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MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Fisheries Division

A FISHERIES SURVEY OF THE ST. MARY'S RIVER, 1975

Richard Schorfhaar, Great Lakes Fisheries Supervisor

SUMMARY

A total of 32 sites were fished in the St. Mary's River system, each with an experimental gang of gill nets consisting of 300-foot panels of 2, 2½, 3, and 4½ inch stretch mesh. Twenty-seven species of fish were captured.

Northern pike populations appear to be highest in Lake George, Munuscong and Potagannissing Bay. Growth rates in Munuscong and Lake George are quite slow, while Potagannissing pike grow at about state average rates.

The Upper St. Mary's River, Lake George and Potagannissing Bay have the best yellow perch populations, and all areas have perch of good average size. Growth rates are slow in the Potagannissing and Munuscong areas and are about state average in the Upper St. Mary's and Lake George areas.

More smallmouth bass were netted in Potagannissing and Munuscong Bays than elsewhere. Their growth rate in Munuscong Bay, however, is very slow.

The whitefish population in the Upper St. Mary's River is adequate for the winter fishery and could provide a summer fishery as well, especially during the mayfly hatch.

Raber Bay and Potagannissing Bay both have sizeable herring populations and deserve more attention by the sport fishery. A small herring population also

exists in the Wasig Bay area of Lake Nicolet. Growth rates in Lake Nicolet and Potagannissing Bay are similar to growth in Keweenaw Bay.

Netting results for salmonids were not very encouraging, however no sampling was done in the rapids area where the steelhead fishery operates.

Walleye were found throughout the lower St. Mary's River in substantial numbers.

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INTRODUCTION

As early as 1937, the Michigan Conservation Department and the U.S. Bureau of Fisheries investigated claims by a group calling themselves the N.Y.A. Conservation Research Office in Detour that commercial fishing had depleted bass populations in Potagannissing Bay. Creel censuses at that time indicated no evidence of a depleted sport fishery in Potagannissing Bay and other connecting waters between Lake Superior and Lake Huron. Catch rates were as high or higher than state averages. (Westerman and VanOosten, 1937)

There has been a growing concern on the part of local residents and tourists in the St. Mary's River area recently regarding the quality of fishing in the system. As an outgrowth of this concern, these people invited the Department of Natural Resources to discuss some of the problems and their solutions.

The staff at the Alpena Great Lakes Station has conducted spring and/or fall gill net and trawl surveys since 1970 to index several species of fish in Potagannissing and Raber Bay (Maud Bay), as well as some surveys in Munuscong Bay. Some of the data and thinking in this paper reflects these surveys.

To obtain a broader picture of the fish stocks throughout the system during the summer months, a fisheries survey was made from July 29 - September 5, 1975 by the staff at the Marquette Great Lakes Station. The objectives of the cruise were to determine: (1) the general distribution of fish in the system during the summer; (2) the age structure and growth of the various fish populations throughout the system; (3) whether or not there might be extensive populations of relatively unexploited stocks of fish in the system; and (4) gather information on which to base a management program.

METHODS

Previous to the survey, netting locations were marked on U.S. Lake Survey Charts. Netting sites were selected to obtain representative samples from each area and in general, nets were set where there were physical features such as points, banks, current, etc.

Standard 300-foot long gill nets of stretch mesh sizes 2, 2½, 3 and 4½ inches were used throughout the survey. A Vexilar 171 fish-finder was used to locate netting sizes and fish concentrations in some instances. Temperature profiles were taken on most lifting days with an electrical resistance thermometer. Gear was fished from the M/V Bluefin.

Fish were weighed and measured and representative scale samples were taken from the sport species for age determination.

RESULTS

The sites fished in each area are shown in Figure 1. A summary of catches by water body are presented in Table 1 and by individual site in Appendix, Table 1. Percentage length frequencies of selected species by area are presented in Appendix Tables 2-5. The catch per unit of effort (CPE) for each species, as depicted, may be slightly misleading, since not all sets were made in the best habitat for that species. Also, no replicate sets were made at any site. Mesh sizes were combined to calculate CPE (number of fish per 1000' of gill net). Brief discussions for each major sport species follow and include comments on the sport fishing.

NORTHERN PIKE

UPPER ST. MARY'S RIVER: Fifteen northern pike (CPE = 12.5) were caught near Round Island. These fish ranged in length from 15.2 to 23.8 inches and averaged 18.9 inches. Thirty-one percent were above the legal size of 20 inches. One pike was netted at Sherman Park. A few fishermen were having good success in the Round Island and Sherman Park areas at the time of this survey.

