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A two-year environmental field study of fishery resources in Lake St. Clair and in the St. Clair and Detroit Rivers was conducted by the Michigan Department of Natural Resources for the Corps of Engineers. This report gives a summary of all trap net catches, tagging from trap nets, and creel survey data collected from eight sampling sites in the lake-river system. The eight sites were sampled for different habitat types and fish assemblages. In addition to the above, another ongoing trap net study was continued on Lake Erie and incorporated into this report, since significant northward migration of certain fish species from the lake contributes heavily to the fish populations and fisheries in Lake St. Clair and connecting rivers. The adult fish community and its yield were examined to allow subjective prediction of environmental impacts of extended winter navigation in the St. Clair-Detroit River System. Keywords;

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES
FISHERIES DIVISION

MOVEMENT AND HARVEST OF FISH IN LAKE ST. CLAIR, ST. CLAIR RIVER, AND DETROIT RIVER

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1985
Final Report
Winter Navigation Study
U.S. Army Corps of Engineers

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ACKNOWLEDGMENTS

The collection and analysis of the creel, trap net, and tag data was financed by the United States Army Corps of Engineers, Detroit District. W. C. Latta provided guidance to the course of the program and to the preparation and review of the final report. M. Galbraith was in charge of the first year's creel census activities and prepared the creel section of the first annual report. A. Sutton prepared all figures and was in charge of key punching survey data and preparing computer programs. G. Zurek typed the rough draft and final report. L. Shubel and J. Hodge were in charge of the netting operations. The collection of the netting and creel census survey data involved the effort of a large number of temporary employees. T. Freitag, U. S. Corps of Engineers, was helpful in providing relevant reports and by his encouragement to the staff.

INTRODUCTION

The Michigan Department of Natural Resources (MDNR) was contracted by the U. S. Army Corps of Engineers to perform a 2-year environmental field study, from March 1983, through March 1985, of fishery resources in Lake St. Clair and the St. Clair and Detroit rivers. This report provides a summary of all trap net catches, tagging from trap nets and creel survey data collected during that time. Also incorporated in this report are data analyses and interpretations relevant to a description of the fishery resources and consideration of potential impacts upon them from extended winter navigation.

This study was conducted in three segments which were a creel survey of the angling fishery, a trap net survey, and a tagging study of the adult fish community. The study area encompassed all of Michigan's Great Lakes waters between Port Huron on the north, and Gibraltar on the south, including the St. Clair River, Lake St. Clair, and the Detroit River. In addition, an ongoing trap net study was continued on Lake Erie, since significant northward migration of certain fish species from the lake contributes heavily to the fish populations and fisheries in Lake St. Clair and connecting rivers.

This report will be presented in four segments, dealing first with trap net results, second with angler survey results, third with results of tagging, and finally, with detailed analyses of the combined data set and their biological interpretation.

The basic approach of this study was to examine the adult fish community and its yield in a manner which might allow subjective predictions of environmental impacts. Tonn et al. (1983) suggested that a community analysis would be the best way to address fishery values and to prevent inappropriate management measures. Eight sampling sites were selected for netting and tagging to represent the different habitat types and fish assemblages. The number of stations and frequency of sampling had to be a compromise between an extensive and statistically desirable level and what would be feasible and acceptable under normal constraints of economics, personnel, and weather. We decided to target for one week of netting per month at each station and to tag as many individuals of as many species as possible within certain size criteria. Our goal was to minimize potential biases due to such things as timing of data collection, unequal sample sizes, and differences in habitat and species representation between stations. A statistical analysis of covariance would show whether the sampling scheme had prevented some of these biases. If so, then observed variances would be more likely to represent real changes in the fish community.

DESCRIPTION OF THE STUDY AREA

The study area encompassed all of Michigan's waters of the St. Clair-Detroit River system (SCDRS); from Port Huron at the head of the St. Clair River to Gibraltar at the lower end of the Detroit River. The SCDRS is approximately 143 km long and consists of three main sections; the St. Clair River, Lake St. Clair, and the Detroit River. Data from an adjacent Lake Erie netting study are also incorporated into this study because of the significant interchange of fish between these waters.

The description of hydrological characteristics and ice conditions in the SCDRS are mainly from Derecki (1984a-c).

St. Clair River.—The St. Clair River is approximately 63 km long and falls 1.5 m from Port Huron to the St. Clair Flats. There are three distinct reaches in the St. Clair River with differing hydraulic characteristics. The short (5 km) upper reach, from Lake Huron to the Black River, is narrow and deep (9 to 21 m) and contains the highest current velocities in the system. The middle reach, covering the next 40 km, extends to the river delta. It contains most of the river fall (1.1 m), but, due to its length, the slope is less than one-half as steep as in the upper reach. This reach has a fairly uniform rectangular channel, 8- to 15-m deep and 600- to 900-m wide. Channel uniformity is interrupted at Stag and Fawn Islands and the Middle Ground Shoal, where the channel widens from 900 to 1,200 m. The lower river falls less than 0.2 m and forms an extensive 18 km-long delta area known as the St. Clair Flats. It is divided into several channels and supports extensive marshy flats.

Except for narrow bands of shore ice, the St. Clair River does not freeze over and generally remains clear of ice above the delta. However, prior to spring breakup, northerly winds may push Lake Huron ice into the river. These ice floes travel swiftly to the delta, where they may lodge and form ice jams. The resultant partial damming effect causes water levels to rise upstream and drop downstream of the obstruction.

Lake St. Clair.—Lake St. Clair is the shallow connecting water body between the St. Clair and Detroit rivers. It has a surface area of 1,100 km^2, a maximum natural depth of 6.4 m, and an average depth of 3.4 m. A dredged 8.2-m navigation channel 29.7-km long bisects the lake. There are three major tributaries: the Clinton River in Michigan, and the Sydenham and Thames rivers in Ontario. The St. Clair River provides about 97% of the water supplied to the lake. Two distinct areas of Lake St. Clair are the main body of the lake, laying south and west of the St. Clair Flats, and a shallower, northern area (Anchor Bay).

Lake St. Clair has limited heat storage capacity, due to its shallowness. Consequently, its ice cover forms and melts quickly in response to wind and temperature changes. The lake is usually ice covered by the end of January. However, outside of bays and protected areas, stability of the ice cover is sensitive to wind forces. Maintenance of an open-water navigation channel can be difficult, due to shifting of ice sheets after clearing the vessel channel. An ice bridge forms in Lake St. Clair above the head of the Detroit River, keeping that area free of ice. However, this area fills with drift ice when storms break up the ice bridge. The lake is usually ice-free by March.

Detroit River.—The Detroit River is approximately 51 km long and its total fall is about 0.9 m. There are two distinct reaches in the river, with differing hydraulic characteristics. The upper reach extends from Lake St. Clair downstream 21 km to the head of Fighting Island. The fall is about 0.3 m. Except at the head of the river, where the channel is divided by Peach Island and Belle Isle, the river has a single, well-defined channel 600- to 900-m wide. The combined channel area is approximately doubled in the island area; however, the hydraulically effective width is reduced about 300 m by shoal areas, running along the islands. The river channel is deep (9 to 15 m) and has steep banks.

The 30 km-long lower reach is characterized by a broad river channel with many islands and wide shallow expanses of water. Fighting Island, Grosse Ile, and Bois Blanc Island divide the river into several channels. The main channel runs west of Fighting Island and east of Grosse Ile. The Trenton Channel separates Grassy Island and Grosse Ile from the United States mainland. To the east, two navigation channels in Canadian waters are maintained at 8.2–8.5 m depths. The substrate in the main channel, from the downstream end of Fighting Island to Bois Blanc Island, is mainly bedrock and boulders. It has the steepest slope in the area (0.5 m fall), leaving less than 0.2 m fall for the remainder of the lower river. Strong storms can raise the water level in western Lake Erie sufficiently to cause short period reversal of flow in the lower river. This is a phenomenon unique to the Detroit River in Great Lakes connecting channels.

Ice conditions in the Detroit River differ considerably from the St. Clair River, because of the upstream lakes which are the source of most of the ice for both rivers. Lake Huron, unlike Lake St. Clair, possesses a large heat storage capacity, which delays formation as well as deterioration of ice cover. The upper Detroit River is normally ice-free, except for the broad shoal area between Belle Isle and the United States mainland. In the lower river, ice cover develops in the broad shallow expanses adjacent to the islands; however, the main navigation channels are generally open, allowing free passage of ice to Lake Erie. Easterly winds can move Lake Erie ice into the lower river, causing ice jams which reduce flows and hamper navigation.

TRAP NET SURVEY

Methods

Much of the SCDRS tagging and netting data came from the eight regularly sampled stations (primary stations), whose locations are given in Fig. 1. Coordinates for the primary stations and location of each trap net site within the stations is given in Figs. 2–9. Hydrological characteristics at the primary stations appear in Table 1. Additional data were generated from springtime netting and tagging at long established Station 31 and 32 in Anchor Bay of Lake St. Clair and at Station 49 in western Lake Erie near the city of Monroe.

The netting effort goal was at least 20 trap net lifts (normally five nets lifted four times) per station per month except during winter months. The winter schedule attempted to make four net lifts at each of two stations per month. The schedule of monthly netting throughout the year at each station (where it was practicable) was designed to provide representative sampling of the fish population over all seasons. An attempt was made to position the nets, where feasible, at sites representative of each station's range of habitats. Ice conditions hindered and sometimes precluded winter netting. A notable example was the unusually extensive and persistent 1984 St. Clair River ice jam which prevented any netting at Stations 1–4 during the entire month of April.

Trap nets used at the primary stations were specifically built for the project. The lead was 77-m long by 1.8-m deep with a 1.8-m deep heart which tapered to 0.9 m at the pot end. Trap nets employed at the Anchor Bay and Lake Erie stations had 91.4 m long by 1.8-m deep net leads. The heart and pot were a uniform 1.8 m deep.

Scale samples were regularly collected from species most sought by anglers. A jeweler's rolling press, modified to maintain constant pressure, was used to imprint fish scales on 2.5 x 7.6 cm acetate plastic blanks. Age determinations were made using an Eberbach microprojector or a microfiche reader.

All fish netted at the eight primary stations were tagged with the exception of frail species (e.g., clupeids), and small (<170 mm), injured, or diseased fish. At the primary stations, smallmouth bass, largemouth bass, and walleyes were tagged with size 10 monel butt-end tags, secured to the jaw. All other species were tagged with vinyl tube Floy tags, with a nylon T-shaped base, inserted and anchored into the interneural process below the dorsal fin. Walleye and smallmouth bass netted at the Anchor Bay and Lake Erie stations were jaw-tagged with size 10 or 12 monel butt-end tags.

Sexual maturity and spawning condition determinations were made by applying gentle manual pressure to the fish abdomen to attempt to express milt or eggs. The easiest spawning condition determinations were made on male yellow perch and female rock bass. Sex and spawning condition determinations with other species were, to varying degrees, more difficult.

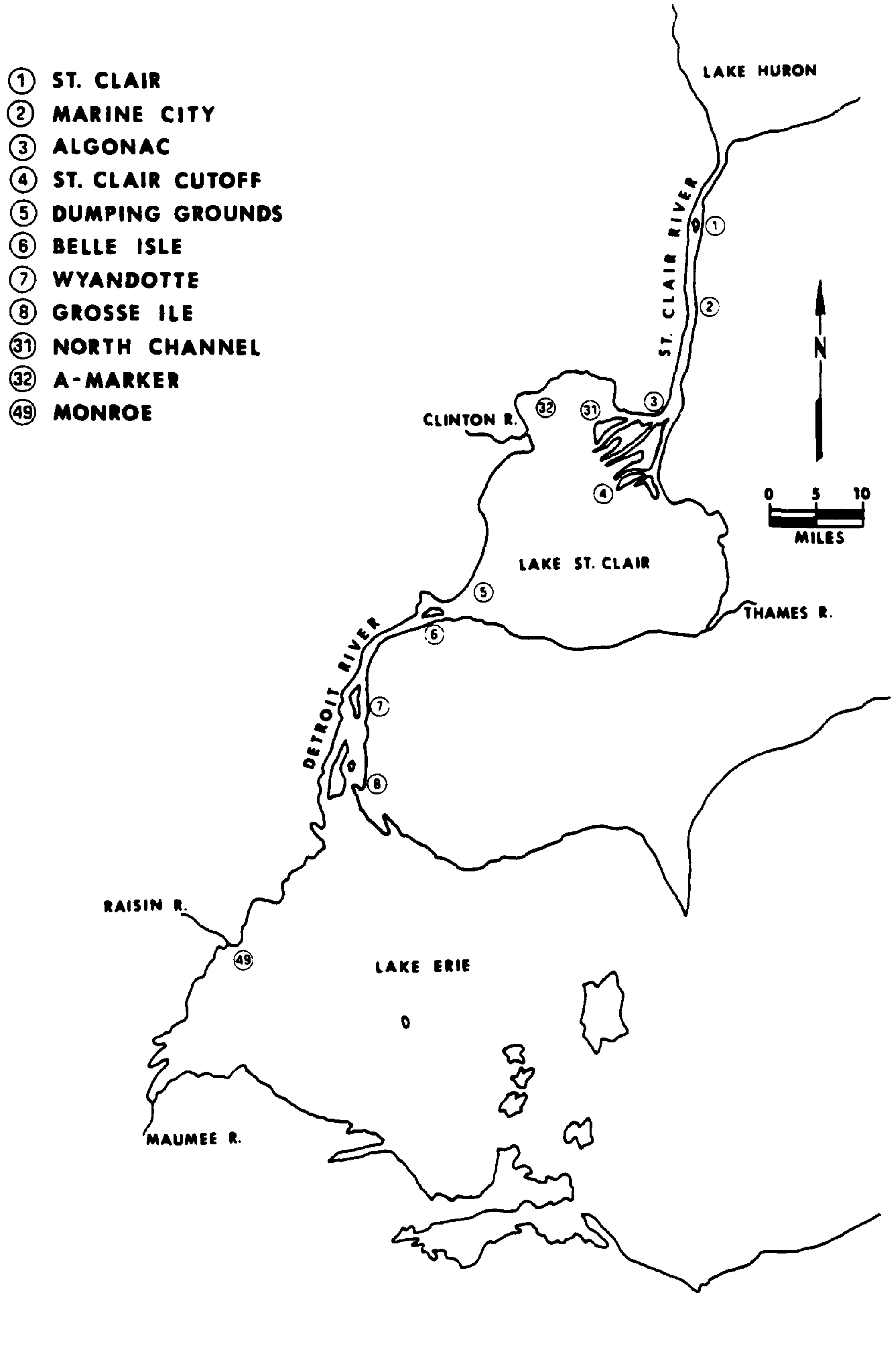

Figure 1. Location of trap netting stations in the St. Clair-Detroit River system and western Lake Erie, 1983–1985.

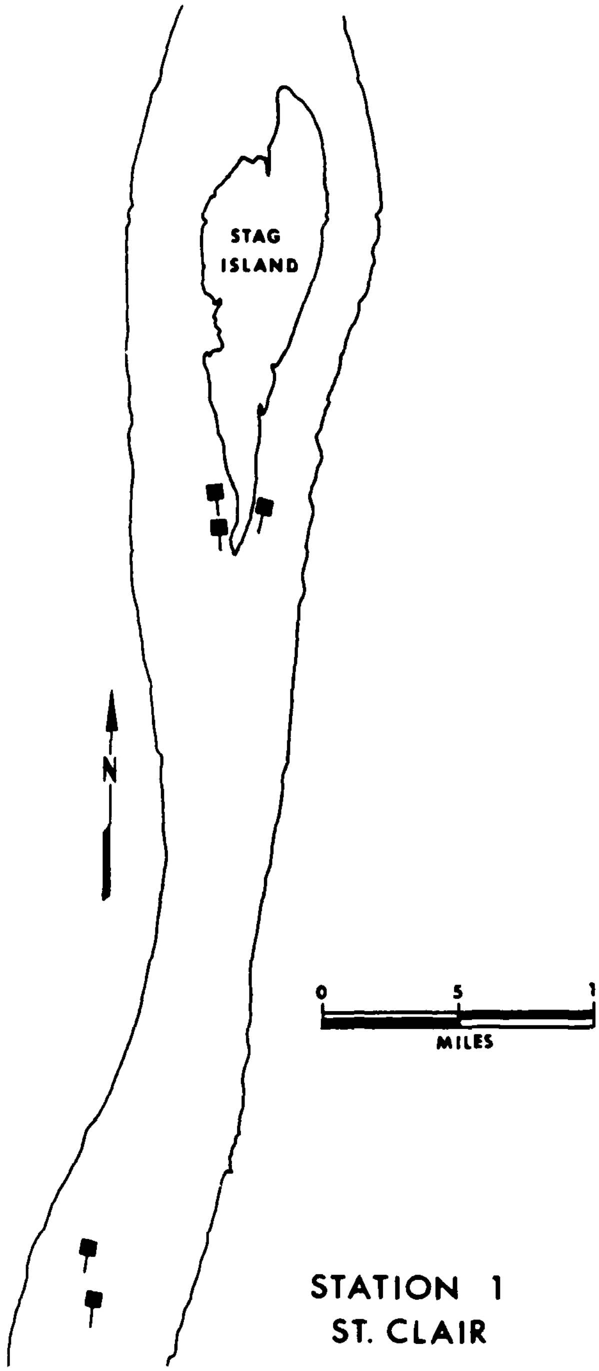

Figure 2. Trap net sites at Station 1, located at 42° 53' 36" to 42° 49' 33" north latitude and 82° 27' 48" to 82° 28' 45" west longitude.

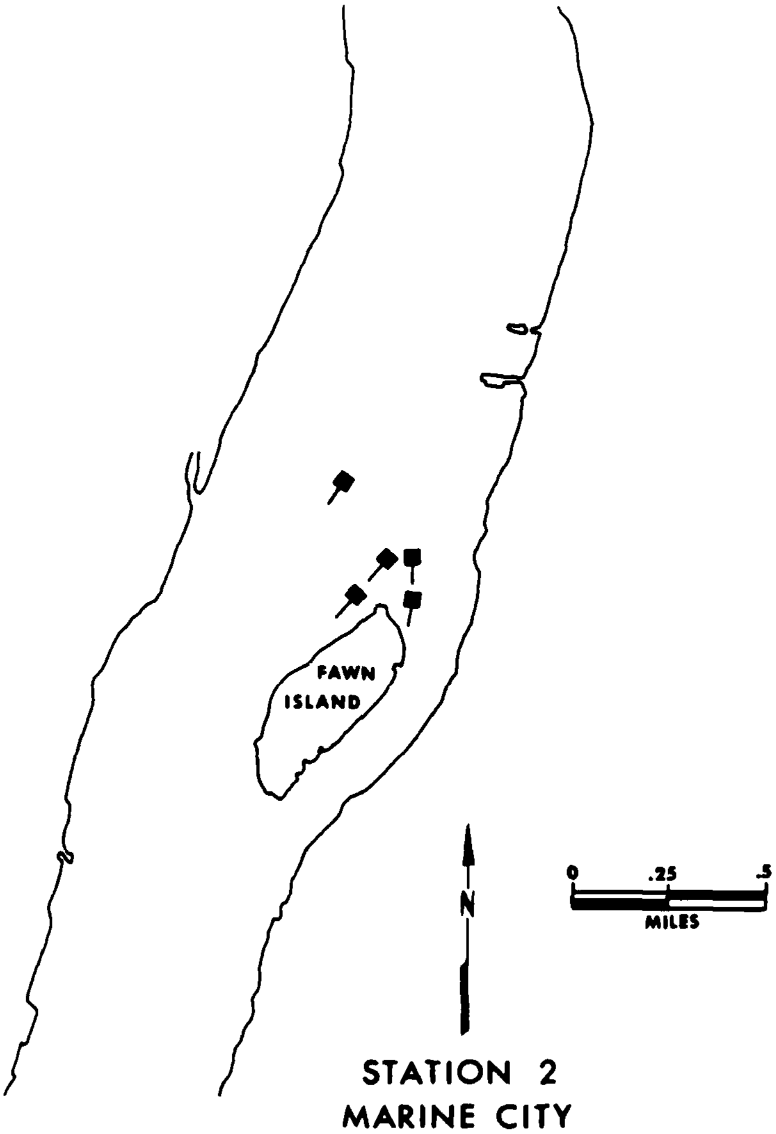

Figure 3. Trap net sites at Station 2, located at 42° 42' 32" to 42° 41' 37" north latitude and 82° 29' 08" to 82° 29' 35" west longitude.

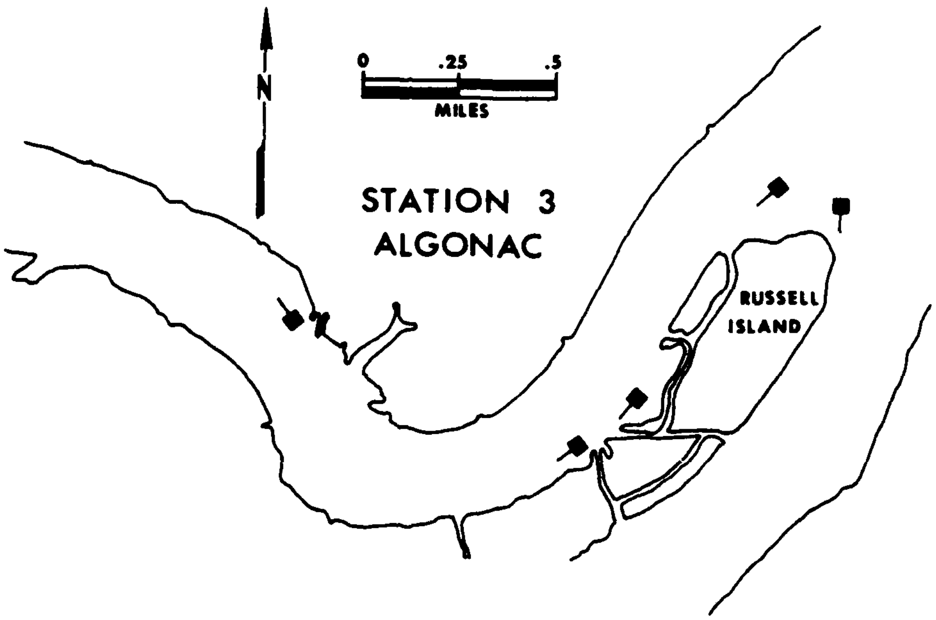

Figure 4. Trap net sites at Station 3, located at 42° 37' 00" to 42° 36' 23" north latitude and 82° 31' 12" to 82° 33' 00" west longitude.

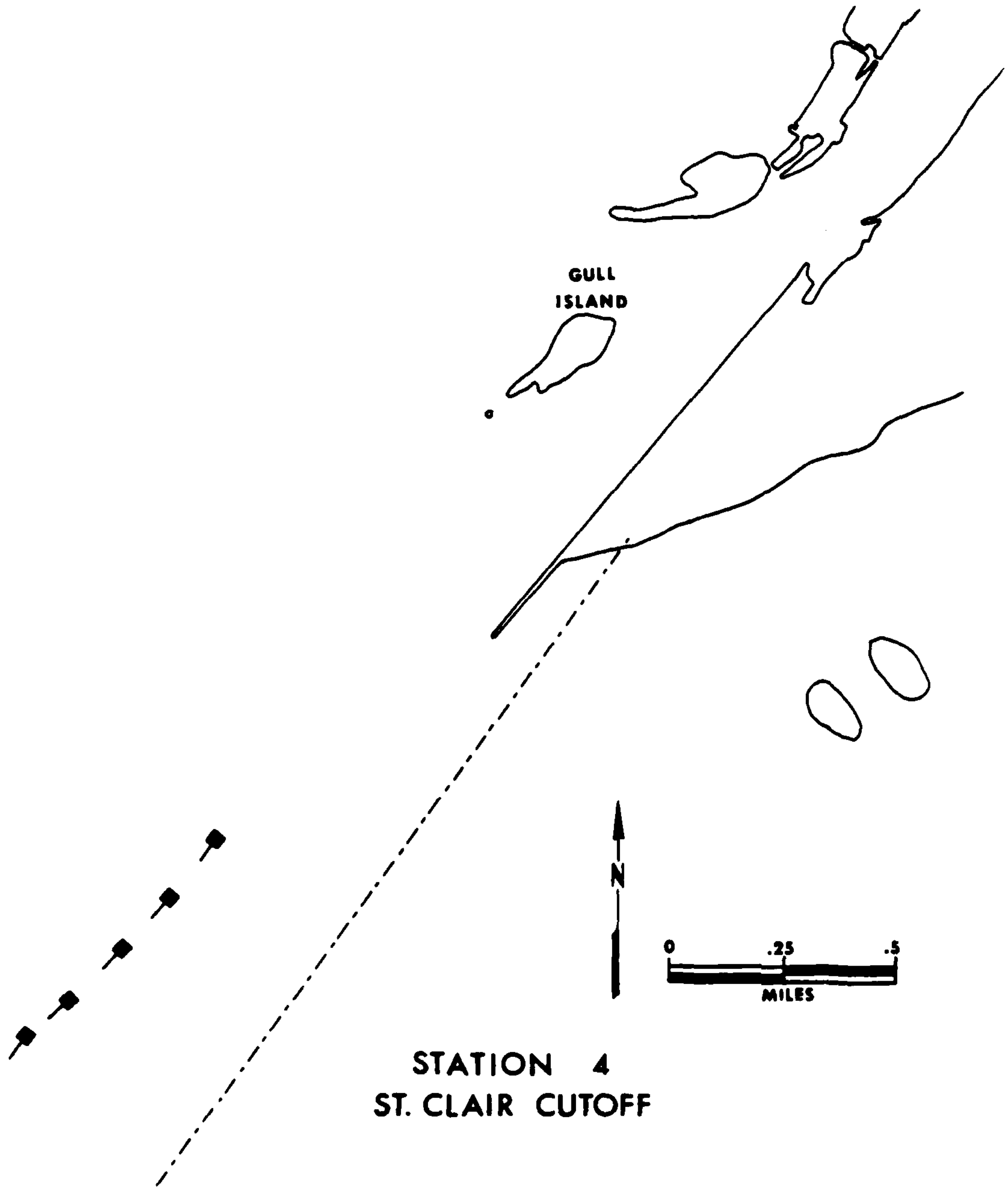

Figure 5. Trap net sites at Station 4, located at 42° 31' 10" to 42° 30' 15" north latitude and 82° 41' 14" to 82° 42' 39" west longitude.

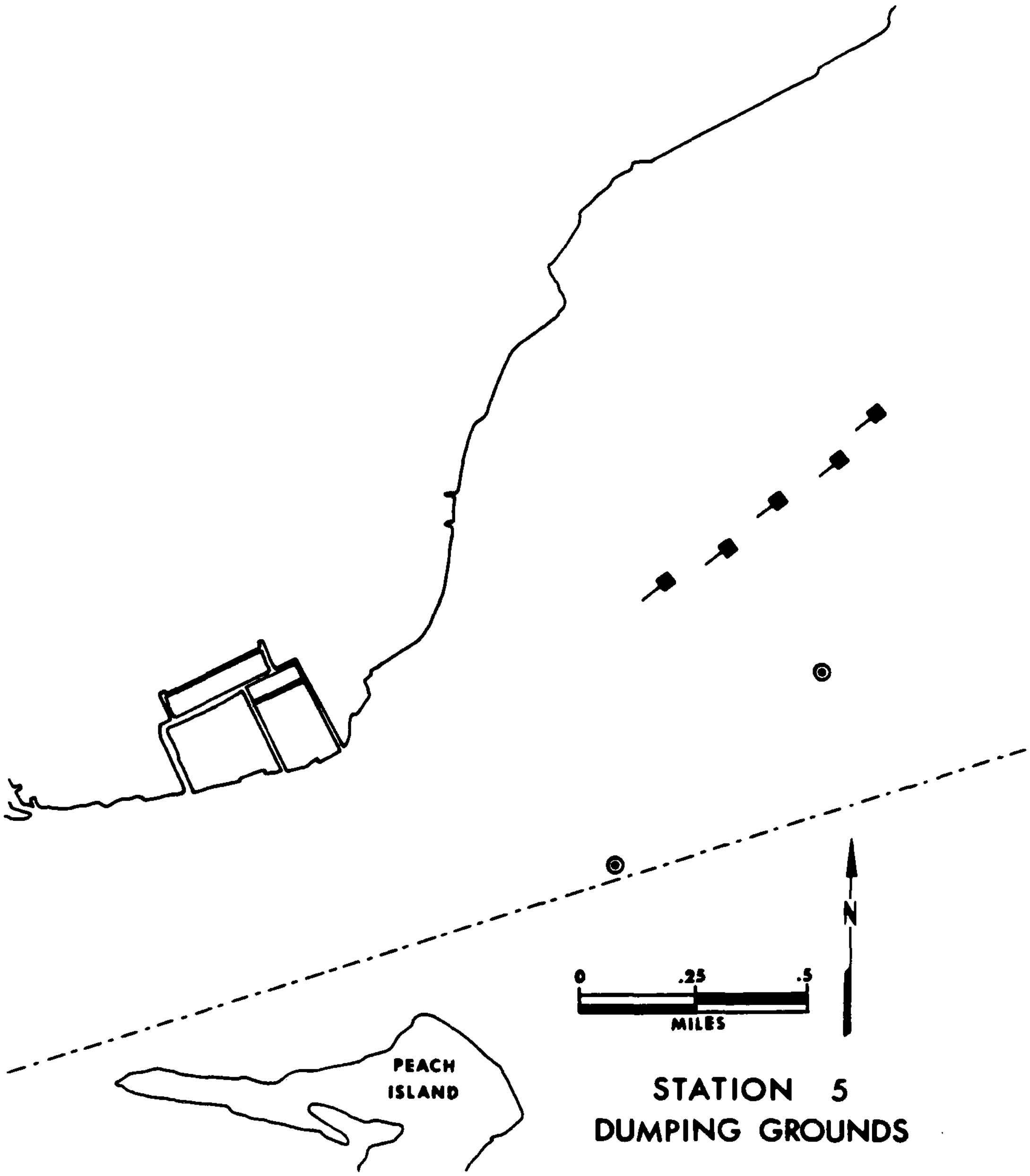

Figure 6. Trap net sites at Station 5, located at 42° 22' 32" to 42° 22' 00" north latitude and 82° 53' 45" to 82° 55' 20" west longitude.

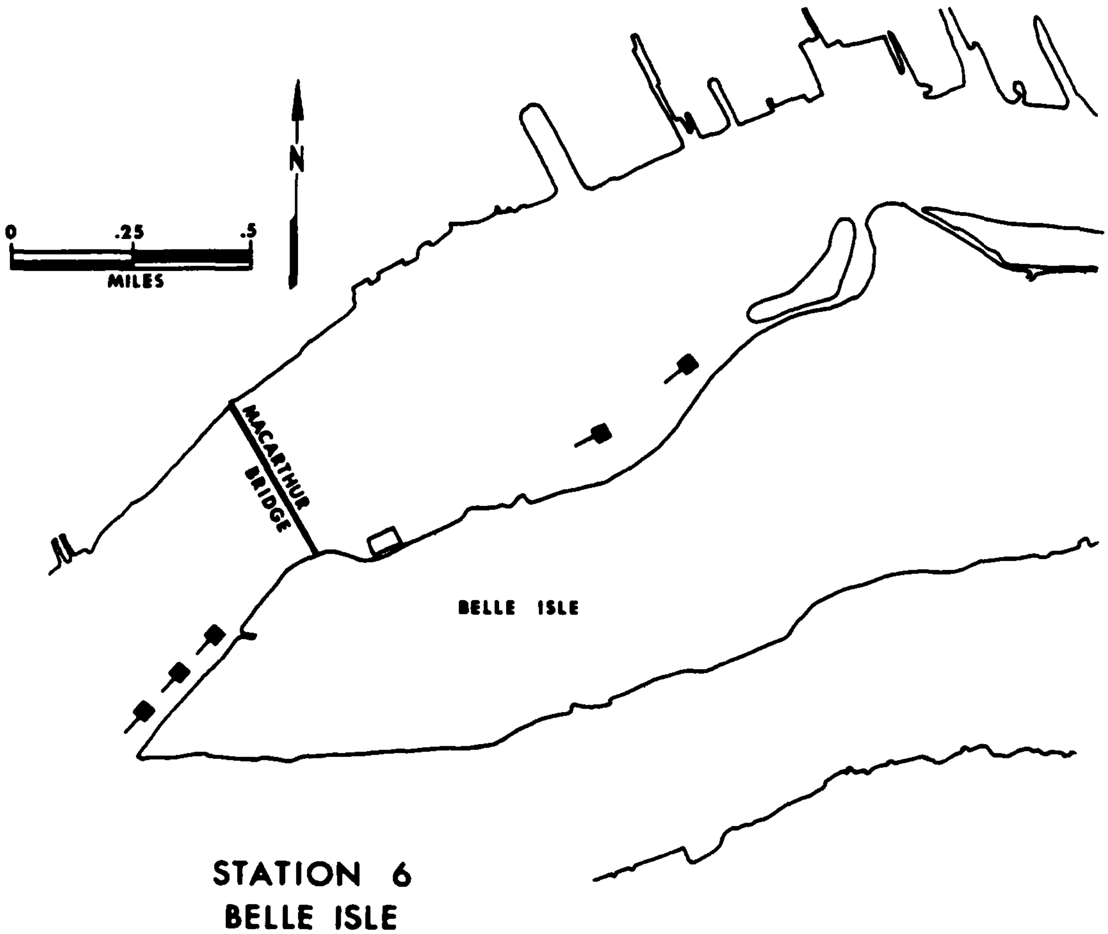

Figure 7. Trap net sites at Station 6, located at 42° 20' 46" to 42° 19' 57" north latitude and 82° 58' 37" to 83° 00' 24" west longitude.

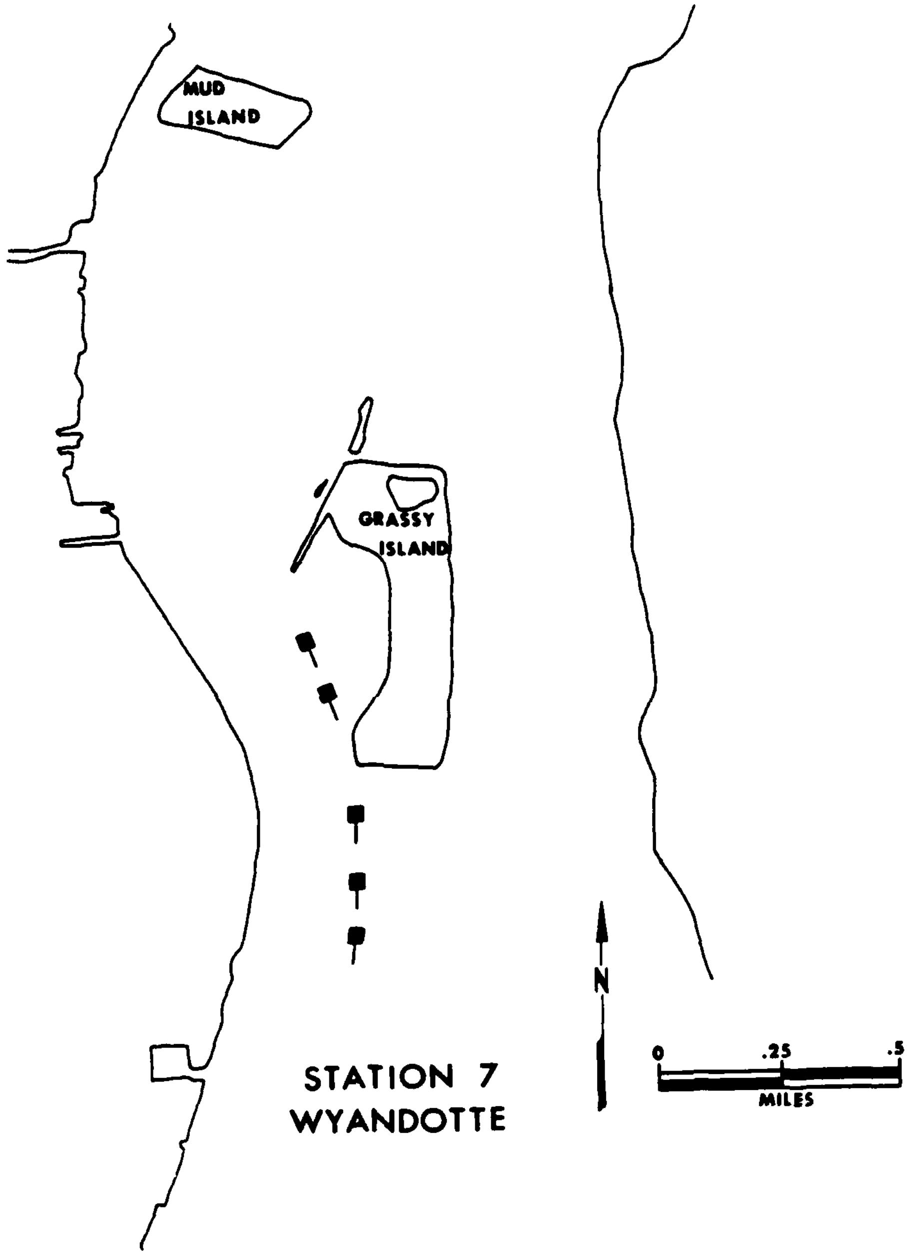

Figure 8. Trap net sites at Station 7, located at 42° 14' 27" to 42° 12' 35" north latitude and 83° 07' 56" to 83° 08' 44" west longitude.

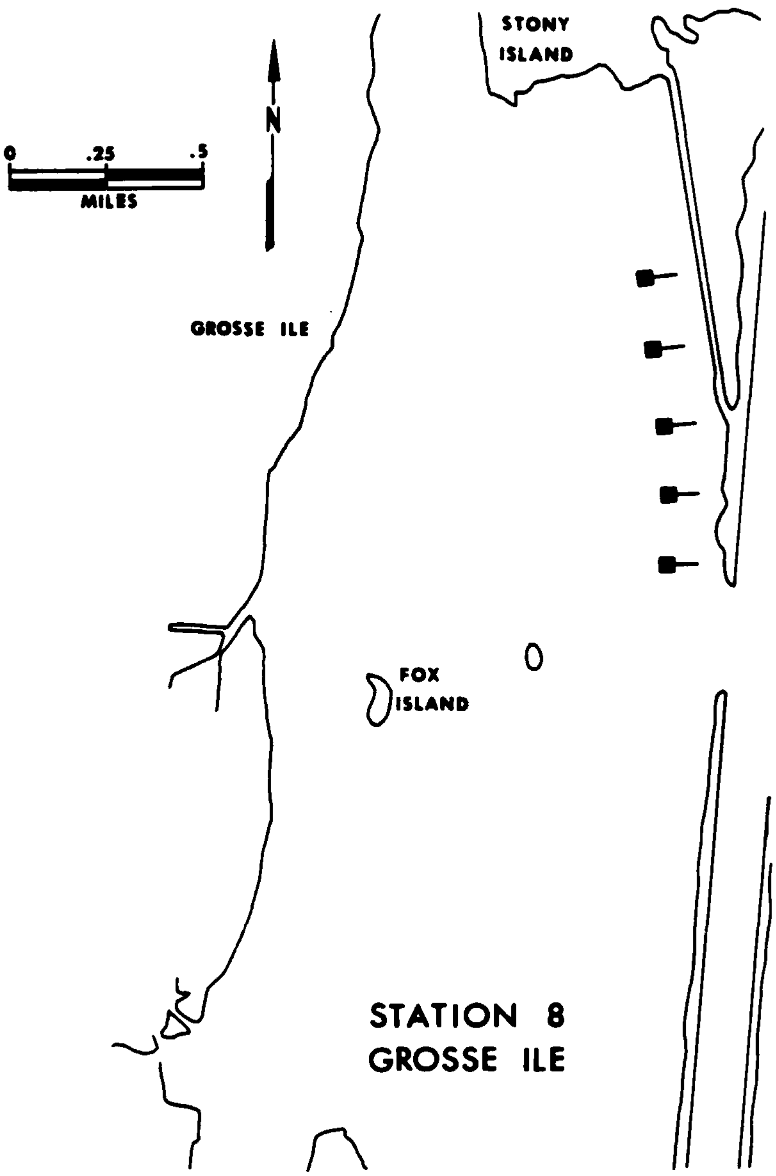

Figure 9. Trap net sites at Station 8, located at 42° 07' 11" to 42° 05' 24" north latitude and 83° 07' 43" to 83° 08' 30" west longitude.

Table 1. Hydrological characteristics of the eight primary netting stations.[1]

	Station							
	St. Clair (1)	Marine City (2)	Algonac (3)	St. Clair Cutoff (4)	Dumping Grounds (5)	Belle Isle (6)	Wyandotte (7)	Grosse Ile (8)
Depth at net site (m)								
Mean	3.2	3.4	3.6	3.9	4.2	3.4	3.3	2.9
Range	2.7–4.3	2.7–4.0	2.7–4.6	2.7–5.2	2.7–5.2	2.7–4.0	2.7–4.3	2.7–3.7
Depth of river at station (m)								
Mean	8.4	6.2	9.8	3.9	4.4	8.4	6.8	4.1
Maximum	12.2	9.2	12.2	8.2	8.2	11.0	8.5	8.5
Substrate type	Sand, clay gravel	Sand, clay gravel	Sand, clay clay	Sand, silt mud	Sand, silt gravel	Sand, clay gravel	Sand, clay mud	Mud, clay
River width at station (m)	1,080	1,240	1,280	38,040	5,460	1,560	2,160	3,210
Surface current velocity (m/sec)								
Mean	0.73	0.76	0.55	0.15	0.24	0.46	0.43	0.21
Range	0.58–0.85	0.58–0.88	0.55–0.88	0.06–0.21	0.21–0.30	0.37–0.49	0.40–0.43	No data
Ice effects	see[2]	see[3]	see[4]	see[5]	see[6]	see[7]	see[8]	see[9]

[1]Substrate and current velocity data were from Hiltunen and Manny (1982) and Hudson et al. (1985).
[2]Does not freeze over but is subject to ice floes from Lake Huron in late winter storms.
[3]Does not freeze over but is subject to ice floes from Lake Huron in late winter storms.
[4]Subject to ice jams from Lake Huron ice floes in late winter.
[5]Usually ice covered by end of January; ice is subject to shifting by the wind.
[6]Adjacent head of Detroit River is usually ice-free but fills with ice after storms.
[7]Belle Isle to United States mainland freezes over but main channel does not; it carries drift ice from Lake St. Clair.
[8]Freezes over; main channels generally remain open.
[9]Freezes over; easterly winds move Lake Erie ice into lower river which can cause ice jams.

Results and discussion

A total of 57 species and three hybrids (splake, carp x goldfish and walleye x sauger) were identified during the study. The common and scientific names of all fish species collected are listed in Appendix 1.

A smallmouth buffalo was collected in 1984 and another in 1985 at the A-marker, Anchor Bay Station. Identification was confirmed by Dr. Gerald Smith, The University of Michigan Natural History Museum. Smith (personal communication) does not believe the species is established in the SCDRS, but has been released in the area occasionally from unknown sources.

A white perch was first collected in southeast Lake St. Clair in 1978 (S. J. Nepszy, Ontario Ministry of Natural Resources (OMNR), personal communication). Since then, this most recent invader of the Great Lakes has expanded in abundance and range in the SCDRS. They were collected at all eight primary stations, plus the Anchor Bay and Lake Erie stations. The species has now moved northward to Saginaw Bay, where it was first observed in 1983 (D. Borgeson, MDNR, personal communication). Endemic to the Atlantic Ocean coast, white perch gained access to Lake Ontario in the late 1940's via connecting barge canal systems (Scott and Christie 1963). The first reported white perch in Lake Erie was in 1953. There were no further capture reports until 1973; thereafter, it expanded rapidly and was considered established in Lake Erie's western basin by 1975 (Busch et al. 1977). The impact of white perch on other species in the SCDRS has yet to be assessed.

The composition and numbers of fish caught in trap nets at the eight primary stations were a basic source of biological information for the study. The fish catch per unit of effort (CPUE) was an extensively used unit of comparison between stations and species. The SCDRS, to facilitate comparisons, was divided into five areas to best match the catch data at net stations with that of contiguous creel survey grids. Catch data were combined at Stations 1 and 2 (upper St.Clair River), at Stations 4 and 5 (Lake St. Clair), and at Stations 7 and 8 (lower Detroit River). Station 3 (lower St. Clair River) and Station 6 (upper Detroit River) CPUE data were presented separately.

