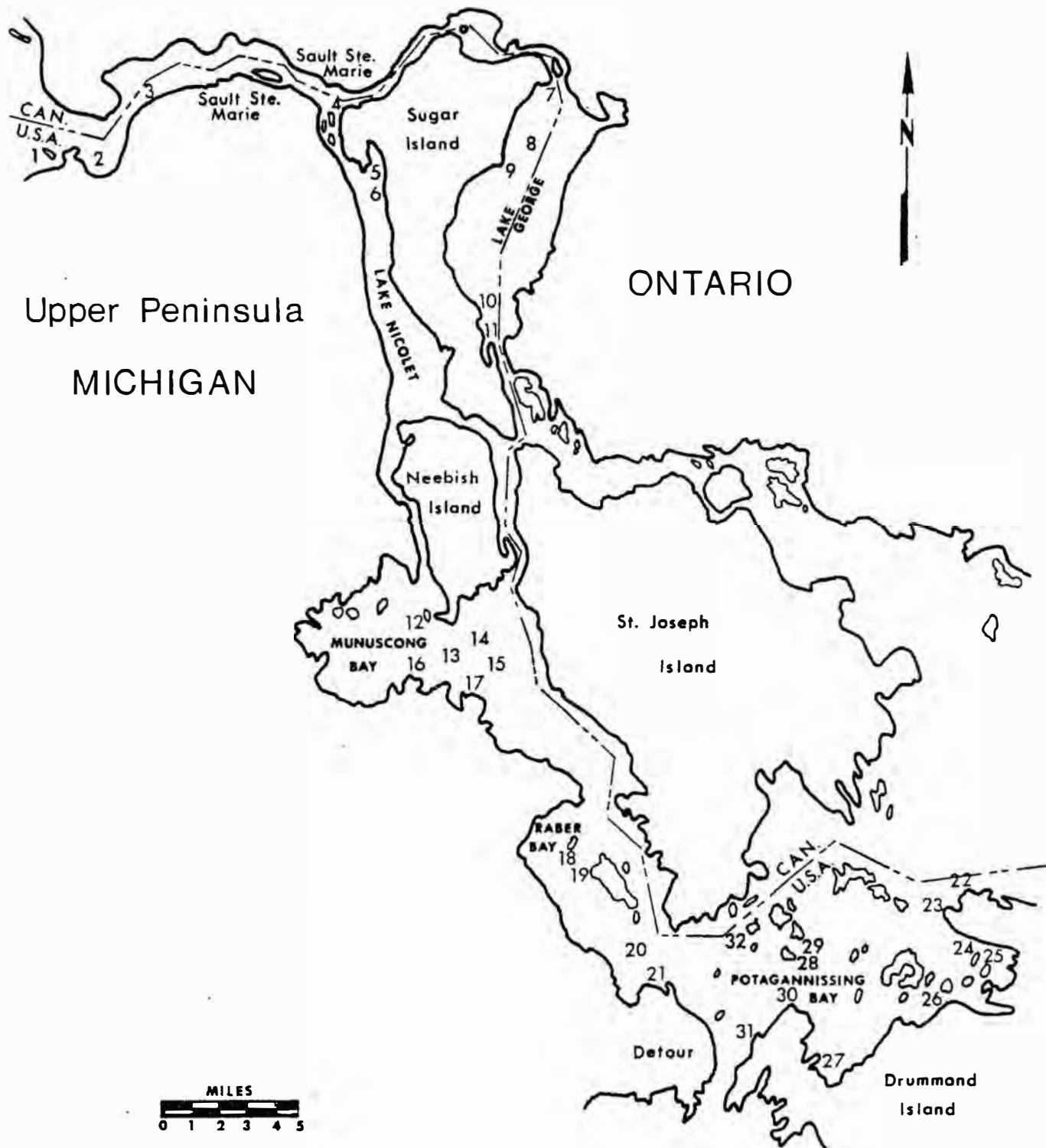


Figure 1 - Map of the St. Mary's River system showing the stations sampled during the 1975 and 1979 surveys.

stations between the 1975 and 1979 surveys, the difference in the total catch of each of those species averaged less than 10 percent.

Upper St. Mary's River

Three sites were sampled in the St. Mary's River above the Sault locks: Round Island (Station 1); Mosquito Bay (Station 2); and Sherman Park (Station 3). A catch summary for those stations is presented in Table 2. Yellow perch were abundant at all locations although Stations 1 and 2 (Table 1) contributed about 80 percent of the catch. The perch ranged in length from 7 to over 12 inches with 60 percent of the fish between 8 and 11 inches.

Other fish species commonly encountered at Stations 1-3 were northern pike and lake whitefish. Neither species were abundant, but sufficient numbers of both were present to provide some diversity for the sport fishery in the area.

One brown trout and one coho salmon were captured in 1975, but their occurrence in this area appears to be incidental (or at least seasonal). None were taken in 1979.

No major changes in the fish populations between 1975 and 1979 were noted. Yellow perch were taken in greater numbers in 1979 (155) than in 1975 (91) but vice versa for northern pike. However, statistical analyses did not indicate significant differences. Overall, this area of the St. Mary's River continues to provide good perch fishing.

Lake Nicolet

Three sites were sampled in the north end of Lake Nicolet: Off the northwest tip of Sugar Island (Station 4), Wasig Bay North (Station 5) and Wassig Bay South (Station 6). Table 3 is a catch summary for these sites in 1979. Station 4 proved to be difficult to sample in 1979 as it was in 1975. The strong current in this area made it nearly impossible to fish gill nets and few fish were taken at this location during either survey.

The catches at Stations 5 and 6 (Table 1) indicated a fair abundance of yellow perch and northern pike. Both species showed evidence of excessive fishing pressure because over 85 percent of the perch were under 8 inches long, and 77 percent of the northerns were under the legal size limit of 20 inches. Growth data also indicates that the fish are not particularly slow growing which suggests a high cropping rate.