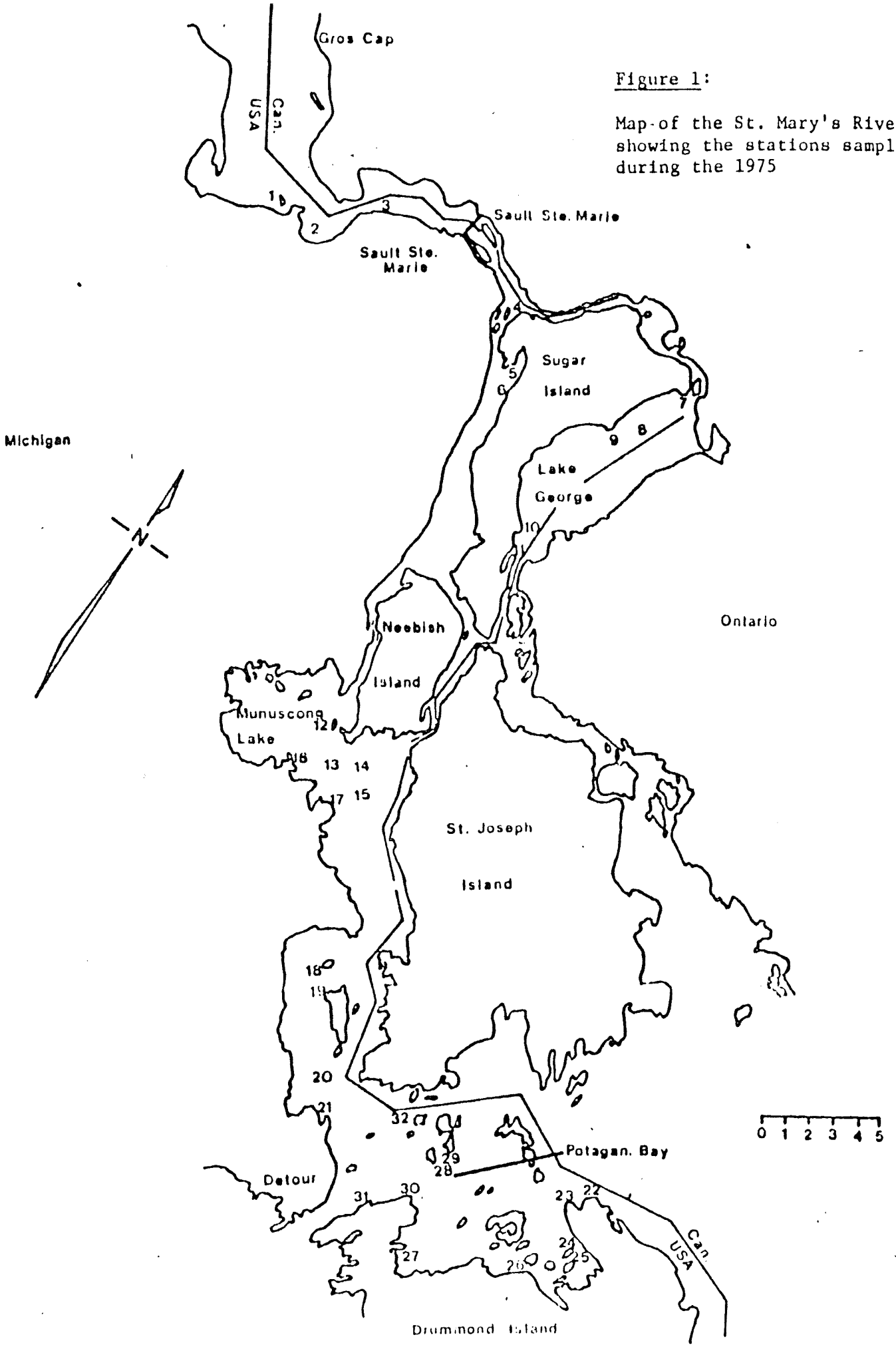

Figure 1:

Map of the St. Mary's River showing the stations sampled during the 1975

Table 1. Number and Length Range (Inches) of Fish Captured in Graded-Mesh Gill Nets Fished in Sections of the St. Mary's River System, Summer of 1975. (Amount of Gill Net Fished at Each Site is Included in Parenthesis)

	Upper St. Mary's River (3,600')		Lake Nicolet (3,600')		Lake George (6,000')		Munuscong Bay (7,200')		Raber Bay (4,800')		Potagannissing Bay (13,200')		TOTALS (38,400')	
	Number	Length	Number	Length	Number	Length	Number	Length	Number	Length	Number	Length	Number	Length
Sea Lamprey					1	8.0							1	8.0
Lake Sturgeon							1	30.5					1	30.5
Bowfin					1	23.5							1	23.5
Alewife	1	8.0			2	7.0			11	5.0-7.0	49	5.0-7.0	63	5.0-8.0
Gizzard Shad					1	14.0							1	14.0
Smelt					5	3.0-6.0			68	4.0-6.0	129	3.0-9.0	202	3.0-9.0
Northern Pike	16	15.2-23.8	42	10.8-25.2	104	13.0-24.3	67	13.5-25.9	24	8.7-22.5	94	12.5-42.5	347	8.7-42.5
Brown Bullhead			32	9.0-11.0	3	8.0-11.0	55	10.0-13.0			156	6.0-12.0	246	6.0-13.0
Burbot											2	22.0-27.0	2	22.0-27.0
Lake Herring			33	8.2-15.1			1	17.1	204	9.9-17.9	313	6.2-17.5	551	6.2-17.9
Lake Whitefish	21	9.3-21.6	1	15.9					4	12.9-20.5	9	9.0-21.0	35	9.0-21.0
Round Whitefish	6	11.0-13.8							1	10.6	14	10.2-16.1	21	10.2-16.1
Rainbow Trout											1	19.0	1	19.0
Brown Trout	1	23.1											1	23.1
Brook Trout			1	13.1									1	13.1
Coho Salmon	1	15.9											1	15.9
Splake									2	20.5-23.0	15	17.4-24.0	17	17.4-24.0
Carp					2	27.0	3	20.0-26.0					5	20.0-27.0
Longnose Sucker			2	12.0-15.0					2	12.0-15.0	49	8.0-18.0	53	8.0-18.0
White Sucker	27	9.0-20.0	67	9.0-19.0	214	8.0-20.0	100	8.0-19.0	49	8.0-18.0	412	8.0-19.0	869	8.0-19.0
Redhorse	1	16.0			9	13.0-19.0	14	12.0-24.0	1	21.0			25	12.0-24.0
Rock Bass			8	5.7-9.8	16	6.0-9.0	144	5.0-11.0	3	6.7-8.9	104	4.0-9.4	275	4.0-11.0
Pumpkinseed					1	4.0	1	6.5			4	5.0-7.0	6	4.0-7.0
Smallmouth Bass					2	8.3-15.0	13	9.0-17.1			22	8.3-15.2	37	8.3-17.1
Black Crappie					1	13.7							1	13.7
Yellow Perch	91	7.0-12.0	50	6.5-11.0	191	6.5-11.6	81	6.8-13.1	29	7.1-11.5	442	6.0-13.3	884	6.0-13.3
Walleye			17	10.5-23.1	30	12.1-23.3	21	10.2-22.7	10	13.3-20.9	86	12.8-24.6	159	10.2-24.6

LAKE NICOLET: Forty-two northern pike were taken from this area, 41 of which were from Wasig Bay (CPE = 11.7). Their size ranged from 10.6 to 25.2 inches and averaged 15.2 inches. Only four of the 42 (10%) were over 20 inches long. Pike fishing was good at the northwest end of Sugar Island and in Wasig Bay during this period.

LAKE GEORGE: A total of 104 northern pike were taken in Lake George. Hay Point produced the best CPE (44.2). Pike were also abundant (CPE = 25.8) two miles southwest of Buoy #1, however all 31 fish were under 20 inches. Lake George pike ranged from 13.0 to 24.3 inches long and averaged 18.4 inches. Twenty-seven percent were legal size. Undoubtedly, the vast shallow areas in the vicinity of Whipple Point would also have produced well. The Hay Point, Churchville Point and possibly Whipple Point areas appear to have the most potential for pike fishing in Lake George.