A total of 57,579 fish were caught in 2,504 net lifts for a mean CPUE of 22.99. Monthly CPUE of species most abundant in the nets, plus the CPUE of other species combined are given in Tables 2-6 (1983-84 period) and Tables 7-11 (1984-85 period). The monthly CPUE of all species at each of the eight primary stations is found in Appendices 2-9 and Appendices 10-17 for the first and second years of the study.

The primary stations were ranked by mean total CPUE, total number of species, and a combined ranking of these values (Table 12). Station 3 had the most species both years of the study and the second highest 2 year combined CPUE. It was tied for first with Station 7 in the combined rank of CPUE and number of species. The large number of species at Station 3 can

Table 2. Catch per unit of effort of species that were most numerous in trap nets set each month at Stations 1 and 2 in the St. Clair River, March 1983 through March 1984.

Species	Month[1]												
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Feb	Mar	Mean CPUE
White perch	0.00	0.00	0.03	0.00	0.04	0.17	0.06	0.00	0.03	0.00	0.00	0.00	0.04
White bass	0.00	0.05	2.50	0.00	0.04	0.03	0.15	0.00	0.00	0.11	0.17	0.00	0.31
Freshwater drum	0.00	0.00	0.10	0.03	0.58	0.17	0.33	0.30	0.07	0.00	0.00	0.00	0.14
White sucker	1.38	2.38	1.30	0.71	0.81	0.66	0.97	1.15	3.03	1.22	14.83	1.00	1.65
Redhorse, unidentified	0.85	1.11	1.75	0.29	0.31	0.37	0.15	0.30	1.76	0.56	4.17	0.00	0.81
Rock bass	0.00	0.00	0.02	0.03	0.08	1.00	2.55	0.30	0.00	0.00	0.00	0.00	0.38
Smallmouth bass	0.00	0.80	0.93	0.53	3.19	10.03	4.73	3.45	0.69	1.89	0.00	0.07	2.53
Yellow perch	0.31	0.64	4.18	1.26	7.11	7.74	5.21	4.97	0.72	0.61	0.00	0.57	3.19
Walleye	0.00	0.14	0.77	0.06	2.96	3.94	6.73	2.53	4.17	1.11	1.17	0.00	2.07
Other	13.38	2.76	21.92	15.38	23.03	1.06	1.67	1.22	4.48	0.61	3.33	1.36	7.59
Total CPUE	15.92	7.88	33.50	18.29	38.15	25.17	22.55	14.22	14.96	6.11	23.67	3.00	18.71
Total lifts	13	64	40	34	26	35	33	40	29	18	6	14	352
Total species	8	17	30	17	19	17	16	15	13	10	10	5	41
Water temp. C	2–2	2–6	8–10	10–13	18–19	22–25	20–22	10–17	5–7	5–5	1–4	0–0	

[1]No netting surveys were done in January, due to ice conditions.

Table 3. Catch per unit of effort of species that were most numerous in trap nets set each month at Station 3 in the St. Clair River, March 1983 through March 1984.

Species	Month[1]										Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Feb	
White perch	0.00	0.00	0.00	0.00	0.12	0.14	0.17	0.00	0.00	0.00	0.05
White bass	0.00	0.00	0.21	0.03	0.00	0.61	0.52	0.05	0.45	0.00	0.23
Freshwater drum	0.06	0.06	0.16	0.35	0.94	0.36	0.31	0.85	0.35	0.25	0.37
White sucker	2.19	2.33	2.32	1.45	0.38	0.29	0.69	0.30	0.65	0.50	1.10
Redhorse, unidentified	0.69	0.72	1.26	1.45	0.50	0.50	0.97	0.05	0.45	0.25	0.77
Rock bass	0.19	0.44	5.32	17.26	19.44	18.11	8.31	17.50	7.90	3.50	11.08
Smallmouth bass	0.00	0.00	0.05	0.03	0.31	1.46	0.97	0.05	0.05	0.00	0.39
Yellow perch	1.25	1.89	15.74	7.29	38.88	14.00	2.45	2.40	1.10	0.25	8.63
Walleye	0.06	0.00	0.53	0.22	2.19	2.96	5.52	2.65	5.40	0.75	2.29
Other	10.06	6.23	15.78	13.82	9.18	12.00	9.85	7.85	2.75	2.00	9.90
Total CPUE	14.50	11.67	41.37	41.90	71.94	50.43	29.76	31.70	19.10	7.50	34.81
Total lifts	16	18	19	31	16	28	29	20	20	4	201
Total species	13	17	24	30	20	21	22	20	16	8	41
Water temp. C	3–4	4–5	6–8	9–19	21–22	22–22	17–23	13–14	9–10	1–1	

[1]No netting surveys were done in December, January, and March, due to ice conditions.

Table 4. Catch per unit of effort of species that were most numerous in trap nets set each month at Stations 4 and 5 in Lake St. Clair, March 1983 through March 1984.

Species	Month[1] May	Jun	Jul	Aug	Sep	Oct	Nov	Mean CPUE
White perch	0.10	0.04	1.62	2.03	1.07	0.47	0.20	0.87
White bass	0.35	0.27	2.57	0.39	0.07	0.79	0.32	0.75
Freshwater drum	0.26	0.54	1.81	0.69	0.13	6.32	0.32	1.56
White sucker	0.23	1.12	0.35	0.06	0.03	0.26	0.52	0.34
Redhorse, unidentified	0.90	3.54	4.57	1.36	1.03	2.32	5.08	2.63
Rock bass	3.35	5.19	4.86	8.75	6.13	19.38	2.04	7.43
Smallmouth bass	0.58	0.62	3.30	3.31	5.67	9.53	1.52	3.68
Yellow perch	0.42	8.27	3.38	2.39	0.60	1.47	0.96	2.42
Walleye	1.90	7.96	8.86	8.94	2.47	4.09	4.84	5.71
Other	1.10	1.38	2.49	2.69	2.10	8.78	3.00	3.17
Total CPUE	9.19	28.93	33.81	30.61	19.30	53.41	18.80	28.56
Total lifts	31	26	37	36	30	34	25	219
Total species	16	18	19	18	19	20	17	29
Water temp. C	9–13	12–19	19–22	19–24	18–23	10–15	9–10	

[1]No netting surveys were done in March-April and December-March, due to ice conditions.

Table 5. Catch per unit of effort of species that were most numerous in trap nets set each month at Station 6 in the Detroit River, March 1983 through March 1984.

Species	Month[1]										Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
White perch	0.00	0.00	0.06	0.07	8.00	1.00	0.20	0.10	0.25	0.50	0.78
White bass	0.00	0.04	0.00	0.00	0.75	0.19	0.30	0.05	0.45	0.00	0.19
Freshwater drum	0.00	0.08	0.00	0.07	1.83	0.65	0.40	0.15	0.00	0.00	0.32
White sucker	0.10	0.16	0.25	0.00	0.17	0.00	0.30	0.25	0.20	0.25	0.17
Redhorse, unidentified	0.10	0.08	0.00	0.40	1.08	0.38	0.30	0.45	0.30	0.00	0.31
Rock bass	0.60	0.44	1.50	11.67	11.25	5.19	1.73	4.55	0.60	1.25	3.63
Smallmouth bass	0.00	0.00	0.00	0.13	0.42	3.88	1.60	6.45	0.00	0.00	1.60
Yellow perch	0.10	0.40	2.75	1.60	8.75	0.96	0.43	0.60	0.90	4.25	1.51
Walleye	0.00	0.24	0.25	0.53	0.58	1.38	2.03	1.15	1.65	0.00	1.00
Other	0.50	2.12	6.56	1.74	4.67	1.48	1.24	1.30	4.65	0.25	2.48
Total CPUE	1.40	3.56	11.38	16.20	37.50	15.11	8.53	15.05	9.00	6.50	11.99
Total lifts	10	25	16	15	12	26	30	20	20	4	178
Total species	9	16	17	15	19	17	16	16	13	5	28
Water temp. C	2–2	4–6	8–10	11–13	20–20	22–24	20–23	17–18	5–8	2–2	

[1]No netting surveys were done in January-March, due to ice conditions.

Table 6. Catch per unit of effort of species that were most numerous in trap nets set each month at Stations 7 and 8 in the Detroit River, March 1983 through March 1984.

Species	Month[1]												
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Feb	Mar	Mean CPUE
White perch	0.00	0.00	0.54	55.58	5.95	4.65	1.23	1.87	0.04	0.14	0.00	0.00	8.93
White bass	0.00	0.00	0.09	3.81	1.05	0.46	0.28	0.33	0.00	0.00	0.00	0.00	0.75
Freshwater drum	0.00	0.00	0.39	0.93	0.90	0.32	0.22	0.30	0.20	0.07	0.00	0.00	0.38
White sucker	0.00	0.30	0.64	0.42	0.41	0.38	0.45	0.83	1.56	1.14	0.50	0.00	0.57
Redhorse, unidentified	0.16	0.05	0.36	0.80	0.26	0.81	0.30	1.73	0.88	0.14	0.25	1.00	0.56
Rock bass	0.32	0.25	7.24	16.70	12.08	3.38	4.93	5.73	1.60	4.86	1.00	0.33	6.27
Smallmouth bass	0.00	0.00	0.06	0.42	1.59	0.54	0.40	0.10	0.08	0.00	0.00	0.00	0.38
Yellow perch	0.95	8.12	0.94	20.56	9.54	4.11	1.83	1.57	1.36	5.71	3.00	1.00	6.21
Walleye	0.00	0.00	1.15	2.87	2.13	3.54	2.33	4.80	1.28	0.14	0.00	0.33	1.98
Other	2.47	1.50	10.44	10.05	6.35	7.38	5.58	6.14	3.52	3.30	0.50	3.00	5.97
Total CPUE	3.90	10.22	21.85	112.14	40.26	25.57	17.55	23.40	10.52	15.50	5.25	5.67	32.00
Total lifts	19	40	33	43	39	37	40	30	25	14	4	3	327
Total species	10	14	23	26	25	23	25	23	18	14	5	10	36
Water temp. C	1–3	4–8	11–12	15–23	19–25	23–24	16–20	12–15	4–9	2–4	0	2	

[1]No netting surveys were done in January, due to ice conditions.

Table 7. Catch per unit of effort of species that were most numerous in trap nets set each month at Stations 1 and 2 in the St. Clair River, April 1984 through March 1985.

Species	Month[1] May	Jun	Jul	Aug	Sep	Oct	Nov	Jan	Feb	Mar	Mean CPUE
White perch	0.00	0.00	0.09	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.02
White bass	0.00	0.00	0.00	0.05	0.03	0.02	0.03	0.00	0.00	0.00	0.02
Freshwater drum	0.00	0.00	0.31	0.50	0.34	0.24	0.03	0.00	0.00	0.00	0.19
White sucker	0.48	0.48	0.43	1.10	0.80	1.70	1.90	3.12	0.62	0.00	1.02
Redhorse, unidentified[2]	0.20	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Shorthead redhorse	0.00	0.00	0.11	0.65	0.83	0.34	0.23	0.00	0.00	0.00	0.40[3]
Rock bass	0.78	3.03	7.71	3.50	2.11	3.60	3.13	0.00	0.38	0.00	3.15
Smallmouth bass	0.05	0.00	1.52	0.85	0.80	0.42	0.47	0.00	0.13	0.00	0.53
Yellow perch	1.70	2.95	5.00	2.00	2.34	2.34	1.00	0.25	1.75	0.00	2.37
Walleye	0.22	1.05	3.69	1.73	2.49	2.58	0.73	0.00	0.00	0.25	1.68
Other	0.47	1.39	0.60	1.40	1.06	1.10	0.35	0.25	0.24	0.0	0.89
Total CPUE	3.90	9.00	19.49	11.88	10.80	12.34	7.87	3.62	3.12	0.25	10.20
Total lifts	40	40	35	40	35	50	30	8	8	4	290
Total species	15	13	17	19	19	18	13	4	6	1	30
Water temp. C	6–9	11–12	17–19	21–23	17–22	12–14	6–13	2–2	1–1	1–1	

[1]No netting surveys were done in April 1984 and January 1985, due to ice conditions.

[2]Redhorse were not identified to species until July at these stations.

[3]Based only on months in which identification was made.

Table 8. Catch per unit of effort of species that were most numerous in trap nets set each month at Station 3 in the St. Clair River, April 1984 through March 1985.

Species	Month[1]									Mean CPUE
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mar	
White perch	0.05	4.32	0.45	0.15	0.15	0.00	0.00	0.00	0.00	0.82
White bass	0.00	0.44	0.10	0.55	0.05	0.10	0.40	0.00	0.00	0.22
Freshwater drum	0.15	0.20	4.20	0.25	0.85	0.55	3.93	0.00	0.50	1.24
White sucker	1.00	0.20	0.25	0.20	0.30	0.65	2.40	0.50	0.88	0.64
Redhorse, unidentified[2]	0.15	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Shorthead redhorse	0.0	0.08	0.55	0.55	0.45	0.30	1.33	0.00	0.25	0.46[3]
Rock bass	4.00	21.84	11.65	4.15	3.85	11.40	4.87	1.50	0.00	8.72
Smallmouth bass	0.05	0.12	3.40	0.35	0.20	0.20	0.00	0.00	0.00	0.57
Yellow perch	7.25	13.16	4.25	8.85	3.45	10.40	1.53	4.25	1.00	6.98
Walleye	1.40	7.20	1.80	1.15	2.55	1.75	2.07	0.00	0.13	2.53
Other	6.75	16.72	8.05	9.85	5.25	4.15	4.47	0.75	0.24	7.70
Total CPUE	20.80	64.32	34.70	26.05	17.10	29.50	21.00	7.00	3.00	29.86
Total lifts	20	25	20	20	20	20	15	4	8	152
Total species	24	24	22	23	19	15	21	5	7	40
Water temp. C	3–10	10–18	19–20	21–22	17–17	14–14	7–7	4–4	1–2	

[1]No netting surveys were done in April 1984 and January-February 1985, due to ice conditions.

[2]Redhorse were not identified to species until June.

[3]Based on months in which identification was made.

Table 9. Catch per unit of effort of species that were most numerous in trap nets set each month at Stations 4 and 5 in Lake St. Clair, April 1984 through March 1985.

Species	Month[1]										
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mar	Mean CPUE
White perch	0.30	0.10	2.38	0.91	0.39	0.83	0.44	0.03	0.00	0.00	0.65
White bass	0.32	0.05	0.07	0.23	0.10	0.27	0.04	0.05	0.00	0.00	0.13
Freshwater drum	0.98	0.87	0.17	0.77	0.42	1.03	0.33	0.29	0.00	0.00	0.56
White sucker	0.80	0.08	0.31	0.07	0.06	0.37	0.20	0.20	0.25	0.08	0.25
Redhorse, unidentified[2]	2.22	0.85	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
Shorthead redhorse	—	—	0.88	0.64	0.45	1.73	0.67	0.77	0.25	0.50	1.80[3]
Rock bass	1.78	9.92	5.88	5.43	4.06	3.70	8.02	5.12	0.50	0.08	5.35
Smallmouth bass	0.35	2.95	1.74	3.25	2.58	2.76	6.29	1.70	0.25	0.00	2.62
Yellow perch	9.32	5.00	5.09	0.59	0.87	2.76	1.67	1.23	1.75	0.50	3.20
Walleye	7.80	8.95	5.36	1.62	1.03	1.57	1.24	1.18	2.50	1.17	3.53
Other	2.98	1.05	3.72	3.51	2.69	2.31	2.30	2.82	0.25	0.84	1.41
Total CPUE	26.85	29.82	25.67	17.02	12.65	17.33	21.20	13.39	5.75	3.17	19.88
Total lifts	40	39	42	44	31	30	45	44	4	12	331
Total species	20	21	23	22	25	19	23	22	7	10	41
Water temp. C	4–9	5–13	12–19	21–22	21–25	14–22	12–14	4–13	4–4	2–3	

[1]No netting surveys were done in January-February, due to ice conditions.

[2]Redhorse were not identified to species until June.

[3]Based only on months in which identification was made.

Table 10. Catch per unit of effort of species that were most numerous in trap nets set each month at Station 6 in the Detroit River, April 1984 through March 1985.

	Month[1]									
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Mar	Mean CPUE
White perch	0.17	0.00	3.05	0.05	0.15	0.00	0.00	0.00	0.00	0.43
White bass	0.09	0.07	0.05	0.00	0.05	0.15	0.00	0.10	0.00	0.06
Freshwater drum	0.03	0.07	0.30	0.55	0.65	0.20	0.15	0.30	0.00	0.26
White sucker	0.11	0.33	—	0.25	0.20	0.15	0.20	0.80	0.25	0.21
Redhorse, unidentified[2]	0.11	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.04
Shorthead redhorse	—	—	0.50	0.45	0.45	0.05	0.10	0.20	0.00	0.29[3]
Rock bass	1.74	9.20	22.85	5.80	3.35	3.40	4.20	0.60	2.25	6.13
Smallmouth bass	0.00	0.07	2.00	1.00	0.20	0.70	0.75	0.00	0.00	0.57
Yellow perch	6.71	3.53	7.30	3.55	5.95	7.05	4.30	1.70	1.25	5.32
Walleye	0.74	1.07	0.75	1.15	0.50	0.75	0.45	1.00	0.00	0.76
Other	2.38	1.66	2.85	4.70	3.75	7.40	3.80	0.10	0.25	3.41
Total CPUE	12.08	16.00	39.65	17.50	15.35	19.85	13.95	4.80	4.00	17.39
Total lifts	35	15	20	20	20	20	20	10	4	164
Total species	18	15	20	20	18	21	17	8	4	33
Water temp. C	3–8	8–9	18–19	22–22	23–24	16–17	14–14	4–5	0–0	

[1]No netting surveys were done in December-February, due to ice conditions.

[2]Redhorse were not identified to species until June.

[3]Based only on months in which identification was made.

Table 11. Catch per unit of effort of species that were most numerous in trap nets set each month at Stations 7 and 8 in the Detroit River, April 1984 and March 1985.

Species	Month[1]										Mean CPUE
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mar	
White perch	0.00	0.16	26.51	3.11	6.38	1.48	0.31	0.10	0.00	0.00	4.82
White bass	0.03	0.24	2.54	0.07	0.80	0.70	0.09	0.00	0.00	0.00	0.56
Freshwater drum	0.10	0.00	0.63	0.71	1.40	0.30	0.11	0.25	0.25	0.00	0.47
White sucker	0.50	0.44	0.11	0.20	0.11	0.28	0.60	0.15	0.38	0.17	0.32
Redhorse, unidentified[2]	0.18	0.28	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
Shorthead redhorse	—	—	0.06	0.16	0.52	0.22	0.46	0.05	0.00	0.08	0.20[3]
Rock bass	1.90	4.56	18.66	6.95	1.80	2.43	4.11	4.75	1.13	0.33	5.22
Smallmouth bass	0.00	0.00	0.46	0.29	1.27	0.70	0.51	0.05	0.00	0.00	0.44
Yellow perch	6.25	17.84	8.63	4.18	2.35	3.28	7.09	9.10	8.38	1.58	6.65
Walleye	2.10	3.48	3.77	1.29	3.20	4.53	3.03	0.60	0.25	0.00	2.72
Other	6.96	1.88	4.77	6.65	10.42	11.88	4.58	5.35	1.73	1.67	6.82
Total CPUE	18.02	28.88	66.51	22.22	28.25	25.80	20.89	20.40	12.12	3.83	28.31
Total lifts	40	25	35	36	40	40	35	20	8	12	290
Total species	24	18	26	25	25	26	22	20	12	9	40
Water temp. C	4–7	7–8	16–20	20–21	22–24	16–19	13–15	9–9	3–3	0–2	

[1]No netting surveys were done in January-February, due to ice conditions.

[2]Redhorse were not identified to species until June.

[3]Based only on months in which identification was made.

be accounted for by its location in a high water quality delta region of transition from the St. Clair River lotic to a more lentic environment of Lake St. Clair (Hiltunen and Manny 1982). Deltas typically contain resident species from both river and lake environments.

The reduced current velocity of the St. Clair River delta makes the nutrient output from Lake Huron available to the biota. Secondary productivity in the delta, measured as macrozoobenthos density, was the highest in the SCDRS (Hudson et al. 1985). Densities of a major fish food organism, the mayfly nymph, Hexagenia, in the delta (south channel) are among the highest reported in the literature (Hudson et al. 1985). The rich fish food sources may be an explanation for the high CPUE at Station 3.

Station 7 in the lower Detroit River ranked first in mean CPUE for the entire study and was second in total number of species. Station 7 is in a near-delta region, which makes it roughly equivalent in habitat to Station 3. Station 7 contains an abundant and diverse fish population despite nearby inputs of pollutants (Thornley and Hamdy 1984). It was evident that the pollutant load was not well distributed in the Station 7 area, as adequate water quality for fish was present at the nets (W. Bryant, MDNR, personal observation).

Species with the highest mean CPUE for the entire study were rock bass, followed by yellow perch, and then walleye (Table 13). White perch, due to their high catch rates in the lower Detroit River, ranked fourth. Rock bass ranked first in CPUE during both years of the study, except at Stations 1, 2, 7, and 8 (Table 14). Yellow perch ranged in rank from 1 to 4, and walleyes were 2 to 4 in ranking.

The high productivity of the western basin of Lake Erie is evident in the Monroe station trap net total mean CPUE, which was approximately double that at the A-marker station in Lake St. Clair in the 1983–85 period (Table 15). A main reason for the difference was the much higher Lake Erie catches of percids, particularly of yellow perch, with catch rates up to 50 times higher than at A-marker station. The high catch rates of these and a few other species more than offset higher catch rates of centrarchids (pumpkinseeds, smallmouth and rock bass) in the A-marker nets.

Age and growth.—Scale samples of 15 species were collected at the primary stations. However, age samples of only four species (rock bass, smallmouth bass, yellow perch, and walleye) were considered numerous enough to allow substantive comparisons. Estimates of monthly age-mean length and percentage age composition of the catch of the four species at the primary stations are presented in Appendices 18–49 for the first year. Appendices 50–81 provide the data for the second year of the study. Age and growth data for the four species is combined into the three major regions (Stations 1–3, 4–5, and 6–8) by study year in Appendices 82–105. Individuals in a few 25.4 mm interval groups were not always scale-sampled, and, thus, were not represented in the age composition. Where this occurred, the CPUE by age group does not add up to 100% of the sample of that species.

Table 12. Rankings of the eight primary stations by mean total CPUE, total number of species, and CPUE—number of species combined. Ranking is from 1 for highest to 8 for lowest.

Statistic and year	Station							
	1	2	3	4	5	6	7	8
Total CPUE 1983–84	7	6	3	2	5	8	1	4
Total CPUE 1984–85	8	7	2	5	4	6	1	3
Total CPUE 1983–85	8	6	2	3	5	7	1	4
Total number of species 1983–84	4	3	1	7	8	6	2	5
Total number of species 1984–85	5	6	1	4	3	4	4	2
Total number of species 1983–85	5	3	1	7	6	8	2	4
CPUE and number of species combined 1983–84	4	3	2	3	5	6	1	3
CPUE and number of species combined 1984–85	6	6	1	4	3	5	2	2
CPUE and number of species combined 1983–85	6	5	1	3	4	7	1	2

Table 13. Rankings of the major species by their CPUE among the station, 1983–85. Ranking is 1 for highest to 8 for lowest.

Species	Station 1	2	3	4	5	6	7	8	All station rank
White perch	8	7	6	3	5	4	1	2	4
White bass	8	4	6	5	2	7	1	3	9
Freshwater drum	8	7	2	1	3	5	6	4	8
White sucker	2	1	3	5	7	8	4	6	7
Redhorse, spp.	6	3	5	1	2	8	4	7	6
Rock bass	8	6	1	3	4	5	2	7	1
Smallmouth bass	4	7	6	2	1	3	5	8	5
Yellow perch	8	5	1	4	7	6	2	3	2
Walleye	5	6	4	1	2	8	3	7	3

Table 14. Rankings of the species most numerous in trap nets by CPUE within stations by years. Ranking is from 1 for highest to 8 for lowest.

Station and year	White perch	White bass	Fresh-water drum	White sucker	Redhorse all spp.	Rock bass	Small-mouth bass	Yellow perch	Walleye
Station 1									
1983–84	9	8	7	3	6	4	5	1	2
1984–85	8	8	7	4	6	1	5	3	2
Station 2									
1983–84	9	6	8	3	5	2	7	1	4
1984–85	8	9	7	4	6	1	5	2	3
Station 3									
1983–84	9	8	7	4	5	1	6	2	3
1984–85	5	9	4	6	8	1	7	2	3
Station 4									
1983–84	7	9	5	8	4	1	6	3	2
1984–85	6	9	7	8	4	1	5	2	3
Station 5									
1983–84	7	5	6	8	4	1	2	3	3
1984–85	8	9	6	7	5	1	3	4	2
Station 6									
1983–84	5	8	6	9	7	1	2	3	4
1984–85	5	9	7	8	6	1	4	2	3
Station 7									
1983–84	1	5	9	7	6	2	8	3	4
1984–85	1	6	9	8	5	2	7	3	4
Station 8									
1983–84	1	7	5	6	8	3	9	2	4
1984–85	3	6	5	9	7	2	8	1	4
All stations									
1983–84	3	8	7	6	5	1	4	2	3
1984–85	4	9	8	7	6	1	5	2	3
All stations and years	4	9	8	7	6	1	5	2	3

Table 15. Catch per unit of effort of species in trap nets set at the A-marker and Monroe stations in the springs of 1983, 1984, and 1985.

Species	Monroe			A-marker		
	Apr 12-May 3	Apr 18-May 7	Apr 15-Apr 29	May 11-Jun 16	May 14-Jun 21	May 7-Jun 17
Longnose gar	—	0.06	—	—	0.02	0.17
Bowfin	—	—	—	0.06	0.24	0.18
Alewife	0.02	—	0.02	0.17	—	—
Gizzard shad	29.04	18.15	17.39	0.09	0.32	0.47
Northern pike	—	—	—	1.49	2.46	1.15
Muskellunge	—	—	—	0.33	0.11	0.07
Black bullhead	—	—	0.02	—	—	—
Brown bullhead	4.25	2.46	1.45	0.21	0.22	0.16
Channel catfish	10.81	4.57	5.45	11.96	17.65	6.37
Stonecat	—	0.06	0.04	—	—	—
American eel	—	—	—	—	—	0.01
Burbot	0.02	0.02	—	—	—	—
White perch	35.69	10.96	38.96	0.04	0.02	0.13
White bass	4.98	2.54	2.82	2.81	1.46	0.85
Freshwater drum	23.98	25.13	30.63	1.38	2.71	5.32
Lake whitefish	—	0.04	—	—	—	—
Lake trout	—	—	—	0.01	—	—
Coho salmon	0.02	0.02	—	—	—	—
Goldfish	2.58	0.56	0.18	—	0.01	—
Common carp	15.19	3.52	1.96	1.94	3.18	6.75
Quillback	5.71	1.98	1.92	0.55	0.62	0.82
White sucker	6.81	10.24	33.04	0.50	0.56	0.36
Hog sucker	—	0.06	0.27	—	—	—
Bigmouth buffalo	0.02	—	—	—	—	—
Smallmouth buffalo	—	—	—	—	0.01	0.01
Spotted sucker	0.08	0.07	0.08	—	0.02	—
Redhorse, unidentified[1]	1.58	1.72	0.33	1.33	0.01	—
Silver redhorse	—	—	—	—	0.49	0.93
Golden redhorse	—	—	0.16	—	0.12	—
Shorthead redhorse	—	—	0.88	—	0.99	0.99

Table 15. Continued:

Species	Monroe Apr 12-May 3	Monroe Apr 18-May 7	Monroe Apr 15-Apr 29	A-marker May 11-Jun 16	A-marker May 14-Jun 21	A-marker May 7-Jun 17
River redhorse	—	—	—	—	0.01	—
Carp X goldfish hybrid	—	0.13	—	—	—	—
Silver chub	0.04	0.19	0.06	—	—	—
Golden shiner	—	0.04	—	—	—	—
Rock bass	1.29	1.00	1.43	62.50	53.26	42.38
Pumpkinseed	0.13	0.04	0.12	10.96	31.55	60.32
Bluegill	0.04	0.02	0.04	0.04	0.20	2.33
Smallmouth bass	0.08	0.06	0.08	14.92	26.93	29.93
Largemouth bass	—	0.04	0.02	0.01	0.21	0.09
White crappie	0.06	0.02	—	—	—	0.02
Black crappie	—	0.15	0.06	1.53	7.07	8.45
Yellow perch	262.08	129.07	153.53	5.29	21.98	15.55
Sauger	1.37	1.35	1.14	—	—	—
Walleye	26.56	36.61	75.55	19.86	18.06	22.38
Sauger X walleye hybrid	—	0.06	—	—	—	—
Total CPUE	432.43	250.94	367.63	137.98	190.49	206.20
Number lifts	52	54	51	78	82	87
Number species	25	31	28	23	29	26
Water temp. C	5–12	7–15	8–14	10–20	8–21	13–20

[1]Redhorse were not identified to species until 1984.

Age data collected from the four species in August and September of both survey years were combined to permit comparisons of mean length at age within the major regions of the SCDRS, and with average ages from inland lakes (Laarman 1963, Table 16). Data beyond Age 6 were not included due to generally small sample size. Mean length at age of rock bass was quite similar at stations within the SCDRS, as well as with inland lake data. Mean lengths varied only 5 to 15 mm at any given age. Mean lengths at age of smallmouth bass were fairly similar between the sites but not to the same extent as rock bass. The smallest mean lengths at age were from the St. Clair River and the highest (except Age 3) were from inland lakes. Mean lengths at age of yellow perch varied from 18 to 43 mm. Perch of a given age were always largest in samples from the St. Clair River and smallest in the Detroit River. Lower density and more optimal forage conditions are probably both involved in the relatively faster growth of perch in the St. Clair River. Mean lengths of Age 1 and 2 walleye were similar at all locations. However, older individuals of the same age varied from 38 to 76 mm in length. Largest mean lengths of Age 2-6 walleyes were from the Detroit River. This was expected, since Lake Erie, where walleyes grow faster than in the SCDRS, contributes heavily to the Detroit River population. It was also quite evident that walleyes grew slower in Michigan inland lakes than in the SCDRS.

The age-mean length of both rock bass and smallmouth bass were fairly similar within the SCDRS and inland lakes. Walleye and yellow perch were much more variable in mean length for all age groups. Yellow perch grew faster in the St. Clair River than elsewhere in the SCDRS. The largest walleyes in the SCDRS at given age were from the Detroit River, while inland lake walleyes grew slower than in the SCDRS.

Age and growth data have been collected over an extended period of years from walleye and smallmouth bass at the A-marker station in Anchor Bay, and from walleyes at the Monroe station in Lake Erie. The 1983 and 1984 mean length at age data for these species is provided in Table 17. No long-term changes in smallmouth bass mean length at age have been evident. Total CPUE of bass has risen sharply since inception of a size limit increase in 1977 from 254 to 305 mm. Average mean CPUE since 1977 has been almost three times the pre-1977 (1972-75) mean. It is evident that extending the period (one year) of protection from exploitation has allowed the population to expand to a higher density.

Survival rate estimates of bass and walleyes were calculated, using a procedure described by Ricker (1975). This method estimates survival rates from CPUE of individual year classes in successive years of their existence. Mean annual survival rate (S) of smallmouth bass at A-marker station was estimated to be 0.52 during the 1982-83 time period, and 0.55 during 1983-84.

Data collected since 1978 have indicated that walleyes older than Age 2, with few exceptions, grow faster in western Lake Erie than Lake St. Clair. Walleye year class strength is

Table 16. Comparison of age—mean length (mm) of four species from the St. Clair River, Lake St. Clair, the Detroit River, and from Michigan inland lakes. (Number of fish in parentheses.)[1]

	Age					
	1	2	3	4	5	6
Rock bass						
St. Clair River	—	124	157	185	198	212
	—	(41)	(63)	(34)	(21)	(11)
Lake St. Clair	—	123	152	174	197	—
	—	(42)	(45)	(19)	(13)	—
Detroit River	—	113	146	176	194	220
	—	(64)	(53)	(35)	(24)	(7)
Inland lakes	—	122	150	170	193	213
Smallmouth bass						
St. Clair River	168	220	296	341	373	391
	(9)	(67)	(91)	(32)	(18)	(11)
Lake St. Clair	176	246	305	349	376	—
	(138)	(140)	(68)	(27)	(10)	—
Detroit River	175	236	316	354	380	—
	(138)	(65)	(26)	(5)	(5)	—
Inland lakes	178	257	305	356	386	406
Yellow perch						
St. Clair River	—	172	209	220	256	273
	—	(115)	(73)	(28)	(22)	(32)
Lake St. Clair	—	154	191	220	251	266
	—	(13)	(12)	(6)	(5)	(5)
Detroit River	—	154	166	191	—	255
	—	(75)	(159)	(5)	—	(5)
Inland lakes	—	160	183	208	234	257
Walleye						
St. Clair River	272	342	415	460	498	526
	(253)	(184)	(85)	(41)	(33)	(19)
Lake St. Clair	257	335	411	473	—	—
	(108)	(67)	(22)	(5)	—	—
Detroit River	265	345	436	483	548	554
	(197)	(258)	(30)	14	(12)	(10)
Inland lakes	250	338	386	437	472	516

[1]All data were collected in August and September.

Table 17. Trap net CPUE and mean total length of walleye from the Monroe Station, and of walleye and smallmouth bass from the A-marker Station in the spring of 1983 and 1984. (Sample size in parentheses.)

	A-marker								Monroe			
	Smallmouth bass				Walleye				Walleye			
Year class	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)
1970	—	—	—	—	0.01	—	—	—	—	—	—	—
1971	—	—	—	—	0.02	—	—	—	—	—	—	—
1972	—	—	0.01	—	0.04	—	0.01	—	0.02	—	—	—
1973	0.01	—	—	—	0.09	—	0.00	—	0.00	—	—	—
1974	0.07	431 (4)	0.08	463 (5)	0.08	—	0.09	—	0.04	—	0.02	—
1975	0.02	416 (1)	0.11	458 (6)	0.12	604 (9)	0.01	623 (1)	0.24	614 (12)	0.11	649 (4)
1976	0.68	399 (43)	0.19	434 (13)	0.13	543 (9)	0.06	587 (5)	0.14	553 (7)	0.06	616 (2)
1977	3.62	371 (231)	1.67	415 (116)	2.61	502 (176)	1.39	539 (101)	1.29	515 (61)	0.92	546 (42)
1978	2.41	342 (154)	2.00	392 (142)	1.17	456 (78)	0.70	503 (52)	0.83	492 (40)	0.37	521 (17)
1979	4.95	309 (315)	4.35	356 (326)	2.32	431 (154)	1.32	479 (98)	1.22	475 (57)	0.69	508 (32)

Table 17. Continued:

Year class	A-marker								Monroe			
	Smallmouth bass				Walleye				Walleye			
	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)	CPUE	Mean length (mm)
1980	3.13	267 (194)	10.19	321 (774)	9.79	379 (668)	4.08	445 (317)	7.67	404 (342)	3.39	461 (161)
1981	0.04	245 (3)	8.16	275 (637)	3.46	343 (235)	1.94	403 (159)	14.63	340 (607)	5.20	402 (248)
1982	—	—	0.15	251 (12)	0.01	—	8.19	327 (680)	0.40	256 (14)	25.84	325 (1,207)
Total	14.92	—	26.91	—	19.86	—	17.79	—	26.48	—	36.59	—
Mean age	4.6	—	4.2	—	3.6	—	3.4	—	2.8	—	2.6	—

typically variable. In the history of our netting program, the 1977 and 1983 year classes of walleye were the most dominant, both in Lake Erie and Lake St. Clair. The 1977 cohort made a primary contribution to the angler harvest from 1979 through at least 1982. Extensive reporting by anglers confirms that the 1982 year class was similarly dominant in the 1985 angler harvest. It is expected to contribute heavily to the catch in 1986 and 1987.

Estimates of annual survival rate from trap net CPUE of walleyes at A-marker were 0.47 in 1982–83, and 0.52 in 1983–84. The netting CPUE estimate of annual survival rate of walleyes at the Monroe station was only 0.31 for 1982–83, and 0.48 for 1983–84. Such a low estimate of survival in 1982–83 was not consistent with the strong recovery of the western Lake Erie walleye stocks (Colby and Nepszy 1981). Estimates of Lake Erie walleye survival rates from the net catches varied greatly, from 0.25 to 0.61. It was apparent that the distribution of walleyes fluctuated widely at the Monroe Station from one netting period to the next.

Spawning conditions.—Spawning condition determinations were made on 23 species (Tables 18 and 19). However, determinations for many of the species were limited to one, or at best, only a few individuals. Interpretation from such small numbers would be speculative and most of these species have not been discussed. Yellow perch (mostly males) comprised 66% of the total number of individuals observed in spawning condition. Rock bass (mostly females) were 14% of the total and white bass were 8%.

There was no apparent relationship between species composition of fish eggs and larvae collected by the U. S. Fish and Wildlife Service and our observations of species with largest numbers of individuals in spawning condition. Muth, Wolfert, and Bur (1985) found alewife, smelt, and logperch comprising the bulk of their 1983 and 1984 St. Clair River samples. They found alewife, gizzard shad, white perch and emerald shiner were the species with the most numerous larvae in the Detroit River samples during that period.

Ripe (milt or eggs easily expressed) yellow perch were found both years at all eight stations. Ripe males were observed from March to as late as July. Ripe males in June and July indicated the condition of residual milt and probably had no spawning significance. No spawning was observed later than May in the SCDRS. A majority of the ripe perch were observed at the lower Lake St. Clair and Detroit River stations. Ripe white bass were found at all stations except 6. Over half of the individuals came from the species' very important lower Detroit River spawning grounds. Ripe white perch were noted at Stations 1 and 3 in the St. Clair River which indicated that a spawning population was becoming established in that river. Ripe carp were taken from May to as late as October. Most spawning activity was observed in May. A possible explanation for ripe males in October was early ripening for the next spawning season. Ripe white suckers were found in the spring scattered in small numbers throughout the SCDRS. Males with residual milt were observed as late as July.

Table 18. Number of fish per species in spawning condition in trap net catches at the eight primary stations in 1983.

		Male		Female	
Species	Month	Ripe	Partly to mostly spent	Ripe	Partly to mostly spent
Station 1					
Yellow perch	Apr	4	0	0	0
	May	76	0	3	9
	Jun	6	1	1	2
	Jul	0	0	0	1
Rock bass	Jun	0	0	3	0
	Jul	0	0	1	0
White bass	May	0	0	2	0
Muskellunge	May	2	0	0	0
White sucker	Apr	1	0	0	0
	May	1	0	0	1
	Dec	1	0	0	0
White perch	May	1	0	0	0
Carp	Jun	2	0	0	0
Northern pike	Apr	6	0	1	0
	May	1	0	0	0
Station 2					
Yellow perch	Mar	1	0	0	0
	Apr	4	0	0	0
	May	21	0	1	0
	Jun	10	0	0	0
Northern pike	Apr	0	0	1	0
	May	0	0	1	0
White bass	Apr	1	0	0	0
	May	30	0	3	0
White sucker	May	3	0	1	0
	Jun	2	0	0	0
Trout-perch	May	0	0	1	0
	Jun	0	0	4	0
Black crappie	May	1	0	0	0
Redhorse, unidentified	May	1	0	0	0
Rock bass	Jun	0	0	1	0
	Jul	0	0	1	0

Table 18. Continued:

Species	Month	Male: Ripe	Male: Partly to mostly spent	Female: Ripe	Female: Partly to mostly spent
Station 3					
Yellow perch	Apr	6	0	0	0
	May	25	0	5	1
	Jun	36	1	0	0
Rock bass	Jun	1	0	118	0
	Jul	0	0	3	0
Carp	Jun	7	0	4	0
Northern pike	Apr	1	0	1	0
	May	1	0	6	0
Muskellunge	Jun	0	0	1	0
Smelt	Mar	1	0	0	0
	Apr	1	0	0	0
Black crappie	Mar	1	0	0	0
	May	0	0	4	0
White sucker	Mar	2	0	0	0
	Apr	1	0	0	0
	May	1	0	0	0
	Jun	0	0	0	1
Bluegill	Jun	1	0	0	0
	Jul	1	0	0	0
Pumpkinseed	Jul	3	0	0	0
Freshwater drum	Jul	2	0	1	0
Station 4					
Yellow perch	May	2	0	9	0
	Jun	0	2	0	0
White bass	May	2	0	9	0
	Jun	0	2	0	0
Redhorse, unidentified	Jun	0	0	3	0
Rock bass	Jun	0	0	2	0
White sucker	May	1	0	0	0

Table 18. Continued:

Species	Month	Male: Ripe	Male: Partly to mostly spent	Female: Ripe	Female: Partly to mostly spent
Station 5					
Yellow perch	May	1	0	0	0
	Jun	0	0	1	0
Smallmouth bass	May	1	0	1	0
White bass	May	0	0	1	0
	Jul	55	0	0	0
Rock bass	May	0	0	1	0
	Jun	0	0	4	0
	Jul	1	0	3	0
Freshwater drum	May	0	0	1	0
Carp	Jul	0	0	1	0
Station 6					
Yellow perch	Apr	1	0	0	0
	May	30	0	5	6
	Jun	3	0	0	0
Northern pike	Apr	0	0	1	0
	May	15	0	6	0
Rock bass	May	0	0	1	0
	Jun	0	0	3	0
	Jul	0	0	4	0
Carp	May	1	0	1	0
Walleye	Jun	0	1	0	0
Redhorse, unidentified	Jun	1	0	0	0
Bluegill	Jul	1	0	0	0
Station 7					
Yellow perch	Apr	200	0	27	0
	May	10	0	2	0
	Jun	3	3	0	0
	Jul	1	0	0	0
Northern pike	Apr	3	0	1	0
	May	1	0	0	0
Walleye	May	3	0	0	0
White sucker	May	1	0	0	2

Table 18. Continued:

Species	Month	Male Ripe	Male Partly to mostly spent	Female Ripe	Female Partly to mostly spent
Rock bass	May	0	0	3	0
	Jun	1	0	17	0
	Jul	0	0	3	0
Carp	May	6	0	1	0
	Aug	1	0	0	0
	Oct	1	0	0	0
White perch	May	1	0	0	0
Black crappie	May	0	0	1	0
	Jun	3	0	0	0
Quillback	Sep	2	0	0	0
White bass	Jun	24	0	10	0
Station 8					
Carp	Apr	0	0	1	0
	Jul	1	0	0	0
Yellow perch	Mar	1	0	0	0
	Apr	7	0	9	0
	May	5	0	0	0
White sucker	May	1	0	1	0
Northern pike	May	1	0	0	0
Rock bass	Jun	0	0	10	0
White bass	Jun	11	0	2	0
Quillback	Sep	1	0	0	0

Table 19. Number of fish per species in spawning condition in trap net catches at the eight primary stations in 1984 and 1985.