Other species encountered of interest to anglers were walleye, rock bass and herring.

Compared to the 1975 results, the 1979 survey showed few changes. As indicated for the Upper St. Mary's River, perch catches were slightly better in 1979 and pike catches dropped somewhat, but the changes were not significant. At the present time, it appears that fishing for perch and pike is better in other areas of the St. Mary's River.

Table 2. - Catch summary for stations 1-3 in the Upper St. Mary's River, 1979

Inch Group	SPECIES AND NUMBER MEASURED					
	Alewife	Northern Pike	Lake Whitefish	White Sucker	Yellow Perch	Rock Bass
7	0	0	0	0	46	1
8	1	0	0	0	43	0
9	0	0	1	0	30	0
10	0	0	0	0	20	0
11	0	0	2	0	14	0
12	0	0	1	0	2	0
13	0	0	2	0	0	0
14	0	2	0	0	0	0
15	0	0	2	0	0	0
16	0	0	1	0	0	0
17	0	0	2	0	0	0
19	0	2	0	0	0	0
20	0	0	1	0	0	0
21	0	2	0	0	0	0
27	0	1	0	0	0	0
TOTAL NUMBER MEASURED	1	7	12	0	155	1
TOTAL CATCH	1	7	12	37	155	1
ROUND WEIGHT (LBS.)	0.0	15.2	10.1	45.2	51.1	0.0
CPE ^{1/}	0.28	1.94	3.33	10.28	43.06	0.28

^{1/}Number per 1000' of gill net

Table 3. - Catch summary for stations 4-6 in Lake Nicolet, 1979

Inch Group	SPECIES AND NUMBER MEASURED						
	Northern Pike	White Sucker	Yellow Perch	Walleye	Alewife	Herring	Rock Bass
6	0	0	16	0	2	0	1
7	0	0	43	0	0	0	1
8	0	0	7	0	0	0	0
9	0	0	1	0	0	0	0
10	0	0	1	0	0	0	0
11	0	0	0	0	0	1	0
12	0	0	0	0	0	1	0
13	1	0	0	2	0	0	0
14	1	0	0	0	0	4	0
15	3	0	0	0	0	4	0
16	5	0	0	0	0	1	0
17	0	1	0	0	0	0	0
18	1	1	0	1	0	0	0
19	2	0	0	0	0	0	0
20	0	1	0	0	0	0	0
22	1	0	0	1	0	0	0
24	2	0	0	0	0	0	0
27	1	0	0	0	0	0	0
TOTAL NUMBER MEASURED	17	3	68	4	2	11	2
TOTAL CATCH	17	24	68	4	2	11	2
ROUND WEIGHT (LBS.)	25.1	34.0	13.9	7.9	0.0	14.3	0.7
CPE <u>1/</u>	4.72	6.67	18.89	1.11	0.56	3.06	0.56

1/ Number per 1000' of gill net

Lake George

Five locations in Lake George were sampled--three in the north end of the lake (Stations 7-9) and two at the south end (Stations 10 and 11). Yellow perch and northern pike were taken at all five locations (Table 4). Walleye were captured only at Stations 7-9 (Table 1). Station 9 (Hay Point) produced the largest catches of all three species. The perch ranged in length from 6-13 inches with over 80 percent in the 7 to 9-inch size groups. Walleyes ranged from 9-24 inches in length. Over half of those were above the legal size limit of 15 inches. Northern pike from 12-29 inches long were captured. About 25 percent of those fish were legal (20 inches and up). Both age and length distributions of perch, walleye and northern pike in Lake George (especially around Hay Point) indicated there were well balanced and abundant populations of those species.

Little change was noted between the 1975 and 1979 surveys. Catches of perch, walleye and northern pike were all within 20 percent of each other. A few rock bass also were taken in both surveys, but few other sportfish species were taken in Lake George during either survey.

Munuscong Bay

Six sites were sampled in Munuscong Bay and Table 5 shows the catch summary for those sites. They were all located near the central portion of the Bay south of Neebish Island. Much of the rest of the Bay is too shallow to sample with 6-foot deep gill nets.

Only the Roach Point set (Station 16) produced any number of fish. At that station, 40 northern pike were captured that ranged in length from 13-24 inches. Sixty-five percent of those fish were between 17 and 21 inches long. Altogether, 85 pike were taken in Munuscong Bay and about 35 percent of those fish exceeded the legal size limit of 20 inches.

Yellow perch and walleye were not abundant at any location and those captured generally were small. In the 6 stations sampled, a total of 66 perch were captured but over 80 percent were less than 9.0 inches long. Twenty-one walleyes were taken but only about 15 percent were of legal size.

Contacts with anglers fishing the area indicated poor fishing success for perch and walleye but a few northern pike were being taken. Most anglers felt that perch and walleye fishing has been declining for the past several years. A comparison of the results of the 1975 and 1979 surveys suggested that little has occurred in the past few years to alter the populations. Perch and pike catches varied only about 20 percent between surveys. Twenty-one walleyes were caught in each survey.

Other species of interest to the sport fishery that were caught included rock bass, herring and tiger muskies. None of the muskies approached legal size and their age indicated that few, if any, came from the 1976 release of tiger muskies in Raber Bay. Rock bass and herring also were too small to be of interest to the angler.

Raber Bay

Four locations in Raber Bay were sampled: Round Island (Station 18), the north and south ends of Lime Island (Stations 19 and 20) and Maud Bay (Station 21). A 1979 catch summary is presented in Table 6.