MUNUSCONG BAY: All six sites produced northern pike, however they were most abundant in the Moon Island and Rocky Point sets (18.3 and 15.8/1,000 feet respectively). In general, these pike were fairly small--the largest captured was 25.9 inches and the smallest was 13.5 inches. The mean length was 19.5 inches and 43% were legal size. Altogether, sixty-seven pike were captured in Munuscong Bay (CPE = 9.3). Analysis of a very limited number of northern pike scales indicated they were rather slow growing. Good sport catches of pike were coming from the Winter Point, Moon Island and Sawmill Point areas during this survey.

RABER BAY: Northern pike were taken only in the two shallow sets at Round Island and Maud Bay. Good numbers of pike were taken at both sites (CPE = 8.3 and 11.7 respectively), however they were not large (17.5 inch average length). Only 13% were legal size.

POTAGANNISSING BAY: All five netting sites in the eastern portion of Potagannissing Bay yielded good numbers of northern pike, as well as the site at Fairbank Island. The CPE varied from 4.2 to 21.0. In general, these pike

were larger than in other areas in the St. Mary's River system. Several pike over 25.0 inches were taken, including one 42.5 inch fish. Lengths ranged from 12.5 to 42.5 inches and averaged 19.8 inches. Thirty-seven percent were of legal size. Most of the sport fishing was concentrated in the eastern portion of Potagannissing Bay during this survey, but success was rather poor--probably due to the high water temperatures.

Northern pike grow slowly in Munuscong Bay and Lake George. Four to five growing seasons are necessary for the fish to attain the legal size of 20.0 inches. Potagannissing Bay pike grow at about state average rates with some fish attaining legal size in three growing seasons and all reaching 20.0 inches by four growing seasons. Mean lengths at the end of the growing seasons for these areas are shown below in Table 2.

Table 2: Mean back-calculated lengths (inches) of northern pike in three areas of the St. Mary's River system.

	End of Year								
Area	1	2	3	4	5	6	7	8	9
Munuscong Bay	7.7	12.8	16.4	19.2	21.3	22.8			
Potagannissing Bay	7.2	13.5	18.8	23.4	27.2	30.0	33.1		
Lake George	7.8	12.7	16.7	20.4	21.0	21.8			

From the standpoint of CPE and percentage of legal size fish caught, the areas listed in Table 2 have the best northern pike populations and hence, the highest fishery potential for this species in the portions of the St. Mary's River system surveyed.

YELLOW PERCH

UPPER ST. MARY'S RIVER: A total of 91 yellow perch were netted. They ranged in size from 7.0 to 12.0 inches long and averaged 9.0 inches. The CPE was 25.3, but perch were most abundant in the Sherman Park set (CPE = 58.3). Perch fishing in this area was best in the Sherman Park and Reiss' Coal Dock areas.

LAKE GEORGE: The Lake George netting produced 191 perch (CPE = 31.8) that ranged in size from 6.5 to 11.6 inches long and averaged 8.7 inches. Hay Point had the best perch set with a CPE of 62.5 followed in descending order by Advance Island (46.6), Churchville Point (23.3), a site two miles southwest of Buoy #1 (20.0), and Duck Island (6.7). Although little sport fishing was being done for perch during this survey, the potential for excellent fishing is certainly there, especially in the Advance Island and Hay Point areas.

LAKE MUNUSCONG: Eighty-one perch (CPE = 11.2) were captured here, ranged from 6.8 to 13.1 inches and averaged 9.1 inches in length. The netting size 3/4 mile southeast of Winter Point produced the most perch (CPE = 40.8). Rocky and Roach Points sets each produced fish at the rate of 9.2/1,000 feet, and a site just east of downbound Buoy #RN-4 produced 3.3 perch per 1,000 feet. Nets set at Moon Island and 1/4 mile west of downbound Buoy #B-5 each produced 2.5 perch per 1,000 feet of net. Very few perch were caught in the sport fishery during the survey.

RABER BAY: Yellow perch were captured in the two shallow-water sets at Round Island and Maud Bay. The overall CPE in the Raber Bay area was only 6.0, however Maud Bay yielded 14.2 perch/1,000 feet and Round Island 10/1,000 feet of net. The 29 perch from the Raber Bay area ranged from 7.1 to 11.5 inches in length and averaged 8.7 inches long.

POTAGANNISSING BAY: Three netting sites in Potagannissing Bay were very productive. The Rutland Island set caught 212 perch (CPE = 176.7) while Sims Point and Peck Island sets yielded 76.7 and 66.7 perch per 1,000 feet respectively. Other sites either had no fish (Blackrock Point) or up to 15.0 per 1,000 feet at Bruce Point. Hook and line fishing for perch should be excellent in the Rutland-Peck Island area and around Sims Point, although success was not too good while we were there.

Potagannissing Bay contains an excellent perch population that produced an average CPE of 33.5 for fish between 6 and 13 inches long ($\bar{X}$ = 9.1 inches).

Growth rates for the older age groups are rather slow (Table 3).

Table 3: Mean back-calculated lengths (inches) of yellow perch in four areas of the St. Mary's River system.

	End of Year								
Area	1	2	3	4	5	6	7	8	9
U. St. Mary's Rv.	3.0	4.2	5.3	6.6	7.9	9.3	10.1	10.9	11.8
Lake George	2.5	3.9	5.3	6.4	7.9	9.3	10.1	11.0	
Lake Munuscong	2.3	3.7	5.0	6.3	7.4	8.5	9.5	10.8	11.4
Potagannissing Bay	2.5	3.8	4.9	6.1	7.4	8.3	8.7		

Eshenroder (1973) noted a scarcity of mature female perch, but the sex ratio approximated 50:50 in Potagannissing Bay until females reached 6.5 to 7.5 inches--the size at which perch enter the sport fishery. Since females do grow fast, many may be caught before reaching maturity, which would tend to unbalance the sex ratio of older perch.

The Upper St. Mary's River, Lake George and Potagannissing Bay net sets had high CPE's, indicating rather substantial perch populations. These populations should be adequate to provide excellent fisheries in these areas. By referring to the Appendix, one can pick out specific areas where CPE's were exceptionally high. Perch were large enough throughout the St. Mary's system to be attractive to sports fishermen.