Species	Month	Male Ripe	Male Partly to mostly spent	Female Ripe	Female Partly to mostly spent
Station 1 - 1984					
Sea lamprey	June	0	0	1	0
Trout-perch	June	2	0	0	0
White sucker	Mar	1	0	0	0
	Jun	0	2	0	0
	Jul	1	0	0	0
Redhorse, unidentified	Jun	0	2	0	0
Shorthead redhorse	Jul	1	0	0	0
Rock bass	Jul	0	0	2	0
Yellow perch	May	4	0	2	0
	Jun	2	4	0	3
Station 2 - 1984					
White sucker	May	2	0	0	0
	Jun	0	1	0	0
Redhorse, unidentified	May	1	0	0	0
Rock bass	Jul	0	0	8	0
Yellow perch	May	19	0	0	3
	Jun	18	1	0	3
Station 3 - 1984					
Smelt	May	6	0	2	0
Northern pike	May	1	0	0	0
Trout-perch	May	0	0	3	0
White perch	May	1	0	0	0
	Jun	16	0	3	0
White bass	Jun	1	0	2	0
Carp	Jun	3	0	1	0
White sucker	May	0	1	0	0
Rock bass	Jun	0	0	6	0
	Jul	0	0	5	0
Pumpkinseed	Jun	8	0	0	0
Bluegill	Jun	0	0	1	0

Table 19. Continued:

Species	Month	Male: Ripe	Male: Partly to mostly spent	Female: Ripe	Female: Partly to mostly spent
Yellow perch	May	68	0	0	0
	Jun	52	0	0	0
1985					
Yellow perch	Mar	1	0	0	0
Station 4 - 1984					
White bass	Jun	2	0	0	0
Rock bass	Jun	0	0	4	0
Yellow perch	May	123	0	0	0
1985					
Yellow perch	Mar	1	0	0	0
White sucker	Mar	0	0	1	0
Station 5 - 1984					
Channel catfish	May	0	0	1	0
White perch	May	8	0	0	0
Carp	Jun	1	0	0	0
Redhorse, unidentified	May	1	0	0	0
White sucker	Apr	4	0	0	0
Rock bass	May	0	0	1	0
	Jun	0	0	3	0
	Jul	0	0	1	0
Smallmouth bass	Jul	0	0	1	0
Yellow perch	Apr	285	0	4	0
	May	7	0	0	2
Walleye	Apr	16	0	0	0
	May	0	2	0	0
Sauger	Apr	1	0	1	0
Station 6 - 1984					
Stonecat	Jun	1	0	0	0
Northern pike	Apr	0	0	1	0
White perch	Apr	1	0	0	0

Table 19. Continued:

Species	Month	Male Ripe	Male Partly to mostly spent	Female Ripe	Female Partly to mostly spent
Carp	Apr	2	0	0	0
	Jun	1	0	0	0
	Jul	1	0	0	0
	Aug	1	0	0	0
Quillback	May	1	0	0	0
White sucker	May	2	1	0	0
Rock bass	May	0	0	1	0
	Jun	3	0	128	0
	Jul	0	0	0	1
Smallmouth bass	Jun	0	0	0	1
Yellow perch	Apr	124	0	1	0
	May	31	0	0	0
	Jul	1	0	0	0
Walleye	May	0	1	0	0
<u>Station 7 - 1984</u>					
White perch	Jun	2	0	0	0
	Jul	4	0	2	0
White bass	Jun	6	0	2	0
	Jul	1	0	0	0
Goldfish	Jul	1	0	0	0
Carp	Jun	2	0	0	0
	Jul	5	0	1	0
Rock bass	Jun	0	0	7	0
	Jul	0	0	11	0
Pumpkinseed	May	1	0	0	0
Smallmouth bass	Jun	0	0	1	0
Yellow perch	Apr	28	0	0	0
	May	29	0	5	1
	Jun	1	0	0	0
Walleye	Apr	3	0	1	0
<u>Station 8 - 1984</u>					
Northern pike	Apr	2	0	1	1
	May	2	0	0	0

Table 19. Continued:

Species	Month	Male: Ripe	Male: Partly to mostly spent	Female: Ripe	Female: Partly to mostly spent
White bass	May	2	0	0	0
	Jun	15	0	23	1
Carp	Jun	2	0	0	0
	Aug	0	1	0	0
	Sep	1	0	0	0
	Oct	1	0	0	0
White sucker	May	1	0	0	0
Smallmouth bass	Jun	0	0	1	0
Yellow perch	Apr	81	0	6	0
	May	216	0	2	0
	Jun	28	0	0	0
Walleye	Apr	1	0	0	0
1985					
Yellow perch	Mar	1	–	2	0

SPORTFISHING SURVEY

Methods

Total harvest, fishing pressure, and the catch per hour for the most commonly caught fishes are the major parameters to be used for determining changes which might occur due to winter shipping. A stratified random creel census was used to sample the fishermen and their catch. Instantaneous counts of boats, shore anglers, open ice anglers, and ice shanties were scheduled randomly on a daily basis and made from both a plane and an automobile. Percentage of ice shanties occupied was determined by inspecting shanties on all weekend days and three randomly selected weekdays each week. Mean number of anglers per boat and per shanty were obtained from interviews. Estimates of the hours fished were based on the product of the mean instantaneous counts, the fishing hours in the daylight period, and the number of days in the month. Total hours fished does not reflect night fishing that may have occurred in the study area. Estimates of the catch per hour were based on randomly interviewed anglers within the same time period and were derived from both complete and incomplete interviews. Separate estimates were calculated for boat, shore, open, and shanty ice fishermen. Estimates of hours fished and of catch per hour represent the sum of estimates calculated separately by weekend and weekday periods within each month.

The study area was divided into four major sections (1) the St. Clair River; (2) the Harsens Island channels; (3) Lake St. Clair; and (4) the Detroit River (Figs. 10 and 11). Each area was divided into grids to facilitate data collection, analysis, and interpretation. For the St. Clair River and Lake St. Clair, 4-mile grids were established and separate estimates of catch rate (catch per hour) and fishing pressure (angling hours) were obtained for each grid. In the Harsens Island channels, 2-mile grids were used which had been established and utilized in an earlier study. However, problems in the data collection for this section (e.g., misidentification of the actual grid fished) made it impossible to calculate appropriate estimates by individual grids. Thus, the Harsens Island channels were treated as one area (i.e., all grids were combined into one large grid) and single estimates of catch rate and fishing pressure were obtained for the entire section. The Detroit River was subdivided into a north (Grids 1-7) and south (Grids 8-15) section to make results comparable to earlier studies. Again, 2-mile grids were used as established in these earlier studies, allowing comparisons of the estimates from the current census with those obtained previously. The creel census of recreational fishermen began in April 1983 on the St. Clair and Detroit rivers. Census of the Lake St. Clair and Harsens Island sections commenced in May 1983. All census taking activities ceased at the end of March 1985.

Interview data for both boat and shore anglers were collected along the St. Clair and Detroit rivers. Open and shanty ice angler interview data were also obtained for the Detroit River section. Only boat and ice angler interviews were collected for the Lake St. Clair and

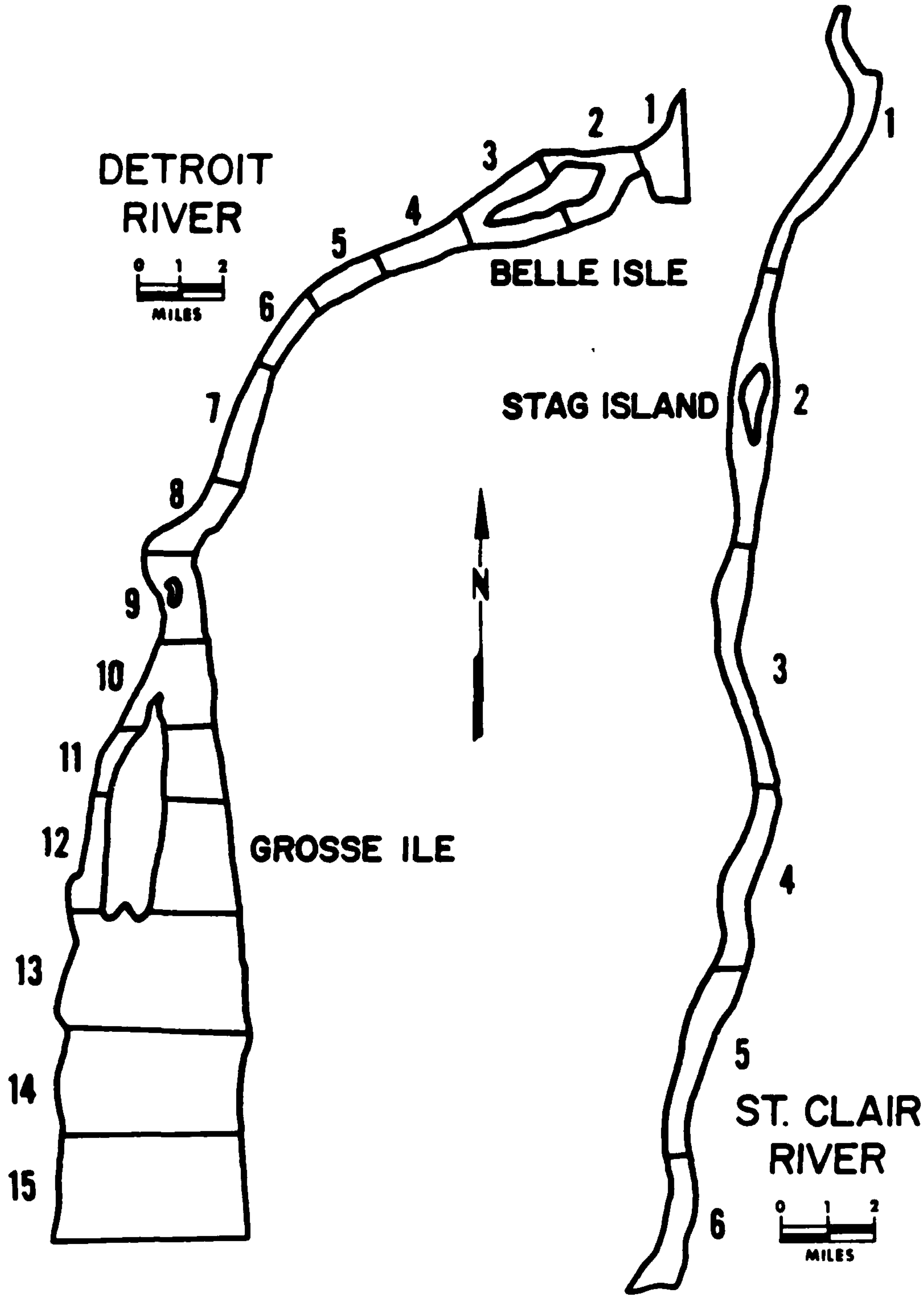

Figure 10. Location of creel census grids in the St. Clair and Detroit rivers.

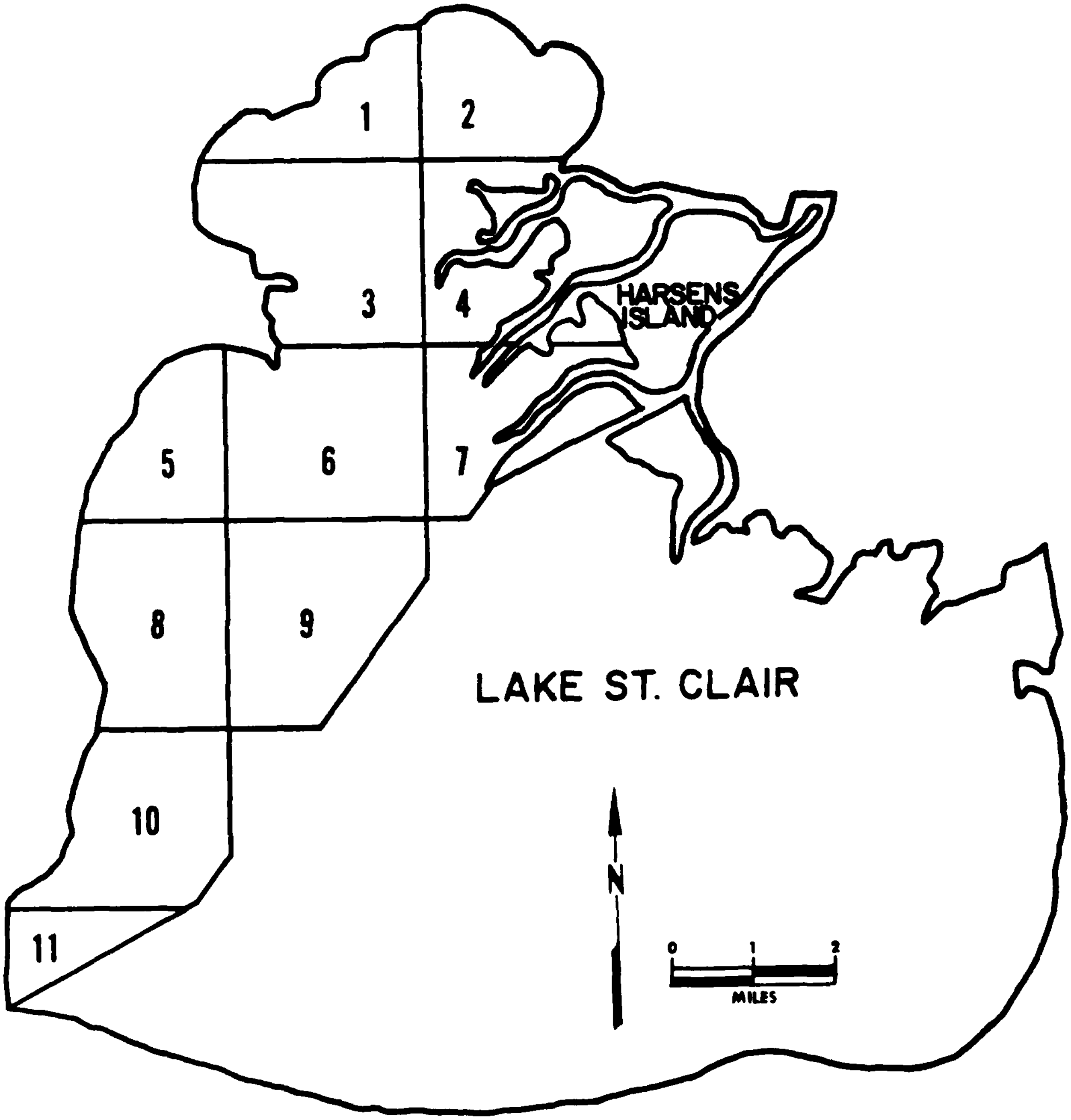

Figure 11. Location of creel census grids in Lake St. Clair.

Harsens Island areas. Shore counts were also made for the Harsens Island channels, allowing an estimate of angling hours for shore fishermen in this section. The decision to eliminate censusing the shore fishery in these latter two areas was necessitated by budgetary and logistical constraints, and was based on the following criteria (1) preliminary observations indicated there was very little shore fishing along the Harsens Island channels; (2) only a few concentrations of shore fishermen occurred along the vast shoreline of Lake St. Clair; and (3) most of the Lake St. Clair shore fishery is a long way from the shipping channel and therefore was considered as having the least chance of being affected by changes in shipping. Thus, interviewing shore anglers in these areas was eliminated from the study in order not to further dilute the sampling effort in the other major sections.

Many of the comparisons discussed in the text were made using point estimates. Two standard errors were calculated for all estimates and are presented in the tables. In most cases, the point estimates plus or minus two standard errors define an interval slightly larger than the 95% confidence interval due to the large sample size. When the term "significant" is used in the text, it infers that the values being compared were statistically different ($P < 0.05$).

All sportfishing harvest and effort estimates discussed in this report are for Michigan waters of the study area. No estimates were made of fishing harvest or effort in Canadian waters.

Results

St. Clair River.—Fishing hours, hereafter referred to as fishing pressure or effort, by boat anglers averaged 365,108 hours over the 2 year study period. This amount of boat effort was only slightly greater than the annual average of 329,975 angler hours reported by Krumholz and Carbine (1943 and 1945) for the 1942–43 fishing seasons. From April 1983 to March 1984 (first year of the study), boat angler effort was 360,428 ± 31,310, while from April 1984 to March 1985 (second year of the study) boat anglers fished 369,789 ± 23,040 hours (Tables 20 and 21). Fishing pressure by boat anglers was considerably greater than in the Harsens Islands channels and less than that exerted in Lake St. Clair or the Detroit River as a whole. However, St. Clair River boat anglers fished approximately twice the number of hours that boaters did in the north section of the Detroit River while fishing 1.4 times less hours than southern boat anglers.

Monthly boat angling pressure peaked in July for both years, with 140,879 ± 23,935 and 131,487 ± 14,700 hours in the first and second years, respectively. Over 87% of the total boat angling pressure occurred from June to September in the first year, with 95% of the catch coming in this period (Table 22). In the second year, 84.3% of the total boat effort was exerted from June to September, resulting in 89.2% of the total catch for this year (Table 23). About 24% of the total boat effort for the 2 years was exerted in Grid 2, which also had the

Table 20. Estimated number of fishing hours by boat anglers in the St. Clair River from April 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	1,439	1,398	641	4,806	1,856	1,183	11,323
	(1,726)	(1,217)	(652)	(3,453)	(1,046)	(834)	(4,313)
May	952	1,937	1,227	3,411	2,093	3,430	13,050
	(684)	(1,319)	(614)	(1,389)	(887)	(1,387)	(2,688)
Jun	4,001	7,081	3,403	5,298	6,190	4,076	30,049
	(3,063)	(3,817)	(1,600)	(1,867)	(3,404)	(1,851)	(6,709)
Jul	15,340	42,900	18,384	18,759	25,457	20,039	140,879
	(6,348)	(14,817)	(7,827)	(9,768)	(9,980)	(7,535)	(23,935)
Aug	10,031	29,127	15,034	15,299	20,441	17,834	107,766
	(4,050)	(10,507)	(5,828)	(6,270)	(7,953)	(5,409)	(17,105)
Sep	3,697	9,381	5,591	5,432	6,240	7,126	37,467
	(1,349)	(3,015)	(2,309)	(2,018)	(2,614)	(2,549)	(5,800)
Oct	1,272	4,160	2,860	3,097	2,873	4,129	18,391
	(577)	(1,502)	(1,083)	(1,627)	(1,226)	(1,511)	(3,193)
Nov	58	208	168	236	216	378	1,264
	(70)	(137)	(126)	(207)	(159)	(216)	(393)
Dec	—	130	—	23	64	22	239
	—	(99)	—	(46)	(72)	(43)	(138)
Jan	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Feb	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Mar	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Total	36,790	96,322	47,308	56,361	65,430	58,217	360,428
	(8,467)	(18,950)	(10,252)	(12,603)	(13,590)	(10,045)	(31,310)

Table 21. Estimated number of fishing hours by boat anglers in the St. Clair River from April 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	49	—	—	24	—	—	73
	(73)	—	—	(52)	—	—	(90)
May	3,052	3,246	2,398	11,993	5,319	8,516	34,524
	(1,038)	(886)	(930)	(3,868)	(2,128)	(4,563)	(6,560)
Jun	6,594	12,140	5,757	10,592	12,359	14,075	61,517
	(4,920)	(4,940)	(2,196)	(3,707)	(4,741)	(6,570)	(11,525)
Jul	17,245	35,096	15,494	21,723	23,563	18,366	131,487
	(5,117)	(6,615)	(4,163)	(6,493)	(7,104)	(6,015)	(14,700)
Aug	7,303	14,047	6,506	10,481	13,181	9,524	61,042
	(2,111)	(3,607)	(2,125)	(3,331)	(4,514)	(2,444)	(7,709)
Sep	3,944	11,201	11,341	8,845	9,285	12,950	57,566
	(1,431)	(3,266)	(3,252)	(2,741)	(3,102)	(4,659)	(7,882)
Oct	669	4,107	3,486	2,116	3,615	7,517	21,510
	(375)	(1,588)	(1,428)	(1,104)	(1,572)	(2,876)	(4,082)
Nov	69	151	151	379	259	529	1,538
	(99)	(127)	(117)	(263)	(216)	(337)	(519)
Dec	—	43	—	43	43	43	172
	—	(86)	—	(86)	(86)	(86)	(172)
Jan	300	—	—	60	—	—	360
	(600)	—	—	(121)	—	—	(612)
Feb	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Mar	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Total	39,225	80,031	45,133	66,256	67,624	71,520	369,789
	(7.648)	(9,755)	(6,337)	(9,528)	(10,488)	(11,672)	(23,040)

highest percent of the total catch (Fig. 12). Boat angling pressure and harvest were essentially uniform in Grids 4–6 and lowest in Grid 1.

Total shore fishing pressure for the 2 year study in the St. Clair River averaged 186,345 hours per year, roughly half that exerted by boat anglers. Shore anglers fished 170,453 ± 15,259 in the first and 202,237 ± 14,782 hours in the second year (Tables 24 and 25). Pressure exerted by shore anglers on the St. Clair River was significantly greater than the effort in the Harsens Island channels while being significantly less than the number of hours estimated for both sections of the Detroit River.

Monthly shore angling pressure peaked in August in 1983 with 46,112 ± 5,462 hours, while in the second year pressure peaked in July at 62,201 ± 8,222 hours. Over 81% of the total shore angling effort occurred in the months of June to September for both years, resulting in 92.3% and 94.8% of the total catch in the 2 years, respectively (Tables 26 and 27). Over 50% of the total shore fishing pressure and harvest for the 2 years combined came in Grid 1 (Fig. 13), dropping off to about 20% in Grid 6. Grids 2–5 were lowest, with 10% or less of the hours and catch occurring in each.

Boat anglers harvested 2.6 times as many fish as shore anglers during the 2 years. The harvest per hour (catch rate) for boat anglers was 1.3 times the shore angler catch rate for this same period. Catch rates peaked during July through October for boat anglers while June through September had the highest catch rates for shore anglers (Tables 28–31).

The boat angler catch rate was relatively uniform from Port Huron to Algonac in both years, ranging from 0.3754 in Grid 5 to 0.1878 fish per hour in Grid 4 (Appendices 116 and 117). Walleye comprised the majority of the boat catch, making up 86.4% and 93.5% of the total catch in the 2 years. White bass ranked second, making up an average of 3.5% of the catch, followed by freshwater drum (3.0%). Yellow perch made up 3.1% of the total catch in the first year but were almost nonexistent in the catch from April 1984 to March 1985. This boat harvest distribution was similar to that in the 1942–43 fishing season on the St. Clair River, when walleye made up 98.2% of the total boat harvest (Krumholz and Carbine 1943 and 1945).

Shore angler catch rate was also fairly uniform in the St. Clair River, ranging from 0.3675 in Grid 2 to 0.0355 fish per hour in Grid 5 (Appendices 124 and 125). Walleye made up a majority of the total shore angler catch, comprising 16.5% and 55.3% in the 2 years, respectively. Freshwater drum was second highest overall, but ranked first in the catch from April 1983 to March 1984. Yellow perch was third comprising 27.0% and 6.7% of the catch. Unlike the boat fishery, white bass made up only a small percentage of the total catch by shore anglers.

Mean total lengths of selected species sampled from both the boat and shore catch are given in Appendices 106 and 107. Walleye measured from the combined boat and shore angler

Table 22. Estimated number of fish harvested by boat anglers in the St. Clair River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White bass	—	—	5	1,018	2,169	—	—	—	—	—	—	—	3,192
	—	—	(10)	(1,463)	(2,699)	—	—	—	—	—	—	—	(3,070)
Freshwater drum	—	33	793	1,089	523	76	31	—	—	—	—	—	2,545
	—	(69)	(1,068)	(1,338)	(653)	(96)	(41)	—	—	—	—	—	(1,836)
Redhorse	—	18	248	—	36	20	25	—	—	—	—	—	347
	—	(34)	(330)	—	(75)	(41)	(52)	—	—	—	—	—	(346)
Rock bass	—	—	—	196	167	42	19	—	—	—	—	—	424
	—	—	—	(250)	(155)	(58)	(39)	—	—	—	—	—	(303)
Smallmouth bass	—	—	—	186	214	80	—	—	—	—	—	—	480
	—	—	—	(389)	(221)	(163)	—	—	—	—	—	—	(476)
Yellow perch	—	—	315	716	1,470	135	—	—	—	—	—	—	2,636
	—	—	(383)	(922)	(1,171)	(201)	—	—	—	—	—	—	(1,552)
Walleye	8	115	386	35,311	25,402	8,873	3,174	492	—	—	—	—	73,761
	(17)	(173)	(321)	(9,452)	(5,917)	(2,404)	(1,355)	(386)	—	—	—	—	(11,500)
Other	162	91	465	89	446	539	189	27	—	—	—	—	2,008
	(112)	(83)	(523)	(103)	(247)	(247)	(168)	(33)	—	—	—	—	(674)
Total	170	257	2,212	38,605	30,427	9,765	3,438	519	—	—	—	—	85,393
	(113)	(207)	(1,331)	(9,713)	(6,651)	(2,433)	(1,368)	(387)	—	—	—	—	(12,180)

Table 23. Estimated number of fish harvested by boat anglers in the St. Clair River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White bass	—	—	3,405	71	342	15	—	—	—	—	—	—	3,833
	—	—	(6,806)	(111)	(482)	(30)	—	—	—	—	—	—	(6,824)
Freshwater drum	—	—	720	483	137	95	—	—	—	—	—	—	1,435
	—	—	(795)	(654)	(213)	(142)	—	—	—	—	—	—	(1,061)
Redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—
Rock bass	—	—	—	219	20	199	—	—	—	—	—	—	438
	—	—	—	(287)	(29)	(252)	—	—	—	—	—	—	(383)
Smallmouth bass	—	—	—	226	16	235	—	—	—	—	—	—	477
	—	—	—	(206)	(32)	(341)	—	—	—	—	—	—	(399)
Yellow perch	—	—	48	188	38	50	14	—	—	—	—	—	338
	—	—	(102)	(339)	(78)	(74)	(29)	—	—	—	—	—	(371)
Walleye	—	2,939	8,472	39,401	16,462	31,720	8,586	140	—	—	—	—	107,720
	—	(3,236)	(3,349)	(7,213)	(3,551)	(7,980)	(3,400)	(221)	—	—	—	—	(12,713)
Other	—	460	—	42	119	57	248	—	—	—	—	—	926
	—	(274)	—	(68)	(133)	(62)	(328)	—	—	—	—	—	(457)
Total	—	3,399	12,645	40,630	17,134	32,371	8,848	140	—	—	—	—	115,167
	—	(3,248)	(7,628)	(7,260)	(3,593)	(7,993)	(3,416)	(221)	—	—	—	—	(14,490)

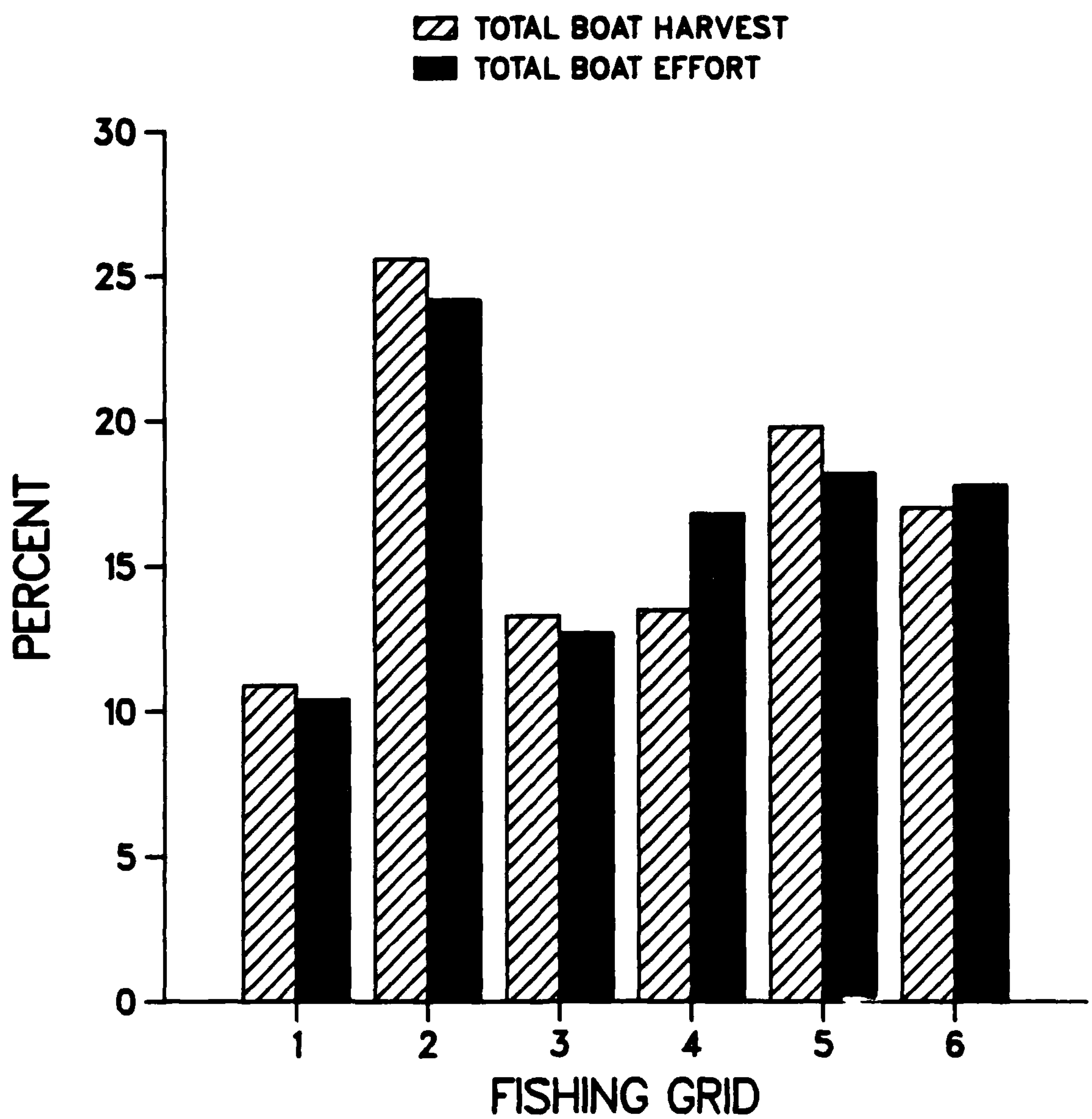

Figure 12. Percentage distribution of boat angling pressure (angler hours) and total harvest of all species by Michigan's boat anglers within each fishing grid of the St. Clair River for the entire study.

Table 24. Estimated number of fishing hours by shore anglers in the St. Clair River from April 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	2,526	252	162	126	267	720	4,053
	(1,440)	(257)	(176)	(8,179)	(204)	(581)	(8,333)
May	6,290	1,107	1,278	773	298	2,077	11,823
	(2,033)	(647)	(747)	(528)	(303)	(1,045)	(2,564)
Jun	13,070	4,596	3,899	3,460	1,364	8,094	34,483
	(4,426)	(2,331)	(1,692)	(1,376)	(553)	(2,050)	(5,856)
Jul	19,706	3,909	5,123	2,994	2,605	9,068	43,405
	(7,700)	(1,308)	(2,192)	(1,597)	(1,427)	(3,243)	(8,995)
Aug	20,844	4,303	5,087	3,328	3,166	9,384	46,112
	(4,385)	(1,300)	(1,486)	(1,336)	(1,244)	(1,838)	(5,462)
Sep	8,445	1,012	1,653	833	817	2,775	15,535
	(1,878)	(630)	(627)	(481)	(517)	(881)	(2,365)
Oct	5,080	550	831	225	444	1,735	8,865
	(1,824)	(228)	(893)	(204)	(277)	(904)	(2,261)
Nov	1,139	165	44	59	35	65	1,507
	(407)	(112)	(54)	(56)	(40)	(62)	(436)
Dec	277	—	—	—	—	46	323
	(180)	—	—	—	—	(91)	(202)
Jan	738	—	—	—	—	—	738
	(342)	—	—	—	—	—	(342)
Feb	2,340	50	82	41	—	82	2,595
	(761)	(71)	(135)	(39)	—	(88)	(782)
Mar	831	92	—	50	41	—	1,014
	(287)	(106)	—	(99)	(81)	—	(332)
Total	81,286	16,036	18,159	11,889	9,037	34,046	170,453
	(10,590)	(3,130)	(3,417)	(8,584)	(2,092)	(4,598)	(15,259)

Table 25. Estimated number of fishing hours by shore anglers in the St. Clair River from April 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	1,106 (691)	65 (71)	142 (144)	107 (163)	90 (87)	57 (82)	1,567 (738)
May	9,467 (2,152)	1,359 (1,039)	986 (394)	1,604 (682)	321 (203)	2,618 (1,321)	16,355 (2,849)
Jun	20,407 (8,677)	4,642 (1,971)	1,348 (405)	2,952 (879)	916 (513)	8,393 (2,470)	38,658 (9,299)
Jul	30,956 (6,307)	6,291 (2,053)	2,993 (1,003)	4,653 (1,705)	1,166 (631)	16,142 (4,393)	62,201 (8,222)
Aug	20,050 (5,122)	2,698 (1,237)	1,418 (626)	2,087 (899)	1,831 (1,242)	7,107 (1,889)	35,191 (5,837)
Sep	17,085 (3,294)	2,189 (897)	1,767 (634)	1,681 (724)	1,045 (434)	4,753 (1,182)	28,520 (3,764)
Oct	8,703 (1,862)	749 (265)	655 (415)	725 (314)	505 (276)	2,153 (813)	13,490 (2,132)
Nov	1,627 (872)	57 (114)	94 (105)	208 (202)	38 (76)	170 (197)	2,194 (933)
Dec	677 (593)	— —	29 (58)	58 (77)	— —	— —	764 (601)
Jan	110 (126)	— —	— —	— —	— —	44 (88)	154 (154)
Feb	819 (126)	— —	— —	— —	— —	— —	819 (126)
Mar	2,324 (1,307)	— —	— —	— —	— —	— —	2,324 (1,307)
Total	113,331 (12,790)	18,050 (3,406)	9,432 (1,525)	14,075 (2,377)	5,912 (1,588)	41,437 (5,729)	202,237 (14,782)

Table 26. Estimated number of fish harvested by shore anglers in the St. Clair River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
White bass	—	10	76	312	347	83	109	—	—	—	—	—	937
	—	(16)	(130)	(243)	(280)	(108)	(103)	—	—	—	—	—	(421)
Freshwater drum	—	11	4,889	5,134	3,172	369	132	—	—	—	—	—	13,707
	—	(23)	(1,384)	(1,418)	(1,590)	(171)	(186)	—	—	—	—	—	(2,553)
Redhorse	6	483	1,878	967	959	238	113	14	—	—	2	—	4,660
	(9)	(203)	(592)	(417)	(404)	(91)	(67)	(19)	—	—	(4)	—	(861)
Rock bass	—	14	29	244	1,191	389	49	9	—	—	—	—	1,925
	—	(31)	(46)	(149)	(466)	(219)	(36)	(23)	—	—	—	—	(541)
Smallmouth bass	—	—	—	14	311	113	30	2	—	—	—	—	470
	—	—	—	(17)	(352)	(74)	(32)	(4)	—	—	—	—	(361)
Yellow perch	58	705	556	4,885	5,553	66	166	40	—	—	—	—	12,029
	(75)	(572)	(372)	(1,785)	(1,581)	(48)	(105)	(45)	—	—	—	—	(2,484)
Walleye	—	7	141	3,276	2,846	669	359	—	—	—	53	—	7,351
	—	(9)	(151)	(1,555)	(862)	(253)	(201)	—	—	—	(106)	—	(1,817)
Other	30	252	648	338	911	501	310	86	10	228	118	10	3,442
	(30)	(132)	(269)	(133)	(295)	(144)	(147)	(61)	(15)	(167)	(78)	(12)	(526)
Total	94	1,482	8,217	15,170	15,290	2,428	1,268	151	10	228	173	10	44,521
	(81)	(623)	(1,587)	(2,809)	(2,538)	(436)	(354)	(82)	(15)	(167)	(132)	(12)	(4,196)

Table 27. Estimated number of fish harvested by shore anglers in the St. Clair River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White bass	—	32	1,445	271	360	105	41	—	—	—	—	—	2,254
	—	(65)	(902)	(247)	(306)	(129)	(54)	—	—	—	—	—	(996)
Freshwater drum	—	—	2,750	1,793	880	175	94	—	—	—	—	—	5,692
	—	—	(1,144)	(625)	(403)	(96)	(77)	—	—	—	—	—	(1,370)
Redhorse	—	58	209	408	243	182	84	53	—	—	—	—	1,237
	—	(76)	(161)	(396)	(171)	(112)	(63)	(89)	—	—	—	—	(492)
Rock bass	—	—	146	—	229	47	31	—	—	—	—	—	453
	—	—	(158)	—	(165)	(39)	(63)	—	—	—	—	—	(240)
Smallmouth bass	—	—	63	347	236	161	2	—	—	—	—	—	809
	—	—	(83)	(215)	(133)	(170)	(4)	—	—	—	—	—	(316)
Yellow perch	—	50	1,044	570	297	85	141	—	13	—	—	—	2,200
	—	(74)	(677)	(294)	(194)	(120)	(149)	—	(28)	—	—	—	(791)
Walleye	—	23	3,536	7,918	4,256	2,235	255	—	—	—	—	—	18,223
	—	(47)	(1,900)	(1,878)	(1,244)	(570)	(195)	—	—	—	—	—	(3,008)
Other	—	359	201	127	206	697	398	11	14	2	60	—	2,075
	—	(247)	(170)	(109)	(115)	(228)	(180)	(14)	(21)	(14)	(72)	—	(453)
Total	—	522	9,394	11,434	6,707	3,687	1,046	64	27	2	60	—	32,943
	—	(281)	(2,505)	(2,069)	(1,389)	(678)	(331)	(90)	(35)	(14)	(72)	—	(3,626)

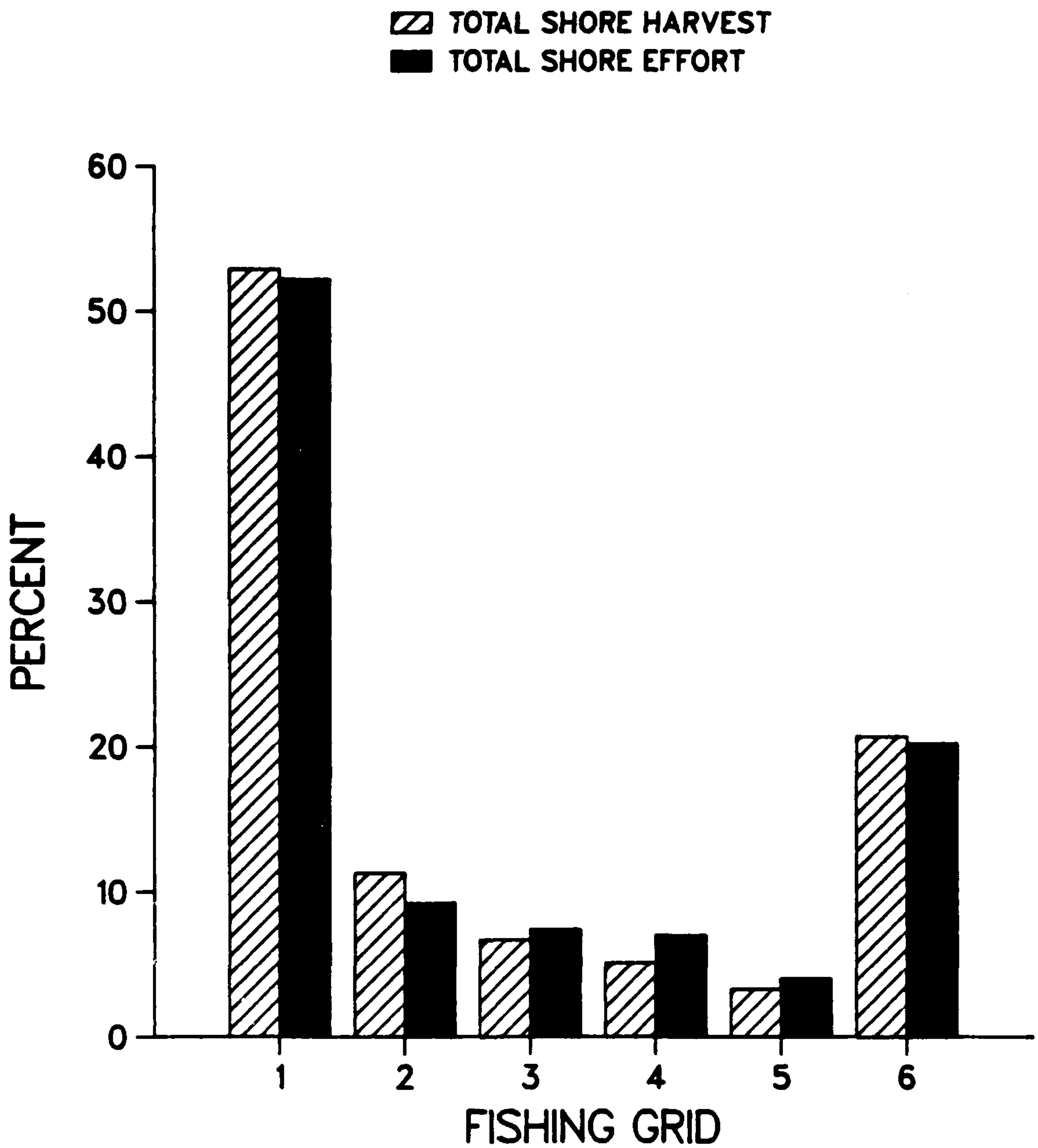

Figure 13. Percentage distribution of shore angling pressure (angler hours) and total harvest of all species by Michigan's shore anglers within each fishing grid on the St. Clair River for the entire study.