Table 4. - Catch summary for stations 7-11
on Lake George, 1979

SPECIES AND NUMBER MEASURED										
Inch Group	Northern Pike	White Sucker	Redhorse spp.	Rock Bass	Yellow Perch	Brown Bullhead	Alewife	Rainbow Smelt	Walleye	Longnose Sucker
5	0	0	0	1	0	0	0	7	0	0
6	0	0	0	1	3	0	0	0	0	0
7	0	0	0	1	69	1	1	0	0	0
8	0	0	0	1	38	0	0	0	0	0
9	0	0	0	0	24	0	0	0	1	0
10	0	0	0	3	15	0	0	0	1	0
11	0	0	0	0	6	0	0	0	3	0
12	2	0	0	0	1	0	0	0	1	0
13	2	0	0	0	1	0	0	0	1	1
14	3	0	0	0	0	0	0	0	4	3
15	7	0	0	0	0	0	0	0	3	0
16	15	0	2	0	0	0	0	0	0	0
17	15	0	0	0	0	0	0	0	1	0
18	6	0	1	0	0	0	0	0	4	0
19	13	0	1	0	0	0	0	0	1	0
20	4	0	0	0	0	0	0	0	2	0
21	4	0	0	0	0	0	0	0	0	0
22	4	0	0	0	0	0	0	0	1	0
23	5	0	0	0	0	0	0	0	0	0
24	4	0	0	0	0	0	0	0	1	0
27	1	0	0	0	0	0	0	0	0	0
29	1	0	0	0	0	0	0	0	0	0
TOTAL NUMBER MEASURED	86	0	4	7	157	1	1	7	24	4
TOTAL CATCH	86	151	4	7	157	1	1	13	24	4
ROUND WEIGHT (LBS.)	115.5	172.0	9.5	3.5	47.6	0.4	0.0	0.9	17.2	4.4
CPE <u>1/</u>	14.33	25.17	0.67	1.17	26.17	0.17	0.17	2.17	4.00	0.67

1/ Number per 1000' of gill net

Table 5. Catch summary for stations 12-17 on Munuscong Bay, 1979

Inch Group	SPECIES AND NUMBER MEASURED												
	Northern Pike	Rock Bass	Yellow Perch	Walleye	Rainbow Smelt	Herring	Tiger Musky	White Sucker	Redhorse spp.	Sturgeon	Smallmouth Bass	Longnose Gar	Lake Trout
5	0	2	0	0	0	0	0	0	0	0	0	0	0
6	0	3	2	0	0	0	0	0	0	0	0	0	0
7	0	3	31	0	0	0	0	0	0	0	1	0	0
8	0	2	21	1	0	15	0	0	0	0	1	0	0
9	0	3	9	1	0	4	0	0	0	0	0	0	0
10	0	0	1	1	0	0	0	0	0	0	0	0	0
11	0	0	1	2	0	2	1	0	0	0	0	0	0
12	3	0	0	2	0	0	0	0	0	0	0	0	0
13	2	0	1	3	0	1	1	0	0	0	0	0	0
14	1	0	0	8	0	1	1	0	0	0	0	0	0
15	7	0	0	1	0	0	2	0	0	0	0	0	0
16	9	0	0	0	0	0	2	0	0	0	0	0	0
17	9	0	0	0	0	0	2	0	0	0	0	0	0
18	10	0	0	0	0	0	3	0	0	0	0	0	0
19	14	0	0	1	0	0	3	0	0	0	0	0	0
20	13	0	0	0	0	0	1	0	0	0	0	0	0
21	9	0	0	1	0	0	1	0	0	0	0	0	0
22	1	0	0	0	0	0	0	0	0	0	0	0	0
23	5	0	0	0	0	0	0	0	0	0	0	0	0
24	1	0	0	0	0	0	0	0	0	0	0	0	1
25	0	0	0	0	0	0	0	0	0	1	0	0	0
26	1	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	1	0
TOTAL NUMBER MEASURED	85	13	66	21	0	23	17	0	0	1	2	1	1
TOTAL CATCH	85	13	66	21	1	23	17	29	16	1	2	1	1
ROUND WEIGHT (lbs.)	138.2	4.6	17.4	19.2	0.0	7.1	19.2	35.5	38.4	5.1	0.7	2.2	4.6
CPE ^{1/}	11.81	1.81	9.17	2.92	0.14	3.19	2.36	4.03	2.22	0.14	0.28	0.14	0.14

^{1/} Number per 1000' of gill net

Table 6 - Catch summary for stations 18-21
in Raber Bay, 1979

SPECIES AND NUMBER MEASURED ^{1/}										
Inch Group	Rainbow Smelt	Northern Pike	White Sucker	Yellow Perch	Walleye	Herring	Brown Bullhead	Tiger Musky	Redhorse spp.	Rock Bass
4	0	0	0	0	0	0	0	0	0	1
7	0	0	0	15	0	0	0	0	0	1
8	0	0	0	17	1	2	0	0	0	1
9	0	0	0	3	1	1	0	0	0	0
10	0	0	0	8	0	2	0	0	0	0
11	0	0	0	4	1	4	3	0	0	0
12	0	0	0	0	7	5	0	0	0	0
13	0	1	0	0	6	65	0	0	0	0
14	0	0	0	0	5	96	0	0	0	0
15	0	1	0	0	3	26	0	2	0	0
16	0	6	0	0	0	0	0	1	0	0
17	0	3	0	0	1	0	0	2	0	0
18	0	4	0	0	1	0	0	2	1	0
19	0	5	0	0	1	0	0	0	0	0
20	0	7	0	0	0	0	0	0	0	0
21	0	1	0	0	0	0	0	0	0	0
24	0	1	0	0	0	0	0	0	0	0
TOTAL NUMBER MEASURED	0	29	0	47	27	201	3	7	1	3
TOTAL CATCH	26	29	35	47	27	301	3	7	1	3
ROUND WEIGHT (LBS.)	1.5	40.8	31.5	16.8	25.4	150.6	2.4	6.8	2.4	1.1
CPE ^{2/}	5.42	6.04	7.29	9.79	5.63	62.77	0.63	1.46	0.21	0.63

^{1/} In addition, one channel catfish was caught that weighed 2.9 lbs.