SMALLMOUTH BASS

UPPER ST. MARY'S, LAKE NICOLET & RABER BAY: No smallmouth bass were taken in these areas, which indicated the populations are probably low but not necessarily nonexistent. Bass are difficult to sample with gill nets.

LAKE GEORGE: Two smallmouth bass (8.3 and 15.0 inches long) were netted in Lake George--one at Hay Point and one at Duck Island. Eight to ten boats were fishing in the Duck Island area but with poor success during the survey period. However, smallmouth fishing was reported to be quite good at times.

MUNUSCONG BAY: Smallmouth bass were captured at four out of six netting sites with Rocky Point producing 9 of the 13 bass (CPE = 7.5). The bass ranged from 9.0 to 17.1 inches long and averaged 12.0 inches long. Only two were legal size (12.0 inches). These bass were aged and the growth rate was found to be very slow. Six to seven growing seasons are necessary to attain the 12.0 inch size limit. Mean lengths at the end of each growing season are as follows:

	Year										
	1	2	3	4	5	6	7	8	9	10	11
Length (Inches)	2.6	4.3	5.5	7.1	8.7	11.3	13.5	14.3	--	--	16.8

These 13 bass may represent a fairly sizeable, though localized, population since the species is difficult to net. Although no one seemed to be specifically fishing for smallmouth in Munuscong Bay, the potential for a fishery is certainly there--especially around the several rocky points.

POTAGANNISSING BAY: Smallmouth bass, while not numerous in the netting samples, appeared to be sufficiently distributed in the eastern portion of the Island area of Potagannissing Bay to provide a sport fishery. A total of 22 smallmouth were caught. Fifteen of those fish were captured in the Peck Island set. They ranged in size from 8.3 to 15.2 inches long, averaged 11.1 inches long and 26% were of legal size. Historically, Potagannissing Bay has provided good to excellent smallmouth fishing.

ROCK BASS

UPPER ST. MARY'S RIVER, LAKE NICOLET & LAKE GEORGE: No rock bass were taken in the Upper St. Mary's River netting. Four rock bass (CPE = 2.2) were taken from each of the Wasig Bay sets in Lake Nicolet ranging in size from 5.7 to 9.8 inches and averaging 7.7 inches. Sixteen 6.0 to 9.0 inch rock bass (CPE = 2.7) were taken in Lake George. Their average length was 7.2 inches.

MUNUSCONG BAY: Rock bass were quite abundant (CPE = 20.0), especially in the Rocky and Roach Point sets and the set 3/4 mile southeast of Winter Point.

A total of 144 fish that ranged from 5.0 to 11.0 inches long ($\bar{X}$ = 8.1 inches) were netted. Hook and line fishing for rock bass was good from the lower end of the Neebish Island Cut to the lower end of Moon Island. Rocky and Roach Points should also provide good rock bass fishing.

RABER BAY: Only three rock bass were taken at Maud Bay.

POTAGANNISSING BAY: The shallow-water habitat in much of Potagannissing Bay is quite suitable for rock bass, since they were numerous in most of the shallow sites--especially the Peck Island site where 65 (CPE =54.2) rock bass were netted. A total of 104 rock bass (CPE = 7.9) ranging from 4.0 to 9.4 inches long ($\bar{X}$ = 6.3 inches) were captured in Potagannissing Bay.

WALLEYE

UPPER ST. MARY'S RIVER AND LAKE NICOLET: No walleyes were taken in the Upper St. Mary's River. In Lake Nicolet we did not attempt to take walleyes from along the shipping channel outside Wasig Bay, but a sizeable fishery was operating there at the time of this survey. Nine and eight walleyes, respectively, were taken from the north end of Sugar Island and Wasig Bay. They ranged from 10.5 to 23.1 inches long (CPE = 4.7). Fifteen (88%) of the walleyes were over 15.0 inches. Average length of walleyes from this area was 17.8 inches. Walleye fishing at the end of July was fair to good in the following areas: north end of Sugar Island along the Little Lake George channel; the edge of the shipping channel outside of Wasig Bay; and in Wasig Bay itself. About 20-30 boats were fishing these areas daily.

LAKE GEORGE: Thirty walleyes from 12.1 to 23.3 inches long ($\bar{X}$ = 17.8 inches) were collected in the Lake George sets (77% legal size). The best spot for walleyes in Lake George was Hay Point where fish were caught at the rate of 19.2/1,000 feet. Nets at Churchville Point and the site two miles southwest of Buoy #1 had CPE's of 2.5 and 1.7, respectively. No sport fishing for walleyes was observed.

MUNUSCONG BAY: Rocky Point produced 14 of the 21 walleyes netted in Munuscong Bay (CPE = 11.7). Walleyes from Munuscong ranged from 9.4 to 22.7 inches long and averaged 17.3 inches long. Seventy-one percent were legal size. Other sites in Munuscong Bay produced only 1 to 3 walleyes per set (Total CPE = 2.9). Walleye sport fishing was fair along the upbound channel due east of Winter Point. Success was better in the Moon Island area along the edge of the downbound channel, as well as along the channel from Rocky Point to Point Aux Frenes.

RABER BAY: Round Island and Maud Bay produced seven and three walleyes, respectively (CPE's = 5.8 and 2.5). The walleyes were from 13.3 to 20.9 inches long and averaged 16.6 inches long. Half of them were of legal size. Walleye fishing was quite good in the Round Island area at times with 15-20 boats fishing there.

POTAGANNISSING BAY: Peck and Rutland Island sites both produced excellent catches of walleyes (CPE's = 44.2 and 17.5 per 1,000 feet). Six of the eleven sites sampled produced 86 walleyes. All but three were taken in the eastern portion of Potagannissing Bay. These walleyes ranged from 12.8 to 24.6 inches long and averaged 19.2 inches long (90% legal size). Walleye sport fishing was poor considering the number of fish captured in the netting survey.

The growth of walleyes in the St. Mary's River is slow with most walleyes not reaching 15.0 inches until the fifth growing season (state average = four growing seasons). Mean lengths at the end of each year are shown below in Table 4.

Table 4: Mean back-calculated lengths of walleye in Lake George and at Raber Bay.