Table 28. Estimated catch per hour for fish harvested by boat anglers in the St. Clair River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White bass	—	—	0.0002	0.0072	0.0201	—	—	—	—	—	—	—	0.0089
	—	—	(0.0003)	(0.0105)	(0.0252)	—	—	—	—	—	—	—	(0.0086)
Freshwater drum	—	0.0025	0.0264	0.0077	0.0049	0.0020	0.0017	—	—	—	—	—	0.0071
	—	(0.0053)	(0.0360)	(0.0096)	(0.0061)	(0.0026)	(0.0022)	—	—	—	—	—	(0.0051)
Redhorse	—	0.0014	0.0083	—	0.0003	0.0005	0.0014	—	—	—	—	—	0.0010
	—	(0.0026)	(0.0111)	—	(0.0007)	(0.0011)	(0.0028)	—	—	—	—	—	(0.0010)
Rock bass	—	—	—	0.0014	0.0015	0.0011	0.0010	—	—	—	—	—	0.0012
	—	—	—	(0.0018)	(0.0015)	(0.0016)	(0.0021)	—	—	—	—	—	(0.0008)
Smallmouth bass	—	—	—	0.0013	0.0020	0.0021	—	—	—	—	—	—	0.0013
	—	—	—	(0.0028)	(0.0021)	(0.0044)	—	—	—	—	—	—	(0.0013)
Yellow perch	—	—	0.0105	0.0051	0.0136	0.0036	—	—	—	—	—	—	0.0073
	—	—	(0.0130)	(0.0066)	(0.0111)	(0.0054)	—	—	—	—	—	—	(0.0044)
Walleye	0.0007	0.0088	0.0128	0.2506	0.2357	0.2368	0.1726	0.3892	—	—	—	—	0.2046
	(0.0015)	(0.0134)	(0.0111)	(0.0795)	(0.0664)	(0.0739)	(0.0795)	(0.3285)	—	—	—	—	(0.0365)
Other	0.0143	0.0070	0.0155	0.0006	0.0041	0.0144	0.0103	0.0214	—	—	—	—	0.0056
	(0.0113)	(0.0065)	(0.0177)	(0.0007)	(0.0024)	(0.0070)	(0.0093)	(0.0269)	—	—	—	—	(0.0019)
Total	0.0150	0.0197	0.0737	0.2739	0.2822	0.2605	0.1870	0.4106	—	—	—	—	0.2370
	(0.0114)	(0.0160)	(0.0450)	(0.0811)	(0.0722)	(0.0746)	(0.0801)	(0.3296)	—	—	—	—	(0.0382)

Table 29. Estimated catch per hour for fish harvested by boat anglers in the St. Clair River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White bass	—	—	0.0554	0.0005	0.0056	0.0003	—	—	—	—	—	—	0.0104
	—	—	(0.1111)	(0.0008)	(0.0079)	(0.0005)	—	—	—	—	—	—	(0.0185)
Freshwater drum	—	—	0.0117	0.0037	0.0022	0.0017	—	—	—	—	—	—	0.0039
	—	—	(0.0131)	(0.0050)	(0.0035)	(0.0025)	—	—	—	—	—	—	(0.0029)
Redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—
Rock bass	—	—	—	0.0017	0.0003	0.0035	—	—	—	—	—	—	0.0012
	—	—	—	(0.0022)	(0.0005)	(0.0044)	—	—	—	—	—	—	(0.0010)
Smallmouth bass	—	—	—	0.0017	0.0003	0.0041	—	—	—	—	—	—	0.0013
	—	—	—	(0.0016)	(0.0005)	(0.0059)	—	—	—	—	—	—	(0.0011)
Yellow perch	—	—	0.0008	0.0014	0.0006	0.0009	0.0007	—	—	—	—	—	0.0009
	—	—	(0.0017)	(0.0026)	(0.0013)	(0.0013)	(0.0014)	—	—	—	—	—	(0.0010)
Walleye	—	0.0851	0.1377	0.2997	0.2697	0.5510	0.3992	0.0910	—	—	—	—	0.2913
	—	(0.0951)	(0.0602)	(0.0643)	(0.0674)	(0.1578)	(0.1753)	(0.1469)	—	—	—	—	(0.0389)
Other	—	0.0133	—	0.0003	0.0019	0.0010	0.0115	—	—	—	—	—	0.0025
	—	(0.0083)	—	(0.0005)	(0.0022)	(0.0011)	(0.0154)	—	—	—	—	—	(0.0012)
Total	—	0.0984	0.2056	0.3090	0.2806	0.5625	0.4114	0.0910	—	—	—	—	0.3115
	—	(0.0955)	(0.1271)	(0.0646)	(0.0680)	(0.1580)	(0.1760)	(0.1469)	—	—	—	—	(0.0432)

Table 30. Estimated catch per hour for fish harvested by shore anglers in the St. Clair River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month					
Species	Apr	May	Jun	Jul	Aug	Sep
White bass	—	0.0008	0.0022	0.0072	0.0075	0.0053
	—	(0.0014)	(0.0038)	(0.0058)	(0.0061)	(0.0070)
Freshwater drum	—	0.0009	0.1418	0.1183	0.0688	0.0238
	—	(0.0020)	(0.0468)	(0.0408)	(0.0354)	(0.0116)
Redhorse	0.0015	0.0409	0.0545	0.0223	0.0208	0.0153
	(0.0038)	(0.0193)	(0.0195)	(0.0107)	(0.0091)	(0.0063)
Rock bass	—	0.0012	0.0008	0.0056	0.0258	0.0250
	—	(0.0026)	(0.0013)	(0.0036)	(0.0106)	(0.0146)
Smallmouth bass	—	—	—	0.0003	0.0067	0.0073
	—	—	—	(0.0004)	(0.0077)	(0.0049)
Yellow perch	0.0143	0.0596	0.0161	0.1125	0.1204	0.0042
	(0.0348)	(0.0501)	(0.0111)	(0.0473)	(0.0371)	(0.0032)
Walleye	—	0.0006	0.0041	0.0755	0.0617	0.0431
	—	(0.0008)	(0.0044)	(0.0391)	(0.0201)	(0.0176)
Other	0.0074	0.0213	0.0188	0.0078	0.0198	0.0322
	(0.0169)	(0.0121)	(0.0084)	(0.0035)	(0.0068)	(0.0105)
Total	0.0232	0.1253	0.2383	0.3495	0.3315	0.1562
	(0.0389)	(0.0552)	(0.0529)	(0.0749)	(0.0581)	(0.0298)

Table 30. Continued:

Species	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month						
White bass	0.0123	—	—	—	—	—	0.0055
	(0.0120)	—	—	—	—	—	(0.0025)
Freshwater drum	0.0149	—	—	—	—	—	0.0804
	(0.0213)	—	—	—	—	—	(0.0166)
Redhorse	0.0127	0.0093	—	—	0.0008	—	0.0273
	(0.0082)	(0.0129)	—	—	(0.0016)	—	(0.0056)
Rock bass	0.0055	0.0060	—	—	—	—	0.0113
	(0.0043)	(0.0154)	—	—	—	—	(0.0033)
Smallmouth bass	0.0034	0.0013	—	—	—	—	0.0028
	(0.0037)	(0.0027)	—	—	—	—	(0.0021)
Yellow perch	0.0187	0.0265	—	—	—	—	0.0706
	(0.0128)	(0.0308)	—	—	—	—	(0.0159)
Walleye	0.0405	—	—	—	0.0204	—	0.0431
	(0.0249)	—	—	—	(0.0413)	—	(0.0113)
Other	0.0350	0.0571	0.0310	0.3089	0.0455	0.0099	0.0202
	(0.0188)	(0.0437)	(0.0503)	(0.2678)	(0.0330)	(0.0123)	(0.0036)
Total	0.1430	0.1002	0.0310	0.3089	0.0667	0.0099	0.2612
	(0.0428)	(0.0572)	(0.0503)	(0.2678)	(0.0529)	(0.0123)	(0.0269)

Table 31. Estimated catch per hour for fish harvested by shore anglers in the St. Clair River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White bass	—	0.0020	0.0374	0.0044	0.0102	0.0037	0.0030	—	—	—	—	—	0.0111
	—	(0.0040)	(0.0250)	(0.0040)	(0.0089)	(0.0045)	(0.0040)	—	—	—	—	—	(0.0050)
Freshwater drum	—	—	0.0711	0.0288	0.0250	0.0061	0.0070	—	—	—	—	—	0.0281
	—	—	(0.0342)	(0.0107)	(0.0122)	(0.0035)	(0.0058)	—	—	—	—	—	(0.0071)
Redhorse	—	0.0035	0.0054	0.0066	0.0069	0.0064	0.0062	0.0242	—	—	—	—	0.0061
	—	(0.0047)	(0.0044)	(0.0064)	(0.0050)	(0.0040)	(0.0048)	(0.0418)	—	—	—	—	(0.0025)
Rock bass	—	—	0.0038	—	0.0065	0.0016	0.0023	—	—	—	—	—	0.0022
	—	—	(0.0042)	—	(0.0048)	(0.0014)	(0.0047)	—	—	—	—	—	(0.0012)
Smallmouth bass	—	—	0.0016	0.0056	0.0067	0.0056	0.0001	—	—	—	—	—	0.0040
	—	—	(0.0022)	(0.0035)	(0.0039)	(0.0060)	(0.0003)	—	—	—	—	—	(0.0016)
Yellow perch	—	0.0031	0.0270	0.0092	0.0084	0.0030	0.0105	—	0.0170	—	—	—	0.0109
	—	(0.0046)	(0.0187)	(0.0049)	(0.0057)	(0.0042)	(0.0112)	—	(0.0390)	—	—	—	(0.0040)
Walleye	—	0.0014	0.0915	0.1273	0.1209	0.0784	0.0189	—	—	—	—	—	0.0901
	—	(0.0029)	(0.0538)	(0.0346)	(0.0406)	(0.0225)	(0.0148)	—	—	—	—	—	(0.0163)
Other	—	0.0220	0.0052	0.0020	0.0059	0.0244	0.0295	0.0050	0.0183	0.0130	0.0733	—	0.0103
	—	(0.0156)	(0.0046)	(0.0018)	(0.0034)	(0.0086)	(0.0141)	(0.0067)	(0.0310)	(0.0918)	(0.0886)	—	(0.0024)
Total	—	0.0320	0.2430	0.1839	0.1905	0.1292	0.0775	0.0292	0.0353	0.0130	0.0733	—	0.1628
	—	(0.0176)	(0.0714)	(0.0375)	(0.0445)	(0.0262)	(0.0253)	(0.0423)	(0.0498)	(0.0918)	(0.0886)	—	(0.0193)

catches for both years were not appreciably different between study areas. However, freshwater drum caught in the St. Clair River averaged 116 mm longer than those caught by anglers in the Detroit River and 98 mm longer than those caught in Lake St. Clair. Yellow perch averaged 34 mm longer than those reported from the Detroit River while white bass were 48 mm shorter than those caught by Detroit River fishermen.

Harsens Island.—Boat anglers fished a total of 489,026 hours in Michigan waters of the north, middle, and south channels of the St. Clair River (Harsens Island channels) during the 2 year study period (Table 32). This total 2-year boat effort was 2.6 times greater than the estimated pressure of 189,419 boat hours reported for the 1942–43 seasons (Krumholz and Carbine 1943 and 1945). The number of hours in the second year (313,964 ± 25,288) was 1.8 times larger than the number of hours fished by boat anglers in the first year (175,062 ± 16,974). This level of fishing pressure by boat anglers was significantly lower than in any other area except the northern section of the Detroit River. Monthly angling pressure peaked in August during 1983 at 65,572 ± 9,207 hours, while in 1984 the highest total occurred in July at 101,617 ± 15,354 hours. Over 98% of the total boat effort was estimated to occur from May to October in both years. The seasonal distribution of boat effort was similar to the pattern observed in the St. Clair River from Port Huron to Algonac.

Shore angling pressure along the Harsens Island channels totaled 9,201 hours, with 81.2% of this effort occurring in the first year (Table 33). This estimate of total shore angler effort does not include fishing which occurred along the canals lying within the island where shore angler access is more readily available. Shore fishing interviews, as mentioned earlier, were not conducted at Harsens Island during the study period because of the low number of shore fishermen along the channels. Consequently, no estimates of catch or catch rate could be calculated.

Boat anglers harvested 22,752 ± 15,577 fish during the first year and roughly four times as many (81,156 ± 13,184) in the second study year (Tables 34 and 35). It should be emphasized that this estimated harvest does not include any fish caught from the numerous side canals within Harsens, Dickinson, and Russell islands.

The entire first year harvest was obtained exclusively in October 1983. Because there were so few interviews obtained in the earlier months of 1983, no catch estimates were made for May to September. In the second year, 100% of the catch was made during the months of May to October, peaking in July at 20,781 ± 3,821. Walleye comprised 58.9% of the 2 year total harvest, with the majority of the catch coming in the second year. Yellow perch made up 23.5% of the total catch, with the largest catch occurring in October of 1983. Rock bass and smallmouth bass harvest was approximately 4.0% of the total, with catches of these two species recorded only in the second year. Largemouth bass comprised 3.2% of the total harvest with the majority coming in the April 1984 to March 1985 period. Krumholz and Carbine (1943 and

Table 32. Estimated number of fishing hours by boat anglers in the north, middle, and south channels of Harsens Island for 1983-84 and 1984-85. (Two standard errors in parentheses.)

Month	1983-84	1984-85
Apr	—	75
	—	(87)
May	5,316	32,633
	(351)	(5,737)
Jun	17,721	68,189
	(4,525)	(16,456)
Jul	48,229	101,617
	(12,843)	(15,354)
Aug	65,572	53,674
	(9,207)	(7,129)
Sep	21,775	34,202
	(3,358)	(5,467)
Oct	13,961	19,598
	(2,302)	(4,190)
Nov	2,197	1,749
	(1,076)	(615)
Dec	—	432
	—	(263)
Jan	—	—
	—	—
Feb	201	—
	(229)	—
Mar	90	1,795
	(108)	(1,144)
Total	175,062	313,964
	(16,974)	(25,288)

Table 33. Estimated number of fishing hours by shore anglers in the north, middle, and south channels of Harsens Island for 1983-84 and 1984-85. (Two standard errors in parentheses.)

Month	1983-84	1984-85
Apr	—	33
	—	(65)
May	115	388
	(117)	(256)
Jun	1,106	242
	(519)	(300)
Jul	2,523	684
	(1,032)	(551)
Aug	3,164	51
	(778)	(102)
Sep	409	163
	(268)	(192)
Oct	124	71
	(151)	(106)
Nov	—	102
	—	(144)
Dec	—	—
	—	—
Jan	—	—
	—	—
Feb	14	—
	(27)	—
Mar	12	—
	(24)	—
Total	7,467	1,734
	(1,432)	(737)

Table 34. Estimated number of fish harvested by boat anglers in the north, middle, and south channels of Harsens Island from April 1983 to March 1984. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Northern pike	—	—	—	—	—	—	188	—	—	—	—	—	188
	—	—	—	—	—	—	(157)	—	—	—	—	—	(157)
Rainbow trout	—	—	—	—	—	—	188	—	—	—	—	—	188
	—	—	—	—	—	—	(157)	—	—	—	—	—	(157)
Largemouth bass	—	—	—	—	—	—	470	—	—	—	—	—	470
	—	—	—	—	—	—	(185)	—	—	—	—	—	(185)
Yellow perch	—	—	—	—	—	—	18,721	—	—	—	—	—	18,721
	—	—	—	—	—	—	(15,439)	—	—	—	—	—	(15,439)
Walleye	—	—	—	—	—	—	3,185	—	—	—	—	—	3,185
	—	—	—	—	—	—	(2,046)	—	—	—	—	—	(2,046)
Total	—	—	—	—	—	—	22,752	—	—	—	—	—	22,752
	—	—	—	—	—	—	(15,577)	—	—	—	—	—	(15,577)

Table 35. Estimated number of fish harvested by boat anglers in the north, middle, and south channels of Harsens Island from April 1984 to March 1985. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Northern pike	—	—	104	86	352	—	—	—	—	—	—	—	542
	—	—	(227)	(175)	(140)	—	—	—	—	—	—	—	(319)
White perch	—	—	—	—	—	133	—	—	—	—	—	—	133
	—	—	—	—	—	(278)	—	—	—	—	—	—	(278)
White bass	—	—	—	310	51	11	—	—	—	—	—	—	372
	—	—	—	(535)	(76)	(23)	—	—	—	—	—	—	(541)
Freshwater drum	—	—	—	—	597	311	—	—	—	—	—	—	908
	—	—	—	—	(821)	(650)	—	—	—	—	—	—	(1,047)
Coho salmon	—	665	—	—	—	—	—	—	—	—	—	—	665
	—	(525)	—	—	—	—	—	—	—	—	—	—	(525)
Redhorse	—	—	—	—	550	—	—	—	—	—	—	—	550
	—	—	—	—	(815)	—	—	—	—	—	—	—	(815)
Rock bass	—	—	—	352	909	176	3,085	—	—	—	—	—	4,522
	—	—	—	(188)	(847)	(176)	(4,522)	—	—	—	—	—	(4,608)
Pumpkinseed	—	—	—	—	559	11	—	—	—	—	—	—	570
	—	—	—	—	(238)	(23)	—	—	—	—	—	—	(239)
Bluegill	—	—	1,215	259	—	11	—	—	—	—	—	—	1,485
	—	—	(2,681)	(547)	—	(23)	—	—	—	—	—	—	(2,736)
Smallmouth bass	—	—	208	866	645	2,432	—	—	—	—	—	—	4,151
	—	—	(454)	(305)	(673)	(857)	—	—	—	—	—	—	(1,219)
Largemouth bass	—	—	—	360	1,379	1,131	—	—	—	—	—	—	2,870
	—	—	—	(285)	(591)	(411)	—	—	—	—	—	—	(774)

Table 35. Continued:

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
Crappie	—	—	608	—	—	—	—	—	—	—	—	—	608
	—	—	(1,341)	—	—	—	—	—	—	—	—	—	(1,341)
Yellow perch	—	—	—	64	575	4,216	880	—	—	—	—	—	5,735
	—	—	—	(133)	(817)	(3,169)	(1,292)	—	—	—	—	—	(3,521)
Walleye	—	4,138	16,090	18,484	10,385	6,689	2,259	—	—	—	—	—	58,045
	—	(1,627)	(8,103)	(3,709)	(3,331)	(5,555)	(1,493)	—	—	—	—	—	(11,236)
Total	—	4,803	18,225	20,781	16,002	15,121	6,224	—	—	—	—	—	81,156
	—	(1,710)	(8,655)	(3,821)	(3,834)	(6,507)	(4,934)	—	—	—	—	—	(13,184)

1945) estimated a similar distribution of boat harvest during 1942 and 1943, with walleye, yellow perch, smallmouth bass, and rock bass comprising the majority of the catch.

Catch rates for boat anglers were fairly consistent over the fishing season for the April 1984 to March 1985 period. An overall catch rate of 0.1300 ± 0.0896 in the first and 0.2584 ± 0.0446 in the second year was similar to the rates observed in the St. Clair River (Tables 36 and 37). The catch rate in October 1983 was high at 1.6297 ± 1.1381 while in the following year rates ranged from 0.4421 ± 0.1942 in September to 0.1472 ± 0.0570 in May.

Ice fishermen spent approximately the same number of hours fishing in each of the two years, totaling 18,585 hours for the entire study (Table 38). During January through March 1984, fishing pressure by all ice anglers was estimated at 9,200 ± 2,117 hours with 56.8% of those recorded for shanty ice fishermen. Ice anglers fished 9,385 ± 2,358 hours in January and February of 1985 with 84.0% being shanty effort. No ice fishing was observed in March 1985. A majority of the ice angler effort was concentrated around the head of Russell Island.

Ice anglers caught a total of 2,605 ± 1,957 fish during the 1984 ice fishing season (Table 39). No catch was reported for the 1985 season due to a lack of interviews. Over 96% of the open ice catch consisted of yellow perch caught entirely in February with the remainder of the catch being bluegill, also caught in February. Shanty ice anglers harvested 1,214 ± 907 yellow perch with the entire catch coming in January 1984. Open ice anglers had a higher overall catch rate (0.3503 ± 0.4576) than did shanty ice anglers (0.2322 ± 0.1840), with a maximum open ice catch per hour of 1.03395 ± 1.6158 for yellow perch (Table 40).

Mean lengths of fish caught by all anglers in the Harsens Islands channels are given in Appendices 108 and 109. Walleye and yellow perch averaged about the same size as observed for the St. Clair River samples. However, white bass averaged 41 mm longer than those caught in the St. Clair River.

Lake St. Clair.—Boat angling pressure on Lake St. Clair was higher than the effort exerted by any other fishery type in any of the rivers. Totaling 2,971,182 hours, this effort was almost evenly split between the two study years (Tables 41 and 42). A total of 1,524,065 ± 105,098 hours were expended in the first year with 1,447,117 ± 61,579 hours estimated for the second year. This estimated boat effort was 2.5 times greater than reported by Krumholz and Carbine (1943 and 1945) during the 1942–43 seasons. In the Canadian waters of Lake St. Clair, the average annual boat effort during the period 1978–81 was over 4.0 times less (366,214 hours) than in Michigan waters during this study (Ontario Ministry of Natural Resources 1981).

Over 97% of the total boat angling hours occurred in the months of May to October both years. Boat pressure was highest in June (508,395 ± 79,379 and 446,694 ± 41,030, respectively) and lowest in the winter months of January through March when ice covered the lake. More boat effort was exerted in Grid 3 (over 20%), than in any other Grid (Fig. 14).

Table 36. Estimated catch per hour for fish harvested by boat anglers in the north, middle, and south channels of Harsens Island from April 1983 to March 1984. (Two standard errors in parentheses.)

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Northern pike	—	—	—	—	—	—	0.0135	—	—	—	—	—	0.0011
	—	—	—	—	—	—	(0.0115)	—	—	—	—	—	(0.0009)
Rainbow trout	—	—	—	—	—	—	0.0135	—	—	—	—	—	0.0011
	—	—	—	—	—	—	(0.0115)	—	—	—	—	—	(0.0009)
Largemouth bass	—	—	—	—	—	—	0.0337	—	—	—	—	—	0.0027
	—	—	—	—	—	—	(0.0144)	—	—	—	—	—	(0.0011)
Yellow perch	—	—	—	—	—	—	1.3409	—	—	—	—	—	0.1069
	—	—	—	—	—	—	(1.1278)	—	—	—	—	—	(0.0888)
Walleye	—	—	—	—	—	—	0.2281	—	—	—	—	—	0.0182
	—	—	—	—	—	—	(0.1513)	—	—	—	—	—	(0.0118)
Total	—	—	—	—	—	—	1.6297	—	—	—	—	—	0.1300
	—	—	—	—	—	—	(1.1381)	—	—	—	—	—	(0.0896)

Table 37. Estimated catch per hour for fish harvested by boat anglers in the north, middle, and south channels of Harsens Island from April 1984 to March 1985. (Two standard errors in parentheses.)

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Northern pike	—	—	0.0015	0.0008	0.0066	—	—	—	—	—	—	—	0.0017
	—	—	(0.0033)	(0.0017)	(0.0027)	—	—	—	—	—	—	—	(0.0010)
White perch	—	—	—	—	—	0.0039	—	—	—	—	—	—	0.0004
	—	—	—	—	—	(0.0082)	—	—	—	—	—	—	(0.0009)
White bass	—	—	—	0.0031	0.0010	0.0003	—	—	—	—	—	—	0.0012
	—	—	—	(0.0053)	(0.0014)	(0.0007)	—	—	—	—	—	—	(0.0017)
Freshwater drum	—	—	—	—	0.0111	0.0091	—	—	—	—	—	—	0.0029
	—	—	—	—	(0.0154)	(0.0191)	—	—	—	—	—	—	(0.0033)
Coho salmon	—	0.0204	—	—	—	—	—	—	—	—	—	—	0.0021
	—	(0.0165)	—	—	—	—	—	—	—	—	—	—	(0.0017)
Redhorse	—	—	—	—	0.0102	—	—	—	—	—	—	—	0.0018
	—	—	—	—	(0.0152)	—	—	—	—	—	—	—	(0.0026)
Rock bass	—	—	—	0.0035	0.0169	0.0051	0.1574	—	—	—	—	—	0.0144
	—	—	—	(0.0019)	(0.0159)	(0.0052)	(0.2332)	—	—	—	—	—	(0.0147)
Pumpkinseed	—	—	—	—	0.0104	0.0003	—	—	—	—	—	—	0.0018
	—	—	—	—	(0.0046)	(0.0007)	—	—	—	—	—	—	(0.0008)
Bluegill	—	—	0.0178	0.0025	—	0.0003	—	—	—	—	—	—	0.0047
	—	—	(0.0396)	(0.0054)	—	(0.0007)	—	—	—	—	—	—	(0.0087)
Smallmouth bass	—	—	0.0031	0.0085	0.0120	0.0711	—	—	—	—	—	—	0.0132
	—	—	(0.0067)	(0.0033)	(0.0126)	(0.0275)	—	—	—	—	—	—	(0.0040)
Largemouth bass	—	—	—	0.0035	0.0257	0.0331	—	—	—	—	—	—	0.0091
	—	—	—	(0.0029)	(0.0115)	(0.0131)	—	—	—	—	—	—	(0.0026)

Table 37. Continued:

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Crappie	—	—	0.0089	—	—	—	—	—	—	—	—	—	0.0019
	—	—	(0.0198)	—	—	—	—	—	—	—	—	—	(0.0043)
Yellow perch	—	—	—	0.0006	0.0107	0.1233	0.0449	—	—	—	—	—	0.0183
	—	—	—	(0.0013)	(0.0153)	(0.0947)	(0.0666)	—	—	—	—	—	(0.0113)
Walleye	—	0.1268	0.2360	0.1819	0.1935	0.1956	0.1153	—	—	—	—	—	0.1849
	—	(0.0546)	(0.1318)	(0.0457)	(0.0672)	(0.1654)	(0.0801)	—	—	—	—	—	(0.0388)
Total	—	0.1472	0.2673	0.2044	0.2981	0.4421	0.3176	—	—	—	—	—	0.2584
	—	(0.0570)	(0.1392)	(0.0466)	(0.0761)	(0.1942)	(0.2554)	—	—	—	—	—	(0.0446)

Table 38. Estimated number of fishing hours by open, shanty, and all ice anglers in the north, middle, and south channels of Harsens Island for January-March 1984 and January-March 1985. (Two standard errors in parentheses.)

	1984			1985		
Month	Open	Shanty	Combined	Open	Shanty	Combined
Jan	1,940	4,197	6,137	729	2,029	2,758
	(967)	(1,339)	(1,652)	(626)	(783)	(1,002)
Feb	1,290	816	2,106	768	5,859	6,627
	(1,117)	(306)	(1,158)	(459)	(2,085)	(2,135)
Mar	741	216	957	—	—	—
	(625)	(136)	(640)	—	—	—
Total	3,971	5,229	9,200	1,497	7,888	9,385
	(1,604)	(1,380)	(2,117)	(776)	(2,227)	(2,358)

Table 39. Estimated number of fish harvested by open, shanty, and all ice anglers in the north, middle, and south channels of Harsens Island for January-March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Open				Shanty				Combined			
Species	Jan	Feb	Mar	Total	Jan	Feb	Mar	Total	Jan	Feb	Mar	Total
Bluegill	—	50	—	50	—	—	—	—	—	50	—	50
	—	(108)	—	(108)	—	—	—	—	—	(108)	—	(108)
Yellow perch	—	1,341	—	1,341	1,214	—	—	1,214	1,214	1,341	—	2,555
	—	(1,731)	—	(1,731)	(907)	—	—	(907)	(907)	(1,731)	—	(1,954)
Total	—	1,391	—	1,391	1,214	—	—	1,214	1,214	1,391	—	2,605
	—	(1,734)	—	(1,734)	(907)	—	—	(907)	(907)	(1,734)	—	(1,957)

Table 40. Estimated catch per hour for fish harvested by open, shanty, and all ice anglers in the north, middle, and south channels of Harsens Island for January-March 1984. (Two standard errors in parentheses.)

	Open				Shanty				Combined			
Species	Jan	Feb	Mar	Total	Jan	Feb	Mar	Total	Jan	Feb	Mar	Total
Bluegill	—	0.0388	—	0.0126	—	—	—	—	—	0.0237	—	0.0054
	—	(0.0902)	—	(0.0277)	—	—	—	—	—	(0.0529)	—	(0.0118)
Yellow perch	—	1.0395	—	0.3377	0.2893	—	—	0.2322	0.1978	0.6368	—	0.2777
	—	(1.6158)	—	(0.4568)	(0.2350)	—	—	(0.1840)	(0.1571)	(0.8934)	—	(0.2218)
Total	—	1.0783	—	0.3503	0.2893	—	—	0.2322	0.1978	0.6605	—	0.2831
	—	(1.6183)	—	(0.4576)	(0.2350)	—	—	(0.1840)	(0.1571)	(0.8950)	—	(0.2221)

Table 41. Estimated number of fishing hours by boat anglers in Lake St. Clair from April 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Apr	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
May	3,013 (2,048)	3,800 (3,244)	8,548 (4,729)	1,957 (1,505)	12,454 (9,531)	2,049 (1,722)	982 (564)	5,431 (3,986)	127 (137)	4,683 (4,518)	904 (748)	43,948 (13,052)
Jun	85,362 (26,597)	47,314 (37,278)	132,412 (46,349)	27,491 (15,155)	100,577 (36,459)	33,677 (15,491)	11,016 (4,791)	29,962 (10,372)	6,038 (2,893)	23,213 (8,799)	11,333 (6,361)	508,395 (79,379)
Jul	51,103 (20,071)	63,058 (19,204)	108,853 (36,860)	22,498 (6,679)	22,099 (8,792)	29,405 (10,485)	18,267 (8,098)	30,285 (8,571)	34,361 (14,445)	28,607 (9,903)	10,036 (5,062)	418,572 (53,231)
Aug	27,294 (5,526)	43,454 (12,840)	72,649 (19,785)	16,624 (4,038)	16,852 (5,007)	25,080 (6,668)	18,546 (6,332)	33,658 (10,700)	31,360 (7,237)	12,298 (4,681)	7,765 (4,540)	305,580 (30,367)
Sep	11,391 (6,600)	21,647 (8,004)	26,509 (12,282)	11,860 (4,602)	9,814 (3,443)	18,908 (8,135)	5,320 (3,374)	25,011 (15,172)	11,648 (5,793)	5,978 (2,850)	1,625 (712)	149,711 (25,327)
Oct	6,565 (3,299)	16,211 (4,907)	19,601 (7,193)	7,579 (2,228)	5,986 (3,456)	8,131 (3,863)	3,082 (1,375)	11,068 (6,597)	3,313 (2,285)	3,881 (1,339)	1,157 (775)	86,574 (13,098)
Nov	725 (698)	1,714 (661)	2,289 (1,038)	1,062 (633)	888 (557)	138 (150)	425 (310)	805 (597)	339 (367)	1,245 (954)	226 (329)	9,856 (2,083)
Dec	— —	269 (179)	48 (96)	— —	— —	— —	— —	63 (66)	— —	— —	— —	380 (214)
Jan	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
Feb	— —	90 (139)	— —	588 (1,022)	— —	— —	— —	— —	— —	— —	— —	678 (1,031)

Table 41. Continued:

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Mar	101 (207)	— —	— —	— —	— —	— —	— —	— —	— —	135 (275)	135 (275)	371 (441)
Total	185,554 (34,640)	197,557 (44,972)	370,909 (64,221)	89,659 (17,901)	168,670 (39,327)	117,388 (21,874)	57,638 (11,930)	136,283 (24,197)	87,186 (17,559)	80,040 (15,123)	33,181 (9,410)	1,524,065 (105,098)

Table 42. Estimated number of fishing hours by boat anglers in Lake St. Clair from April 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Apr	960 (601)	1,015 (464)	4,328 (2,290)	432 (306)	4,414 (2,306)	1,629 (1,285)	— —	1,114 (631)	106 (107)	2,054 (1,193)	1,481 (994)	17,533 (3,963)
May	11,889 (6,143)	11,539 (4,199)	35,029 (10,065)	4,745 (2,187)	48,454 (14,933)	9,319 (3,743)	2,309 (899)	14,402 (5,324)	2,620 (1,247)	5,091 (1,856)	2,145 (773)	147,542 (20,814)
Jun	60,991 (15,562)	43,639 (10,735)	86,493 (19,228)	18,432 (4,694)	83,401 (18,246)	27,843 (12,140)	17,297 (5,105)	49,911 (16,090)	22,140 (8,659)	30,724 (9,035)	5,823 (3,531)	446,694 (41,030)
Jul	56,263 (11,767)	67,554 (13,321)	74,283 (16,425)	23,325 (3,758)	32,010 (7,560)	28,883 (7,221)	16,897 (4,596)	31,160 (7,241)	31,104 (9,247)	24,752 (9,045)	7,975 (2,738)	394,206 (30,943)
Aug	25,462 (5,183)	36,672 (13,002)	31,520 (6,802)	15,250 (3,099)	12,694 (4,538)	11,546 (3,767)	9,385 (3,280)	21,381 (6,019)	14,565 (4,001)	9,258 (2,309)	2,336 (699)	190,069 (18,852)
Sep	9,293 (2,618)	16,577 (4,006)	21,813 (5,332)	16,574 (4,353)	7,547 (2,633)	9,472 (3,158)	8,778 (2,750)	16,335 (7,382)	7,889 (3,871)	3,951 (1,271)	1,080 (544)	119,309 (12,889)
Oct	11,635 (5,157)	21,085 (6,073)	17,396 (5,246)	12,639 (3,423)	7,900 (3,187)	6,923 (2,317)	7,611 (2,479)	10,383 (5,008)	4,033 (2,571)	9,508 (3,015)	3,509 (2,041)	112,622 (13,013)
Nov	832 (353)	2,978 (1,458)	2,771 (940)	1,588 (927)	437 (267)	543 (496)	279 (317)	606 (359)	162 (124)	4,406 (2,113)	936 (563)	15,538 (3,056)
Dec	— —	194 (174)	43 (62)	141 (181)	— —	— —	41 (58)	— —	— —	2,323 (1,250)	61 (69)	2,803 (1,280)
Jan	— —	— —	— —	45 (41)	— —	— —	— —	— —	— —	492 (401)	— —	537 (403)
Feb	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —

Table 42. Continued:

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Mar	—	59	—	—	—	—	—	—	—	29	176	264
	—	(117)	—	—	—	—	—	—	—	(59)	(352)	(376)
Total	177,325	201,312	273,676	93,171	196,857	96,158	62,597	145,292	82,619	92,588	25,522	1,447,117
	(21,890)	(23,123)	(29,140)	(9,066)	(25,615)	(15,651)	(8,518)	(21,354)	(14,130)	(13,804)	(5,191)	(61,579)

Grids 2 and then 1 were next highest with the Anchor Bay area accounting for almost 50% of the total boat effort. Grid 5 was the only other with at least 10% of the total pressure, while the remaining grids each averaged about 5% of the total boat angling effort.

The harvest by boat anglers totaled 1,476,163 fish for the 2 years, with 56% of the catch coming in the first year (Tables 43 and 44). This harvest was 1.5 times greater than that reported by Krumholz and Carbine (1943 and 1945) for Lake St. Clair boat anglers during the 1942–43 fishing seasons. Over 98% of the catch in each year occurred from May to October, with July and August accounting for 54.2%, and June and July 49.5% of the annual harvest in the 2 years, respectively. Total harvest from boats followed a similar pattern to boat effort with Grid 3 having the highest catch (Fig. 14). Grids 2, 8, 9, and 10 each accounted for about 10–12% of the harvest, while Grid 11 was the lowest (Appendices 134 and 135).

Yellow perch was the major species caught, making up 58.6% of the total 2 year harvest. From April 1983 to March 1984, 520,810 ± 81,554 perch were caught by boat anglers. This catch was lower in the second year with 344,212 ± 83,320 yellow perch harvested. The majority of perch were harvested during the months of July to September both years, accounting for about 50% of the total perch catch by boat anglers. Walleye were the second most abundant species in the boat catch, making up 15.9% and 20.5% of the catch in the 2 years. June through August were the highest months of angler harvest of walleye compared to July through September in the St. Clair River. Rock bass were third in the first year (7.4%) but ranked fourth in the catch during the second year (5.6%). White bass were ranked fourth (3.3%) the first year but made up a much higher portion of the catch (11.4%) during April 1984 to March 1985. Total numbers of rock bass and white bass caught for both years combined were essentially equal, making up approximately 6.5% of the 2 year harvest. A low number of white perch were harvested in Lake St. Clair (3,580 fish), accounting for only 0.2% of the harvest. Some white perch were also harvested in the Harsens Island channels.

The distribution of harvest from boats during 1942 and 1943 was different, with yellow perch making up 90% and rock bass about 5% (Krumholz and Carbine 1943 and 1945). However, in the Canadian waters of Lake St. Clair during the period 1978–81, yellow perch comprised the largest portion of the annual average harvest (91,841 fish) followed by walleye (82,095 fish; Ontario Ministry of Natural Resources 1981).

Catch rates increased from May to October in both years after which they decreased (Tables 45 and 46). For the summer-fall months, October was highest at 0.9720 ± 0.3574 and 1.0658 ± 0.6114 fish per hour for the 2 years, respectively. However, the maximum catch rates occurred in February (1.3216 ± 2.2590) of 1984 and January (1.3184 ± 1.8952) of 1985. Although the number of hours expended in these months was low due to the adverse conditions on the lake, boat anglers who ventured out during these months had good success. Grid 9 had the highest catch rate in the first year (1.2216 ± 0.4557) while it was second (0.6971 ±

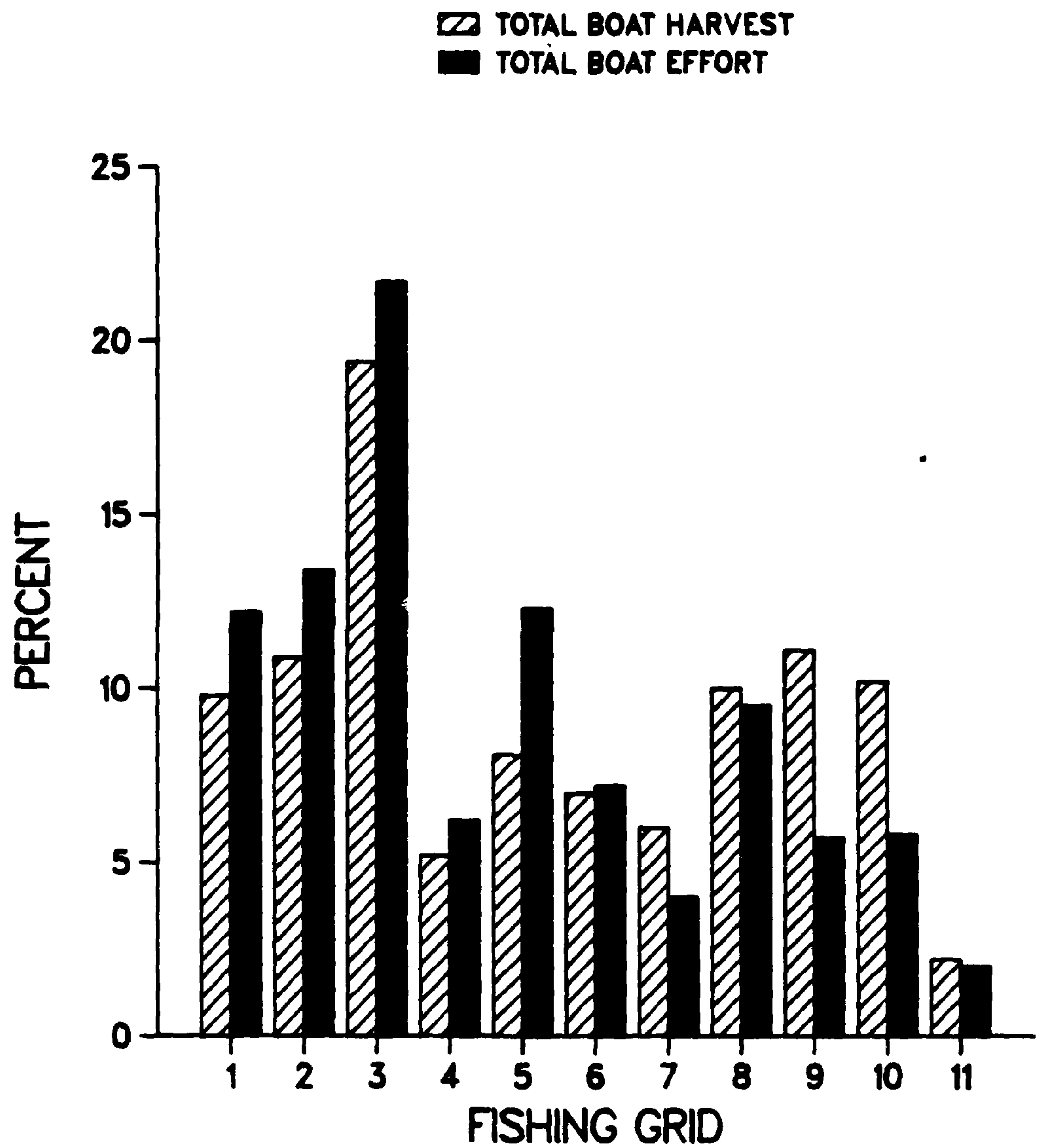

Figure 14. Percentage distribution of boat angling pressure (angler hours) and total harvest of all species by Michigan's boat anglers within each fishing grid of Lake St. Clair for the entire study.

Table 43. Estimated number of fish harvested by boat anglers in Lake St. Clair from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	—	283	872	281	143	60	—	—	—	—	—	1,639
	—	—	(487)	(934)	(363)	(270)	(89)	—	—	—	—	—	(1,150)
White bass	—	—	10,400	15,050	1,808	19	—	—	—	—	—	—	27,277
	—	—	(12,302)	(24,338)	(1,721)	(40)	—	—	—	—	—	—	(27,324)
Freshwater drum	—	269	5,691	5,229	6,735	2,692	268	—	—	—	—	—	20,884
	—	(571)	(3,916)	(2,568)	(4,432)	(1,674)	(402)	—	—	—	—	—	(6,698)
Rock bass	—	1,032	24,882	11,842	19,053	3,695	1,209	—	—	—	—	—	61,713
	—	(1,935)	(13,446)	(8,486)	(13,114)	(2,298)	(896)	—	—	—	—	—	(20,847)
Pumpkinseed	—	2,436	8,384	2,390	2,531	3,758	585	—	—	—	25	—	20,109
	—	(2,879)	(6,163)	(2,294)	(1,414)	(3,067)	(757)	—	—	—	(50)	—	(7,970)
Smallmouth bass	—	—	15,180	2,567	3,094	2,951	252	29	—	—	—	—	24,073
	—	—	(13,415)	(1,651)	(1,682)	(1,736)	(261)	(57)	—	—	—	—	(13,733)
Yellow perch	—	4,886	45,280	160,854	129,881	95,445	77,600	6,158	—	—	638	68	520,810
	—	(5,094)	(21,930)	(51,221)	(41,290)	(31,365)	(28,429)	(4,757)	—	—	(1,029)	(112)	(81,554)
Walleye	—	1,122	46,178	37,117	38,310	4,936	3,332	504	30	—	—	—	131,529
	—	(1,847)	(21,145)	(12,848)	(9,527)	(2,223)	(2,781)	(615)	(30)	—	—	—	(26,822)
Other	—	999	3,426	7,407	5,071	3,684	842	17	—	—	233	—	21,679
	—	(1,542)	(2,384)	(7,998)	(3,646)	(3,255)	(1,173)	(36)	—	—	(465)	—	(9,875)
Total	—	10,744	159,704	243,328	206,764	117,323	84,148	6,708	30	—	896	68	829,713
	—	(6,641)	(38,722)	(59,434)	(44,816)	(31,936)	(28,617)	(4,797)	(30)	—	(1,130)	(112)	(94,591)

Table 44. Estimated number of fish harvested by boat anglers in Lake St. Clair from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	52	835	760	151	71	72	—	—	—	—	—	1,941
	—	(105)	(1,284)	(1,119)	(311)	(148)	(148)	—	—	—	—	—	(1,747)
White bass	—	301	71,932	508	482	580	101	73	—	—	—	—	73,977
	—	(483)	(113,525)	(353)	(764)	(963)	(205)	(155)	—	—	—	—	(113,533)
Freshwater drum	—	91	4,980	8,259	1,295	607	542	24	—	—	—	—	15,798
	—	(134)	(4,894)	(4,843)	(1,393)	(523)	(935)	(52)	—	—	—	—	(7,107)
Rock bass	73	340	15,510	9,141	6,984	2,491	1,474	97	—	—	—	—	36,110
	(95)	(585)	(7,521)	(3,634)	(2,906)	(1,748)	(1,202)	(207)	—	—	—	—	(9,116)
Pumpkinseed	—	70	4,902	1,038	3,049	1,191	1,383	—	—	—	—	—	11,633
	—	(144)	(7,541)	(756)	(2,487)	(1,136)	(2,250)	—	—	—	—	—	(8,366)
Smallmouth bass	—	107	5,281	6,562	2,267	881	851	87	—	—	—	—	16,036
	—	(221)	(3,146)	(2,653)	(1,284)	(634)	(927)	(127)	—	—	—	—	(4,462)
Yellow perch	511	7,254	25,045	72,425	41,988	91,307	102,628	2,930	—	—	—	124	344,212
	(502)	(11,913)	(10,944)	(28,637)	(19,474)	(30,644)	(67,354)	(2,323)	—	—	—	(260)	(83,320)
Walleye	517	15,789	57,212	30,219	7,156	5,146	12,129	3,040	305	708	—	—	132,221
	(553)	(5,459)	(15,213)	(7,748)	(2,632)	(3,147)	(7,243)	(1,688)	(237)	(868)	—	—	(19,863)
Other	1,214	1,219	3,628	1,488	3,262	2,861	850	—	—	—	—	—	14,522
	(734)	(1,138)	(1,858)	(755)	(2,887)	(2,653)	(644)	—	—	—	—	—	(4,653)
Total	2,315	25,223	189,325	130,400	66,634	105,135	120,030	6,251	305	708	—	124	646,450
	(1,051)	(13,179)	(115,722)	(30,436)	(20,332)	(31,016)	(67,807)	(2,886)	(237)	(868)	—	(260)	(143,090)

0.2637) to Grid 10 in the second year (1.0452 ± 1.2418; Appendices 136 and 137). In general, Grids 7-11 had much higher catch rates than the more northern grids. The overall catch per hour, for both years combined, of 0.4968 was twice as high as that observed for the St. Clair River and the Harsens Island channels.

Ice fishing pressure on Lake St. Clair totaled 934,205 hours for the entire study. More ice fishing effort was exerted here than in the Harsens Island channels and Detroit River combined. Over 90% of the total ice fishing occurred in Grids 1-3, with Grid 3 having the highest percentage of the total hours (Fig. 15). The average annual ice effort of 467,103 hours estimated for this study greatly exceeded that reported by the OMNR during the period 1977-81. The average annual ice effort was 148,693 hours in the Canadian waters of Lake St. Clair during this period, with most of the pressure exerted in and around the Thames River area (Ontario Ministry of Natural Resources 1981).

Shanty ice effort was 60.4% of the total, with 392,119 ± 36,435 and 172,304 ± 21,802 hours in the 2 years, respectively (Tables 47 and 48). Open ice fishermen totaled 250,829 ± 28,880 and 118,953 ± 15,976 hours (Tables 49 and 50). Ice fishing pressure in the first year was over twice that in the second. This was because the lake had ice coverage in December 1983 and March 1984, giving a 4 month fishing season, while no ice was on the lake in December 1984 or March 1985 creating only a two month season in the second year. Total shanty effort was highest in Grid 2, with Grids 1, 3, and 4 containing at least 10% of the total ice fishing pressure (Fig. 16). Total open ice effort was highest in Grid 2 with Grids 3 and 1 quite similar. Over 90% of the total shanty effort for the two years occurred in Grids 1-4 while open ice pressure was centered mainly in Grids 1-3. Shanty ice pressure peaked in January the first and February the second year, making up about 60% of the total hours in each ice season. Open ice pressure was essentially the same in February and March 1984, averaging 81,333 hours while February 1985 had the highest total of 64,855 hours in the second season.