^{2/} Number per 1000' feet of gill net

Yellow perch, walleye and northern pike were captured at all locations except off the south end of Lime Island (Station 20) which was a deep water set. Forty-seven perch were taken. They ranged in length from 7 to over 11 inches with almost 60 percent being between 8 and 11 inches. Twenty-seven walleyes were captured but only about 22 percent were of legal size. Twenty-nine pike were taken but only about 21 percent of the fish were of legal size.

During the 1975 survey, 205 herring were captured at the various stations. In 1979, the herring catch was restricted to Station 20 (Table 1) but 300 herring were taken there. Almost 94 percent of those fish were between 13 and 16 inches in length. From this set, and other sets made in Potagannissing Bay, it appears there is excellent potential for developing a sport fishery for herring in the Lower St. Mary's River. At the present time, very few people fish for this species even though it is a fine eating fish.

Seven tiger muskellunge were caught in Raber Bay but five were 2 years old and two were 3 years old, so they were not from the 1976 plant of 5,000 fish made in that area. One tiger musky about 25 inches in length was taken by an angler in the area who mistook it for a northern pike. Since the fish was still alive, it was released and no scales were collected for age determination. It was of a size, however, that could possibly be ascribed to the 1976 plant.

Potagannissing Bay

Eleven sites around Potagannissing Bay and its islands were sampled. A catch summary is shown in Table 7. This area proved to have the most varied, well balanced, and abundant gamefish population of any area in the St. Mary's system. Excellent populations of yellow perch, walleye, northern pike, rock bass and herring inhabit the area. Also, in the area between Drummond Island and Detour, sufficient numbers of lake trout exist to provide some fishing for that species.

A total of 492 yellow perch were captured, ranging in length from 7 to over 15 inches. Seventy percent of them were between 9 and 12 inches long and should provide excellent fishing, especially around Peck, Rutland and Grape islands and off Black Rock Point.

Eighty-three walleyes, 10-23 inches long, were caught. Over 85 percent of them exceeded 15 inches, the legal size limit. Bruce Point yielded most of the walleyes, but a few were taken at nearly all sites.

Eighty-six northern pike were captured. They ranged from 12 to 39 inches long. Forty-three percent of them exceeded the 20-inch minimum size limit. Peck, Rutland and Grape islands and Hay Point yielded the best catches.

The sets at Little Trout and Bow islands plus those at Sims and Black Rock points produced 523 of the 524 herring taken from the bay. The herring averaged between 13 and 15 inches in length. They were concentrated in 40-60 feet of water.

Compared to the 1975 survey, the 1979 survey showed perch, walleye and northern pike populations to be virtually the same (Table 1). Herring catches were up 40 percent in 1979 and lake trout replaced splake in nearly identical numbers.

Table 7 - Catch summary for stations 22-32 in Potagannissing Bay, 1979

SPECIES AND NUMBER MEASURED										
Inch Group	Northern Pike	Tiger Musky	Herring	Lake Whitefish	Chinook	White Sucker	Yellow Perch	Walleye	Alewife	Rainbow Smelt
4	0	0	0	0	0	0	0	0	0	6
6	0	0	0	0	0	0	8	0	0	0
7	0	0	0	0	0	0	91	0	0	0
8	0	0	2	0	0	0	138	0	0	0
9	0	0	0	0	0	0	114	0	0	0
10	0	0	8	0	0	0	93	1	0	0
11	0	0	19	0	0	0	34	0	0	0
12	1	0	34	0	0	0	12	1	0	0
13	2	0	126	0	0	0	1	3	0	0
14	0	0	93	0	0	0	1	7	0	0
15	7	0	22	0	0	0	0	11	0	0
16	6	0	6	0	0	0	0	14	0	0
17	8	0	0	0	0	0	0	9	0	0
18	11	1	0	0	0	0	0	14	0	0
19	14	0	0	2	1	0	0	12	0	0
20	7	1	0	1	0	0	0	8	0	0
21	6	0	0	3	0	0	0	1	0	0
22	8	0	0	1	0	0	0	2	0	0
23	4	0	0	2	0	0	0	0	0	0
24	8	0	0	0	0	0	0	0	0	0
25	1	0	0	0	0	0	0	0	0	0
26	1	0	0	0	0	0	0	0	0	0
29	1	0	0	0	0	0	0	0	0	0
38	1	0	0	0	0	0	0	0	0	0
TOTAL NUMBER MEASURED	86	2	310	9	1	0	492	83	0	6
TOTAL CATCH	86	2	524	9	1	256	492	83	5	29
ROUND WEIGHT (LBS.)	155.4	3.1	489.6	31.3	2.6	289.9	188.1	159.2	0.4	2.0
CPE ^{1/}	6.52	0.15	39.70	0.68	0.08	19.39	37.27	6.29	0.38	2.20

^{1/} Number per 1000' of gill net

Table 7 - (Continued)

SPECIES AND NUMBER MEASURED								
Inch Group	Brown Bullhead	Round Whitefish	Lake Trout	Longnose Sucker	Rock Bass	Sculpin spp.	Smallmouth Bass	Pumpkinseed
3	0	0	0	0	0	1	0	0
4	0	0	0	0	1	0	0	1
5	0	0	0	0	10	0	0	1
6	0	0	0	0	14	0	0	2
7	0	0	0	0	18	0	0	1
8	1	0	0	0	14	0	1	0
9	0	0	0	0	4	0	2	0
10	11	0	1	0	1	0	4	0
11	11	0	0	0	0	0	0	0
12	2	1	2	0	0	0	1	0
13	0	1	2	0	0	0	0	0
14	0	3	1	0	0	0	0	0
15	0	2	0	0	0	0	0	0
16	0	3	3	0	0	0	0	0
17	0	2	1	0	0	0	0	0
19	0	2	1	0	0	0	0	0
23	0	0	1	0	0	0	0	0
25	0	0	3	0	0	0	0	0
27	0	0	1	0	0	0	0	0
TOTAL NUMBER MEASURED	25	14	16	0	62	1	8	5
TOTAL CATCH	26	14	16	34	62	1	8	5
ROUND WEIGHT (LBS.)	7.0	7.1	15.8	12.9	8.7	0.1	2.1	0.3
CPE ^{1/}	1.97	1.06	1.21	2.58	4.70	0.08	0.61	0.38