	End of Year								
Area	1	2	3	4	5	6	7	8	9
Lake George	5.3	8.9	11.8	14.3	16.5	17.7	19.6	21.6	22.5
Raber*	5.2	8.9	12.4	13.2	15.2	16.6	19.5	20.4	

*Minutes of the 1973 Lake Huron Committee Meeting of the Great Lakes Fishery Commission

All areas below the locks on the St. Mary's contain enough walleyes to provide a fishery, as evidenced by the number of anglers fishing. Several specific netting locations stand out in particular, i.e., North Sugar Island, Wasig Bay and Hay Point in Lake George; Rocky Point in Munuscong Bay; Round Island in Raber Bay; and Peck and Rutland Islands in Potagannissing Bay.

LAKE WHITEFISH

UPPER ST. MARY'S RIVER: Lake Whitefish were netted at all three sites. A total of 21 fish were taken ranging from 9.3 to 21.6 inches long ($\overline{X}$ = 14.5 inches). They are probably abundant enough to provide a sport fishery, if techniques were developed to catch them.

LAKE NICOLET, LAKE GEORGE AND MUNUSCONG BAY: Only one 15.9 inch whitefish was taken in Lake Nicolet, and no whitefish were taken from either Lake George or Munuscong Bay.

RABER BAY AND POTAGANNISSING BAY: Four whitefish were taken from Round Island and Lime Island (north end). They ranged from 12.9 to 20.5 inches long and averaged 16.6 inches long. Nine whitefish were taken in the deep-water sets in Potagannissing Bay, ranging from 9 to 21 inches long with a 14.7 inch average length.

The potential for further development of this fishery appears possible only in the Upper St. Mary's River downstream to a point below the Rapids area where existing fisheries already exist.

ROUND WHITEFISH (MENOMINEE)

Menominees were netted only at the Mosquito Bay site in the Upper St. Mary's River where six fish were taken. Lake Nicolet, Lake George and Munuscong Bay produced no menominees and Raber Bay, only one 10.6 inch fish. However, in Potagannissing Bay, 23 menominees were captured in sets at Little Cass and Little Trout Islands. They ranged from 10.2 to 16.1 inches long and averaged 12.4 inches long.

Little potential exists for development of menominee fisheries in the river system, except possibly when they concentrate off river mouths in the spring and fall.

LAKE HERRING (CISCO)

UPPER ST. MARY'S RIVER, LAKE GEORGE AND MUNUSCONG BAY: No herring were netted in the Upper St. Mary's or in the Lake George area. One 17.1 inch fish was taken from Munuscong Bay.

LAKE NICOLET: The south end of Wasig Bay produced 31 of the 33 herring (CPE = 25.8) taken in the Lake Nicolet netting. The upper Wasig Bay site was too shallow and warm, and the north end of Sugar Island site had an extremely strong current. Herring ranged in length from 8.2 to 15.1 inches and averaged 11.3 inches.

RABER BAY: Very good catches of herring (204) were made in the Raber Bay area - even in shallower water at Round Island. Sizes ranged from 9.9 to 17.9 inches long. CPE ranged from 26.7 in the Lime Island Channel (south) to 76.7 per 1,000 feet at Round Island. No herring were taken in Maud Bay. Raber Bay herring averaged 13.7 inches long.

Potagannissing Bay: Five netting sites in Potagannissing Bay were deeper than 20 feet. The Hay Point CPE exceeded 30 and the Little Trout-Bow Island set had a CPE of 121.7. The 313 herring from Potagannissing Bay ranged in length from 6.2 to 17.5 inches long and averaged 13.5 inches long. A significant percentage (6.7) of the herring had lamprey marks.

Lake Herring growth rates in the St. Mary's River are presented below in Table 5.

Table 5: Mean back-calculated lengths of lake herring in Lake Nicolet and Potagannissing Bay.

	End of Year					
Area	1	2	3	4	5	6
Lake Nicolet	5.3	9.2	10.8	12.7	13.5	
Potagannissing Bay	4.2	7.7	10.5	12.7	13.8	16.2

A potential for expanding the herring fisheries exists in Lake Nicolet, Raber and Potagannissing Bay.

SPLAKE

Two splake (20.5 and 23.0 inches) bearing a right pectoral clip (1973 plant) were captured in Raber Bay. They were also captured in some of the deeper sets in Potagannissing Bay (Hay Point, Little Trout and Bow Island and Cass Island). A few were taken from the Little Cass Island set. All splake bore a right pectoral fin clip (1973 plant) which are a backcross between the F_5 generation male splake and female lake trout. It is interesting to note that neither earlier nor later plants of splake showed up in this survey. One third (5) of the splake from Potagannissing Bay bore either fresh or old lamprey marks. The potential for development of a splake fishery is improving in the Potagannissing Bay area and will continue to improve in direct relation to the size of the planting program, improvement in sea lamprey control and the onset of natural reproduction.

OTHER SPECIES

Although only one rainbow trout was taken in Potagannissing Bay, had we been able to net in the power plant area or rapids area at the Soo, undoubtedly rainbows would have shown up. The sucker catch per unit of effort in the St. Mary's River ranged from 7.5 to 35.7 and exceeded 30.0 in Lake George and Potagannissing Bay. Sizes ranged from 8.0 to 20.0 inches long. Significant catches of bullheads were made in Lake Nicolet, Munuscong Bay and Potagannissing Bay with CPE's ranging from 7.6 to 11.8. Their lengths ranged from 8.0 to 13.0 inches and their average weight was about 1 pound. A fairly active fishery was operating in the upper end of Munuscong Bay during the time of this survey.

APPENDIX

RECOMMENDATIONS

1. Encourage continued cooperation among management agencies and concerned citizens' groups for collecting and disseminating information about the fisheries potential in the St. Mary's River system.

2. Continue to conduct assessment surveys on both juvenile and adult stocks of fish in the system for management purposes. As time and money permit, improve the creel census estimates of withdrawal.

3. Develop a fishing atlas for distribution to the public and update it when new survey information becomes available.

4. Continue the stocking of lake trout or lake trout-splake backcrosses on past traditional grounds in the lower river.

5. Initiate a tagging study of walleyes, using the spring walleye run in Munuscong, to determine movement patterns and the amount of exploitation.

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APPENDIX TABLE 1

Number, Length, Range (Inches), and CPE of Various Species Caught in 1200' of Graded-Mesh Gill Net Fished at Each Location (Dates are Indicated in Parenthesis).