Ice fishermen harvested 919,036 fish from Lake St. Clair in the two years. The open ice harvest was twice that of shanty ice fishermen (621,833 and 297,203, respectively). The catch in the first year was double that of the second, again due to the longer fishing season. Open ice anglers harvested 441,283 ± 76,996 and 180,550 ± 50851 fish in the two years (Tables 51 and 52) while shanty fishermen caught 198,327 ± 77,747 and 98,876 ± 33,667 fish (Tables 53 and 54). More fish were harvested in March 1984 by open ice fishermen (223,116 ± 59,684) than during any other month, with February 1985 ranking first in the second year (108,078 ± 42,644). Shanty anglers harvested 88,401 ± 30421 fish in January 1984 with 57,952 ± 26,508 fish caught in February 1985. Over 94% of the open ice harvest occurred in Grids 1-3 both years (Fig. 16; Appendices 148 and 149), while approximately 95% of the shanty harvest occurred in Grids 1-4 in both years (Fig. 16; Appendices 150 and 151).

Table 45. Estimated catch per hour for fish harvested by boat anglers in Lake St. Clair from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	—	0.0006	0.0021	0.0009	0.0010	0.0007	—	—	—	—	—	0.0011
	—	—	(0.0010)	(0.0022)	(0.0012)	(0.0018)	(0.0010)	—	—	—	—	—	(0.0008)
White bass	—	—	0.0205	0.0360	0.0059	0.0001	—	—	—	—	—	—	0.0179
	—	—	(0.0244)	(0.0583)	(0.0057)	(0.0003)	—	—	—	—	—	—	(0.0180)
Freshwater drum	—	0.0061	0.0112	0.0125	0.0220	0.0180	0.0031	—	—	—	—	—	0.0137
	—	(0.0131)	(0.0079)	(0.0063)	(0.0147)	(0.0116)	(0.0047)	—	—	—	—	—	(0.0045)
Rock bass	—	0.0235	0.0489	0.0283	0.0624	0.0247	0.0140	—	—	—	—	—	0.0405
	—	(0.0446)	(0.0275)	(0.0206)	(0.0434)	(0.0159)	(0.0106)	—	—	—	—	—	(0.0140)
Pumpkinseed	—	0.0554	0.0165	0.0057	0.0083	0.0251	0.0068	—	—	—	0.0369	—	0.0132
	—	(0.0675)	(0.0124)	(0.0055)	(0.0047)	(0.0209)	(0.0088)	—	—	—	(0.0926)	—	(0.0053)
Smallmouth bass	—	—	0.0299	0.0061	0.0101	0.0197	0.0029	0.0029	—	—	—	—	0.0158
	—	—	(0.0268)	(0.0040)	(0.0056)	(0.0121)	(0.0030)	(0.0058)	—	—	—	—	(0.0091)
Yellow perch	—	0.1112	0.0891	0.3843	0.4250	0.6375	0.8963	0.6248	—	—	0.9410	0.1833	0.3417
	—	(0.1205)	(0.0453)	(0.1318)	(0.1416)	(0.2356)	(0.3553)	(0.5004)	—	—	(2.0859)	(0.3723)	(0.0585)
Walleye	—	0.0255	0.0908	0.0887	0.1254	0.0330	0.0385	0.0511	0.0789	—	—	—	0.0863
	—	(0.0427)	(0.0439)	(0.0327)	(0.0336)	(0.0159)	(0.0326)	(0.0633)	(0.0906)	—	—	—	(0.0186)
Other	—	0.0227	0.0067	0.0177	0.0166	0.0246	0.0097	0.0017	—	—	0.3437	—	0.0142
	—	(0.0357)	(0.0048)	(0.0192)	(0.0120)	(0.0221)	(0.0136)	(0.0037)	—	—	(0.8622)	—	(0.0066)
Total	—	0.2444	0.3142	0.5814	0.6766	0.7837	0.9720	0.6805	0.0789	—	1.3216	0.1833	0.5444
	—	(0.1560)	(0.0793)	(0.1507)	(0.1533)	(0.2392)	(0.3574)	(0.5044)	(0.0906)	—	(2.2590)	(0.3723)	(0.0668)

Table 46. Estimated catch per hour for fish harvested by boat anglers in Lake St. Clair from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month											Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Mar	
White perch	—	0.0004	0.0019	0.0019	0.0008	0.0006	0.0006	—	—	—	—	0.0013
	—	(0.0007)	(0.0029)	(0.0028)	(0.0016)	(0.0012)	(0.0013)	—	—	—	—	(0.0012)
White bass	—	0.0020	0.1610	0.0013	0.0025	0.0049	0.0009	0.0047	—	—	—	0.0511
	—	(0.0033)	(0.2546)	(0.0009)	(0.0040)	(0.0081)	(0.0018)	(0.0100)	—	—	—	(0.0785)
Freshwater drum	—	0.0006	0.0111	0.0210	0.0068	0.0051	0.0048	0.0015	—	—	—	0.0109
	—	(0.0009)	(0.0110)	(0.0124)	(0.0074)	(0.0044)	(0.0083)	(0.0034)	—	—	—	(0.0049)
Rock bass	0.0042	0.0023	0.0347	0.0232	0.0367	0.0209	0.0131	0.0062	—	—	—	0.0250
	(0.0055)	(0.0040)	(0.0171)	(0.0094)	(0.0157)	(0.0148)	(0.0108)	(0.0134)	—	—	—	(0.0064)
Pumpkinseed	—	0.0005	0.0110	0.0026	0.0160	0.0100	0.0123	—	—	—	—	0.0080
	—	(0.0010)	(0.0169)	(0.0019)	(0.0132)	(0.0096)	(0.0200)	—	—	—	—	(0.0058)
Smallmouth bass	—	0.0007	0.0118	0.0166	0.0119	0.0074	0.0076	0.0056	—	—	—	0.0111
	—	(0.0015)	(0.0071)	(0.0069)	(0.0069)	(0.0054)	(0.0083)	(0.0082)	—	—	—	(0.0031)
Yellow perch	0.0291	0.0492	0.0561	0.1837	0.2209	0.7653	0.9113	0.1886	—	—	0.4697	0.2379
	(0.0294)	(0.0810)	(0.0250)	(0.0741)	(0.1048)	(0.2698)	(0.6073)	(0.1540)	—	—	(1.1906)	(0.0585)
Walleye	0.0295	0.1070	0.1281	0.0767	0.0376	0.0431	0.1077	0.1956	0.1088	1.3184	—	0.0914
	(0.0322)	(0.0400)	(0.0360)	(0.0206)	(0.0143)	(0.0268)	(0.0655)	(0.1153)	(0.0981)	(1.8952)	—	(0.0143)
Other	0.0692	0.0083	0.0081	0.0038	0.0172	0.0240	0.0075	—	—	—	—	0.0100
	(0.0447)	(0.0078)	(0.0042)	(0.0019)	(0.0153)	(0.0224)	(0.0058)	—	—	—	—	(0.0032)
Total	0.1320	0.1710	0.4238	0.3308	0.3504	0.8813	1.0658	0.4022	0.1088	1.3184	0.4697	0.4467
	(0.0627)	(0.0908)	(0.2598)	(0.0789)	(0.1094)	(0.2728)	(0.6114)	(0.1933)	(0.0981)	(1.8952)	(1.1906)	(0.0995)

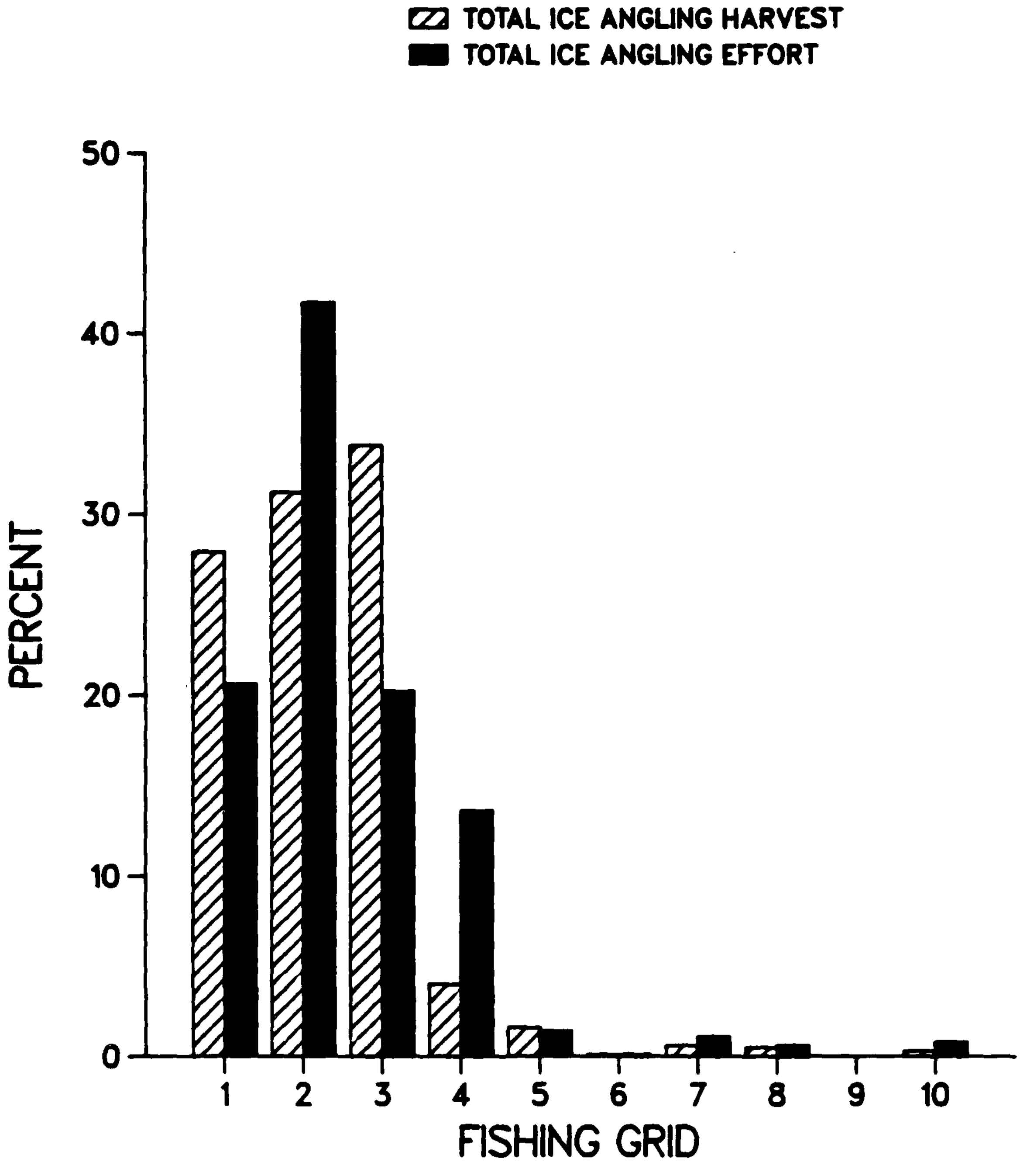

Figure 15. Percentage distribution of combined open ice and shanty angler pressure (angler hours) and total harvest of all species within each fishing grid of Lake St. Clair for the entire study.

Table 47. Estimated number of fishing hours by shanty ice anglers in Lake St. Clair from December 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	4,824	10,876	1,488	—	—	—	—	—	—	2,016	—	19,204
	(2,806)	(12,964)	(1,558)	—	—	—	—	—	—	(1,638)	—	(13,455)
Jan	47,107	116,863	25,307	48,524	1,263	144	2,205	1,686	—	2,118	—	245,217
	(8,841)	(15,056)	(4,400)	(7,545)	(340)	(118)	(1,141)	(758)	—	(415)	—	(19,578)
Feb	26,220	53,108	13,839	26,280	1,544	60	887	829	—	1,054	—	123,821
	(13,614)	(22,022)	(4,302)	(7,193)	(579)	(86)	(558)	(433)	—	(406)	—	(27,232)
Mar	1,074	721	1,835	71	162	—	14	—	—	—	—	3,877
	(1,872)	(1,256)	(4,043)	(132)	(372)	—	(38)	—	—	—	—	(4,646)
Total	79,225	181,568	42,469	74,875	2,969	204	3,106	2,515	—	5,188	—	392,119
	(16,580)	(29,687)	(7,526)	(10,425)	(768)	(146)	(1,271)	(873)	—	(1,738)	—	(36,435)

Table 48. Estimated number of fishing hours by shanty ice anglers in Lake St. Clair from December 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	7,205	40,563	7,736	16,228	663	36	2,314	94	—	862	—	75,701
	(3,511)	(17,107)	(3,068)	(7,512)	(406)	(74)	(1,424)	(82)	—	(699)	—	(19,326)
Feb	14,584	41,389	16,365	18,358	3,765	38	1,256	440	—	408	—	96,603
	(2,421)	(8,816)	(2,907)	(2,613)	(1,398)	(77)	(962)	(224)	—	(93)	—	(10,090)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	21,789	81,952	24,101	34,586	4,428	74	3,570	534	—	1,270	—	172,304
	(4,265)	(19,245)	(4,226)	(7,953)	(1,456)	(107)	(1,718)	(239)	—	(705)	—	(21,802)

Table 49. Estimated number of fishing hours by open ice anglers in Lake St. Clair from December 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	192 (249)	14,252 (11,617)	3,228 (1,752)	— —	— —	— —	— —	— —	— —	— —	126 (184)	17,798 (11,752)
Jan	20,575 (6,778)	31,298 (9,981)	12,529 (3,676)	4,781 (1,451)	785 (376)	83 (86)	160 (168)	116 (111)	— —	38 (75)	— —	70,365 (12,703)
Feb	17,341 (8,275)	26,960 (9,765)	27,859 (8,814)	6,185 (2,848)	417 (267)	126 (252)	1,216 (1,243)	— —	— —	— —	— —	80,104 (15,853)
Mar	31,216 (12,131)	7,154 (2,012)	38,763 (11,318)	1,238 (1,195)	2,887 (571)	51 (62)	98 (139)	1,067 (1,471)	— —	88 (21)	— —	82,562 (16,830)
Total	69,324 (16,175)	79,664 (18,275)	82,379 (14,912)	12,204 (3,412)	4,089 (734)	260 (273)	1,474 (1,262)	1,183 (1,475)	— —	126 (78)	126 (184)	250,829 (28,880)

Table 50. Estimated number of fishing hours by open ice anglers in Lake St. Clair from December 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	8,399	26,099	14,423	3,179	486	—	1,284	63	—	165	—	54,098
	(3,664)	(9,390)	(5,888)	(2,000)	(509)	—	(1,003)	(89)	—	(330)	—	(11,902)
Feb	14,091	20,068	25,448	2,212	1,120	144	464	830	—	478	—	64,855
	(3,956)	(6,109)	(7,645)	(926)	(925)	(184)	(306)	(496)	—	(295)	—	(10,658)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	22,490	46,167	39,871	5,391	1,606	144	1,748	893	—	643	—	118,953
	(5,392)	(11,202)	(9,650)	(2,204)	(1,056)	(184)	(1,049)	(504)	—	(443)	—	(15,976)

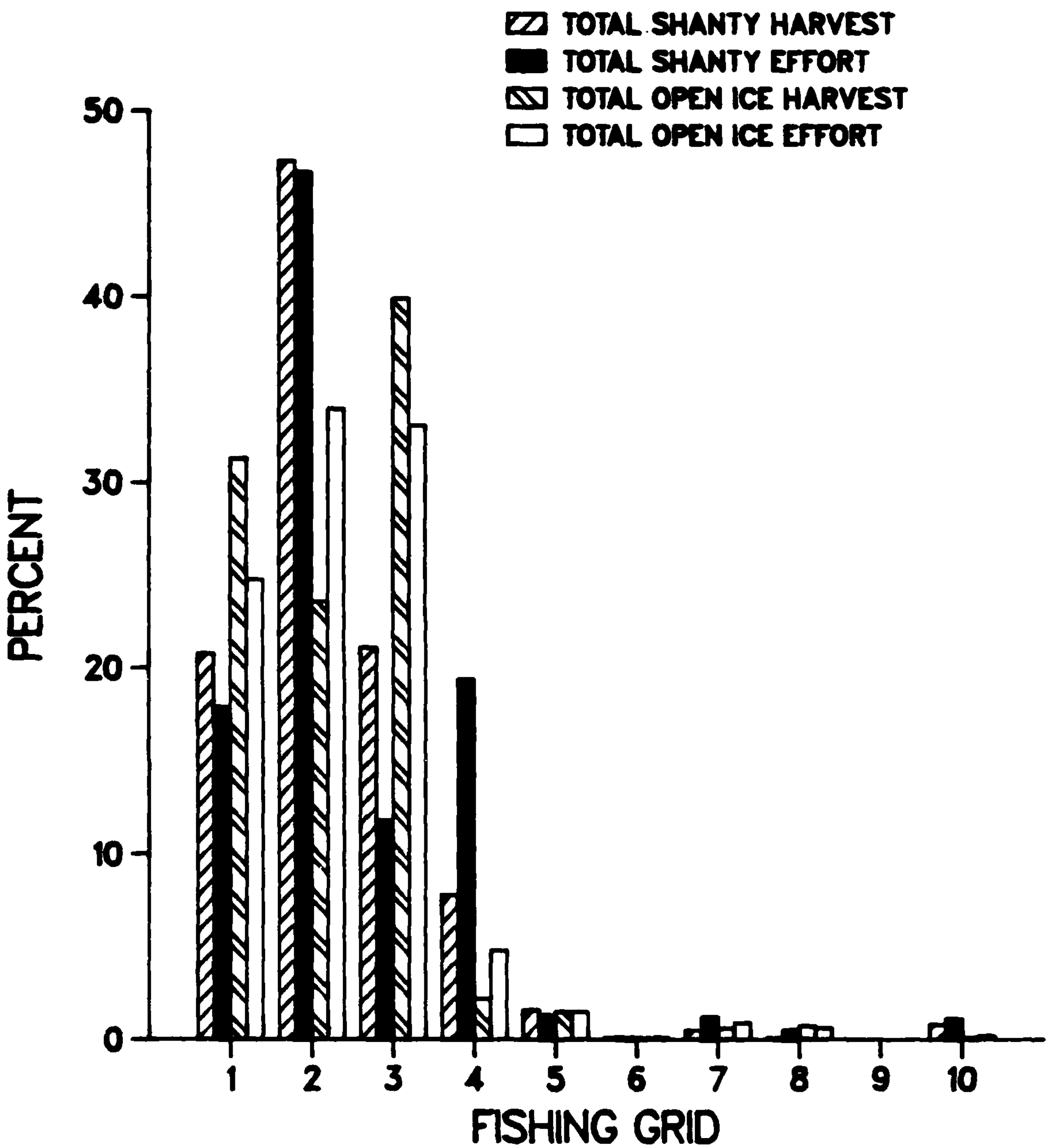

Figure 16. Percentage distribution of shanty and open ice angler harvest and fishing pressure (angler hours) for all species within each fishing grid of Lake St. Clair for the entire study.

Table 51. Estimated number of fish harvested by open ice anglers in Lake St. Clair from December 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month				
Species	Dec	Jan	Feb	Mar	Total
Northern pike	—	11	—	—	11
	—	(19)	—	—	(19)
Rock bass	—	104	2,076	1,248	3,428
	—	(213)	(2,397)	(1,058)	(2,629)
Pumpkinseed	—	—	789	5,474	6,263
	—	—	(850)	(4,331)	(4,414)
Bluegill	—	376	1,955	345	2,676
	—	(646)	(1,090)	(325)	(1,308)
Crappie	—	—	1,216	4,697	5,913
	—	—	(1,181)	(6,859)	(6,960)
Yellow perch	15,936	38,314	156,610	211,059	421,919
	(16,993)	(9,865)	(44,382)	(59,119)	(76,491)
Walleye	—	103	662	293	1,058
	—	(212)	(867)	(338)	(954)
Other	—	—	15	—	15
	—	—	(32)	—	(32)
Total	15,936	38,908	163,323	223,116	441,283
	(16,993)	(9,891)	(44,492)	(59,684)	(76,996)

Table 52. Estimated number of fish harvested by open ice anglers in Lake St. Clair from December 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month				Total
	Dec	Jan	Feb	Mar	
Northern pike	—	29	264	—	293
	—	(55)	(166)	—	(175)
Rock bass	—	1,181	744	—	1,925
	—	(1,685)	(663)	—	(1,811)
Pumpkinseed	—	4,315	3,035	—	7,350
	—	(2,897)	(2,391)	—	(3,756)
Bluegill	—	166	548	—	714
	—	(230)	(841)	—	(872)
Crappie	—	2,636	667	—	3,303
	—	(4,380)	(720)	—	(4,439)
Yellow perch	—	64,145	102,570	—	166,715
	—	(27,143)	(42,556)	—	(50,476)
Walleye	—	—	100	—	100
	—	—	(143)	—	(143)
Other	—	—	150	—	150
	—	—	(304)	—	(304)
Total	—	72,472	108,078	—	180,550
	—	(27,699)	(42,644)	—	(50,851)

Table 53. Estimated number of fish harvested by shanty ice anglers in Lake St. Clair from December 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month				Total
	Dec	Jan	Feb	Mar	
Northern pike	—	2,930	1,193	—	4,123
	—	(1,619)	(839)	—	(1,824)
Rock bass	—	23	—	—	23
	—	(49)	—	—	(49)
Pumpkinseed	—	118	949	—	1,067
	—	(225)	(1,727)	—	(1,742)
Bluegill	—	85	104	—	189
	—	(170)	(132)	—	(215)
Crappie	—	—	9	—	9
	—	—	(19)	—	(19)
Yellow perch	17,014	85,245	56,488	34,025	192,772
	(11,240)	(30,377)	(54,476)	(44,960)	(77,705)
Walleye	—	—	—	—	—
	—	—	—	—	—
Other	—	—	144	—	144
	—	—	(295)	—	(295)
Total	17,014	88,401	58,887	34,025	198,327
	(11,240)	(30,421)	(54,511)	(44,960)	(77,747)

Table 54. Estimated number of fish harvested by shanty ice anglers in Lake St. Clair from December 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month				Total
	Dec	Jan	Feb	Mar	
Northern pike	—	1,904	1,033	—	2,937
	—	(1,069)	(631)	—	(1,242)
Rock bass	—	515	353	—	868
	—	(938)	(420)	—	(1,028)
Pumpkinseed	—	2,216	1,376	—	3,592
	—	(2,488)	(1,669)	—	(2,996)
Bluegill	—	—	82	—	82
	—	—	(121)	—	(121)
Crappie	—	—	126	—	126
	—	—	(197)	—	(197)
Yellow perch	—	36,260	54,964	—	91,224
	—	(20,556)	(26,444)	—	(33,494)
Walleye	—	—	—	—	—
	—	—	—	—	—
Other	—	29	18	—	47
	—	(60)	(37)	—	(70)
Total	—	40,924	57,952	—	98,876
	—	(20,755)	(26,508)	—	(33,667)

Yellow perch was the most abundant species in the catch making up well over 90% of the total for both open and shanty anglers in both seasons. Open ice anglers caught twice as many perch as shanty anglers, the harvest being 588,634 and 283,996 perch for the two groups, respectively (Tables 51–54). The majority of the open ice harvest of perch occurred in March 1984 (211,059 ± 59,119) the first year while February 1985 ranked first in the second year with 102,570 ± 42,556 perch harvested. Shanty ice anglers harvested most of their perch in January 1984 the first year (88,401 ± 30,421) with February 1985 ranking first in the second year (57,952 ± 26,508), same as for open ice anglers. Pumpkinseed (1.4% and 4.1% of the total in the two years) ranked second in the open angler catch with crappie third (1.3% and 1.8%). Northern pike made up an extremely small percentage of the open ice harvest in both ice fishing seasons.

Pumpkinseeds were the second most often harvested species by shanty anglers in the first year (3.6%) while only making up a very small portion of the catch in the second season (0.5%). Northern pike were third most abundant in the shanty ice harvest (3.0%) and second (2.1%) for the 2 years. However, the 2-year total harvest of northern pike (7,060 fish) was the second highest of all species taken by shanty anglers.

Catch rates for all ice fishermen in Lake St. Clair averaged higher than catch rates by any other anglers in any of the other study areas. Catch rates for open ice anglers were, in most cases, much higher than those estimated for shanty ice anglers. The maximum catch per hour by all ice anglers was for yellow perch, with estimated rates for open ice anglers being three times those calculated for shanty fishermen (Tables 55–58). The number of fish caught per hour by open anglers was highest the first year in March 1984 at 2.7024 ± 0.8913 while February 1985 was highest in the second season (1.6664 ± 0.7071). Shanty anglers had an extremely high catch rate of 8.7761 ± 15.6552 in March 1984 (entirely yellow perch) with February 1985 ranking first in the second season at 0.5999 ± 0.2808 fish per hour.

Mean lengths of fish sampled from the angler catch are given in Appendices 110 and 111 for the two study years, respectively. Walleye and yellow perch harvested in Lake St. Clair did not differ in average total length from the same species caught in the Harsens Island channels and the St. Clair River. They were, however, significantly larger than the walleye and yellow perch caught by Detroit River anglers.

Detroit River.—Boat and shore anglers fished for a combined total of 2,802,640 hours on the Detroit River during the 2-year study. This effort was significantly higher than the pressure estimated for the St. Clair River or the Harsens Island channels. However, boat effort alone on Lake St. Clair was slightly greater than this combined total for the Detroit River. Boat and shore effort was essentially equal with 1,365,639 and 1,437,001 hours fished by the two groups, respectively. Boat anglers exerted approximately 50% of their total effort in Grids 13–15 and the least amount in Grid 4 (Fig. 17). Shore anglers fished more often in Grids 5–7

Table 55. Estimated catch per hour for fish harvested by open ice anglers in Lake St. Clair from December 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month				
Species	Dec	Jan	Feb	Mar	Total
Northern pike	—	0.0002	—	—	0.0000
	—	(0.0003)	—	—	(0.0001)
Rock bass	—	0.0015	0.0259	0.0151	0.0137
	—	(0.0030)	(0.0304)	(0.0132)	(0.0106)
Pumpkinseed	—	—	0.0098	0.0663	0.0250
	—	—	(0.0108)	(0.0542)	(0.0178)
Bluegill	—	0.0053	0.0244	0.0042	0.0107
	—	(0.0092)	(0.0144)	(0.0040)	(0.0054)
Crappie	—	—	0.0152	0.0569	0.0236
	—	—	(0.0150)	(0.0839)	(0.0279)
Yellow perch	0.8954	0.5445	1.9551	2.5564	1.6821
	(1.1230)	(0.1712)	(0.6758)	(0.8856)	(0.3613)
Walleye	—	0.0015	0.0083	0.0035	0.0042
	—	(0.0030)	(0.0109)	(0.0042)	(0.0038)
Other	—	—	0.0002	—	0.0001
	—	—	(0.0004)	—	(0.0001)
Total	0.8954	0.5530	2.0389	2.7024	1.7594
	(1.1230)	(0.1715)	(0.6770)	(0.8913)	(0.3630)

Table 56. Estimated catch per hour for fish harvested by open ice anglers in Lake St. Clair from December 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Month				
Species	Dec	Jan	Feb	Mar	Total
Northern pike	—	0.0005	0.0041	—	0.0025
	—	(0.0010)	(0.0026)	—	(0.0015)
Rock bass	—	0.0218	0.0115	—	0.0162
	—	(0.0315)	(0.0104)	—	(0.0154)
Pumpkinseed	—	0.0798	0.0468	—	0.0618
	—	(0.0564)	(0.0377)	—	(0.0326)
Bluegill	—	0.0031	0.0084	—	0.0060
	—	(0.0043)	(0.0130)	—	(0.0074)
Crappie	—	0.0487	0.0103	—	0.0278
	—	(0.0817)	(0.0112)	—	(0.0375)
Yellow perch	—	1.1857	1.5815	—	1.4015
	—	(0.5655)	(0.7058)	—	(0.4642)
Walleye	—	—	0.0015	—	0.0008
	—	—	(0.0022)	—	(0.0012)
Other	—	—	0.0023	—	0.0013
	—	—	(0.0047)	—	(0.0026)
Total	—	1.3396	1.6664	—	1.5179
	—	(0.5750)	(0.7071)	—	(0.4672)

Table 57. Estimated catch per hour for fish harvested by shanty ice anglers in Lake St. Clair from December 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month				Total
	Dec	Jan	Feb	Mar	
Northern pike	—	0.0119	0.0096	—	0.0105
	—	(0.0067)	(0.0071)	—	(0.0048)
Rock bass	—	0.0001	—	—	0.0001
	—	(0.0002)	—	—	(0.0001)
Pumpkinseed	—	0.0005	0.0077	—	0.0027
	—	(0.0009)	(0.0140)	—	(0.0044)
Bluegill	—	0.0003	0.0008	—	0.0005
	—	(0.0007)	(0.0011)	—	(0.0006)
Crappie	—	—	0.0001	—	0.0000
	—	—	(0.0002)	—	(0.0000)
Yellow perch	0.8860	0.3476	0.4562	8.7761	0.4916
	(0.8532)	(0.1269)	(0.4513)	(15.6552)	(0.2034)
Walleye	—	—	—	—	—
	—	—	—	—	—
Other	—	—	0.0012	—	0.0004
	—	—	(0.0024)	—	(0.0008)
Total	0.8860	0.3604	0.4756	8.7761	0.5058
	(0.8532)	(0.1271)	(0.4516)	(15.6552)	(0.2035)

Table 58. Estimated catch per hour for fish harvested by shanty ice anglers in Lake St. Clair from December 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Month				
Species	Dec	Jan	Feb	Mar	Total
Northern pike	—	0.0252	0.0107	—	0.0170
	—	(0.0155)	(0.0066)	—	(0.0075)
Rock bass	—	0.0068	0.0037	—	0.0050
	—	(0.0125)	(0.0044)	—	(0.0060)
Pumpkinseed	—	0.0293	0.0142	—	0.0208
	—	(0.0337)	(0.0173)	—	(0.0176)
Bluegill	—	—	0.0008	—	0.0005
	—	—	(0.0013)	—	(0.0007)
Crappie	—	—	0.0013	—	0.0007
	—	—	(0.0020)	—	(0.0011)
Yellow perch	—	0.4790	0.5690	—	0.5294
	—	(0.2978)	(0.2801)	—	(0.2056)
Walleye	—	—	—	—	—
	—	—	—	—	—
Other	—	0.0004	0.0002	—	0.0003
	—	(0.0008)	(0.0004)	—	(0.0004)
Total	—	0.5407	0.5999	—	0.5737
	—	(0.3004)	(0.2808)	—	(0.2066)

(29%), with the lowest number of hours estimated for Grid 1 and no shore fishing in Grid 8 (Fig. 18).

Krumholz and Carbine (1943 and 1945) estimated that a total of 197,759 hours was exerted by boat anglers in the Detroit River during the 1942–43 seasons. Bryant (1984) reported a total boat effort of 851,183 hours for the Detroit River, and 1,143,237 shore hours during the 1980–81 fishing seasons. Although Bryant's estimates of shore hours is close to that reported here, it would seem that boat pressure exerted on the Detroit River has been increasing rapidly. Since the 1980–81 seasons, it is estimated that boat effort has increased by over 62%.

Boat anglers in the northern section of the Detroit River (Grids 1–7) fished a total of 201,313 ± 25,201 hours in the period from April 1983 to March 1984, while fishing only 165,200 ± 17,340 in the second study year (Tables 59 and 60). Boat anglers in the southern section (Grids 8–15) accumulated 2.7 times the number of angler hours as estimated for northern boat anglers, with 592,092 ± 56,458 and 407,034 ± 32,139 hours, respectively (Tables 61 and 62). Boat effort in the Canadian waters of the lower Detroit River during the period 1976–80 was 2.6 to 4.9 times less than that estimated for Michigan waters in this study (Sztramko and Paine 1984). From the northern tip of Fighting Island, south to Bar Point, Sztramko and Paine estimated that only 120,169–159,465 boat hours were exerted during the 1976–80 period.

The highest number of hours for northern boat anglers occurred in May the first year (57,058 ± 19,637) and June the second year (57,600 ± 12,472). In the southern section, June had the highest total of boat angler hours in both years (213,426 ± 40,069 and 147,146 ± 22,381). Over 80% of the boat hours in the northern Detroit River occurred during the months of May to August both years, while more than 86% of the hours recorded by southern boaters came during the same period. Grid 2 had the greatest number of hours in both years (79,186 ± 19,103 and 67,265 ± 13,770) in the north section while Grid 4 had the fewest. Grids 1–3 comprised 80.5% and 83.6% of the total boat hours in the 2 years. In the southern section, Grids 13–15 were ranked first in both years (396,854 ± 53,875 and 264,750 ± 30,041 hours) while Grid 8 showed the lowest total of boat angler hours.

Shore anglers fishing in Grids 1–7 expended 2.5 times more hours than boat anglers in the same section. Shore hours were 476,739 ± 35,033 and 452,370 ± 29,272 in the 2 years, with the largest monthly total (28.4% and 32.4%) occurring in June for both years (Tables 63 and 64). As for boat fishermen, May to August accounted for more than 80% of the hours fished in both years. Grids 5–7 were the most heavily utilized by northern shore anglers (243,910 ± 29,980 and 177,103 ± 18,584 in the 2 years), with Grids 4 and 1 having the fewest number of angler hours. Grids 2, 3, and 5–7 accounted for more than 85% of the total shore angler hours during the study period. The southern shore fishermen in the Detroit River accumulated 1.8 times fewer hours than their counterparts in the northern section, and one-

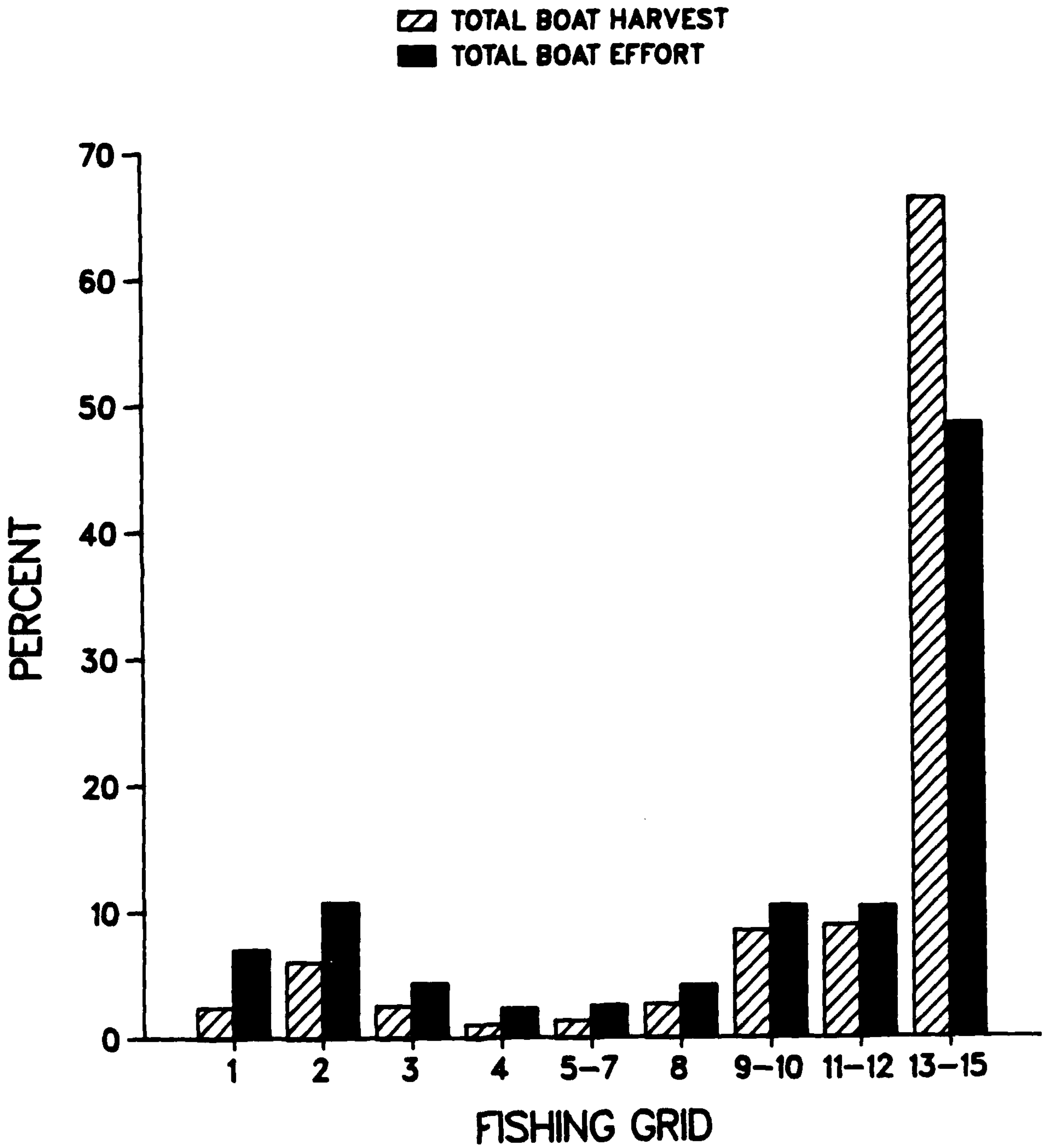

Figure 17. Percentage distribution of boat angling pressure (angler hours) and total harvest of all species by Michigan's boat anglers within each fishing grid of the Detroit River for the entire study.

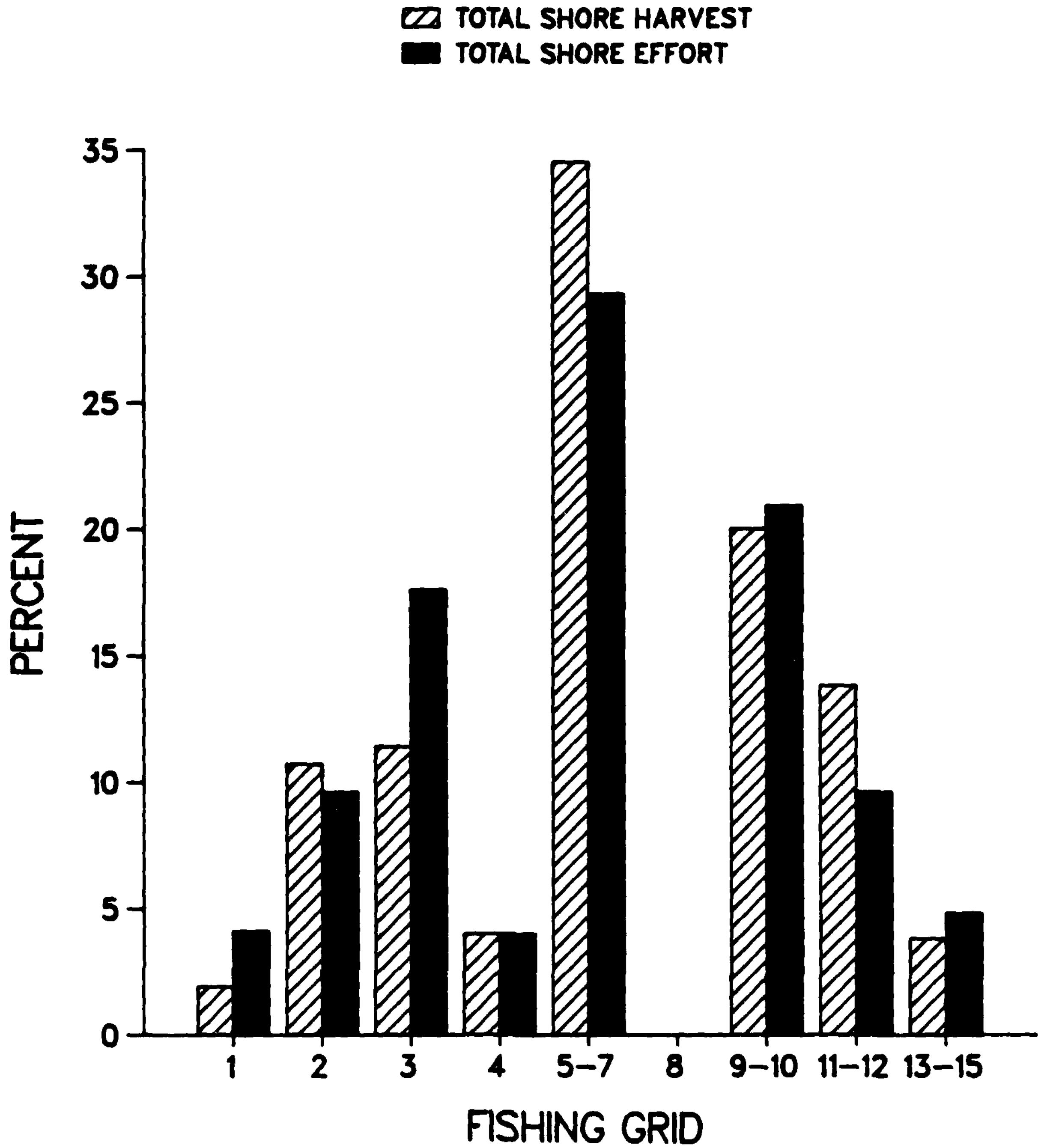

Figure 18. Percentage distribution of shore angling pressure (angler hours) and total harvest of all species by Michigan's shore anglers within each fishing grid on the Detroit River for the entire study.