^{1/} Number per 1000' of gill net

Sufficient numbers of rock bass, round whitefish, lake whitefish, and smallmouth bass were taken to indicate that angling for those fish also might be successful in localized areas.

GROWTH RATES OF THE MAJOR SPORT FISH SPECIES

Scale samples were collected from several species to compare their growth between localities and with the general statewide average. Yellow perch, walleye and northern pike are abundant throughout the system and this discussion is restricted to them. Other species were aged but their abundance, both between and within areas in most instances, does not provide sufficient information to warrant inclusion in this report. Those data, however, are on file at the Marquette Great Lakes Station and available for reference.

Yellow perch

Data on the yellow perch catches from each area of the St. Mary's River are presented in Table 8. Each catch has been apportioned into the percentage of fish in each age group and the average length of fish in each age group is also shown. From this table, one can readily compare the age structure and growth rates of perch in the various areas of the St. Mary's system.

With the exception of the fish taken above the Sault locks, it is apparent that perch grow faster at successive sites down river. Figure 2 clearly shows this increase in the rate of growth. Only ages 3, 4 and 5 are shown because those are the age groups best represented, even though perch of ages 2-12 were captured. Beginning with Upper Lake Nicolet (Wasig Bay) and proceeding down through Lake George, Munuscong, Raber, and Potagannissing bays, age-3 perch average 6.6, 6.8, 7.6, 7.7, and 7.9 inches, respectively. This trend continues through age 5 with the exceptions of Lake Nicolet and Raber Bay perch which show dramatic increases in growth between ages 4 and 5. Those increases are likely due to the small number of age-5 fish from those locations, however, and may not accurately represent this age group. This phenomenon of better growth rates for downstream populations has been demonstrated many times elsewhere and results from accumulation of nutrients in the lower reaches of a stream.

Yellow perch in the Upper St. Mary's show a growth rate that is above the Lake Nicolet and Lake George averages but is less than perch in Munuscong, Raber and Potagannissing bays. Age-3 perch above the Sault locks average 7.2 inches. The reasons for this apparent discrepancy of better growth rates than in downriver locations cannot be resolved from this survey and may be a sampling problem. Stations 1 and 2 are somewhat out of flow of the main current from Lake Superior and they may be enriched somewhat from water leaving the Waiska River-Waiska Bay areas. Temperature also might be a factor but no temperature profiles were taken.

Compared to the statewide average growth rate for yellow perch (Table 9), fish from Lake Nicolet and Lake George exhibit slower growth rates (6.6 and 6.8 inches at age 3 compared to 7.0 inches statewide). Perch in Munuscong, Raber and Potagannissing bays, however, exceed the state average (0.6-0.9 inches longer at age 3; drop to 0.1 inch below it at age 4 and 0.5 inch below at age 5; but then exceed the state average for age 6 and then equal it at older ages).

Table 8 - Percentage age composition and mean length (inches) at age of yellow perch taken in the 1979 St. Mary's River survey

Age Group	LOCATION											
	Upper St. Mary's		Lake Nicolet		Lake George		Munuscong Bay		Raber Bay		Potagannissing Bay	
	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length
2							4.84	8.0	4.66	7.3		
3	3.30	7.2	4.71	6.6	5.67	6.8	47.03	7.6	30.25	7.7	21.61	7.9
4	28.09	7.9	83.53	7.3	21.97	7.5	32.89	8.5	35.75	8.7	28.10	8.8
5	33.99	8.5	8.82	8.7	43.61	8.0	5.27	9.4	11.05	10.7	23.16	9.8
6	14.41	10.2	1.47	8.2	18.87	9.8	4.88	11.2	18.30	10.3	20.48	10.6
7	13.44	10.7	1.47	9.6	3.79	11.1	5.08	10.0			4.94	11.9
8	2.15	11.9			3.92	11.1					1.18	12.7
9	4.62	11.6									0.53	11.1
10					0.76	11.7						
11					0.76	11.7						
12					0.64	13.7						
TOTAL NO. CAUGHT	155		68		157		66		47		492	