Upper St. Mary's River - Above Rapids

	Station 1 (7/30)			Station 2 (7/30)			Station 3 (9/10)			Composite Summary		
Common Name	CPE	No.	Size Range	CPE	No.	Size Range	CPE	No.	Size Range	CPE	No.	Size Range
Alewife	.83	1	8.0							.28	1	8.0
Northern Pike	12.50	15	15.2-23.8	.83	1	21.0				4.44	16	15.2-23.8
Whitefish	1.67	2	20.0-20.7	7.50	9	11.0-21.6	8.33	10	9.3-17.4	5.83	21	9.3-21.6
Menominee							5.00	6	11.0-13.8	1.67	6	11.0-13.8
Brown Trout	.83	1	23.1							.28	1	23.1
Coho							.83	1	15.9	.28	1	15.9
White Sucker	5.83	7	10.0-17.0	7.50	9	11.0-20.0	9.17	11	9.0-19.0	7.50	27	9.0-20.0
Redhorse							.83	1	16.0	.28	1	16.0
Yellow Perch	10.83	13	7.0-11.4	58.33	70	7.2-12.0	6.67	8	8.7-12.0	25.28	91	7.0-12.0

Station 1 (Round Island)
Station 2 (Sherman Park)
Station 3 (Mosquito Bay)

Appendix Table 1 (Cont)

Lake Nicolet

Common Name	Station 4 (8/1) CPE	No.	Size Range	Station 5 (7/31) CPE	No.	Size Range	Station 6 (7/31) CPE	No.	Size Range	Composite Summary CPE	No.	Size Range
Northern Pike	.83	1	21.9	25.00	30	10.8-17.8	9.17	11	13.3-25.2	11.67	42	10.8-25.2
Brown Bullhead				26.67	32	9.0-11.0				8.89	32	9.0-11.0
Herring				1.67	2	10.8-10.9	25.83	31	8.2-15.1	9.17	33	8.2-15.1
Whitefish							.83	1	15.9	.28	1	15.9
Brook Trout	.83	1	13.0							.28	1	13.1
Longnose Sucker	1.67	2	12.0-15.0							.56	2	12.0-15.0
White Sucker	2.50	3	13.0-18.0	29.17	35	9.0-19.0	24.17	29	9.0-19.0	18.61	67	9.0-19.0
Rock Bass				3.33	4	5.7-9.8	3.33	4	6.5-8.0	2.22	8	5.7-9.8
Yellow Perch				33.33	40	6.5-11.0	8.33	10	7.3-11.0	13.89	50	6.5-11.0
Walleye	7.50	9	13.3-19.6	5.83	7	10.5-23.1	.83	1	20.3	4.72	17	10.5-23.1

Station 4 (Buoy No. 31)
Station 5 (Wasig Bay North)
Station 6 (Wasig Bay South)

Appendix Table 1 (cont) Lake George

Common Name	Station 7 (9/4) CPE	No.	Size Range	Station 8 (9/5) CPE	No.	Size Range	Station 9 (9/4) CPE	No.	Size Range	Station 10 (8/28) CPE	No.	Size Range	Station 11 (8/23) CPE	No.	Size Range	Composite Summary CPE	No.	Size Range
Sea Lamprey	.83	1	8.0													.17	1	8.0
Bowfin										.83	1	23.5				.17	1	23.5
Alewife	1.67	2	7.0													.33	2	7.0
Gizzard Shad							.83	1	14.0							.17	1	14.0
Smelt	.83	1	3.0	3.33	4	5.0-6.0										.83	5	3.0-6.0
Northern Pike	9.17	11	17.0-23.5	25.83	31	13.4-16.7	44.17	53	13.0-24.3	4.17	5	14.0-18.9	3.33	4	14.4-17.0	17.33	104	13.0-24.3
Brown Bullhead										2.50	3	8.0-11.0				.50	3	8.0-11.0
Carp	.83	1	27.0										.83	1	27.0	.33	2	27.0
White Sucker	95.83	115	8.0-20.0	19.17	23	8.0-16.0	21.67	26	11.0-19.0	8.33	10	13.0-19.0	33.33	40	9.0-17.0	35.67	214	8.0-20.0
Redhorse							5.00	6	13.0-21.0				2.50	3	13.0-19.0	1.50	9	13.0-19.0
Rock Bass				.83	1	7.0	6.67	8	6.0-9.0	1.67	2	7.0-9.0	4.17	5	6.0-8.0	2.67	16	6.0-9.0
Pumpkinseed							.83	1	4.0							.17	1	4.0
Smallmouth Bass							.83	1	8.3				.83	1	15.0	.33	2	8.3-15.0
Black Crappie										.83	1	13.7				.17	1	13.7
Yellow Perch	23.33	28	6.5-10.8	20.00	24	6.8-9.7	62.50	75	6.8-11.6	44.67	56	7.0-11.2	6.67	8	7.2-11.0	31.83	191	6.5-11.6
Walleye	2.50	3	13.4-15.2	1.67	2	21.7-23.2	20.83	25	12.1-23.3							5.00	30	12.1-23.3

Station 7 (Churchville Point)
Station 8 (2 MI SW Buoy #1)
Station 9 (Hay Point)
Station 10 (Advance Island)
Station 11 (Duck Island)

Appendix Table 1 (cont)

Munuscong Bay

Common Name	Station 12 (8/22) CPE	No.	Size Range	Station 13 (8/26) CPE	No.	Size Range	Station 14 (8/26) CPE	No.	Size Range	Station 15 (8/27) CPE	No.	Size Range
Northern Pike	18.33	22	16.1-22.5	9.17	11	16.8-24.7	5.83	7	13.5-24.0	2.50	3	17.5-19.2
Brown Bullhead	.83	1	11.0				25.00	30	10.0-13.0			
Herring										.83	1	17.7
Carp												
Redhorse							1.67	2	19.0-22.0			
White Sucker	1.67	2	13.0-15.0	7.50	9	11.0-19.0	25.83	31	10.0-19.0	8.83	10	11.0-19.0
Rock Bass	4.17	5	6.0-8.0	4.17	5	5.0-11.0	40.83	50	4.0-10.0	2.50	3	6.0-8.0
Pumpkinseed							.83	1	6.5			
Smallmouth Bass	.83	1	11.3				.83	1	9.9			
Yellow Perch	2.50	3	7.2-11.5	2.50	3	10.4-13.1	40.83	49	7.1-12.2	3.33	4	6.8-10.4
Walleye	.83	1	12.1				.83	1	14.0	2.50	3	14.0-14.6
Lake Sturgeon												