Table 59. Estimated number of fishing hours by boat anglers in the north section of the Detroit River from April 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	2,357 (1,745)	2,903 (2,065)	149 (125)	85 (99)	21 (42)	5,515 (2,709)
May	8,556 (5,267)	27,511 (16,023)	12,121 (8,075)	7,635 (5,966)	1,235 (567)	57,058 (19,637)
Jun	10,117 (4,287)	20,958 (8,183)	8,447 (2,777)	6,088 (3,917)	6,371 (3,221)	51,981 (10,898)
Jul	15,649 (5,717)	14,237 (3,996)	5,525 (2,058)	1,376 (527)	4,579 (2,338)	41,366 (7,657)
Aug	9,679 (4,978)	8,645 (3,808)	2,484 (1,218)	1,025 (994)	2,242 (1,290)	24,075 (6,589)
Sep	4,772 (2,581)	3,344 (2,225)	1,102 (655)	307 (142)	1,133 (707)	10,658 (3,544)
Oct	4,891 (2,413)	1,588 (1,237)	866 (532)	191 (225)	622 (528)	8,158 (2,822)
Nov	1,554 (794)	— —	— —	— —	85 (108)	1,639 (801)
Dec	449 (226)	— —	— —	— —	— —	449 (226)
Jan	— —	— —	— —	— —	— —	— —
Feb	288 (301)	— —	— —	— —	— —	288 (301)
Mar	105 (138)	— —	— —	— —	21 (47)	126 (146)
Total	58,417 (10,950)	79,186 (19,103)	30,694 (8,909)	16,707 (7,231)	16,309 (4,315)	201,313 (25,201)

Table 60. Estimated number of fishing hours by boat anglers in the north section of the Detroit River from April 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

Month	Grid 1	Grid 2	Grid 3	Grid 4	Grid 5–7	Total
Apr	1,929 (1,006)	2,315 (1,134)	685 (506)	442 (362)	818 (457)	6,189 (1,701)
May	10,845 (3,848)	12,519 (4,730)	6,841 (2,685)	4,078 (1,445)	3,251 (1,242)	37,534 (6,930)
Jun	7,760 (5,262)	26,796 (10,211)	9,088 (3,628)	7,089 (2,834)	6,867 (1,550)	57,600 (12,472)
Jul	5,932 (2,061)	14,360 (7,275)	4,340 (2,181)	2,007 (1,069)	3,652 (1,981)	30,291 (8,185)
Aug	1,831 (1,442)	2,344 (1,223)	1,294 (583)	452 (204)	1,476 (907)	7,397 (2,186)
Sep	2,978 (2,373)	2,502 (1,376)	1,927 (1,067)	273 (220)	977 (574)	8,657 (3,007)
Oct	4,574 (1,808)	5,102 (2,164)	3,549 (1,666)	221 (171)	466 (341)	13,912 (3,297)
Nov	1,149 (1,139)	1,170 (803)	718 (584)	33 (66)	43 (64)	3,113 (1,514)
Dec	29 (58)	157 (246)	86 (129)	— —	— —	272 (284)
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —
Mar	235 (408)	— —	— —	— —	— —	235 (408)
Total	37,262 (7,759)	67,265 (13,770)	28,528 (5,477)	14,595 (3,394)	17,550 (3,058)	165,200 (17,340)

Table 61. Estimated number of fishing hours by boat anglers in the south section of the Detroit River from April 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	147 (169)	509 (499)	1,023 (617)	5,615 (3,512)	7,294 (3,604)
May	3,371 (1,452)	12,092 (5,031)	14,168 (6,305)	74,626 (27,339)	104,257 (28,541)
Jun	10,875 (3,398)	33,555 (6,824)	27,039 (6,390)	141,957 (38,815)	213,426 (40,069)
Jul	9,355 (3,740)	21,413 (6,701)	18,328 (4,630)	93,155 (21,194)	142,251 (23,011)
Aug	3,778 (1,225)	9,086 (3,231)	13,325 (3,931)	52,528 (11,530)	78,717 (12,662)
Sep	1,490 (923)	4,006 (1,416)	5,919 (2,395)	22,816 (7,023)	34,231 (7,610)
Oct	449 (309)	2,113 (800)	2,410 (1,088)	6,157 (2,161)	11,129 (2,567)
Nov	— —	363 (152)	140 (95)	— —	503 (179)
Dec	— —	274 (147)	10 (31)	— —	284 (150)
Jan	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —
Total	29,465 (5,488)	83,411 (11,409)	82,362 (11,171)	396,854 (53,875)	592,092 (56,458)

Table 62. Estimated number of fishing hours by boat anglers in the south section of the Detroit River from April 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

Month	Grid: 8	9–10	11–12	13–15	Total
Apr	442 (369)	1,885 (1,128)	1,953 (1,227)	9,863 (4,395)	14,143 (4,715)
May	6,364 (3,789)	9,625 (3,110)	7,071 (2,087)	51,381 (15,836)	74,441 (16,708)
Jun	9,757 (3,146)	18,932 (3,590)	19,700 (4,536)	98,757 (21,390)	147,146 (22,381)
Jul	5,643 (2,271)	16,888 (3,944)	12,514 (4,246)	51,121 (10,975)	86,166 (12,617)
Aug	2,651 (941)	5,533 (1,571)	8,195 (1,546)	26,328 (5,230)	42,707 (5,753)
Sep	1,267 (799)	2,408 (970)	3,222 (1,190)	16,905 (4,823)	23,802 (5,124)
Oct	489 (286)	2,113 (868)	4,547 (2,693)	7,294 (1,649)	14,443 (3,287)
Nov	26 (55)	303 (126)	497 (255)	2,578 (965)	3,404 (1,008)
Dec	— —	216 (376)	43 (91)	373 (344)	632 (518)
Jan	— —	— —	— —	150 (131)	150 (131)
Feb	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —
Total	26,639 (5,582)	57,903 (6,611)	57,742 (7,456)	264,750 (30,041)	407,034 (32,139)

half as many hours as boat fishermen in Grids 8-15. Total hours for April 1983 to March 1984 and for April 1984 to March 1985 were 289,454 ± 22,292 and 218,438 ± 13,745, with the highest month again being June in both years (97,138 ± 11,990 and 79,407 ± 8,890 total angler hours; Tables 65 and 66). The period from May to August had about the same percentage of hours (86%+) as shown for boat anglers in the southern section. Grids 9-10 were most heavily used by shore anglers both years (164,611 ± 16,304 and 135,390 ± 11,050 hours). In contrast to southern boat anglers, Grids 13-15 had the fewest number of estimated shore angler hours during the study.

Northern boat and shore anglers combined for a total harvest of 879,566 fish during the 2-year study. Southern Detroit River anglers combined for a total catch of over twice that of the upper river anglers (1,956,112 fish). Close to 70% of the 2-year harvest with boats occurred in Grids 13-15, with all other grids contributing less than 10% each of the total (Fig. 17). Shore anglers had the highest percentage of their 2-year catch from Grids 5-7 with Grids 9-10 (20%) and 11-12 (14%) coming next (Fig. 18). No shore fishing pressure was exerted in Grid 8.

Boat anglers in Grids 1-7 caught fewer fish than shore and boat fishermen on any other part of the river with a total harvest of 154,815 ± 44,946 and 96,861 ± 15,758 fish in the two years (Tables 67 and 68). The largest catches occurred in May the first year (57,275 ± 39,658) and June the second (46,738 ± 13,163). In the period May through August, boat anglers harvested 95.2% and 81.7% of their total in the two years, respectively. October in the second year was also fairly high. Most of the fish harvested by upper Detroit River boat fishermen came from Grid 2 in both years, making up 45.6% and 43.1% of the total (Appendices 172 and 173). White bass were more frequently caught the first year (49.5%) by boat anglers while walleye made up a majority of the total catch in the second (82.4%). Yellow perch were the third most often caught species in both years. For the 2-year total harvest, walleye (51.2%) were most abundant in the catch followed by white bass (34.2%) and then yellow perch (8.6%). Catch rates for boat anglers in Grids 1-7 were third highest overall for Detroit River boat and shore anglers in the two sections. The highest catch per hour in the first year was in June (1.0746 ± 0.3934) due to the large white bass harvest (Table 69). In the second, June was again high (0.8114 ± 0.2682 fish per hour) with walleye making up the main bulk of the harvest (Table 70). The largest annual catch rates were estimated to be for white bass and walleye in both years.

Shore anglers in the northern Detroit River harvested 332,032 ± 34,099 and 295,858 ± 51,980 fish in the two years, which was 2.5 times the catch of boat anglers in the same area (Tables 71 and 72). The highest catches were observed in June both years (136,482 ± 23,387 and 180,022 ± 49,699 fish) because of the large numbers of white bass harvested. Approximately 90% of all shore angler harvested fish came during the months of May to

Table 63. Estimated number of fishing hours by shore anglers in the north section of the Detroit River from April 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	754	2,381	4,432	—	10,534	18,101
	(963)	(2,204)	(2,684)	—	(4,323)	(5,628)
May	3,864	8,469	15,665	—	40,287	68,285
	(1,832)	(4,166)	(4,795)	—	(11,384)	(13,164)
Jun	10,190	19,168	32,080	8,856	65,177	135,471
	(3,021)	(5,549)	(9,063)	(3,188)	(19,129)	(22,319)
Jul	5,198	14,428	27,998	3,369	55,672	106,665
	(1,824)	(3,147)	(8,430)	(1,156)	(16,424)	(18,852)
Aug	3,909	11,609	23,627	2,913	43,771	85,829
	(1,227)	(2,472)	(5,292)	(924)	(9,766)	(11,483)
Sep	2,276	5,314	12,358	1,245	19,597	40,790
	(693)	(1,170)	(2,996)	(558)	(3,884)	(5,121)
Oct	648	2,082	5,822	441	6,733	15,726
	(531)	(804)	(2,082)	(343)	(1,955)	(3,034)
Nov	77	511	1,101	75	1,245	3,009
	(76)	(269)	(452)	(68)	(567)	(780)
Dec	21	35	126	24	67	273
	(41)	(40)	(91)	(48)	(68)	(136)
Jan	—	—	—	—	53	53
	—	—	—	—	(107)	(107)
Feb	—	63	933	—	318	1,314
	—	(126)	(701)	—	(317)	(780)
Mar	79	—	666	22	456	1,223
	(83)	—	(408)	(43)	(383)	(567)
Total	27,016	64,060	124,808	16,945	243,910	476,739
	(4,361)	(8,434)	(15,019)	(3,576)	(29,980)	(35,033)

Table 64. Estimated number of fishing hours by shore anglers in the north section of the Detroit River from April 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5-7	Total
Apr	3,176 (3,856)	6,792 (7,739)	12,488 (13,323)	1,349 (1,550)	9,753 (9,348)	33,558 (18,495)
May	3,921 (1,524)	10,611 (3,779)	13,065 (3,273)	4,787 (1,584)	25,919 (6,188)	58,303 (8,253)
Jun	11,888 (4,533)	23,319 (6,359)	32,434 (5,829)	14,357 (4,999)	64,774 (13,024)	146,772 (17,017)
Jul	6,969 (1,535)	13,527 (2,839)	28,755 (5,565)	9,072 (2,246)	38,331 (5,013)	96,654 (8,459)
Aug	3,234 (959)	10,849 (3,085)	18,815 (5,657)	5,229 (2,226)	20,255 (4,288)	58,382 (8,111)
Sep	1,785 (640)	6,288 (1,226)	10,636 (1,907)	3,286 (862)	10,990 (1,765)	32,985 (3,067)
Oct	1,112 (400)	2,233 (752)	10,303 (2,368)	1,720 (353)	5,720 (1,760)	21,088 (3,091)
Nov	119 (104)	272 (269)	1,054 (447)	117 (143)	272 (159)	1,834 (573)
Dec	50 (57)	65 (89)	540 (222)	29 (58)	140 (104)	824 (273)
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	— —	48 (53)	— —	— —	48 (53)
Mar	— —	285 (206)	633 (286)	55 (78)	949 (533)	1,922 (644)
Total	32,254 (6,450)	74,241 (11,592)	128,771 (17,168)	40,001 (6,387)	177,103 (18,584)	452,370 (29,272)

Table 65. Estimated number of fishing hours by shore anglers in the south section of the Detroit River from April 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	—	4,110	251	2,313	6,674
	—	(2,415)	(352)	(3,284)	(4,092)
May	—	36,266	18,979	5,696	60,941
	—	(10,500)	(9,155)	(2,585)	(14,168)
Jun	—	53,819	35,265	8,054	97,138
	—	(8,607)	(7,668)	(3,297)	(11,990)
Jul	—	30,283	14,808	13,773	58,864
	—	(6,401)	(4,330)	(4,503)	(8,944)
Aug	—	25,594	6,610	12,264	44,468
	—	(5,046)	(1,684)	(3,907)	(6,600)
Sep	—	9,791	2,541	3,270	15,602
	—	(2,761)	(698)	(1,517)	(3,227)
Oct	—	3,438	343	308	4,089
	—	(1,176)	(218)	(165)	(1,207)
Nov	—	1,095	41	175	1,311
	—	(435)	(57)	(121)	(455)
Dec	—	58	12	—	70
	—	(58)	(24)	—	(63)
Jan	—	38	—	—	38
	—	(75)	—	—	(75)
Feb	—	72	72	—	144
	—	(144)	(144)	—	(204)
Mar	—	47	54	14	115
	—	(68)	(108)	(27)	(130)
Total	—	164,611	78,976	45,867	289,454
	—	(16,304)	(12,841)	(8,138)	(22,292)

Table 66. Estimated number of fishing hours by shore anglers in the south section of the Detroit River from April 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

Month	Grid 8	Grid 9–10	Grid 11–12	Grid 13–15	Total
Apr	—	7,905	1,418	1,455	10,778
	—	(4,188)	(588)	(1,127)	(4,377)
May	—	21,458	11,992	3,030	36,480
	—	(5,309)	(4,647)	(1,603)	(7,235)
Jun	—	43,514	29,056	6,837	79,407
	—	(7,087)	(4,886)	(2,223)	(8,890)
Jul	—	24,114	8,264	5,636	38,014
	—	(3,186)	(1,906)	(1,665)	(4,069)
Aug	—	20,059	5,356	4,250	29,665
	—	(2,869)	(1,398)	(1,554)	(3,550)
Sep	—	10,769	2,073	1,637	14,479
	—	(2,236)	(782)	(600)	(2,444)
Oct	—	5,775	867	891	7,533
	—	(1,563)	(371)	(542)	(1,695)
Nov	—	1,001	19	—	1,020
	—	(439)	(38)	—	(441)
Dec	—	308	—	—	308
	—	(224)	—	—	(224)
Jan	—	—	—	—	—
	—	—	—	—	—
Feb	—	—	—	—	—
	—	—	—	—	—
Mar	—	487	125	142	754
	—	(297)	(110)	(202)	(376)
Total	—	135,390	59,170	23,878	218,438
	—	(11,050)	(7,222)	(3,829)	(13,745)

Table 67. Estimated number of fish harvested by boat anglers in the north section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	—	—	—	—	131	—	—	—	—	—	—	—	131
	—	—	—	—	(277)	—	—	—	—	—	—	—	(277)
White bass	303	35,384	38,806	1,166	888	19	—	—	—	—	—	—	76,566
	(652)	(24,384)	(17,216)	(1,722)	(1,276)	(41)	—	—	—	—	—	—	(29,933)
Freshwater drum	—	190	2,664	1,984	489	182	—	—	—	—	—	—	5,509
	—	(405)	(4,316)	(1,206)	(689)	(277)	—	—	—	—	—	—	(4,561)
Redhorse	—	—	526	37	—	40	60	—	—	—	—	—	663
	—	—	(1,156)	(54)	—	(88)	(102)	—	—	—	—	—	(1,165)
Rock bass	—	941	540	404	533	35	27	—	—	—	—	—	2,480
	—	(1,986)	(762)	(345)	(867)	(75)	(59)	—	—	—	—	—	(2,325)
Smallmouth bass	—	—	—	101	108	—	15	—	—	—	—	—	224
	—	—	—	(148)	(115)	—	(32)	—	—	—	—	—	(190)
Yellow perch	1,855	16,386	907	195	34	46	66	—	—	—	—	—	19,489
	(3,888)	(30,804)	(1,114)	(200)	(74)	(100)	(122)	—	—	—	—	—	(31,070)
Walleye	163	4,374	12,124	19,764	8,297	995	3,053	341	—	—	—	—	49,111
	(336)	(5,015)	(5,187)	(7,646)	(3,679)	(675)	(2,505)	(198)	—	—	—	—	(11,442)
Other	—	—	303	102	—	168	21	48	—	—	—	—	642
	—	—	(438)	(149)	—	(190)	(33)	(70)	—	—	—	—	(506)
Total	2,321	57,275	55,870	23,753	10,480	1,485	3,242	389	—	—	—	—	154,815
	(3,957)	(39,658)	(18,582)	(7,943)	(4,060)	(770)	(2,511)	(210)	—	—	—	—	(44,946)

Table 68. Estimated number of fish harvested by boat anglers in the north section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
White perch	—	—	—	—	594	142	—	—	—	—	—	—	736
	—	—	—	—	(215)	(147)	—	—	—	—	—	—	(260)
White bass	—	272	9,101	20	68	36	—	—	—	—	—	—	9,497
	—	(279)	(1,884)	(31)	(36)	(37)	—	—	—	—	—	—	(1,905)
Freshwater drum	—	—	1,162	780	1,342	—	—	—	—	—	—	—	3,284
	—	—	(284)	(640)	(587)	—	—	—	—	—	—	—	(914)
Redhorse	—	—	—	164	—	—	—	—	—	—	—	—	164
	—	—	—	(330)	—	—	—	—	—	—	—	—	(330)
Rock bass	—	—	—	92	197	—	—	—	—	—	—	—	289
	—	—	—	(101)	(267)	—	—	—	—	—	—	—	(285)
Smallmouth bass	—	—	—	12	—	49	—	—	—	—	—	—	61
	—	—	—	(25)	—	(71)	—	—	—	—	—	—	(75)
Yellow perch	28	109	—	154	51	36	707	871	96	—	—	—	2,052
	(33)	(166)	—	(229)	(112)	(37)	(1,496)	(2,231)	(113)	—	—	—	(2,706)
Walleye	786	18,474	36,219	8,861	589	2,580	11,324	771	—	—	—	235	79,839
	(438)	(5,764)	(13,017)	(4,033)	(427)	(1,437)	(3,672)	(577)	—	—	—	(622)	(15,349)
Other	45	—	256	254	346	38	—	—	—	—	—	—	939
	(70)	—	(431)	(390)	(565)	(70)	—	—	—	—	—	—	(817)
Total	859	18,855	46,738	10,337	3,187	2,881	12,031	1,642	96	—	—	235	96,861
	(445)	(5,773)	(13,163)	(4,123)	(989)	(1,449)	(3,965)	(2,304)	(113)	—	—	(622)	(15,758)

Table 69. Estimated catch per hour for fish harvested by boat anglers in the north section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	—	—	—	0.0054	—	—	—	—	—	—	—	0.0007
	—	—	—	—	(0.0116)	—	—	—	—	—	—	—	(0.0014)
White bass	0.0549	0.6201	0.7465	0.0282	0.0369	0.0018	—	—	—	—	—	—	0.3803
	(0.1213)	(0.4777)	(0.3663)	(0.0420)	(0.0540)	(0.0039)	—	—	—	—	—	—	(0.1561)
Freshwater drum	—	0.0033	0.0512	0.0480	0.0203	0.0171	—	—	—	—	—	—	0.0274
	—	(0.0072)	(0.0837)	(0.0305)	(0.0292)	(0.0266)	—	—	—	—	—	—	(0.0229)
Redhorse	—	—	0.0101	0.0009	—	0.0038	0.0074	—	—	—	—	—	0.0033
	—	—	(0.0223)	(0.0013)	—	(0.0084)	(0.0128)	—	—	—	—	—	(0.0058)
Rock bass	—	0.0165	0.0104	0.0098	0.0221	0.0033	0.0033	—	—	—	—	—	0.0123
	—	(0.0353)	(0.0148)	(0.0085)	(0.0365)	(0.0071)	(0.0073)	—	—	—	—	—	(0.0117)
Smallmouth bass	—	—	—	0.0024	0.0045	—	0.0018	—	—	—	—	—	0.0011
	—	—	—	(0.0036)	(0.0049)	—	(0.0040)	—	—	—	—	—	(0.0010)
Yellow perch	0.3364	0.2872	0.0174	0.0047	0.0014	0.0043	0.0081	—	—	—	—	—	0.0968
	(0.7241)	(0.5488)	(0.0217)	(0.0049)	(0.0031)	(0.0095)	(0.0152)	—	—	—	—	—	(0.1548)
Walleye	0.0296	0.0767	0.2332	0.4778	0.3446	0.0934	0.3742	0.2081	—	—	—	—	0.2440
	(0.0626)	(0.0918)	(0.1111)	(0.2049)	(0.1796)	(0.0705)	(0.3332)	(0.1579)	—	—	—	—	(0.0645)
Other	—	—	0.0058	0.0025	—	0.0158	0.0026	0.0293	—	—	—	—	0.0032
	—	—	(0.0085)	(0.0036)	—	(0.0186)	(0.0041)	(0.0450)	—	—	—	—	(0.0025)
Total	0.4209	1.0038	1.0746	0.5743	0.4352	0.1395	0.3974	0.2374	—	—	—	—	0.7691
	(0.7369)	(0.7342)	(0.3934)	(0.2117)	(0.1937)	(0.0791)	(0.3339)	(0.1642)	—	—	—	—	(0.2306)

Table 70. Estimated catch per hour for fish harvested by boat anglers in the north section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	—	—	—	0.0803	0.0164	—	—	—	—	—	—	0.0045
	—	—	—	—	(0.0375)	(0.0179)	—	—	—	—	—	—	(0.0016)
White bass	—	0.0072	0.1580	0.0007	0.0092	0.0042	—	—	—	—	—	—	0.0575
	—	(0.0076)	(0.0473)	(0.0010)	(0.0056)	(0.0045)	—	—	—	—	—	—	(0.0130)
Freshwater drum	—	—	0.0202	0.0258	0.1814	—	—	—	—	—	—	—	0.0199
	—	—	(0.0066)	(0.0222)	(0.0958)	—	—	—	—	—	—	—	(0.0059)
Redhorse	—	—	—	0.0054	—	—	—	—	—	—	—	—	0.0010
	—	—	—	(0.0110)	—	—	—	—	—	—	—	—	(0.0020)
Rock bass	—	—	—	0.0030	0.0266	—	—	—	—	—	—	—	0.0017
	—	—	—	(0.0034)	(0.0369)	—	—	—	—	—	—	—	(0.0017)
Smallmouth bass	—	—	—	0.0004	—	0.0057	—	—	—	—	—	—	0.0004
	—	—	—	(0.0008)	—	(0.0084)	—	—	—	—	—	—	(0.0005)
Yellow perch	0.0045	0.0029	—	0.0051	0.0069	0.0042	0.0508	0.2798	0.3529	—	—	—	0.0124
	(0.0055)	(0.0045)	—	(0.0077)	(0.0153)	(0.0045)	(0.1082)	(0.7295)	(0.5553)	—	—	—	(0.0164)
Walleye	0.1270	0.4922	0.6288	0.2925	0.0796	0.2980	0.8140	0.2477	—	—	—	1.0000	0.4833
	(0.0789)	(0.1784)	(0.2638)	(0.1548)	(0.0623)	(0.1956)	(0.3269)	(0.2211)	—	—	—	(3.1654)	(0.1059)
Other	0.0073	—	0.0044	0.0084	0.0468	0.0044	—	—	—	—	—	—	0.0057
	(0.0115)	—	(0.0075)	(0.0131)	(0.0776)	(0.0082)	—	—	—	—	—	—	(0.0050)
Total	0.1388	0.5023	0.8114	0.3413	0.4308	0.3329	0.8648	0.5275	0.3529	—	—	1.0000	0.5864
	(0.0799)	(0.1786)	(0.2682)	(0.1575)	(0.1487)	(0.1969)	(0.3443)	(0.7623)	(0.5553)	—	—	(3.1654)	(0.1083)

August. The largest catches were obtained from Grids 5–7 with 63.8% and 45.5% of the total harvest occurring in these grids in the two years, respectively (Appendices 180 and 181). Unlike boat anglers who harvested a large number of walleye, the 2-year total harvest by shore anglers contained only 5.7% of this species. The most abundant were white bass (35.7%), yellow perch (23.8%), freshwater drum (18.0%), and rock bass (8.6%). Catch rates were highest in June both years (1.0075 ± 0.1959 and 1.2264 ± 0.3530 fish per hour) with the exception of November and February in the first year when substantial catches of yellow perch were made relative to the number of hours fished (Tables 73 and 74). Highest rates were estimated for white bass and yellow perch.

As stated above, total catch by boat and shore fishermen in Grids 8–15 was 2.2 times the harvest by those anglers in the northern part of the river. Boat anglers harvested 1,059,025 ± 196,365 and 519,597 ± 163,575 fish in the 2 years which was 6.3 times the northern boat catch and 4 times the southern shore catch (Tables 75 and 76). The largest catch came again in June of both years, due to very large harvests of white bass. The period May to August accounted for 98.3% and 96.5% of the total catch, respectively. Boat fishermen were most successful in Grids 13–15, with 73.5% and 83.5% of the total annual harvest occurring in these grids (Appendices 188 and 189). Southern boat anglers caught more white bass (1,256,869 fish) than any other anglers for the 2 years combined. Walleye (9.9%) were second most abundant in the boat catch followed by yellow perch (3.0%), rock bass (2.7%), and finally freshwater drum (2.2%). Sztramko and Paine (1984) reported a similar distribution of boat harvest in Canadian waters of the lower Detroit River during the 1976–80 seasons. White bass made up a majority of the Canadian harvest, taken during the months of May and June. Walleye were second, with most of the harvest occurring during July and August.

Overall catch rates were highest for boat anglers in Grids 8–15 at 1.7886 ± 0.3614 and 1.2767 ± 0.4087 fish per hour (Tables 77 and 78). Again, as for boat anglers in the northern Detroit River, catch rates for white bass and walleye were much higher than for any other species.

The shore angler catch in Grids 8–15 was 1.7 times lower than the harvest by shore fishermen in the northern section. Shore anglers caught 236,930 ± 25,488 and 140,560 ± 19,126 fish in the 2 years, respectively (Tables 79 and 80). Again, because of the large catches of white bass, June was ranked first both years in number of fish harvested (92,843 ± 15,020 and 81,161 ± 17,512 fish). Like the other areas on the Detroit River, the period May through August accounted for over 90% of the total annual catch during both years. Shore anglers caught 57.0% and 46.9% of their annual harvest in Grids 9–10 for the 2 years, respectively (Appendices 196 and 197). Like their northern counterparts, southern anglers caught a majority of white bass (35.7%), followed by yellow perch (13.4%), freshwater drum (9.4%), and finally rock bass (7.3%) for the 2 years combined. Catch rates were high in May and June

Table 71. Estimated number of fish harvested by shore anglers in the north section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	—	—	3,199	6,468	2,054	340	151	43	—	—	—	—	12,255
	—	—	(2,174)	(2,734)	(852)	(250)	(123)	(65)	—	—	—	—	(3,607)
White bass	506	7,702	63,875	11,910	3,313	274	202	—	—	—	—	—	87,782
	(1,197)	(3,307)	(17,306)	(8,559)	(1,932)	(343)	(235)	—	—	—	—	—	(19,724)
Freshwater drum	—	2,146	23,471	26,118	9,497	1,616	419	—	—	—	—	—	63,267
	—	(909)	(8,075)	(8,684)	(3,014)	(774)	(235)	—	—	—	—	—	(12,296)
Redhorse	—	22	68	1,397	920	1,274	309	27	—	—	—	—	4,017
	—	(46)	(138)	(1,335)	(559)	(575)	(189)	(63)	—	—	—	—	(1,577)
Rock bass	135	4,755	12,130	9,732	5,064	740	777	327	—	—	—	—	33,660
	(137)	(2,355)	(5,954)	(4,152)	(2,049)	(397)	(385)	(363)	—	—	—	—	(7,930)
Smallmouth bass	—	14	346	2,767	950	985	488	124	—	—	—	—	5,674
	—	(28)	(406)	(1,850)	(688)	(720)	(334)	(168)	—	—	—	—	(2,172)
Yellow perch	14,123	38,304	31,688	16,905	2,426	795	1,654	5,249	—	—	1,558	187	112,889
	(6,185)	(16,761)	(11,857)	(6,921)	(1,527)	(634)	(1,316)	(3,922)	—	—	(2,173)	(303)	(23,072)
Walleye	93	113	64	2,535	1,054	908	513	5	—	—	—	—	5,285
	(155)	(156)	(72)	(1,463)	(536)	(557)	(349)	(11)	—	—	—	—	(1,706)
Other	103	952	1,641	1,150	2,077	1,132	148	—	—	—	—	—	7,203
	(117)	(604)	(1,141)	(782)	(1,113)	(779)	(123)	—	—	—	—	—	(2,038)
Total	14,960	54,008	136,482	78,982	27,355	8,064	4,661	5,775	—	—	1,558	187	332,032
	(6,304)	(17,281)	(23,387)	(15,141)	(4,731)	(1,762)	(1,513)	(3,943)	—	—	(2,173)	(303)	(34,099)

Table 72. Estimated number of fish harvested by shore anglers in the north section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	25	475	635	3,036	1,635	1,038	246	—	—	—	—	—	7,090
	(59)	(630)	(1,102)	(1,985)	(1,193)	(572)	(169)	—	—	—	—	—	(2,708)
White bass	—	9,556	122,190	1,125	3,704	69	—	—	—	—	—	—	136,644
	—	(4,097)	(46,560)	(956)	(2,473)	(79)	—	—	—	—	—	—	(46,815)
Freshwater drum	—	4,049	25,865	11,960	4,546	2,500	621	—	—	—	—	—	49,541
	—	(2,135)	(13,976)	(3,808)	(1,941)	(1,272)	(512)	—	—	—	—	—	(14,833)
Redhorse	98	320	1,497	1,267	931	1,626	338	—	—	—	—	—	6,077
	(230)	(291)	(1,982)	(839)	(700)	(853)	(230)	—	—	—	—	—	(2,458)
Rock bass	220	4,545	6,609	5,334	1,909	1,274	345	—	—	—	—	—	20,236
	(283)	(2,351)	(5,506)	(2,324)	(1,152)	(838)	(247)	—	—	—	—	—	(6,589)
Smallmouth bass	—	30	648	1,062	374	278	141	—	—	—	—	—	2,533
	—	(61)	(1,116)	(936)	(324)	(247)	(114)	—	—	—	—	—	(1,518)
Yellow perch	12,984	9,833	6,954	2,749	1,064	1,558	859	547	38	—	—	58	36,644
	(9,918)	(4,875)	(4,349)	(2,202)	(909)	(1,330)	(515)	(770)	(91)	—	—	(141)	(12,222)
Walleye	622	5,981	15,252	6,679	464	885	367	—	—	—	—	—	30,250
	(1,188)	(3,517)	(7,130)	(3,373)	(297)	(524)	(280)	—	—	—	—	—	(8,743)
Other	241	299	372	850	2,932	1,481	598	70	—	—	—	—	6,843
	(365)	(270)	(607)	(681)	(1,866)	(843)	(356)	(92)	—	—	—	—	(2,316)
Total	14,190	35,088	180,022	34,062	17,559	10,709	3,515	617	38	—	—	58	295,858
	(10,002)	(7,973)	(49,699)	(6,559)	(4,198)	(2,489)	(942)	(775)	(91)	—	—	(141)	(51,980)

Table 73. Estimated catch per hour for fish harvested by shore anglers in the north section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	—	0.0236	0.0606	0.0239	0.0083	0.0096	0.0143	—	—	—	—	0.0257
	—	—	(0.0165)	(0.0278)	(0.0104)	(0.0062)	(0.0080)	(0.0219)	—	—	—	—	(0.0078)
White bass	0.0280	0.1128	0.4715	0.1117	0.0386	0.0067	0.0128	—	—	—	—	—	0.1841
	(0.0667)	(0.0531)	(0.1495)	(0.0826)	(0.0231)	(0.0085)	(0.0151)	—	—	—	—	—	(0.0435)
Freshwater drum	—	0.0314	0.1733	0.2449	0.1107	0.0396	0.0266	—	—	—	—	—	0.1327
	—	(0.0146)	(0.0661)	(0.0922)	(0.0381)	(0.0196)	(0.0158)	—	—	—	—	—	(0.0276)
Redhorse	—	0.0003	0.0005	0.0131	0.0107	0.0312	0.0196	0.0090	—	—	—	—	0.0084
	—	(0.0007)	(0.0010)	(0.0127)	(0.0067)	(0.0146)	(0.0126)	(0.0211)	—	—	—	—	(0.0034)
Rock bass	0.0075	0.0696	0.0895	0.0912	0.0590	0.0181	0.0494	0.1087	—	—	—	—	0.0706
	(0.0079)	(0.0370)	(0.0464)	(0.0421)	(0.0251)	(0.0100)	(0.0263)	(0.1239)	—	—	—	—	(0.0174)
Smallmouth bass	—	0.0002	0.0026	0.0259	0.0111	0.0241	0.0310	0.0412	—	—	—	—	0.0119
	—	(0.0004)	(0.0030)	(0.0179)	(0.0082)	(0.0179)	(0.0221)	(0.0568)	—	—	—	—	(0.0046)
Yellow perch	0.7802	0.5609	0.2339	0.1585	0.0283	0.0195	0.1052	1.7444	—	—	1.1857	0.1529	0.2368
	(0.4191)	(0.2682)	(0.0956)	(0.0707)	(0.0182)	(0.0157)	(0.0861)	(1.3796)	—	—	(1.7973)	(0.2577)	(0.0514)
Walleye	0.0051	0.0017	0.0005	0.0238	0.0123	0.0223	0.0326	0.0017	—	—	—	—	0.0111
	(0.0087)	(0.0023)	(0.0005)	(0.0143)	(0.0065)	(0.0139)	(0.0231)	(0.0037)	—	—	—	—	(0.0037)
Other	0.0057	0.0139	0.0121	0.0108	0.0242	0.0278	0.0094	—	—	—	—	—	0.0151
	(0.0067)	(0.0092)	(0.0087)	(0.0076)	(0.0134)	(0.0194)	(0.0080)	—	—	—	—	—	(0.0044)
Total	0.8265	0.7908	1.0075	0.7405	0.3188	0.1976	0.2962	1.9193	—	—	1.1857	0.1529	0.6964
	(0.4246)	(0.2764)	(0.1959)	(0.1537)	(0.0582)	(0.0441)	(0.0995)	(1.3867)	—	—	(1.7973)	(0.2577)	(0.0757)

Table 74. Estimated catch per hour for fish harvested by shore anglers in the north section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	0.0007	0.0081	0.0043	0.0314	0.0280	0.0315	0.0117	—	—	—	—	—	0.0157
	(0.0018)	(0.0109)	(0.0075)	(0.0207)	(0.0208)	(0.0176)	(0.0082)	—	—	—	—	—	(0.0061)
White bass	—	0.1639	0.8325	0.0116	0.0634	0.0021	—	—	—	—	—	—	0.3021
	—	(0.0740)	(0.3316)	(0.0099)	(0.0433)	(0.0024)	—	—	—	—	—	—	(0.1053)
Freshwater drum	—	0.0694	0.1762	0.1237	0.0779	0.0758	0.0294	—	—	—	—	—	0.1095
	—	(0.0379)	(0.0974)	(0.0409)	(0.0350)	(0.0392)	(0.0247)	—	—	—	—	—	(0.0335)
Redhorse	0.0029	0.0055	0.0102	0.0131	0.0159	0.0493	0.0160	—	—	—	—	—	0.0134
	(0.0070)	(0.0051)	(0.0136)	(0.0088)	(0.0122)	(0.0263)	(0.0112)	—	—	—	—	—	(0.0055)
Rock bass	0.0066	0.0780	0.0450	0.0552	0.0327	0.0386	0.0164	—	—	—	—	—	0.0447
	(0.0092)	(0.0418)	(0.0379)	(0.0245)	(0.0202)	(0.0257)	(0.0120)	—	—	—	—	—	(0.0149)
Smallmouth bass	—	0.0005	0.0044	0.0110	0.0064	0.0084	0.0067	—	—	—	—	—	0.0056
	—	(0.0010)	(0.0076)	(0.0097)	(0.0056)	(0.0075)	(0.0055)	—	—	—	—	—	(0.0034)
Yellow perch	0.3869	0.1687	0.0474	0.0284	0.0182	0.0472	0.0407	0.2983	0.0461	—	—	0.0302	0.0810
	(0.3644)	(0.0870)	(0.0301)	(0.0229)	(0.0158)	(0.0406)	(0.0251)	(0.4301)	(0.1115)	—	—	(0.0741)	(0.0275)
Walleye	0.0185	0.1026	0.1039	0.0691	0.0079	0.0268	0.0174	—	—	—	—	—	0.0669
	(0.0368)	(0.0620)	(0.0501)	(0.0354)	(0.0052)	(0.0161)	(0.0135)	—	—	—	—	—	(0.0198)
Other	0.0072	0.0051	0.0025	0.0088	0.0502	0.0449	0.0284	0.0382	—	—	—	—	0.0151
	(0.0116)	(0.0047)	(0.0041)	(0.0071)	(0.0327)	(0.0259)	(0.0174)	(0.0516)	—	—	—	—	(0.0052)
Total	0.4228	0.6018	1.2264	0.3523	0.3006	0.3246	0.1667	0.3365	0.0461	—	—	0.0302	0.6540
	(0.3666)	(0.1423)	(0.3530)	(0.0693)	(0.0739)	(0.0764)	(0.0457)	(0.4332)	(0.1115)	—	—	(0.0741)	(0.1170)

Table 75. Estimated number of fish harvested by boat anglers in the south section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	—	3,208	7,794	1,865	62	—	—	—	—	—	—	12,929
	—	—	(6,503)	(11,884)	(3,562)	(127)	—	—	—	—	—	—	(14,008)
White bass	419	273,751	543,240	69,322	230	502	—	—	—	—	—	—	887,464
	(596)	(85,945)	(171,077)	(31,496)	(232)	(658)	—	—	—	—	—	—	(194,027)
Freshwater drum	7	923	4,395	6,789	4,030	811	—	—	—	—	—	—	16,955
	(14)	(605)	(4,396)	(4,171)	(3,325)	(863)	—	—	—	—	—	—	(6,992)
Redhorse	—	—	—	242	53	34	185	—	—	—	—	—	514
	—	—	—	(436)	(106)	(70)	(315)	—	—	—	—	—	(553)
Rock bass	19	6,050	12,669	6,239	4,130	155	35	—	—	—	—	—	29,297
	(41)	(5,702)	(10,887)	(3,659)	(3,419)	(237)	(37)	—	—	—	—	—	(13,273)
Smallmouth bass	—	—	—	92	463	—	151	—	—	—	—	—	706
	—	—	—	(185)	(556)	—	(241)	—	—	—	—	—	(634)
Yellow perch	7,800	3,898	13,924	9,309	2,267	2,345	524	—	—	—	—	—	40,067
	(8,630)	(4,219)	(9,675)	(6,393)	(1,836)	(2,988)	(254)	—	—	—	—	—	(15,463)
Walleye	301	4,199	7,860	34,173	12,035	736	2,703	127	—	—	—	—	62,134
	(409)	(3,735)	(4,636)	(12,118)	(4,929)	(625)	(654)	(53)	—	—	—	—	(14,407)
Other	579	3,521	2,760	1,256	538	—	65	240	—	—	—	—	8,959
	(1,109)	(4,131)	(4,895)	(1,194)	(530)	—	(79)	(113)	—	—	—	—	(6,632)
Total	9,125	292,342	588,056	135,216	25,611	4,645	3,663	367	—	—	—	—	1,059,025
	(8,731)	(86,419)	(172,007)	(36,788)	(7,985)	(3,252)	(811)	(125)	—	—	—	—	(196,365)

Table 76. Estimated number of fish harvested by boat anglers in the south section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	—	181	771	—	3,694	2,143	77	—	—	—	—	—	6,866
	—	(313)	(1,420)	—	(3,076)	(2,923)	(112)	—	—	—	—	—	(4,487)
White bass	471	37,443	324,153	2,613	4,314	233	178	—	—	—	—	—	369,405
	(841)	(19,029)	(160,094)	(1,867)	(6,355)	(335)	(349)	—	—	—	—	—	(161,360)
Freshwater drum	—	817	2,314	7,988	5,139	2,070	35	—	—	—	—	—	18,363
	—	(703)	(3,070)	(6,499)	(6,333)	(2,103)	(73)	—	—	—	—	—	(9,834)
Redhorse	—	—	—	541	17	509	90	—	—	—	—	—	1,157
	—	—	—	(1,125)	(34)	(575)	(148)	—	—	—	—	—	(1,272)
Rock bass	—	1,395	2,901	6,593	1,594	891	50	—	—	—	—	—	13,424
	—	(1,327)	(3,738)	(5,405)	(1,053)	(871)	(105)	—	—	—	—	—	(6,843)
Smallmouth bass	—	—	1,208	407	976	516	90	—	—	—	—	—	3,197
	—	—	(2,462)	(591)	(1,668)	(608)	(116)	—	—	—	—	—	(3,095)
Yellow perch	128	362	1,912	607	3,593	489	638	—	321	—	—	—	8,050
	(161)	(493)	(2,628)	(735)	(3,723)	(467)	(836)	—	(576)	—	—	—	(4,778)
Walleye	1,365	27,893	36,767	13,930	6,381	3,531	3,356	64	120	—	—	—	93,407
	(792)	(9,959)	(19,402)	(4,164)	(3,656)	(2,630)	(1,207)	(41)	(143)	—	—	—	(22,701)
Other	432	380	1,297	1,302	1,803	270	244	—	—	—	—	—	5,728
	(583)	(574)	(1,475)	(1,430)	(1,216)	(265)	(356)	—	—	—	—	—	(2,562)
Total	2,396	68,471	371,323	33,981	27,511	10,652	4,758	64	441	—	—	—	519,597
	(1,304)	(21,546)	(161,391)	(9,822)	(11,070)	(4,663)	(1,571)	(41)	(593)	—	—	—	(163,575)

Table 77. Estimated catch per hour for fish harvested by boat anglers in the south section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	—	—	0.0150	0.0548	0.0237	0.0018	—	—	—	—	—	—	0.0218
	—	—	(0.0306)	(0.0840)	(0.0454)	(0.0037)	—	—	—	—	—	—	(0.0237)
White bass	0.0574	2.6257	2.5453	0.4873	0.0029	0.0147	—	—	—	—	—	—	1.4989
	(0.0865)	(1.0937)	(0.9332)	(0.2350)	(0.0030)	(0.0195)	—	—	—	—	—	—	(0.3575)
Freshwater drum	0.0010	0.0089	0.0206	0.0477	0.0512	0.0237	—	—	—	—	—	—	0.0286
	(0.0020)	(0.0063)	(0.0210)	(0.0303)	(0.0430)	(0.0258)	—	—	—	—	—	—	(0.0121)
Redhorse	—	—	—	0.0017	0.0007	0.0010	0.0166	—	—	—	—	—	0.0009
	—	—	—	(0.0031)	(0.0014)	(0.0021)	(0.0286)	—	—	—	—	—	(0.0009)
Rock bass	0.0026	0.0580	0.0594	0.0439	0.0525	0.0045	0.0031	—	—	—	—	—	0.0495
	(0.0058)	(0.0570)	(0.0522)	(0.0267)	(0.0442)	(0.0070)	(0.0034)	—	—	—	—	—	(0.0229)
Smallmouth bass	—	—	—	0.0006	0.0059	—	0.0136	—	—	—	—	—	0.0012
	—	—	—	(0.0013)	(0.0071)	—	(0.0219)	—	—	—	—	—	(0.0011)
Yellow perch	1.0694	0.0374	0.0652	0.0654	0.0288	0.0685	0.0471	—	—	—	—	—	0.0677
	(1.2958)	(0.0417)	(0.0470)	(0.0462)	(0.0238)	(0.0886)	(0.0253)	—	—	—	—	—	(0.0269)
Walleye	0.0413	0.0403	0.0368	0.2402	0.1529	0.0215	0.2429	0.2525	—	—	—	—	0.1049
	(0.0597)	(0.0375)	(0.0228)	(0.0936)	(0.0673)	(0.0189)	(0.0812)	(0.1385)	—	—	—	—	(0.0263)
Other	0.0794	0.0338	0.0129	0.0088	0.0068	—	0.0058	0.4771	—	—	—	—	0.0151
	(0.1570)	(0.0407)	(0.0231)	(0.0085)	(0.0068)	—	(0.0072)	(0.2816)	—	—	—	—	(0.0113)
Total	1.2511	2.8041	2.7552	0.9504	0.3254	0.1357	0.3291	0.7296	—	—	—	—	1.7886
	(1.3095)	(1.0974)	(0.9371)	(0.2737)	(0.1052)	(0.0965)	(0.0927)	(0.3138)	—	—	—	—	(0.3614)

Table 78. Estimated catch per hour for fish harvested by boat anglers in the south section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
White perch	—	0.0024	0.0052	—	0.0865	0.0900	0.0053	—	—	—	—	—	0.0169
	—	(0.0042)	(0.0097)	—	(0.0730)	(0.1243)	(0.0078)	—	—	—	—	—	(0.0111)
White bass	0.0333	0.5030	2.2029	0.0303	0.1010	0.0098	0.0123	—	—	—	—	—	0.9076
	(0.0605)	(0.2794)	(1.1384)	(0.0221)	(0.1494)	(0.0142)	(0.0243)	—	—	—	—	—	(0.4029)
Freshwater drum	—	0.0110	0.0157	0.0927	0.1203	0.0870	0.0024	—	—	—	—	—	0.0451
	—	(0.0098)	(0.0210)	(0.0766)	(0.1492)	(0.0903)	(0.0051)	—	—	—	—	—	(0.0244)
Redhorse	—	—	—	0.0063	0.0004	0.0214	0.0062	—	—	—	—	—	0.0028
	—	—	—	(0.0131)	(0.0008)	(0.0246)	(0.0103)	—	—	—	—	—	(0.0031)
Rock bass	—	0.0187	0.0197	0.0765	0.0373	0.0374	0.0035	—	—	—	—	—	0.0330
	—	(0.0183)	(0.0256)	(0.0637)	(0.0252)	(0.0375)	(0.0073)	—	—	—	—	—	(0.0170)
Smallmouth bass	—	—	0.0082	0.0047	0.0229	0.0217	0.0062	—	—	—	—	—	0.0079
	—	—	(0.0168)	(0.0069)	(0.0392)	(0.0260)	(0.0082)	—	—	—	—	—	(0.0076)
Yellow perch	0.0091	0.0049	0.0130	0.0070	0.0841	0.0205	0.0442	—	0.5079	—	—	—	0.0198
	(0.0118)	(0.0067)	(0.0180)	(0.0086)	(0.0879)	(0.0201)	(0.0587)	—	(1.0020)	—	—	—	(0.0118)
Walleye	0.0965	0.3747	0.2499	0.1617	0.1494	0.1483	0.2324	0.0188	0.1899	—	—	—	0.2295
	(0.0646)	(0.1580)	(0.1372)	(0.0538)	(0.0879)	(0.1150)	(0.0989)	(0.0133)	(0.2746)	—	—	—	(0.0586)
Other	0.0305	0.0051	0.0088	0.0151	0.0422	0.0113	0.0169	—	—	—	—	—	0.0141
	(0.0425)	(0.0078)	(0.0101)	(0.0167)	(0.0290)	(0.0114)	(0.0249)	—	—	—	—	—	(0.0064)
Total	0.1694	0.9198	2.5234	0.3943	0.6441	0.4474	0.3294	0.0188	0.6978	—	—	—	1.2767
	(0.0989)	(0.3218)	(1.1475)	(0.1178)	(0.2615)	(0.2006)	(0.1215)	(0.0133)	(1.0389)	—	—	—	(0.4087)

both years again due to white bass (Tables 81 and 82), with this species and then yellow perch having the highest estimated catch per hours. Shore anglers in Grids 8-15 had the second highest overall catch per hour in the Detroit River system.