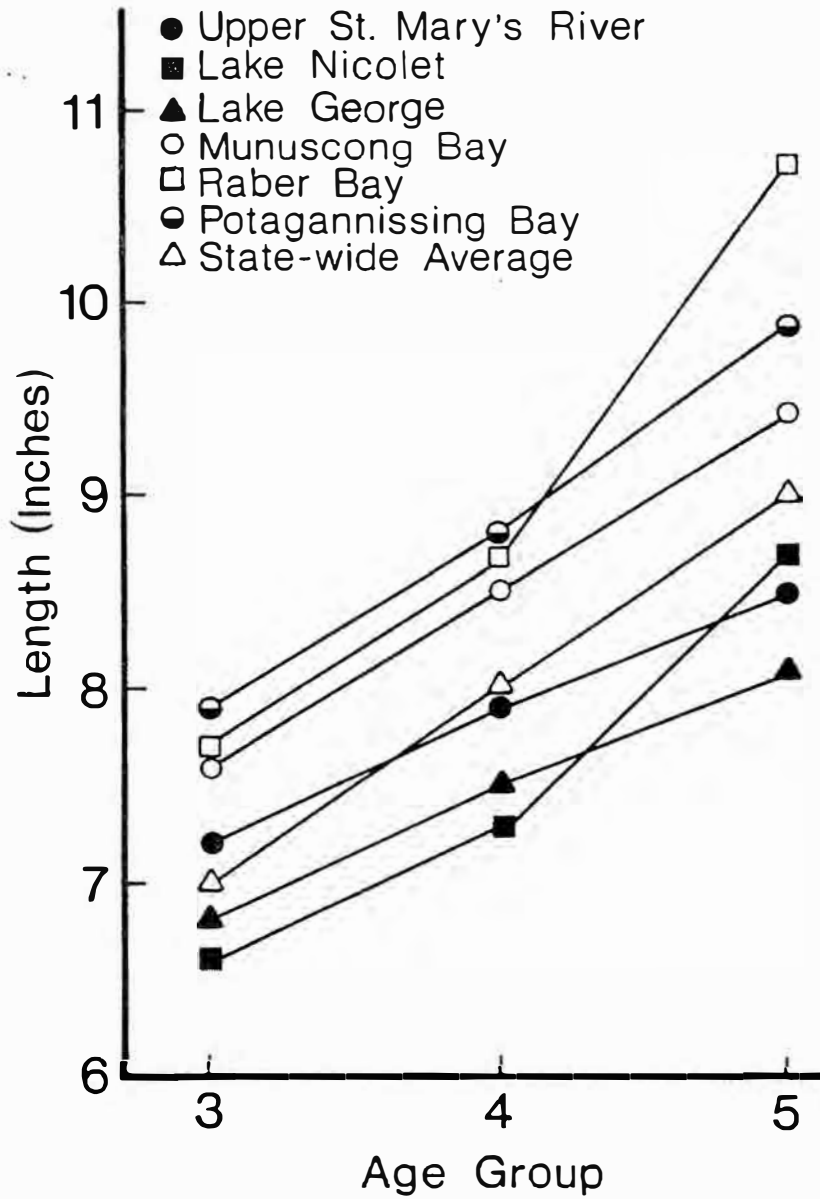


Figure 2 - Growth rates of yellow perch from various areas of the St. Mary's River in 1979 compared to the State average.

Table 9. - Statewide average lengths (inches)
at age 0-10 for yellow perch, walleye
and northern pike. ✓

Age	Yellow Perch	Walleye	Northern Pike
0	3.1	7.1	10.2
1	4.6	9.5	15.6
2	6.1	13.3	19.4
3	7.0	15.2	22.2
4	8.0	17.2	24.6
5	9.0	18.6	26.5
6	9.9	19.2	28.9
7	10.7	19.6	32.7
8	11.3	21.6	33.4
9	11.8	21.4	38.7
10	12.3	25.2	39.6

✓ From: Laarman, Percy W., 1963. Average growth rates of fishes
in Michigan. Mich. Dept. Nat. Res. Inst. for Fish.
Res. Report #1675, 9 pp.

Age distributions of the yellow perch populations were quite symmetrical at most locations after full recruitment to the sampling gear. Lake Nicolet and Munuscong Bay fish showed drastic declines in abundance after they reached a length of 7.5 to 8.5 inches at age 4, however. This probably is a reflection of fishing pressure because both locations are heavily fished. In all other areas, a more gradual reduction in abundance of older age classes occurs until the fish reach approximately 10.5 inches in length and then they decline rapidly.

Walleye

Table 10 presents walleye catches by area, divided into percent abundance per age group as was done with the yellow perch. Walleyes were caught at all locations except in the upper St. Mary's, and few were caught in Lake Nicolet.

The better growth rates in downriver populations of perch were not reflected by the walleye populations (Figure 3). Walleyes grow slower in Munuscong Bay than in Raber Bay where they grow slower than in Potagannissing Bay. Walleye growth in Lake George is faster than for any of the previously mentioned populations, however.

Walleye growth from all areas is below the statewide average until they reach age 5 in Lake George and age 6 in the other areas. Generally, Michigan walleyes reach the legal size of 15.0 inches by age 3 (Table 9). In the St. Mary's system, most walleyes enter the sport fishery between ages 4 and 5. No reason is evident for the slow growth of young walleyes but it probably relates to water temperature and food supply.

Very few walleyes over 15.0 inches long were caught in Lake George, Munuscong Bay, and Raber Bay, indicating that fishing pressure in those areas is affecting those populations. In contrast, no such reduction is noticeable in Potagannissing Bay until the fish reach about 19.0 inches in length. Either less fishing pressure, higher natural abundance, or both helps to maintain a better balanced population in that area. The diversity of the fishery probably helps, too, since excellent perch and pike populations inhabit Potagannissing Bay.

Northern Pike

Northern pike catches by age and size from the various areas of the St. Mary's are presented in Table 11. Pike were caught at all locations, but the catch rates were best in Lake George and Munuscong Bay.

In all areas sampled, growth of northern pike was well below the state average growth rate (Figure 4). Statewide, pike are 3 to 5 inches longer for a given age than in the St. Mary's system. This means that pike in the St. Mary's require about 1½ more years to become 20 inches long (legal size) for the angler.

Few pike (7) were taken in the Upper St. Mary's and little can be said about the effects on angling on that fish population. However, the age distributions of pike in Lake Nicolet, Lake George, Munuscong Bay and Raber Bay suggest that sufficient fishing pressure occurs in those areas to noticeably reduce the number of legal-sized fish. Potagannissing Bay pike, on the other hand, exhibit an age-size distribution more closely resembling a lightly exploited population.