Station 12 - Moon Island
Station 13 - Winter Point (1 Mi. S.)
Station 14 - Winter Point (3/4 Mi. SE)
Station 15 - Winter Point (2 Mi. SE)

Appendix Table 1 (Cont)

Munuscong Bay Continued

Common Name	Station 16 (8/21) CPE	No.	Size Range	Station 17 (8/21) CPE	No.	Size Range	Composite Summary CPE	No.	Size Range
Northern Pike	4.17	5	13.5-22.6	15.83	19	16.9-25.9	9.31	67	13.5-25.9
Brown Bullhead	8.83	10	10.0-12.0	11.67	14	10.0-12.0	7.64	55	10.0-13.0
Herring							.14	1	17.1
Carp	1.67	2	24.0-26.0	.83	1	20.0	.42	3	20.0-26.0
Redhorse	2.50	3	18.0-20.0	7.50	9	12.0-24.0	13.89	100	8.0-19.0
White Sucker	10.00	12	9.0-18.0	30.00	36	8.0-19.0	1.94	14	12.0-24.0
Rock Bass	33.33	40	5.0-11.0	34.17	41	5.0-11.0	20.00	144	5.0-11.0
Pumpkinseed							.14	1	6.5
Smallmouth Bass	1.67	2	9.0-9.8	7.50	9	9.9-17.1	1.81	13	9.0-17.1
Yellow Perch	9.17	11	6.8-10.3	9.17	11	6.9-11.0	11.25	81	6.8-13.1
Walleye	1.67	2	10.2-18.5	11.67	14	9.4-22.7	2.92	21	10.2-22.7
Lake Sturgeon				.83	1	30.5	.14	1	30.5

Station 16 - Roach Point
Station 17 - Rocky Point

Appendix Table 1 (cont.) Raber Bay

Common Name	Station 18 (8/20) CPE	No.	Size Range	Station 19 (8/20) CPE	No.	Size Range	Station 20 (8/19) CPE	No.	Size Range	Station 21 (8/19) CPE	No.	Size Range	Composite Summary CPE	No.	Size Range
Alewife	5.00	6	6.0-7.0	1.67	2	6.0-7.0				2.50	3	5.0-6.0	2.29	11	5.0-7.0
Smelt	5.83	7	4.0-6.0	2.50	3	5.0	48.33	58	4.0-6.0				14.17	68	4.0-6.0
Northern Pike	8.33	10	17.4-21.0							11.67	14	8.7-22.5	5.00	24	8.7-22.5
Herring	76.67	92	9.9-15.8	66.67	80	10.4-17.9	26.67	32	11.0-15.6				42.50	204	9.9-17.9
Whitefish	1.67	2	13.6-20.5	1.67	2	12.9-19.5							.83	4	12.9-20.5
Menominee							.83	1	10.6				.21	1	10.6
Splake				.83	1	20.5				.83	1	23.0	.42	2	20.5-23.0
Longnose Sucker	.83	1	15.0				.83	1	12.0				.42	2	12.0-15.0
White Sucker	23.33	28	8.0-18.0	.83	1	15.0	2.50	3	10.0-13.0	14.17	17	8.0-18.0	10.21	49	8.0-18.0
Redhorse										.83	1	21.0	.21	1	21.0
Rock Bass										2.50	3	6.7-8.9	.63	3	6.7-8.9
Yellow Perch	10.00	12	7.5-11.5							14.17	17	7.1-10.3	6.04	29	7.1-11.5
Walleye	5.83	7	13.8-19.8							2.50	3	13.3-20.9	2.08	10	13.3-20.9

Station 18 - SW Side of Round Island
Station 19 - N End of Lime Island
Station 20 - South End of Lime Island Channel
Station 21 - West Point of Maud Bay

Appendix Table 1 (cont) Potagannissing Bay

Common Name	Station 22 (8/12) CPE	No.	Size Range	Station 23 (8/12) CPE	No.	Size Range	Station 24 (8/7) CPE	No.	Size Range	Station 25 (8/7) CPE	No.	Size Range	Station 26 (8/6) CPE	No.	Size Range	Station 27 (8/6) CPE	No.	Size Range
Alewife																5.83	7	5.0-7.0
Smelt	9.17	11	4.0-6.0													15.00	18	4.0-7.0
Northern Pike	4.17	5	18.3-21.9	20.00	24	17.0-22.5	13.33	16	17.4-28.5	19.17	23	12.5-42.5	8.33	10	12.5-34.5	12.50	15	17.7-23.4
Brown Bullhead				3.33	4	10.0-12.0	95.83	115	6.0-12.0	10.83	13	10.0-12.0	19.17	23	9.0-12.0			
Burbot	.83	1	27.5															
Herring	7.50	9	12.7-16.7	.83	1	14.1										1.67	2	11.9-13.9
Whitefish																		
Menominee																		
Rainbow	.83	1	19.0															
Splake	3.33	4	18.5-22.0															
Longnose Sucker	4.17	5	12.0-14.0							.83	1	18.0						
White Sucker	30.83	37	8.0-18.0	23.33	28	11.0-19.0	60.00	72	9.0-19.0	11.67	14	12.0-19.0	21.67	26	9.0-19.0	32.50	39	8.0-18.0
Rock Bass				11.67	14	4.7-7.5	54.17	65	4.0-8.0	8.33	10	4.9-8.3	10.00	12	5.0-9.4	.83	1	6.2
Pumpkinseed							2.50	3	5.0-7.0	.83	1	5.0						
Smallmouth Bass				1.67	2	10.7-13.9	12.50	15	8.3-15.2	.83	1	11.5	.83	1	9.8			
Yellow Perch	3.33	4	7.2-7.9	15.00	18	7.6-12.1	66.67	80	7.3-11.7	176.67	212	6.3-13.3	10.83	13	7.3-10.1	14.17	17	6.0-11.3
Walleye				1.67	2	18.3-19.7	44.17	53	12.8-23.9	17.50	21	14.9-24.6	3.33	4	20.0-21.5	2.50	3	14.6-21.7