More white perch were harvested by Detroit River anglers than in any other of the study sections. While only making up 2.1% of the total 2-year river harvest, this species is occurring more frequently in the creel. Of the 60,357 white perch estimated caught by all anglers, 34.2% were harvested by boat anglers and the remainder (65.8%) came from the shore fishery. The majority of the white perch harvest occurred during the months of June to August in both years for shore and boat anglers. Bryant (1984) estimated that only 400 white perch were harvested by boat and shore anglers on the Detroit River during 1980-81. It seems evident that this species is increasing in abundance in the Detroit River. Also, as mentioned before, some white perch were taken in Lake St. Clair and the Harsens Island channels, showing that this species is migrating northward through the system.

Ice angling pressure on the Detroit River was very low, totaling only 15,749 hours for the entire 2-year study period. Open ice and shanty anglers in Grids 1-7 accounted for only 5.2% of the total hours with 746 and 78 hours each for both years combined (Tables 83 and 84). All ice fishing in the northern section of the Detroit River occurred in Grid 2 with January and February each making up about 50% of the total. Harvest and catch rates were only estimated for the period January to February 1985 since no interviews were collected during the first ice season. Open ice anglers caught a total of 1,636 ± 1,746 fish, all in February, with 94.1% of this total being yellow perch and the remainder northern pike (Table 85). Unlike shanty anglers in Lake St. Clair, northern Detroit River shanty fishermen harvested only yellow perch (59 ± 170), again all in the month of February (Table 86).

Open ice and shanty anglers in Grids 8-15 accumulated a total of 14,952 hours during the two years, with 93.5% of this total being shanty effort. Open anglers fished 417 ± 415 in the first and 550 ± 966 hours in the second year with most of the effort exerted in Grids 11-12 and 13.9% occurring in Grids 13-15 (Table 87). More angler hours, for both years combined, were estimated for January (57.5%) with the remainder coming in February.

Shanty anglers fished 337 ± 191 and 13,621 ± 5,017 hours in the 2 years, respectively (Table 88). Again, as for open ice anglers, most of the effort was exerted in Grids 11-12 with the remainder (35.9%) of the total estimated shanty hours coming from Grids 13-15. Over 80% of all southern shanty hours occurred in February with the remainder in January.

Like ice anglers in the northern Detroit River, the only two species harvested by ice anglers in Grids 13-15 were yellow perch and northern pike. Ninety-eight percent of all fish harvested by both groups were yellow perch with open ice anglers catching slightly more (50.9%) than did shanty anglers (Tables 89-92). Northern pike harvest was calculated to be 97

Table 79. Estimated number of fish harvested by shore anglers in the south section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	—	—	1,830	5,441	2,104	771	149	—	—	—	—	—	10,295
	—	—	(1,513)	(2,076)	(829)	(434)	(153)	—	—	—	—	—	(2,738)
White bass	—	57,604	76,161	5,664	784	57	50	—	—	—	—	—	140,320
	—	(17,372)	(14,652)	(2,717)	(575)	(81)	(91)	—	—	—	—	—	(22,895)
Freshwater drum	—	1,867	3,394	7,423	5,363	738	156	39	—	—	—	—	18,980
	—	(958)	(1,160)	(2,245)	(1,507)	(338)	(193)	(80)	—	—	—	—	(3,119)
Redhorse	—	3	11	146	124	210	124	—	—	—	—	—	618
	—	(6)	(23)	(157)	(107)	(124)	(94)	—	—	—	—	—	(247)
Rock bass	14	3,298	2,967	4,630	1,827	209	185	41	—	—	—	—	13,171
	(30)	(1,279)	(1,003)	(2,249)	(915)	(207)	(139)	(50)	—	—	—	—	(2,933)
Smallmouth bass	—	—	—	72	30	20	23	—	—	—	—	—	145
	—	—	—	(135)	(61)	(30)	(30)	—	—	—	—	—	(154)
Yellow perch	3,633	17,262	7,097	6,833	1,942	189	839	355	—	—	—	1	38,151
	(3,795)	(6,901)	(2,383)	(3,389)	(1,558)	(145)	(776)	(308)	—	—	—	(2)	(9,074)
Walleye	—	—	61	596	1,179	80	81	—	—	—	—	—	1,997
	—	—	(127)	(423)	(603)	(77)	(78)	—	—	—	—	—	(756)
Other	126	2,028	1,322	5,721	3,200	600	232	24	—	—	—	—	13,253
	(356)	(965)	(769)	(3,577)	(1,434)	(369)	(130)	(30)	—	—	—	—	(4,081)
Total	3,773	82,062	92,843	36,526	16,553	2,874	1,839	459	—	—	—	1	236,930
	(3,812)	(18,786)	(15,020)	(6,804)	(2,998)	(729)	(850)	(324)	—	—	—	(2)	(25,488)

Table 80. Estimated number of fish harvested by shore anglers in the south section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	418	1,103	2,912	3,616	1,653	353	—	—	—	—	—	10,055
	—	(466)	(836)	(1,620)	(1,421)	(1,209)	(273)	—	—	—	—	—	(2,664)
White bass	—	7,707	62,273	758	290	63	16	—	—	—	—	—	71,107
	—	(4,476)	(16,551)	(488)	(245)	(72)	(32)	—	—	—	—	—	(17,154)
Freshwater drum	16	1,788	6,193	3,537	3,691	719	377	—	—	—	—	—	16,321
	(34)	(860)	(2,930)	(1,192)	(1,437)	(362)	(246)	—	—	—	—	—	(3,606)
Redhorse	—	14	—	238	251	489	287	43	—	—	—	—	1,322
	—	(29)	—	(240)	(205)	(248)	(198)	(43)	—	—	—	—	(451)
Rock bass	386	2,226	7,351	2,964	857	473	305	9	—	—	—	—	14,571
	(544)	(1,262)	(4,447)	(1,371)	(415)	(396)	(437)	(20)	—	—	—	—	(4,905)
Smallmouth bass	—	—	—	122	—	173	7	—	—	—	—	—	302
	—	—	—	(165)	—	(225)	(15)	—	—	—	—	—	(279)
Yellow perch	2,736	4,147	990	1,486	520	342	627	981	321	—	—	250	12,400
	(2,664)	(2,392)	(1,028)	(994)	(523)	(201)	(406)	(950)	(576)	—	—	(571)	(4,112)
Walleye	—	1,597	2,321	1,018	185	375	137	—	—	—	—	—	5,633
	—	(1,038)	(1,378)	(850)	(132)	(342)	(141)	—	—	—	—	—	(1,963)
Other	921	1,351	930	2,056	2,256	1,059	227	—	—	—	—	49	8,849
	(1,116)	(827)	(848)	(1,549)	(959)	(591)	(140)	—	—	—	—	(67)	(2,518)
Total	4,059	19,248	81,161	15,091	11,666	5,346	2,336	1,033	321	—	—	299	140,560
	(2,939)	(5,483)	(17,512)	(3,218)	(2,360)	(1,541)	(756)	(951)	(576)	—	—	(575)	(19,126)

Table 81. Estimated catch per hour of fish harvested by shore anglers in the south section of the Detroit River from April 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White perch	—	—	0.0188	0.0924	0.0473	0.0494	0.0364	—	—	—	—	—	0.0356
	—	—	(0.0157)	(0.0380)	(0.0199)	(0.0296)	(0.0389)	—	—	—	—	—	(0.0098)
White bass	—	0.9452	0.7840	0.0962	0.0176	0.0037	0.0122	—	—	—	—	—	0.4848
	—	(0.3599)	(0.1792)	(0.0484)	(0.0132)	(0.0052)	(0.0225)	—	—	—	—	—	(0.0875)
Freshwater drum	—	0.0306	0.0349	0.1261	0.1206	0.0473	0.0382	0.0297	—	—	—	—	0.0656
	—	(0.0173)	(0.0127)	(0.0427)	(0.0383)	(0.0238)	(0.0485)	(0.0619)	—	—	—	—	(0.0119)
Redhorse	—	0.0000	0.0001	0.0025	0.0028	0.0135	0.0303	—	—	—	—	—	0.0021
	—	(0.0001)	(0.0002)	(0.0027)	(0.0024)	(0.0084)	(0.0247)	—	—	—	—	—	(0.0009)
Rock bass	0.0021	0.0541	0.0305	0.0787	0.0411	0.0134	0.0452	0.0313	—	—	—	—	0.0455
	(0.0047)	(0.0245)	(0.0110)	(0.0400)	(0.0215)	(0.0136)	(0.0365)	(0.0397)	—	—	—	—	(0.0107)
Smallmouth bass	—	—	—	0.0012	0.0007	0.0013	0.0056	—	—	—	—	—	0.0005
	—	—	—	(0.0023)	(0.0014)	(0.0019)	(0.0075)	—	—	—	—	—	(0.0005)
Yellow perch	0.5444	0.2833	0.0731	0.1161	0.0437	0.0121	0.2052	0.2708	—	—	—	0.0087	0.1318
	(0.6593)	(0.1310)	(0.0261)	(0.0602)	(0.0356)	(0.0096)	(0.1992)	(0.2530)	—	—	—	(0.0200)	(0.0330)
Walleye	—	—	0.0006	0.0101	0.0265	0.0051	0.0198	—	—	—	—	—	0.0069
	—	—	(0.0013)	(0.0073)	(0.0141)	(0.0050)	(0.0200)	—	—	—	—	—	(0.0027)
Other	0.0189	0.0333	0.0136	0.0972	0.0720	0.0385	0.0567	0.0183	—	—	—	—	0.0458
	(0.0546)	(0.0176)	(0.0081)	(0.0625)	(0.0340)	(0.0250)	(0.0359)	(0.0237)	—	—	—	—	(0.0145)
Total	0.5654	1.3465	0.9556	0.6205	0.3723	0.1843	0.4496	0.3501	—	—	—	0.0087	0.8186
	(0.6616)	(0.3846)	(0.1827)	(0.1217)	(0.0716)	(0.0497)	(0.2185)	(0.2645)	—	—	—	(0.0200)	(0.0965)

Table 82. Estimated catch per hour of fish harvested by shore anglers in the south section of the Detroit River from April 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
White perch	—	0.0115	0.0139	0.0766	0.1219	0.1142	0.0469	—	—	—	—	—	0.0460
	—	(0.0130)	(0.0106)	(0.0434)	(0.0501)	(0.0857)	(0.0377)	—	—	—	—	—	(0.0125)
White bass	—	0.2113	0.7842	0.0199	0.0098	0.0044	0.0021	—	—	—	—	—	0.3255
	—	(0.1297)	(0.2262)	(0.0130)	(0.0083)	(0.0050)	(0.0043)	—	—	—	—	—	(0.0812)
Freshwater drum	0.0015	0.0490	0.0780	0.0930	0.1244	0.0497	0.0500	—	—	—	—	—	0.0747
	(0.0032)	(0.0255)	(0.0379)	(0.0329)	(0.0507)	(0.0264)	(0.0345)	—	—	—	—	—	(0.0172)
Redhorse	—	0.0004	—	0.0063	0.0085	0.0338	0.0381	0.0422	—	—	—	—	0.0061
	—	(0.0008)	—	(0.0063)	(0.0070)	(0.0181)	(0.0276)	(0.0459)	—	—	—	—	(0.0021)
Rock bass	0.0358	0.0610	0.0926	0.0780	0.0289	0.0327	0.0405	0.0088	—	—	—	—	0.0667
	(0.0525)	(0.0366)	(0.0570)	(0.0370)	(0.0144)	(0.0279)	(0.0587)	(0.0200)	—	—	—	—	(0.0228)
Smallmouth bass	—	—	—	0.0032	—	0.0119	0.0009	—	—	—	—	—	0.0014
	—	—	—	(0.0044)	—	(0.0157)	(0.0020)	—	—	—	—	—	(0.0013)
Yellow perch	0.2539	0.1137	0.0125	0.0391	0.0175	0.0236	0.0832	0.9618	1.0422	—	—	0.3316	0.0568
	(0.2678)	(0.0693)	(0.0130)	(0.0265)	(0.0178)	(0.0144)	(0.0571)	(1.0200)	(2.0179)	—	—	(0.7751)	(0.0192)
Walleye	—	0.0438	0.0292	0.0268	0.0062	0.0259	0.0182	—	—	—	—	—	0.0258
	—	(0.0297)	(0.0177)	(0.0225)	(0.0045)	(0.0240)	(0.0192)	—	—	—	—	—	(0.0091)
Other	0.0855	0.0370	0.0117	0.0541	0.0760	0.0731	0.0301	—	—	—	—	0.0650	0.0405
	(0.1092)	(0.0238)	(0.0108)	(0.0412)	(0.0336)	(0.0426)	(0.0198)	—	—	—	—	(0.0946)	(0.0118)
Total	0.3767	0.5277	1.0221	0.3970	0.3932	0.3693	0.3100	1.0128	1.0422	—	—	0.3966	0.6435
	(0.2940)	(0.1588)	(0.2378)	(0.0864)	(0.0829)	(0.1096)	(0.1042)	(1.0212)	(2.0179)	—	—	(0.7809)	(0.0903)

Table 83. Estimated number of fishing hours by open ice anglers in the north section of the Detroit River for January-February 1984 and January-February 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid						Grid					
Month	1	2	3	4	5–7	1984 Total	1	2	3	4	5–7	1985 Total
Jan	—	38	—	—	—	38	—	390	—	—	—	390
	—	(75)	—	—	—	(75)	—	(671)	—	—	—	(671)
Feb	—	—	—	—	—	—	—	318	—	—	—	318
	—	—	—	—	—	—	—	(209)	—	—	—	(209)
Total	—	38	—	—	—	38	—	708	—	—	—	708
	—	(75)	—	—	—	(75)	—	(703)	—	—	—	(703)

Table 84. Estimated number of fishing hours by shanty ice anglers in the north section of the Detroit River for January-February 1984 and January-February 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid						Grid					
Month	1	2	3	4	5–7	1984 Total	1	2	3	4	5–7	1985 Total
Jan	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Feb	—	—	—	—	—	—	—	78	—	—	—	78
	—	—	—	—	—	—	—	(165)	—	—	—	(165)
Total	—	—	—	—	—	—	—	78	—	—	—	78
	—	—	—	—	—	—	—	(165)	—	—	—	(165)

Table 85. Estimated number of fish harvested and catch per hour by open ice anglers in the north section of the Detroit River for January-February 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	96	96	—	0.3019	0.1356
	—	(206)	(206)	—	(0.6775)	(0.3206)
Yellow perch	—	1,540	1,540	—	4.8428	2.1751
	—	(1,734)	(1,734)	—	(6.3138)	(3.2654)
Total	—	1,636	1,636	—	5.1447	2.3107
	—	(1,746)	(1,746)	—	(6.3500)	(3.2811)

Table 86. Estimated number of fish harvested and catch per hour by shanty ice anglers in the north section of the Detroit River for January-February 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	—	—	—	—	—
	—	—	—	—	—	—
Yellow perch	—	59	59	—	0.7564	0.7564
	—	(170)	(170)	—	(2.7038)	(2.7038)
Total	—	59	59	—	0.7564	0.7564
	—	(170)	(170)	—	(2.7038)	(2.7038)

Table 87. Estimated number of fishing hours by open ice anglers in the south section of the Detroit River for January-February 1984 and January-February 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid					Grid				
Month	8	9–10	11–12	13–15	1984 Total	8	9–10	11–12	13–15	1985 Total
Jan	—	—	38	38	76	—	—	480	—	480
	—	—	(75)	(75)	(106)	—	—	(960)	—	(960)
Feb	—	—	245	96	341	—	—	70	—	70
	—	—	(352)	(192)	(401)	—	—	(104)	—	(104)
Total	—	—	283	134	417	—	—	550	—	550
	—	—	(360)	(206)	(415)	—	—	(966)	—	(966)

Table 88. Estimated number of fishing hours by shanty ice anglers in the south section of the Detroit River for January-February 1984 and January-February 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid					Grid				
Month	8	9–10	11–12	13–15	1984 Total	8	9–10	11–12	13–15	1985 Total
Jan	—	—	198	—	198	—	—	1,835	439	2,274
	—	—	(151)	—	(151)	—	—	(2,695)	(776)	(2,804)
Feb	—	—	139	—	139	—	—	6,769	4,578	11,347
	—	—	(117)	—	(117)	—	—	(3,680)	(1,940)	(4,160)
Total	—	—	337	—	337	—	—	8,604	5,017	13,621
	—	—	(191)	—	(191)	—	—	(4,561)	(2,089)	(5,017)

fish with 87.6% of this total taken by shanty anglers. All fish harvested by the two groups were taken in February both years.

Mean lengths of fish from combined samples of the boat, shore, and ice angler harvest are reported in Appendices 112 and 113. Average lengths of walleye, freshwater drum, and yellow perch were all considerably smaller than those reported for the same species from the St. Clair River, the Harsens Islands channels, and Lake St. Clair. White bass caught in the Detroit River averaged larger than in the other areas. One interesting note, the average annual length of smallmouth bass in the angler creel was 218 and 240 mm in the two years, respectively, with an overall average length of 224 mm for the entire study period. This is 81 mm below the legal size limit of 305 mm for smallmouth bass in the Detroit River.

Discussion

Total angler pressure for all areas during the entire study amounted to 8,343,495 ± 169,072 hours, resulting in a total harvest of 5,621,484 ± 344,099 fish. The average annual harvest during this study of 2,810,742 fish was three times less than the average reported by Jamsen (1972–1974, 1976–1977) and Werther (1978) of 8,381,029 fish during the period 1971–77.

The estimated total catch per hour was 0.6738 ± 0.0434 which was very close to the 2-year average for Lake St. Clair and the northern section of the Detroit River, while being significantly greater than the averages for the St. Clair River and the Harsens Island channels, and significantly less than the southern Detroit River (Table 93). Based on 2-year averages, Lake St. Clair had the highest pressure (1,952,694 ± 66,577 hours) followed by the Detroit River (1,409,195 ± 44,590 hours). Fifty-four percent of the Detroit River hours were accumulated in the southern section (Grids 8–15) which ranked second of the five areas. This was followed by the northern Detroit River section (Grids 1–7) with 648,223 ± 27,479 hours, the St. Clair River (551,454 ± 22,150), and finally the Harsens Island channels (258,407 ± 15,332).

The average annual harvest was highest in the Detroit River (1,420,875 ± 134,611 fish) followed by Lake St. Clair (1,197,600 ± 106,201), the St. Clair River (139,012 ± 9,863), and then the Harsens Island channels (55,257 ± 10,251). The Lake St. Clair harvest was 2.7 and 1.2 times greater than the north and south sections of the Detroit River, respectively. Catch rates were highest in the Detroit River (1.0083 ± 0.1007 fish per hour) with the southern rate almost twice that estimated for the fishermen in Grids 1–7. Again, as above, Lake St. Clair was second followed by the St. Clair River and the Harsens Island channels.

Of the total hours exerted in the entire study area, 88.4% (7,374,956 hours) were accumulated by boat and shore fishermen with the remainder being ice angler effort (Tables 94 and 95). Boat and shore anglers caught 5.1 times as many fish as ice anglers (4,693,773 and

Table 89. Estimated number of fish harvested and catch per hour by open ice anglers in the south section of the Detroit River for January-February 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	—	—	—	—	—
	—	—	—	—	—	—
Yellow perch	—	2,160	2,160	—	6.3343	5.1799
	—	(3,115)	(3,115)	—	(11.7869)	(9.0761)
Total	—	2,160	2,160	—	6.3343	5.1799
	—	(3,115)	(3,115)	—	(11.7869)	(9.0761)

Table 90. Estimated number of fish harvested and catch per hour by open ice anglers in the south section of the Detroit River for January-February 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	12	12	—	0.1714	0.0218
	—	(34)	(34)	—	(0.5484)	(0.0727)
Yellow perch	—	69	69	—	0.9857	0.1255
	—	(156)	(156)	—	(2.6667)	(0.3592)
Total	—	81	81	—	1.1571	0.1473
	—	(160)	(160)	—	(2.7225)	(0.3665)

Table 91. Estimated number of fish harvested and catch per hour by shanty ice anglers in the south section of the Detroit River for January-February 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	25	25	—	0.1799	0.0742
	—	(42)	(42)	—	(0.3380)	(0.1315)
Yellow perch	—	303	303	—	2.1799	0.8991
	—	(527)	(527)	—	(4.2120)	(1.6447)
Total	—	328	328	—	2.3598	0.9733
	—	(529)	(529)	—	(4.2255)	(1.6499)

Table 92. Estimated number of fish harvested and catch per hour by shanty ice anglers in the south section of the Detroit River for January-February 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	60	60	—	0.0053	0.0044
	—	(62)	(62)	—	(0.0058)	(0.0048)
Yellow perch	—	1,746	1,746	—	0.1539	0.1282
	—	(1,795)	(1,795)	—	(0.1679)	(0.1400)
Total	—	1,806	1,806	—	0.1592	0.1326
	—	(1,796)	(1,796)	—	(0.1680)	(0.1401)

Table 93. Estimated fishing hours, fish harvest, and catch per hour for all anglers by area and year, and averaged for the 2-year study period. (Two standard errors in parentheses.)

Area	Year	All anglers: Hours	All anglers: Catch	All anglers: Catch per hour
St. Clair River	1983–84	530,881 (34,830)	129,914 (12,883)	0.2447 (0.0291)
	1984–85	572,026 (27,374)	148,110 (14,937)	0.2589 (0.0289)
	Mean	551,454 (22,150)	139,012 (9,863)	0.2521 (0.0206)
Harsens Island	1983–84	191,729 (17,165)	25,357 (15,699)	0.1323 (0.0827)
	1984–85	325,083 (25,409)	81,156 (13,184)	0.2496 (0.0450)
	Mean	258,407 (15,332)	53,257 (10,251)	0.2061 (0.0415)
Lake St. Clair	1983–84	2,167,013 (114,922)	1,469,323 (144,639)	0.6780 (0.0758)
	1984–85	1,738,374 (67,250)	925,876 (155,544)	0.5326 (0.0918)
	Mean	1,952,694 (66,577)	1,197,600 (106,201)	0.6133 (0.0583)
Detroit River North (grids 1–7)	1983–84	678,090 (43,156)	486,847 (56,417)	0.7180 (0.0949)
	1984–85	618,356 (34,030)	394,414 (54,344)	0.6378 (0.0946)
	Mean	648,223 (27,479)	440,631 (39,167)	0.6798 (0.0669)
Detroit River South (grids 8–15)	1983–84	882,300 (60,702)	1,298,443 (198,037)	1.4717 (0.2462)
	1984–85	639,643 (35,326)	662,044 (164,699)	1.0350 (0.2638)
	Mean	760,972 (35,117)	980,244 (128,787)	1.2881 (0.1794)

Table 93. Continued:

Area	Year	All anglers: Hours	Catch	Catch per hour
Detroit River Total	1983–84	1,560,390 (74,479)	1,785,290 (205,916)	1.1441 (0.1428)
	1984–85	1,257,999 (49,051)	1,056,458 (173,433)	0.8398 (0.1417)
	Mean	1,409,195 (44,590)	1,420,875 (134,611)	1.0083 (0.1007)

927,711 fish, respectively), but the ice angler catch rate of 0.9578 fish per hour was almost double the combined boat and shore rate of 0.6364 fish per hour. Boat anglers exerted 3.1 times more pressure and caught 3.3 times more fish than shore anglers. However, boat and shore fishermen catch rates were not significantly different. It must be emphasized again that no shore interviews were collected in the Harsens Island channels nor along Lake St. Clair.

Open ice anglers were 3.3 times more successful than shanty ice anglers based on catch rates (1.6636 and 0.5082 fish per hour, respectively). Shanty angler pressure (591,576 hours) was 1.6 times greater than open ice effort (376,963 hours), but their harvest was 2.1 times less (300,610 for shanty and 627,101 fish caught by open anglers).

Ranking the fishing groups on angling pressure, combined over all areas for both years, was as follows (1) boat anglers (66.6% of the total hours); (2) shore anglers (21.8%); (3) ice shanty anglers (7.1%); and (4) open ice anglers (4.5%). Boat angler harvest was 64.2% of the total catch, followed by shore (19.3%), open ice (11.2%), and finally shanty ice (5.3%). Ranking on catch rates, however, was quite different with open ice anglers being most successful, then boat, shore, and shanty ice anglers, in that order.

Based on 2 year averages, boat anglers on Lake St. Clair fished significantly more hours than boat anglers in all the rivers combined. Lake St. Clair boat anglers caught fewer fish than Detroit River fishermen, but significantly more than anglers on the St. Clair River or the Harsens Islands channels. Catch rates were highest in the Detroit River, with Grids 8–15 being over twice that of the northern section. Lake St. Clair boat anglers followed next, with the St. Clair River and Harsens Island boat anglers having about the same success. Both shore pressure and harvest were greatest in the Detroit River with 64.7% of the average hours and 62.5% of the harvest occurring in Grids 1–7. St. Clair River shore effort was 3.9 times less than that in the Detroit River while harvest was 13.0 times less. Catch per hour for shore anglers was higher in the southern Detroit River than in the upper grids, and both these areas had catch rates significantly greater than that for shore anglers in the St. Clair River.

Ranking of open ice angler pressure based on the 2-year average was (1) Lake St. Clair; (2) the Harsens Island channels; (3) Detroit River south (Grids 8–15); and (4) Detroit River north (Grids 1–7). The Lake St. Clair open ice harvest was significantly greater than in any other area, followed by the Detroit River and than the Harsens Island channels. Detroit River open ice anglers had the highest catch rates, with the north and south sections being essentially equal, followed by Lake St. Clair and Harsens Island in that order. Lake St. Clair shanty ice angler pressure and harvest were both significantly higher than those estimated for the Harsens Island and Detroit River sections combined. Catch rates for shanty anglers on Lake St. Clair were higher than for their counterparts in the Harsens Island or Detroit River sections. However, when catch per hours for the two sections of the Detroit River are estimated

Table 94. Estimated boat, shore, and total angler fishing hours, fish harvest, and catch per hour by area and year, and averaged for the 2-year study period. (Two standard errors in parentheses.)

		Boat			Shore			Total		
Area	Year	Hours	Catch	Catch per hour	Hours	Catch	Catch per hour	Hours	Catch	Catch per hour
St. Clair River	1983–84	360,428 (31,310)	85,393 (12,180)	0.2370 (0.0382)	170,453 (15,259)	44,521 (4,196)	0.2612 (0.0269)	530,881 (34,830)	129,914 (12,883)	0.2447 (0.0291)
	1984–85	369,789 (23,040)	115,167 (14,490)	0.3115 (0.0432)	202,237 (14,782)	32,943 (3,626)	0.1628 (0.0193)	572,026 (27,374)	148,110 (14,937)	0.2589 (0.0289)
	Mean	365,109 (19,437)	100,280 (9,465)	0.2747 (0.0298)	186,345 (10,622)	38,732 (2,773)	0.2079 (0.0190)	551,454 (22,150)	139,012 (9,863)	0.2521 (0.0206)
Harsens Island	1983–84	175,062 (16,974)	22,752 (15,577)	0.1300 (0.0896)	7,467 (1,432)	— —	— —	182,529 (17,034)	22,752 (15,577)	0.1246 (0.0861)
	1984–85	313,964 (25,288)	81,156 (13,184)	0.2584 (0.0446)	1,734 (737)	— —	— —	315,698 (25,299)	81,156 (13,184)	0.2571 (0.0466)
	Mean	244,513 (15,228)	51,954 (10,204)	0.2125 (0.0438)	4,601 (805)	— —	— —	249,114 (15,250)	51,954 (10,204)	0.2086 (0.0429)
Lake St. Clair	1983–84	1,524,065 (105,098)	829,713 (94,591)	0.5444 (0.0668)	— —	— —	— —	1,524,065 (105,098)	829,713 (94,591)	0.5444 (0.0725)
	1984–85	1,447,117 (61,579)	646,450 (143,090)	0.4467 (0.0995)	— —	— —	— —	1,447,117 (61,579)	646,450 (143,090)	0.4467 (0.1007)
	Mean	1,485,591 (60,905)	738,082 (85,765)	0.4968 (0.0612)	— —	— —	— —	1,485,591 (60,905)	738,082 (85,765)	0.4968 (0.0612)

Table 94. Continued:

Area	Year	Boat Hours	Boat Catch	Boat Catch per hour	Shore Hours	Shore Catch	Shore Catch per hour	Total Hours	Total Catch	Total Catch per hour
Detroit River North (grids 1–7)	1983–84	201,313 (25,201)	154,815 (44,946)	0.7691 (0.2306)	476,739 (35,033)	332,032 (34,099)	0.6964 (0.0757)	678,052 (43,156)	486,847 (56,417)	0.7180 (0.0949)
	1984–85	165,200 (17,340)	96,861 (15,758)	0.5864 (0.1083)	452,370 (29,272)	295,858 (51,980)	0.6540 (0.1170)	617,570 (34,022)	392,719 (54,316)	0.6359 (0.0947)
	Mean	183,257 (15,295)	125,838 (23,814)	0.6867 (0.1420)	464,555 (22,826)	313,945 (31,083)	0.6758 (0.0747)	647,811 (27,477)	439,783 (39,157)	0.6789 (0.0670)
Detroit River South (grids 8–15)	1983–84	592,092 (56,458)	1,059,025 (196,365)	1.7886 (0.3614)	289,454 (22,292)	236,930 (25,488)	0.8186 (0.0965)	881,546 (60,700)	1,295,955 (198,012)	1.4701 (0.2464)
	1984–85	407,034 (32,139)	519,597 (163,575)	1.2767 (0.4087)	218,438 (13,745)	140,560 (19,126)	0.6435 (0.0903)	625,472 (34,955)	660,157 (164,689)	1.0555 (0.2698)
	Mean	499,563 (32,482)	789,311 (127,785)	1.5800 (0.2757)	253,946 (13,094)	188,745 (15,933)	0.7432 (0.0735)	753,509 (35,023)	978,056 (128,774)	1.2980 (0.1812)
Detroit River Total	1983–84	793,405 (61,827)	1,213,840 (201,443)	1.5299 (0.2805)	766,193 (41,524)	568,962 (42,572)	0.7426 (0.0686)	1,559,598 (74,478)	1,782,802 (205,892)	1.1431 (0.1429)
	1984–85	572,234 (36,518)	616,458 (164,332)	1.0773 (0.2953)	670,808 (32,338)	436,418 (55,387)	0.6506 (0.0883)	1,243,042 (48,779)	1,052,876 (173,415)	0.8470 (0.1434)
	Mean	682,820 (35,903)	915,149 (129,985)	1.3402 (0.2030)	718,501 (26,315)	502,690 (34,929)	0.6996 (0.0550)	1,401,320 (44,515)	1,417,839 (134,596)	1.0118 (0.1013)

Table 95. Estimated open, shanty, and total ice angler fishing hours, fish harvest, and catch per hour by area and year, and averaged for the 2-year study period. (Two standard errors in parentheses.)

		Open			Shanty			Total		
Area	Year	Hours	Catch	Catch per hour	Hours	Catch	Catch per hour	Hours	Catch	Catch per hour
St. Clair River	1983–84	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—
	1984–85	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—
	Mean	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—
Harsens Island	1983–84	3,971	1,391	0.3503	5,229	1,214	0.2322	9,200	2,605	0.2831
		(1,604)	(1,734)	(0.4576)	(1,380)	(907)	(0.1840)	(2,117)	(1,957)	(0.2221)
	1984–85	1,497	—	—	7,888	—	—	9,385	—	—
		(776)	—	—	(2,227)	—	—	(2,358)	—	—
	Mean	2,734	696	0.2546	6,559	607	0.0925	9,293	1,303	0.1402
		(891)	(867)	(0.3278)	(1,310)	(454)	(0.0716)	(1,584)	(979)	(0.1080)
Lake St. Clair	1983–84	250,829	441,283	1.7594	392,119	198,327	0.5058	642,948	639,610	0.9948
		(28,880)	(76,996)	(0.3630)	(36,435)	(77,747)	(0.2035)	(46,492)	(109,421)	(0.1837)
	1984–85	118,953	180,550	1.5179	172,304	98,876	0.5737	291,257	279,426	0.9594
		(15,976)	(50,851)	(0.4672)	(21,802)	(33,667)	(0.2066)	(27,029)	(60,985)	(0.2249)
	Mean	184,891	310,917	1.6816	282,212	148,602	0.5266	467,103	459,518	0.9838
		(16,502)	(46,136)	(0.2912)	(21,230)	(42,362)	(0.1552)	(26,889)	(62,634)	(0.1456)

Table 95. Continued:

Area	Year	Open Hours	Open Catch	Open Catch per hour	Shanty Hours	Shanty Catch	Shanty Catch per hour	Total Hours	Total Catch	Total Catch per hour
Detroit River North (grids 1–7)	1983–84	38	—	—	—	—	—	38	—	—
		(75)	—	—	—	—	—	(75)	—	—
	1984–85	708	1,636	2.3107	78	59	0.7564	786	1,695	2.1565
		(703)	(1,746)	(3.2811)	(165)	(170)	(2.7038)	(722)	(1,754)	(2.9130)
	Mean	373	818	2.1930	39	30	0.7692	412	848	2.0583
		(353)	(873)	(3.1281)	(83)	(85)	(2.7258)	(363)	(877)	(2.7964)
Detroit River South (grids 8–15)	1983–84	417	2,160	5.1799	337	328	0.9733	754	2,488	3.2998
		(415)	(3,115)	(9.0761)	(191)	(529)	(1.6499)	(457)	(3,159)	(4.6343)
	1984–85	550	81	0.1473	13,621	1,806	0.1326	14,171	1,887	0.1332
		(966)	(160)	(0.3665)	(5,017)	(1,796)	(0.1401)	(5,109)	(1,803)	(0.1354)
	Mean	484	1,121	2.3161	6,979	1,067	0.1529	7,463	2,188	0.2932
		(526)	(1,560)	(4.0896)	(2,510)	(936)	(0.1450)	(2,565)	(1,819)	(0.2637)
Detroit River Total	1983–84	455	2,160	4.7473	337	328	0.9733	792	2,488	3.1414
		(422)	(3,115)	(8.1398)	(191)	(529)	(1.6638)	(463)	(3,160)	(4.3923)
	1984–85	1,258	1,717	1.3649	13,699	1,865	0.1361	14,957	3,582	0.2395
		(1,195)	(1,753)	(1.9033)	(5,020)	(1,804)	(0.1408)	(5,160)	(2,515)	(0.1874)
	Mean	857	1,939	2.2625	7,018	1,097	0.1563	7,875	3,036	0.3855
		(633)	(1,788)	(2.6731)	(2,511)	(940)	(0.1451)	(2,591)	(2,019)	(0.2860)

separately, the rate estimated for northern Detroit shanty anglers, on the average, was greater than in Lake St. Clair.

The major species caught by all angler types combined differed between sections of the study area. Major species are herein defined as those species constituting 5% or more of the combined anglers' catch within a study section. In the St. Clair River, the major species harvested was walleye (74.5%), followed by freshwater drum (8.4%), and yellow perch (6.2%). Walleye were also most abundant in the Harsens Island harvest, making up 57.5% of the total, with yellow perch second (25.4%). In Lake St. Clair the order was yellow perch (72.5%), freshwater drum (15.3%), and walleye (11.1%). This harvest distribution was similar to that estimated in a census of boat and shore anglers on Lake St. Clair during 1966–67. Yellow perch comprised 68.3% of the total harvest followed by walleye, largemouth bass, and freshwater drum (MDNR, unpublished data). Detroit River anglers harvested more white bass (62.6%) than any other species followed by walleye (11.5%), yellow perch (9.7%), and freshwater drum (6.8%). Bryant (1984) found a different distribution of harvest for boat and shore anglers in the Detroit River during 1980–81. Whereas white bass were ranked first in the harvest, yellow perch were the second most abundant species in the catch, followed by freshwater drum and finally walleye.

For the entire SCDRS, yellow perch were most abundant in the harvest with 2,057,485 (36.6%) fish caught by all anglers. Lake St. Clair anglers harvested 84.5% of these perch with Detroit River fishermen taking 13.4%. White bass harvest was second (1,890,627 fish), making up 33.6% of the entire 2 year harvest. Almost all of the white bass caught (94.1%) came from the Detroit River system. The third most abundant species in the creel was walleye (860,849 fish), constituting 15.3% of the harvest. The Detroit River anglers had the largest walleye catch (327,656), with Lake St. Clair (264,908), the St. Clair River (207,055), and the Harsens Island channels (61,230) coming next in that order. Freshwater drum was the only other species making up a least 5% of the total harvest. Anglers caught 583,327 drum (10.4% of the harvest), with a majority of these fish taken from Lake St. Clair and the Detroit River sections. Creel surveys in 1942–43 (Krumholz and Carbine 1943 and 1945) and the MDNR mail surveys from 1971–77 (Jamsen 1972–1974, 1976–1977; Werther 1978) both reported that yellow perch was the most abundant species in the angler harvest for the entire SCDRS system. However, walleye were reported as the second most abundant species in the angler harvest in these surveys, while white bass was ranked second in this creel survey.

TAG RECOVERIES FOR ALL SPECIES

Methods

The recovery grids within which are summarized the angler and commercial fish tag recovery data are shown in Figure 19. The 24 grids were designated by letters with "O" signifying the extreme north end of the tag recovery area in southern Lake Huron and "X, S" signifying the southeastern end in the central basin of Lake Erie. These grids had been selected prior to this study for tag recovery analysis at the Lake St. Clair Fisheries station and were subjectively developed to divide the tag recovery area into moderately sized grids with similar distances between their epicenters. The actual distance between the various tag sites and the epicenters of these recovery grids are given in Appendices 236 and 237. These measurements were used to calculate the minimal distance traveled for tag recoveries which had previously been assigned to the appropriate tag recovery grid. Tags recovered within their tagging grid were arbitrarily assigned a distance of 0.16 km to avoid division by zero problems during movement rate calculations.

The following assumptions were adopted regarding the movement dynamics of all tagged species to facilitate summarization of the diverse recovery data. An individual fish's movement pattern was assumed to be circular within any 365 day period to the extent that individuals were anticipated to be a maximum distance away from the tag site 183 days (a half year) after tagging. They would have returned to their tag site on subsequent tagging anniversaries. This analysis has an underlying hypothesis that tagged fish were adapted to their environment and were moving to or from traditional living areas (with homing) rather than following a random dispersal pattern. Leggett (1977) summarized many studies of fish migration and suggested that a small amount of bias toward the target area over an extended period would probably be enough to ensure successful homing. He concluded migratory movements are not random and must be more directed if occurring during a short time period. The only practical divergence from other dispersal analyses was that we calculated rate of travel as the distance from the tag site divided by the number of days to or from the tag site. Hypothetically, it was the distance away from the tag site if the fish was recovered less than 183 days after the tag anniversary and it was the distance to the tag site if recovered at least 183 days after the tag anniversary but less than the tag anniversary plus 365 days. The maximum number of days from the tag site did not exceed 183 regardless of the number of years between the actual tagging and recovery dates. The calculation of movement rates in this fashion should not have effected comparisons between species since they were all handled in the same fashion.

Annual exploitation and survival estimates for walleye and smallmouth bass were generated using a statistical tag recovery analysis package (Brownie et al. 1978). This mainframe computer program presented a detailed analysis of four general stochastic models

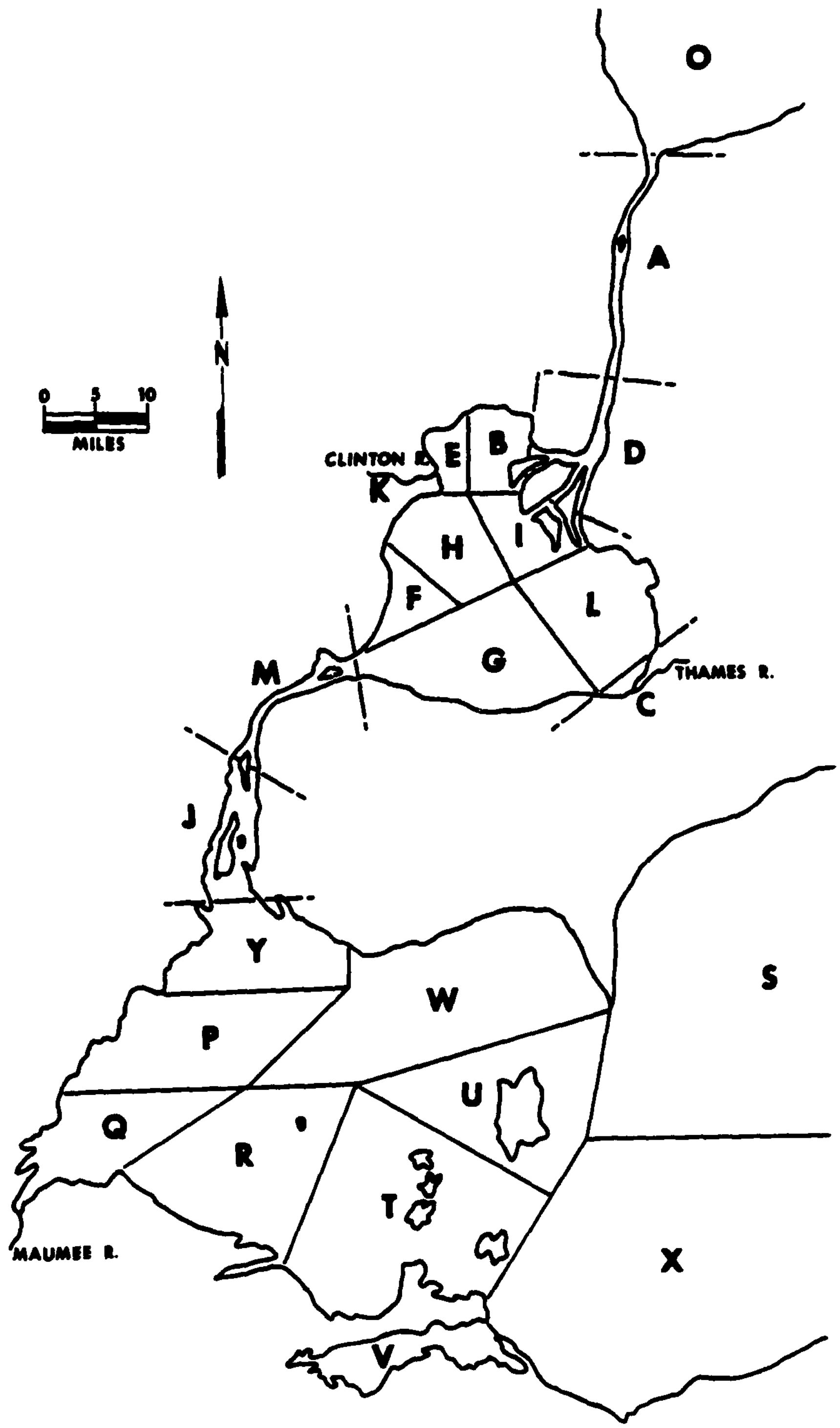

Figure 19. Grids used to locate tag recoveries reported by anglers and commercial fishermen.

each based on several different assumptions. In each case parameters were estimated using the theory of maximum likelihood and the assumptions were tested statistically. The proper model was selected based on how well it fitted the data set.

Results and discussion

The time period for collection of tag recovery data from the eight primary net stations extended from April 1, 1983 to August 1, 1985. The resulting tag analyses were broken down into three segments; multi-species tagging at primary trap net Stations 1-8 associated with the navigation channel throughout the SCDRS, smallmouth bass and walleye tagging at A-marker, and walleye tagging at Monroe in Lake Erie. The A-marker smallmouth bass and walleye and Monroe walleye tagging are continuations of ongoing MDNR tagging studies which have provided statistically precise estimates of mortality and exploitation because they were extensive in number tagged and duration. The returns from tags applied at the primary net stations during 1983 and 1984 provided information about exploitation rates but these tagging operations were not of long enough duration (5 year minimum) to provide statistically sound estimates of mortality and exploitation (Brownie et al. 1978). The more precise estimates from the Anchor Bay and Monroe stations will be used to evaluate any observed differences between years at the eight primary net stations.