Table 10 - Percentage age composition and mean length (inches) at age of walleyes taken in the 1979 St. Mary's River survey

Age Group	LOCATION									
	Lake Nicolet		Lake George		Munuscong Bay		Raber Bay		Potagannissing Bay	
	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length
2			20.8	11.1	9.5	10.0				
3	25.0	13.6	20.8	14.0	19.0	11.0	25.6	11.5	3.6	12.1
4	25.0	13.2	20.8	15.0	47.6	14.1	60.9	14.5	22.6	14.9
5			8.3	18.4	14.3	14.8	9.6	16.7	36.7	17.6
6			16.7	20.4					23.8	18.6
7			8.3	18.6	9.5	20.6			6.0	20.8
8	50.0	20.4					3.9	19.9	4.8	20.2
9			4.2	24.2					2.4	21.2
Total No. Caught	4		24		21		27		83	

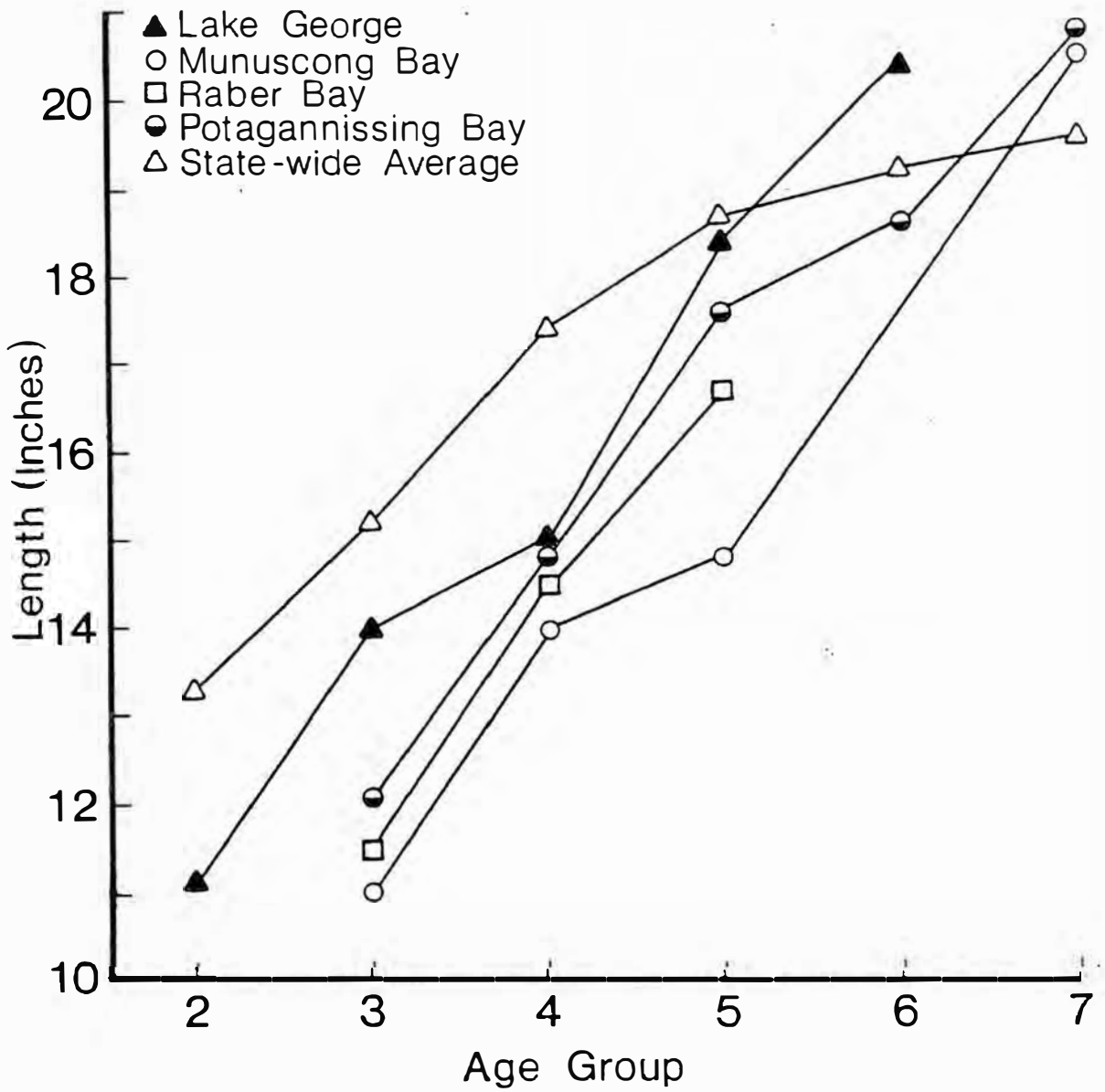


Figure 3 - Growth rates of walleye from various areas of the St. Mary's River in 1979 compared to the State average.

Table 11 - Percentage composition and mean length (inches) at age of northern pike taken in the 1979 St. Mary's River survey

LOCATION												
Age Group	Upper St. Mary's		Lake Nicolet		Lake George		Munuscong Bay		Raber Bay		Potagannissing Bay	
	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length	% of Catch	Mean Length
1					1.2	12.7	5.95	12.8			2.5	13.3
2	42.9	16.1	17.6	15.2	15.1	15.4	27.02	16.9	18.8	17.4	23.5	16.7
3	14.3	19.5	52.9	16.5	26.7	17.1	23.16	18.9	31.3	19.0	30.9	18.9
4	28.6	21.5	11.8	20.9	36.0	19.0	31.81	20.6	43.8	20.2	18.5	20.7
5	14.3	27.7	5.9	25.0	10.5	22.0	9.7	22.3	6.3	24.2	16.0	23.2
6			11.8	26.3	5.8	23.8	1.2	24.6			4.9	24.1
7					4.65	24.5	1.2	26.2			2.5	27.2
8												
9											1.2	38.8
Total No. Caught	7		17		86		85		29		86	