Station 22 - Hay Point
Station 23 - Bruce Point
Station 24 - Peck Island
Station 25 - Rutland Island
Station 26 - Grape Island
Station 27 - Fairbank Island

Appendix Table 1 (Cont) Potagannissing Bay Continued

Common Name	Station 28 (8/13) CPE	No.	Size Range	Station 29 (8/5) CPE	No.	Size Range	Station 30 (8/5) CPE	No.	Size Range	Station 31 (8/13) CPE	No.	Size Range	Station 32 (8/15) CPE	No.	Size Range	Composite Summary CPE	No.	Size Range
Alewife	9.17	11	6.0-7.0	12.50	15	5.0-7.0				8.33	10	6.0-7.0	5.00	6	5.0-7.0	3.71	49	5.0-7.0
Smelt	14.17	17	4.0-6.0	5.00	6	4.0-5.0				62.50	75	4.0-9.0	1.67	2	3.0-5.0	9.77	129	3.0-9.0
Northern Pike													.83	1	26.5	7.17	94	12.5-42.5
Brown Bullhead							.83	1	10.0							11.82	156	6.0-12.0
Burbot													.83	1	22.0	.15	2	22.0-27.5
Herring	121.67	146	10.3-17.5	30.83	37	10.3-17.5				39.17	47	6.2-16.7	59.17	71	10.8-16.0	21.36	282	6.2-17.5
Whitefish	1.67	2	18.8-21.0	3.33	4	9.0-20.7				.83	1	13.6	1.67	2	12.9-16.5	.68	9	9.0-21.0
Menominee				1.67	2	11.6-14.9							10.00	12	10.2-16.1	1.06	14	10.2-16.1
Rainbow																.08	1	19.0
Splake	.83	1	20.0	3.33	4	19.5-24.0							5.00	6	17.4-23.4	1.14	15	17.4-24.0
Longnose Sucker	14.17	17	10.0-14.0				5.00	6	8.0-13.0				1.67	2	10.0-13.0	3.71	49	8.0-18.0
White Sucker	17.50	21	8.0-13.0	40.00	48	9.0-15.0	80.83	97	8.0-16.0				25.00	30	10.0-17.0	31.21	412	8.0-19.0
Rock Bass							1.67	2	5.2-5.8							7.88	104	4.0-9.4
Pumpkinseed																.30	4	5.0-7.0
Smallmouth Bass																1.44	19	8.3-15.2
Yellow Perch	2.50	3	7.5-9.3	.83	1	11.0	76.67	92	6.8-12.4				1.67	2	7.9-8.2	33.48	442	6.0-13.3
Walleye							2.50	3	11.3-14.3							6.29	86	12.8-24.6

Station 28 - Little Trout and Bow Island
Station 29 - Little Trout Island
Station 30 - Sims Point
Station 31 - Black Rock Point
Station 32 - Little Cass Island

APPENDIX TABLE 2

Percentage Length Frequency of Northern Pike Captured in Gill Nets Set in Several Areas of the St. Mary's River System, 1975.

Inch Group	Upper St. Mary's River	Lake Nicolet	Lake George	Munuscong Bay	Raber Bay	Potagannissing Bay
8					4.4	
9					4.4	
10		2.4				
11		9.5			4.4	
12		11.9				2.2
13		26.2	5.8	3.0		3.2
14		9.5	3.9			2.2
15	12.5	16.7	3.9	1.5		1.1
16	12.5	2.4	6.7	6.0	8.7	6.5
17	18.8	7.1	22.1	11.9	17.4	12.9
18	12.5	2.4	17.3	11.9	30.4	18.3
19			15.4	22.4	17.4	16.1
20	12.5		17.3	10.5	4.4	10.8
21	18.8		2.9	10.5	4.4	9.7
22			1.9	11.9	4.4	6.5
23	6.3		1.9	3.0		4.3
24			1.0	6.0		
25				1.5		
26						2.2
28						1.1
34						2.2
42						1.1
No. of Fish	16	42	104	67	24	94

APPENDIX TABLE 3

Percentage Length Frequency of Yellow Perch Captured in Gill Nets Set in Several Areas of the St. Mary's River System, 1975.

Inch Group	Upper St. Mary's River	Lake Nicolet	Lake George	Munuscong Bay	Raber Bay	Potagannissing Bay
6		12.0	3.1	3.6		1.6
7	25.0	48.0	30.7	28.6	51.7	22.2
8	22.8	16.0	27.1	20.5	6.9	24.2
9	34.8	8.0	16.2	9.6	13.8	26.0
10	12.0	10.0	17.7	21.7	17.2	14.8
11	3.3	6.0	5.2	10.8	10.3	9.6
12	2.2			3.6		1.4
13				1.2		.2
No. of Fish	91	50	191	81	29	442

APPENDIX TABLE 4

Percentage Length Frequency of Walleye Captured in Gill Nets Set in Several Areas of the St. Mary's River System, 1975.

Inch Group	Upper St. Mary's River	Lake Nicolet	Lake George	Munuscong Bay	Raber Bay	Potagannissing Bay
9		5.9		4.8		
10				4.8		
11						1.3
12			6.9	4.8		1.3
13		5.9	13.8		30	3.8
14			3.5	14.3	20	7.5
15		11.8	13.8	4.8		2.5
16		11.8				8.8
17		11.8	10.3	4.8	10	6.3
18		17.7	20.7	28.6	10	11.3
19		17.7		9.5	20	17.5
20		5.9	3.5	9.5	10	22.5
21			13.8	9.5		7.5
22		5.9	6.9	4.8		1.3
23		5.9	10.3			6.3
24						2.5
No. of Fish		17	30	21	10	86

APPENDIX TABLE 5

Percentage Length Frequency of Herring Captured in Gill Nets Set in Several Areas of the St. Mary's River System, 1975.

Inch Group	Upper St. Mary's River	Lake Nicolet	Lake George	Munuscong Bay	Raber Bay	Potagannissing Bay
6						.3
7						
8		15.2				
9		3.0			.5	.6
10		27.3			5.4	3.5
11		33.3			4.4	3.9
12		3.0			22.4	14.7
13		3.0			33.7	41.7
14		12.1			24.4	25.3
15		3.0			6.8	6.1
16					1.5	2.9
17					1.0	1.0
No. of Fish		33			204	313