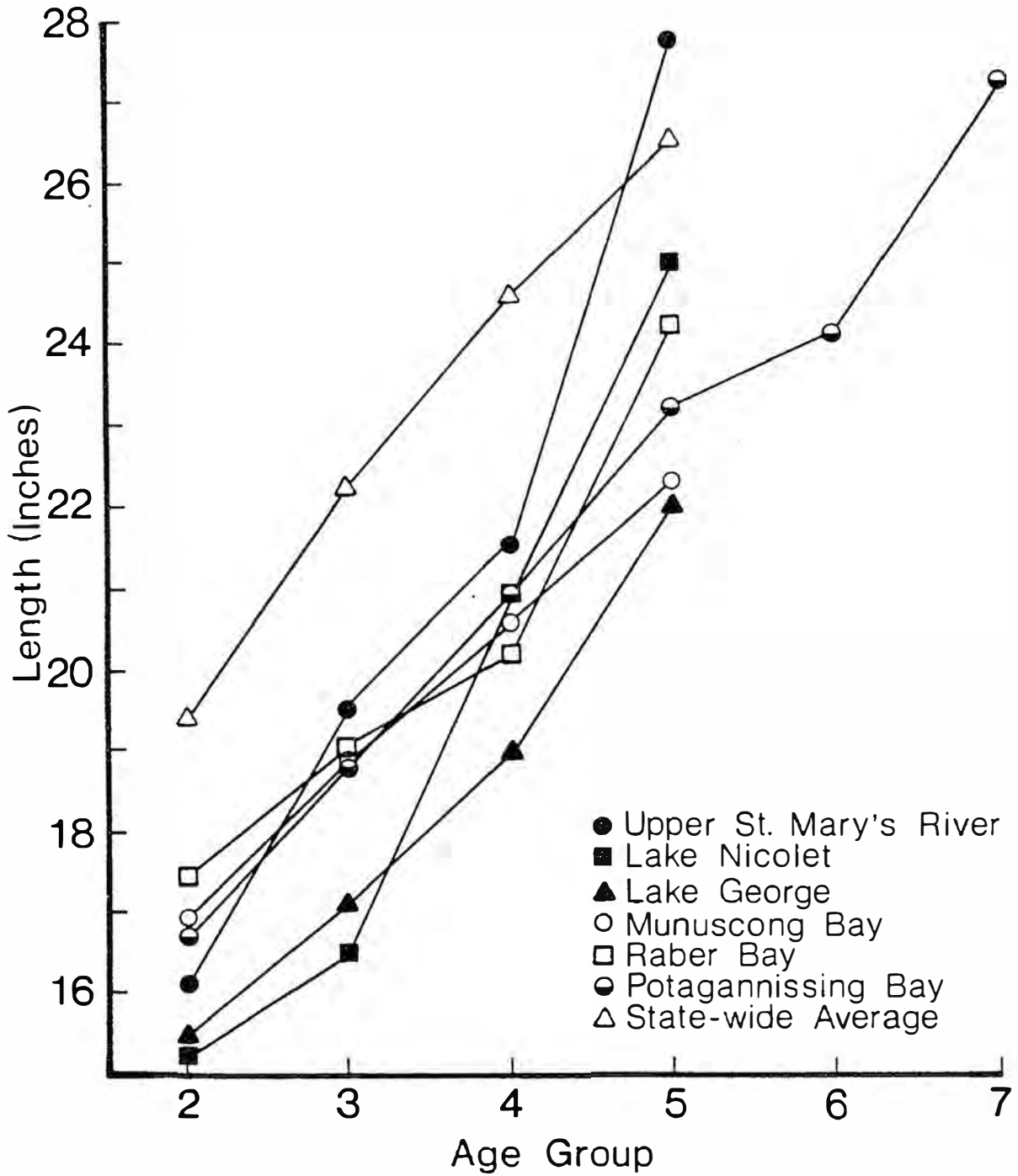


Figure 4 - Growth rates of northern pike from various areas of the St. Mary's River in 1979 compared to the State average.

CONCLUSIONS

From this survey, it was evident that little change in the major fish populations of the St. Mary's River system has occurred since the 1975 survey. Yellow perch, walleye and northern pike appear to maintain their abundance and growth as they have for the past several years. The herring population may be on the rise and the brown bullhead population may be decreasing but neither of these trends could be proven statistically.

It appears that fishing pressure continues to affect the availability of larger perch, walleye and northern pike populations in some areas. Lake Nicolet and Munuscong Bay show reduced yellow perch populations after the time they reach "catchable" size. The same situation was evident for walleye in Lake George, Munuscong Bay and Raber Bay. Potagannissing Bay was the only area sampled where a very symmetrical age distribution of the northern pike populations was observed

In regards to the best places to fish in the St. Mary's River, perch fishing should be excellent in the Upper St. Mary's near Round Island and Mosquito Bay. Good perch fishing is also available in Lake George and Potagannissing Bay. Walleye fishermen should have the best success in Potagannissing Bay although Lake George and Raber Bay also should produce some good catches. Good catches of walleye have been reported from the area of the St. Mary's River immediately downstream from the International Bridge but no stations were sampled there. Although the CPE for northern pike in Lake George and Munuscong Bay was highest, the symmetry of the age distribution of pike in Potagannissing Bay suggests that more fish of larger size should be available there.

A large, and apparently unexploited, population of herring exists in Raber and Potagannissing bays. It remains for a few enterprising fishermen to lead the way in developing what could be an exceptionally fine fishery for this species.

The St. Mary's system should be monitored periodically by the Department of Natural Resources to observe the effects of angling pressure on what are generally fine fisheries. Some reduction in fish populations is evident now and an increased withdrawal rate either by the sport fishery or by unregulated Indian fishing could adversely affect the area to the extent that additional restrictions may be necessary to maintain the stocks.