A total of 43 species were tagged at Stations 1-8 during the study to gather information on movements, exploitation and abundance. The number of each species tagged during both years of the study at the primary trap net Stations 1-8 is shown in Table 96 (see Appendix 227 for numbers of species tagged each year). A total of 29,168 fish were tagged during the entire study of which rock bass, walleye, and yellow perch comprised 58%. Other species which each made up greater then 3% of the total were channel catfish, freshwater drum, common carp, white sucker, and smallmouth bass.

The number of each species tagged at these eight stations during each month is shown in Table 97 (Appendices 228-235 show the number tagged at each station by month). The top 13 species, based on percent of tags recovered in the angler fishery and survey net catch, were selected for in-depth tag analyses. The remaining 30 species were tagged and/or recaptured at too low a frequency to provide useful information beyond the raw tag and recovery data. The rank order of these 13 species, by number tagged per trap net lift, averaged over the entire survey period at trap net Stations 1-8 is shown in Table 98. This ranking shows the domination of walleye, rock bass, and yellow perch to the tagged population. They made up the top three species at all stations except 1 and 5 where they were still included in the top four species. The other 10 species showed interesting patterns between stations. The number tagged of each species was usually proportional to the total number caught in survey nets except for species, like rock bass, where many individuals were too small in size to tag.

Table 96. Number of fish tagged at trap net Stations 1-8 during entire survey.

	Trap net stations								
Species	1	2	3	4	5	6	7	8	Total
Lake sturgeon	—	—	3	6	—	—	—	—	9
Longnose gar	—	2	—	2	—	2	1	2	9
Bowfin	—	2	42	6	—	1	7	8	66
Gizzard shad	1	—	7	—	—	1	—	—	9
Mooneye	—	1	—	1	—	—	—	—	2
Northern pike	21	33	173	25	4	51	27	111	445
Muskellunge	3	—	1	3	1	3	11	3	25
Black bullhead	—	1	8	—	1	—	3	7	20
Yellow bullhead	1	—	4	—	—	—	6	1	12
Brown bullhead	—	2	80	1	2	29	232	343	689
Channel catfish	12	94	171	418	178	59	151	154	1,237
Stonecat	7	4	8	—	83	67	26	53	248
Burbot	2	2	3	1	13	—	—	—	21
White perch	2	5	32	48	21	43	78	61	290
White bass	6	104	54	55	125	32	241	118	735
Freshwater drum	35	64	218	281	212	88	75	115	1,088
Chinook salmon	1	1	—	1	—	2	—	—	5
Coho salmon	—	—	—	—	—	14	—	1	15
Rainbow trout	1	—	1	1	3	5	2	—	13
Brown trout	1	2	1	—	1	—	—	—	5
Lake trout	—	—	1	—	—	—	—	—	1
Goldfish	—	—	1	—	1	3	38	18	61
Common carp	22	31	200	36	28	108	268	374	1,067
Quillback	—	1	22	78	18	19	70	30	238
White sucker	352	199	202	71	64	53	136	70	1,147
Hog sucker	32	5	7	—	1	—	—	2	47
Bigmouth buffalo	—	1	—	—	1	—	1	—	3
Spotted sucker	8	—	2	—	—	—	—	2	12
Redhorse, unidentified	59	49	88	330	293	53	96	22	990
Silver redhorse	8	27	12	16	4	6	33	13	119
Golden redhorse	9	1	1	1	1	—	4	2	19
Shorthead redhorse	52	21	46	91	59	26	34	13	342

Table 96. Continued:

Species	Trap net stations 1	2	3	4	5	6	7	8	Total
River redhorse	5	—	—	1	—	1	—	—	7
Rock bass	346	526	1,552	917	645	725	753	448	5,912
Pumpkinseed	1	7	106	7	5	13	7	9	155
Bluegill	1	5	20	—	3	12	1	—	42
Smallmouth bass	156	106	152	360	1,113	274	101	76	2,338
Largemouth bass	—	4	31	1	1	4	3	5	49
White crappie	—	—	5	—	1	3	3	2	14
Black crappie	3	16	278	3	38	62	111	88	599
Yellow perch	481	726	1,424	699	388	384	580	552	5,234
Sauger	2	1	—	—	—	—	—	—	3
Walleye	684	426	809	1,074	1,215	291	941	386	5,826
Total tagged	2,314	2,469	5,765	4,534	4,523	2,434	4,040	3,089	29,168
Number tagged per net lift	6.99	7.99	16.33	19.05	14.49	7.12	12.55	10.37	11.64

Table 97. Number of fish tagged each month during the entire survey.

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Lake sturgeon	—	—	1	—	—	1	4	3	—	—	—	—	9
Longnose gar	—	3	1	3	1	1	—	—	—	—	—	—	9
Bowfin	8	8	21	15	4	8	2	—	—	—	—	—	66
Gizzard shad	8	—	—	1	—	—	—	—	—	—	—	—	9
Mooneye	—	—	—	—	—	1	1	—	—	—	—	—	2
Northern pike	103	133	41	25	19	23	41	25	6	—	2	22	445
Muskellunge	4	3	3	1	2	—	4	3	4	—	—	1	25
Black bullhead	5	2	1	9	1	—	2	—	—	—	—	—	20
Yellow bullhead	2	5	—	—	3	—	—	1	1	—	—	—	12
Brown bullhead	88	96	69	55	107	153	53	59	1	—	—	8	689
Channel catfish	16	35	53	158	339	235	299	99	—	—	—	3	1,237
Stonecat	25	14	39	22	39	27	68	14	—	—	—	—	248
Burbot	4	4	2	—	—	—	3	5	—	—	2	1	21
White perch	8	13	107	52	68	27	12	2	1	—	—	—	290
White bass	18	163	225	170	82	58	43	12	—	—	—	—	735
Freshwater drum	46	61	99	257	122	110	289	100	—	—	1	3	1,088
Chinook salmon	—	2	1	—	—	2	—	—	—	—	—	—	5
Coho salmon	—	—	—	—	—	8	7	—	—	—	—	—	15
Rainbow trout	4	—	2	1	2	3	—	1	—	—	—	—	13
Brown trout	—	1	2	1	—	1	—	—	—	—	—	—	5

Table 97. Continued:

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Lake trout	—	1	—	—	—	—	—	—	—	—	—	—	1
Goldfish	3	13	9	6	3	4	6	8	5	—	—	4	61
Common carp	178	110	178	150	151	159	73	53	7	—	—	8	1,067
Quillback	21	10	21	33	38	34	73	7	—	—	—	1	238
White sucker	146	129	111	68	87	114	197	209	26	25	9	26	1,147
Hog sucker	1	4	4	1	4	12	13	6	—	1	—	1	47
Bigmouth buffalo	1	—	—	—	—	2	—	—	—	—	—	—	3
Spotted sucker	1	4	2	1	—	—	—	4	—	—	—	—	12
Redhorse, unident.	121	85	141	174	63	77	151	164	9	—	2	3	990
Silver redhorse	4	—	—	13	31	25	27	9	—	—	—	—	119
Golden redhorse	—	—	—	—	—	10	8	1	—	—	—	—	19
Shorthead redhorse	—	—	54	59	56	43	66	54	1	—	—	9	342
River redhorse	—	—	—	—	6	1	—	—	—	—	—	—	7
Rock bass	162	638	1,491	953	638	395	1,238	345	37	—	9	6	5,912
Pumpkinseed	6	21	29	30	42	10	17	—	—	—	—	—	155
Bluegill	—	4	10	10	11	4	2	—	—	—	—	—	41
Smallmouth bass	14	131	142	380	353	441	762	114	1	—	—	—	2,338
Largemouth bass	—	3	3	3	8	22	8	2	—	—	—	—	49
White crappie	3	—	1	3	2	1	4	—	—	—	—	—	14
Black crappie	47	61	63	39	53	130	183	16	6	—	—	1	599

Table 97. Continued:

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Yellow perch	600	948	1,040	755	625	371	595	206	52	1	14	27	5,234
Sauger	—	—	—	—	—	—	—	3	—	—	—	—	3
Walleye	433	612	858	690	939	963	756	535	32	—	3	5	5,827
Total tagged	2,081	3,277	4,829	4,138	3,899	3,476	5,006	2,064	189	27	42	130	29,158
Number net lifts	262	278	302	285	313	307	314	238	52	14	22	45	2,490
Number tagged per net lift	7.9	11.8	16.0	14.5	12.5	11.3	15.9	8.7	3.6	1.9	1.9	1.3	11.7

Table 98. Rank (highest to lowest) of the number of tags applied per trap net lift at each net station during entire survey.

Trap net station			
1	2	3	4
Walleye	Yellow perch	Rock bass	Walleye
Yellow perch	Rock bass	Yellow perch	Rock bass
White sucker	Walleye	Walleye	Yellow perch
Rock bass	White sucker	Black crappie	Redhorse
Smallmouth bass	Smallmouth bass	Freshwater drum	Channel catfish
Redhorse	White bass	White sucker	Smallmouth bass
Freshwater drum	Redhorse	Common carp	Freshwater drum
Common carp	Channel catfish	Northern pike	White sucker
Northern pike	Freshwater drum	Channel catfish	White bass
Channel catfish	Northern pike	Smallmouth bass	Common carp
White bass	Common carp	Redhorse	Northern pike
Black crappie	Black crappie	Brown bullhead	Black crappie
Brown bullhead	Brown bullhead	White bass	Brown bullhead

Trap net station			
5	6	7	8
Walleye	Rock bass	Walleye	Yellow perch
Smallmouth bass	Yellow perch	Rock bass	Rock bass
Rock bass	Walleye	Yellow perch	Walleye
Yellow perch	Smallmouth bass	Common carp	Common carp
Redhorse	Common carp	White bass	Brown bullhead
Freshwater drum	Freshwater drum	Brown bullhead	Channel catfish
Channel catfish	Redhorse	Redhorse	White bass
White bass	Black crappie	Channel catfish	Freshwater drum
White sucker	Channel catfish	White sucker	Northern pike
Black crappie	White sucker	Black crappie	Black crappie
Common carp	Northern pike	Smallmouth bass	Smallmouth bass
Northern pike	White bass	Freshwater drum	White sucker
Brown bullhead	Brown bullhead	Northern pike	Redhorse

The angler harvest and survey trap net effort provided the majority of the data on tag recoveries. Commercial fisheries on Lake Huron and Lake Erie also provided some tag recovery information; however, the Ontario commercial fishery on Lake St. Clair did not.

The angler and commercial fisheries provided 1,081 total tag returns from fish tagged at trap net Stations 1-8. The number of tagged fish of each species from each station that were recovered and reported by anglers and commercial fishermen and each species' percentage of the total tagged is given in Table 99. The combination of yellow perch and walleye made up 61% of these tag returns which showed their predilection, relative to the other species, to be caught by anglers. They comprised only 38% of the total fish tagged during the study.

Only 18 (1.7%) of all tag recoveries were reported from commercial fisheries. A low recovery by commercial fishermen was anticipated since there was only a small commercial fishery in Ontario waters of Lake St. Clair and these tagged fish apparently had to travel to southern Lake Huron or western Lake Erie before they were vulnerable to substantial commercial exploitation. The annual Ontario commercial fish harvest on Lake St. Clair during 1983 and 1984 averaged 94,300 kg of all species (Great Lakes Fishery Commission 1985). The so called "rough species" of bowfin, common carp, freshwater drum, and white suckers made up approximately 90% of this harvest. The lack of tag returns from the Lake St. Clair commercial fishery probably indicated that the fish populations in Michigan waters of the study area had a very low exchange rate with the far eastern shore of Lake St. Clair where the commercial operations were also very unlikely to see and/or report recovery of tagged "rough" fish.

The survey trap net catches at net Stations 1-8 provided 895 tag recoveries from fish tagged at these same stations. The number of tagged fish recovered and their percentage of the total tagged for each species is shown in Table 100. These tag recoveries provided some information on fish movements, but more importantly, they provided evidence of differences between species in vulnerability to trap net capture. This information assisted in evaluating the trap net catch as a measure of species relative abundance.

Rock bass and yellow perch provided 64% of the survey net returns which showed their predilection, relative to the other species, to be captured in nets. They comprised only 38% of the total number of fish tagged. Tagged yellow perch have proven to be the most vulnerable overall to recapture in sport fisheries, commercial fisheries and experimental trap net samples.

The recovery of tagged fish in survey trap nets has shown that tagged fish are most vulnerable to recapture at their tagging station within the same sampling period. Contingency Tables 101-107 are comparisons of the number of tags recovered at each net station for seven selected species according to their tagging station. These seven species, chosen due to relatively high recapture rates and variety in behavior pattern, were channel catfish, freshwater drum, redhorse, rock bass, smallmouth bass, yellow perch, and walleye. One half of all recoveries

Table 99. Number of tags recovered by anglers and commercial fishermen from those tagged at trap net Stations 1-8 during entire survey.

Species	Trap net stations 1	2	3	4	5	6	7	8	Total	Percent of total tagged
Lake sturgeon	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	—	—	—	—	—	—	—	—	—
Bowfin	—	—	—	—	—	—	—	—	—	—
Gizzard shad	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	—	—	—	—
Northern pike	1	3	8	1	—	—	—	4	17	3.8
Muskellunge	—	—	—	—	—	—	—	—	—	—
Black bullhead	—	—	—	—	—	—	—	1	1	5.0
Yellow bullhead	—	—	—	—	—	—	—	—	—	—
Brown bullhead	—	—	—	—	—	—	3	—	3	0.4
Channel catfish	—	2	7	10	2	1	6	3	31	2.5
Stonecat	—	—	—	—	1	—	—	—	1	0.4
Burbot	—	—	—	—	—	—	—	—	—	—
White perch	—	—	1	—	—	1	—	—	2	0.7
White bass	—	2	3	4	—	1	1	1	12	1.6
Freshwater drum	—	—	1	1	—	—	—	—	2	0.2
Chinook salmon	—	—	—	—	—	—	—	—	—	—
Coho salmon	—	—	—	—	—	1	—	—	1	6.7
Rainbow trout	—	—	—	—	—	2	1	—	3	23.1
Brown trout	—	—	—	—	—	—	—	—	—	—
Lake trout	—	—	—	—	—	—	—	—	—	—
Goldfish	—	—	—	—	—	—	—	—	—	—
Common carp	—	1	3	—	—	—	—	—	4	0.4
Quillback	—	—	—	1	—	—	—	—	1	0.4
White sucker	4	3	1	1	—	—	—	—	9	0.8
Hog sucker	—	—	—	—	—	—	—	—	—	—
Bigmouth buffalo	—	—	—	—	—	—	1	—	1	33.3
Spotted sucker	—	—	—	—	—	—	—	—	—	—
Redhorse, unidentified	2	—	—	2	—	—	—	—	4	0.4
Silver redhorse	—	—	—	—	—	—	—	—	—	—
Golden redhorse	—	—	—	—	—	—	—	—	—	—
Golden redhorse	—	—	—	—	—	—	—	—	—	—

Table 99. Continued:

Species	Trap net stations 1	2	3	4	5	6	7	8	Total	Percent of total tagged
Shorthead redhorse	—	—	—	—	—	—	—	—	—	—
River redhorse	—	—	—	—	—	—	—	—	—	—
Rock bass	16	26	56	14	25	26	23	3	189	3.2
Pumpkinseed	—	—	4	—	—	—	—	—	4	2.6
Bluegill	—	—	1	—	—	2	—	—	3	7.1
Smallmouth bass	7	9	11	12	48	9	2	2	100	4.3
Largemouth bass	—	—	1	—	—	1	—	—	2	4.1
White crappie	—	—	2	—	—	—	—	—	2	14.3
Black crappie	—	1	16	—	2	2	4	5	30	5.0
Yellow perch	51	68	136	50	20	23	34	19	401	7.7
Sauger	—	—	—	—	—	—	—	—	—	—
Walleye	31	20	33	39	57	13	53	12	258	4.4
Total tags recovered	112	135	284	135	155	82	128	50	1,081	
Percent recovered	4.84	5.47	4.93	2.98	3.43	3.37	3.17	1.62	3.71	

Table 100. Number of tags recovered in survey trap nets at Stations 1-8 from those tagged at trap net Stations 1-8 during entire survey.

Species	Trap net stations 1	2	3	4	5	6	7	8	Total	Percent of total tagged
Lake sturgeon	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	—	—	—	—	—	—	—	—	—
Bowfin	—	—	4	—	—	—	1	—	5	7.6
Gizzard shad	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	—	—	—	—
Northern pike	1	—	4	—	—	—	—	3	8	1.8
Muskellunge	—	—	—	—	1	—	—	—	1	4.0
Black bullhead	—	—	—	—	—	—	—	—	—	—
Yellow bullhead	—	—	—	—	—	—	—	—	—	—
Brown bullhead	—	—	7	—	—	—	8	7	22	3.2
Channel catfish	—	1	5	9	2	—	5	2	24	1.9
Stonecat	1	—	—	—	2	6	—	—	9	3.6
Burbot	1	—	—	—	1	—	—	—	2	9.5
White perch	—	—	—	—	—	—	—	1	1	0.3
White bass	—	—	—	1	—	—	1	1	3	0.4
Freshwater drum	1	—	2	—	3	1	2	1	10	0.9
Chinook salmon	—	—	—	—	—	—	—	—	—	—
Coho salmon	—	—	—	—	—	—	—	—	—	—
Rainbow trout	—	—	—	—	—	—	—	—	—	—
Brown trout	—	—	—	—	—	—	—	—	—	—
Lake trout	—	—	—	—	—	—	—	—	—	—
Goldfish	—	—	—	—	—	—	—	—	—	—
Common carp	—	1	1	—	—	—	5	4	11	1.0
Quillback	—	—	—	—	—	—	—	—	—	—
White sucker	9	—	1	—	—	—	1	—	11	1.0
Hog sucker	2	—	—	—	—	—	—	—	2	4.3
Bigmouth buffalo	—	—	—	—	—	—	—	—	—	—
Spotted sucker	—	—	1	—	—	—	—	—	1	8.3
Redhorse, unidentified	1	1	—	1	7	—	1	1	12	1.0
Silver redhorse	—	—	—	—	—	—	—	—	—	—
Golden redhorse	—	—	—	—	—	—	—	—	—	—
Shorthead redhorse	—	—	—	—	—	—	—	—	—	—

Table 100. Continued:

Species	Trap net stations 1	2	3	4	5	6	7	8	Total	Percent of total tagged
River redhorse	—	—	—	—	—	—	—	—	—	—
Rock bass	28	52	71	29	36	52	28	10	306	5.2
Pumpkinseed	—	—	4	1	—	—	—	1	6	3.9
Bluegill	—	—	1	—	—	—	—	—	1	2.4
Smallmouth bass	14	1	2	21	44	18	2	1	103	4.4
Largemouth bass	—	—	—	—	—	—	—	—	—	—
White crappie	—	—	—	—	—	—	—	—	—	—
Black crappie	—	2	11	—	1	5	8	16	43	7.2
Yellow perch	51	56	105	9	11	17	11	4	264	5.0
Sauger	—	—	—	—	—	—	—	—	—	—
Walleye	4	5	8	5	10	5	10	3	50	0.9
Total tags recovered	113	119	227	76	118	104	83	55	895	
Percent recovered	4.88	4.82	3.94	1.68	2.61	4.27	2.05	1.78	3.07	

came from the tagging station during the same netting period in which they were tagged; 28% were taken during subsequent netting periods within the same calendar year; and 22% were taken during a subsequent calendar year.

When the stations were grouped by water body some differences in trap net tag recoveries were evident. Of these seven species, 8,178 had been tagged in the St. Clair River (Stations 1-3), 8,123 had been tagged in Lake St. Clair (Stations 4-5), and 6,324 had been tagged in the Detroit River (Stations 6-8). The ratio of survey net tag recoveries, during the same net period in which tagging occurred, to total tagged was 0.017 for the St. Clair River, 0.016 for Lake St. Clair, and 0.018 for the Detroit River. There were no apparent differences between lakes during the same net periods.

This same ratio for tag recoveries during subsequent net periods within the same calendar year was 0.017 for the St. Clair River, 0.003 for Lake St. Clair, and 0.007 for the Detroit River. This ratio for tag recoveries during net periods in subsequent calendar years were 0.015, 0.003 and 0.003. The recoveries that were obtained during the subsequent net periods provided ratios for Lake St. Clair and the Detroit River which were considerably lower then that for the St. Clair River. Fish vulnerability to capture in trap nets apparently was highest in the St. Clair River, next highest in the Detroit River, and lowest in Lake St. Clair.

Walleye from Monroe and Anchor Bay stations.—During the spring of 1983 and 1984, 2,984 walleyes were tagged at the Monroe Station. As of August 1985, anglers and commercial fishermen reported capturing 156 of these tagged fish for a 5.2% return. In 1985, 3,763 walleyes were tagged at Monroe of which 92 (2.4%) were recovered by August 1. The 1985 tag and recovery data were not included in the exploitation and survival parameter estimation since only about two-thirds of the recovery season had elapsed. However, the 1985 recovery data was included in analyses of walleye movement patterns.

During the spring of 1983 and 1984, 2,487 walleyes were tagged at the A-marker Station. As of August 1985, anglers and commercial fishermen had reported capturing 222 of these tagged fish for an 8.9% return. In 1985, an additional 1,829 walleyes were tagged of which 76 (4.2%) were recovered by August 1. As for the Lake Erie data, the 1985 A-marker tag data were not used for parameter estimation.

Analyses of walleye tag recovery data from the A-marker and Monroe net stations, as of August 1985, allowed for precise annual estimates of survival and exploitation for the 1983 and 1984 fishing years. The annual exploitation and survival estimates for the two stations generated using the statistical tag recovery analysis package (Brownie et al. 1978) are shown in Table 108. The estimated average annual exploitation rate on walleye was significantly higher for Lake St. Clair tagged walleyes (5.4%) than for the Lake Erie tagged walleye (3.3%) in spite of the fact that Monroe tagged walleyes have intermingled with the Lake St. Clair walleyes. This difference was also minimized because the Lake St. Clair estimate included data from the

Table 101. Number of channel catfish tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged								
	1	2	3	4	5	6	7	8	32
1	—	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—	—
3	—	—	3	—	—	—	—	—	—
4	—	—	—	6	—	—	—	—	—
5	—	—	—	—	2	—	—	—	—
6	—	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	5	1	—
8	—	—	—	—	—	—	—	1	—
32	—	1	2	3	—	—	—	—	—

Table 102. Number of freshwater drum tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged								
	1	2	3	4	5	6	7	8	32
1	1	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—	—
3	—	—	2	—	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—
5	—	—	—	—	3	—	—	—	—
6	—	—	—	—	—	1	—	—	—
7	—	—	—	—	—	—	2	—	—
8	—	—	—	—	—	—	—	1	—
32	—	—	—	—	—	—	—	—	—

Table 103. Number of redhorse tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged								
	1	2	3	4	5	6	7	8	32
1	1	—	—	—	—	—	—	—	—
2	—	1	—	—	—	—	—	—	—
3	—	—	—	1	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—
5	—	—	—	—	6	—	—	—	—
6	—	—	—	—	—	—	—	—	—
7	—	—	—	—	1	—	—	—	—
8	—	—	—	—	—	—	1	1	—
32	—	—	—	—	—	—	—	—	—

Table 104. Number of rock bass tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged								
	1	2	3	4	5	6	7	8	32
1	26	—	1	—	—	—	—	—	—
2	2	50	2	—	—	—	—	—	—
3	—	2	69	—	—	—	—	—	—
4	—	—	—	29	1	—	—	—	—
5	—	—	—	—	36	—	—	—	—
6	—	—	—	—	—	52	—	—	—
7	—	—	—	—	—	—	28	—	—
8	—	—	—	—	—	—	—	10	—
32	—	—	—	—	—	—	—	—	—

Table 105. Number of smallmouth bass tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged								
	1	2	3	4	5	6	7	8	32
1	14	—	—	—	2	—	—	—	1
2	—	1	—	—	—	—	—	—	2
3	—	—	2	1	—	—	—	—	4
4	—	—	—	19	—	—	—	—	1
5	—	—	—	1	42	—	—	—	1
6	—	—	—	—	—	18	—	—	—
7	—	—	—	—	—	—	2	—	—
8	—	—	—	—	—	—	—	1	—
32	—	—	—	—	—	—	—	—	—

Table 106. Number of yellow perch tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged								
	1	2	3	4	5	6	7	8	32
1	51	3	4	—	—	—	—	—	—
2	—	50	—	—	—	—	—	—	—
3	—	—	99	—	—	—	—	—	—
4	—	—	—	8	—	—	—	—	—
5	—	—	—	—	10	—	—	—	—
6	—	—	—	—	—	17	—	—	—
7	—	—	—	—	—	—	11	—	—
8	—	—	—	—	—	—	—	5	—
32	—	—	—	—	—	—	—	—	—

Table 107. Number of walleye tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged								
	1	2	3	4	5	6	7	8	32
1	4	—	—	—	—	—	—	—	—
2	—	5	—	—	—	—	—	—	—
3	—	—	8	—	—	—	—	—	—
4	—	—	—	5	—	—	—	—	2
5	—	—	—	—	10	—	—	—	—
6	—	1	—	—	—	5	—	—	—
7	—	—	—	—	—	—	10	—	—
8	—	—	—	—	—	—	—	3	—
32	—	—	—	—	—	—	—	—	—

1975–1977 period when exploitation was relatively low. These data provided a minimal measure of the real difference between the exploitation of walleye in Lake St. Clair and connecting waters (high) versus Lake Erie (low).

Estimates for walleye exploitation in SCDRS were low compared to published values for other intensively fished walleye populations which range from a low of 5% to a high of 47% (Colby et al. 1979). The low exploitation, when considered with the annual survival estimate of 54.2%, indicated that natural death of legal-sized walleyes was a much larger mortality factor than was fishing death for fish tagged at these stations. The percent of all walleye tag returns, originating from the A-marker and Monroe tag stations, that were reported as being caught in each of the angler recovery grids is shown in Figure 20. The percentages of A-marker tags were based on a total of 451 returns of walleyes tagged between 1975 and 1983. Only tag returns that had a full calendar year of vulnerability were included. The 1985 returns of previous years tags were not included since they would reflect only a portion of a recovery year. The percentages recovered from the Monroe tag site were based on 341 returns received from 1979 to 1984 from walleyes that had been tagged in 1978 through 1983. The same constraints of time period were applied to this data set as had been applied to the A-marker tag returns. Monroe tagged walleyes were much more likely to be caught in the SCDRS waters than the A-marker walleyes in Lake Erie. Monroe walleyes were quite likely to be recovered from southern Lake Huron and the St. Clair River (Grids O, A, and D) even though that station was about 105 km further from the St. Clair River.

The A-marker walleye tags were unlikely to be recovered from Lake Erie grids. Only 4.4% of all returns came from there. Quite a few fish from the two tag sites were recovered from the Thames River, a major walleye spawning tributary to Lake St. Clair along the Ontario shore.

The distribution of A-marker tag recoveries compared to the distribution of recoveries from walleyes tagged at a prior eastern Anchor Bay net station located near the mouth of the North Channel is shown in Figure 21. These North Channel station percentages were based on 279 angler tag recoveries from 2,253 walleyes that had been tagged during October and November in 1975–78 by MDNR. These data were incorporated to represent winter walleye stocks and their winter movement patterns and improve the understanding of year around stock dynamics.

Fall tagged walleyes were more likely to be recovered close to their tag site, mainly Grid B, than were walleyes tagged during spring at A-marker even though the fall tagged fish were not subjected to any fishing pressure until January 1 of the next year. Fewer of the North Channel walleye tags (1.1%) were recovered in Lake Erie even though more were recovered in the Detroit River (6.4%) compared to Detroit River recoveries of A-marker tags (5.7%). The

Table 108. Estimated annual exploitation and survival (with 95% confidence limits) for walleye and smallmouth bass in Lake St. Clair and Lake Erie from tag recoveries through 1985, for tags applied through 1984.

	Walleye		Smallmouth bass
	Lake Erie	Lake St. Clair	Lake St. Clair
Year	Exploitation in percent	Exploitation in percent	Exploitation in percent
1975	—	3.7(2.5–4.8)	—
1976	—	2.4(1.4–3.5)	—
1977	—	5.2(3.6–6.8)	—
1978	3.3(2.4–4.2)	3.5(2.5–4.5)	9.3(7.1–11.4)
1979	3.0(2.4–3.6)	6.4(5.2–7.7)	7.1(5.5–8.6)
1980	3.7(2.7–4.7)	5.1(4.2–6.0)	4.3(3.5–5.2)
1981	2.1(1.3–2.9)	4.1(2.9–5.2)	6.9(5.3–8.6)
1982	3.8(2.8–4.8)	9.4(6.3–12.4)	13.8(9.8–17.7)
1983	3.7(2.8–4.6)	9.0(7.4–10.7)	14.1(11.7–16.6)
1984	3.1(2.2–3.9)	5.3(4.1–6.5)	11.1(9.8–12.5)
Mean annual exploitation	3.3(2.9–3.6)	5.4(4.9–5.9)	9.3(8.3–10.2)
Mean annual survival	64.9(58.4–71.4)	54.2(49.9–58.5)	39.4(35.5–43.4)

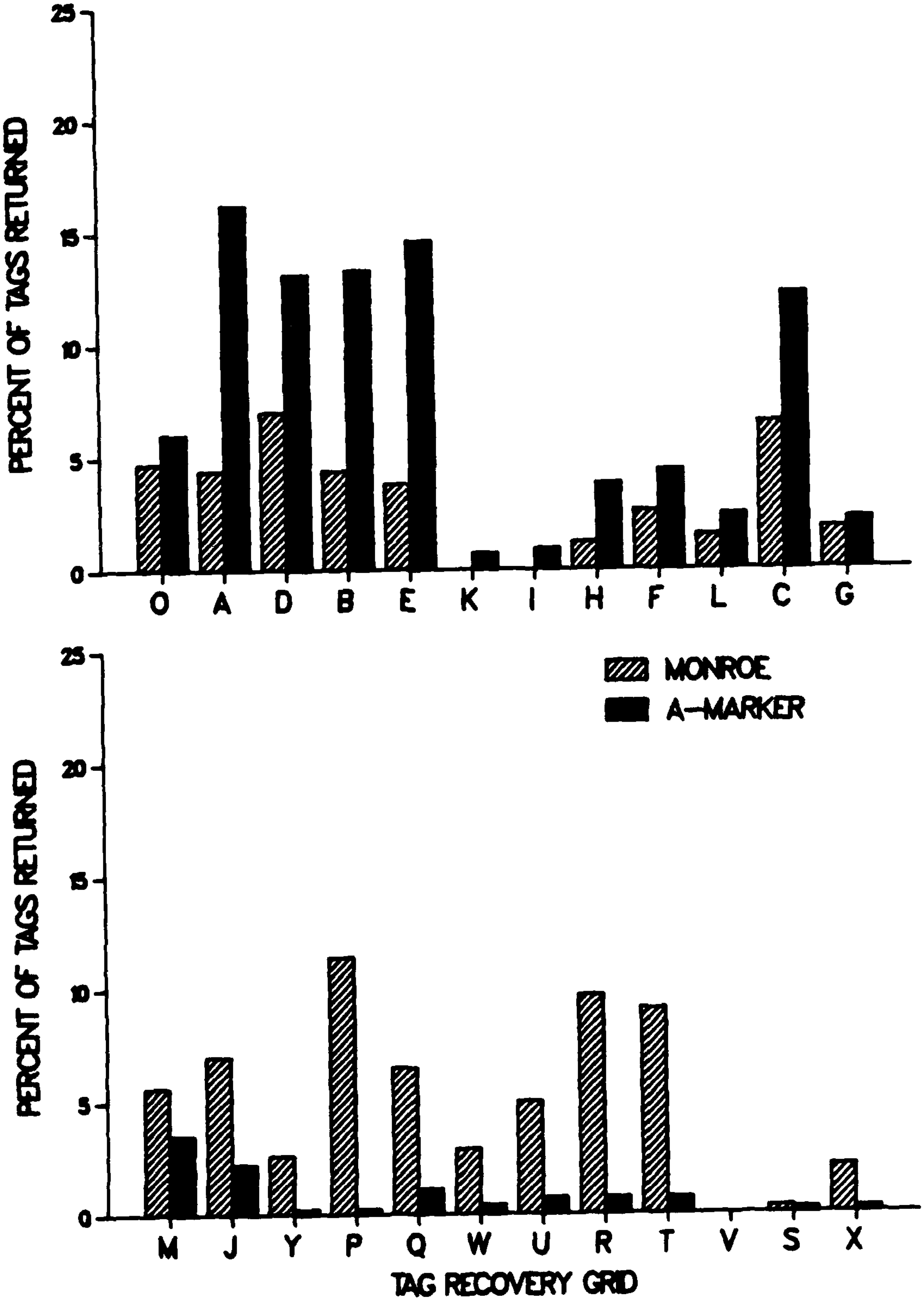

Figure 20. Percent of tagged walleyes from A-marker and Monroe stations recaptured, during subsequent years, by anglers and commercial fishermen within recovery grids.

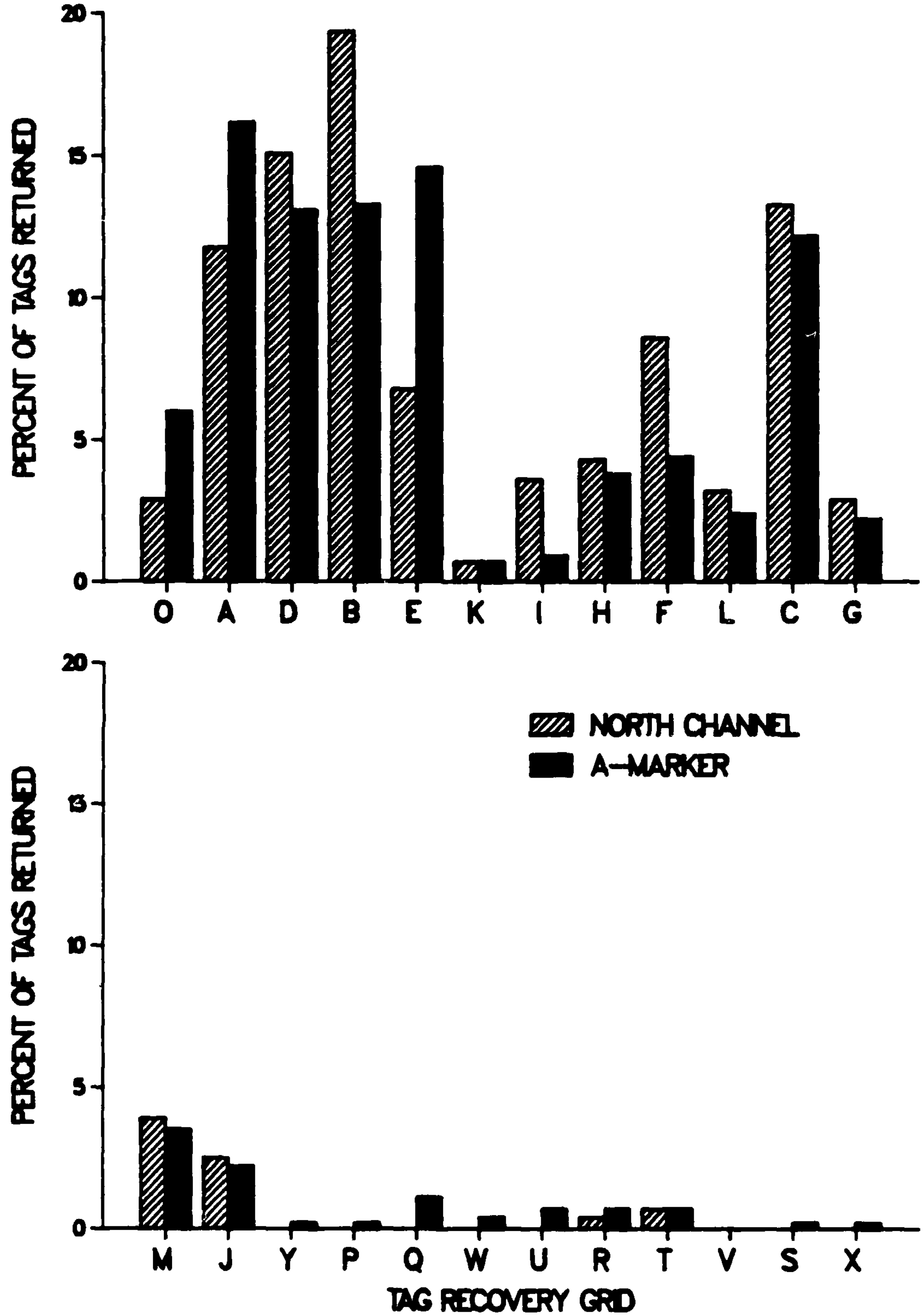

Figure 21. Percent of tagged walleyes from A-marker and North Channel stations recaptured, during subsequent years, by anglers and commercial fishermen within recovery grids.

possibility that the distribution of fishing, and therefore tag recovery effort, had changed since the tag recovery periods for these two tag sites were different cannot be eliminated.

Smallmouth bass from A-marker Station.—The annual exploitation and survival estimates for smallmouth bass tagged at A-marker are given in Table 108. They were based on 1,137 tag recoveries through 1984 from 8,093 bass that had been tagged from 1978 through 1984. Exploitation peaked at 14.1% in 1983, the first fishing year of this survey and then declined substantially to 11.1% during 1984. Data from both years provided bass exploitation estimates well above the overall annual average of 9.3%. The estimate for mean annual survival was 39.4% which is high enough to indicate that natural death was a much larger mortality factor for legal-sized bass than was fishing death. Bass were apparently exploited at a higher rate than walleyes which had a considerably higher survival rate.

The estimated average life span for a legal-sized smallmouth bass was only 1.1 years. Data on legal sized walleyes tagged at the A-marker Station provided an estimate of average life span of 1.6 years and the Monroe tagged walleyes had an estimated average life span of 2.3 years.

The distribution of smallmouth bass, based on tag recoveries, was quite different than that shown by tagged walleyes. The percentage of 367 bass tags returned during subsequent seasons within recovery grids from the A-marker tag site compared to the tags returned from net Stations 1-8 is shown in Figure 22. Smallmouth bass tagged at A-marker did not move nearly as far as walleyes with the majority of bass tags (73%) recovered from Anchor Bay Grids E and B. There was substantial movement into the St. Clair River, especially the lower half, and along the southwest shore of Lake St. Clair. There was limited movement of bass tagged at A-marker into the Detroit River and virtually no movement into Ontario waters of Lake St. Clair.

Northern pike.—There were 445 northern pike tagged during the study of which 3.8% were caught and reported by anglers. An additional 1.8% of the tagged pike were recaptured in survey trap nets. The exploitation by anglers was quite high showing that northern pike were a target of the sport fishery and were relatively easily exploited. The distribution of survey trap net catch and their eventual tag recaptures showed that northern pike did not move far from the tag site during the year.

Net Stations 3 and 8 produced the majority of tagged pike and their tag recoveries. These fish were apparently linked to a certain habitat type which produced local fisheries. The trap nets at Station 8 recaptured tagged northern pike relatively good since the recapture rate ranked second among all species. Net recapture rate of northern pike ranked six at Station 3.

The largest number of pike were tagged at these two stations in April (20% of total tagged) and May (34% of total tagged) which probably reflected the higher density and movement rate associated with spawning. The only net recapture that showed movement was a

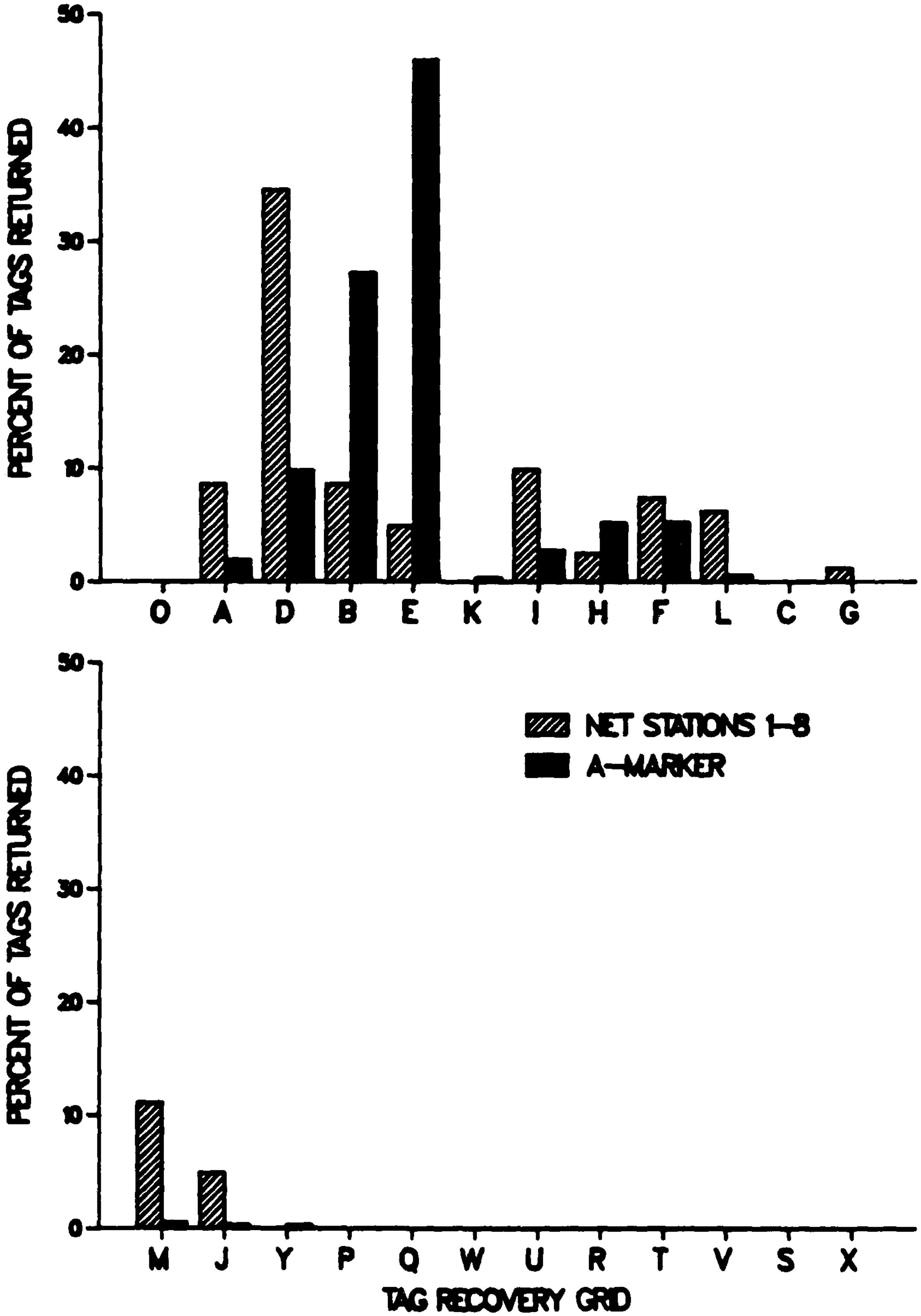

Figure 22. Percent of tagged smallmouth bass from A-marker and Net Stations 1–8 recaptured, during subsequent years, by anglers and commercial fishermen within recovery grids.

fish tagged at Station 3 in May and recovered 1 week later at Station 2, possibly moving upstream after spawning.

The percent of tags returned by anglers in grids for northern pike tagged at each net station is shown in Table 109. Figure 23 shows the percent of all tagged pike for each recovery grid. Seventeen tagged pike were caught and reported by anglers. Of these fish, 47% had been tagged at Station 3 and 24% at Station 8. All of these Station 8 tags were recovered in the lower Detroit River primarily during the spring. Most of the remaining tag recoveries were taken in Anchor Bay tag recovery Grids E and B and in the lower St. Clair River recovery Grid D. These tags were predominantly recovered in late spring and early summer. There were only two pike recaptures during winter which occurred in shallow areas adjacent to tag Stations 3 and 8. The angler tag recoveries in Grid D were from pike that had been tagged considerably later in the year than those recovered in Anchor Bay. Some of the pike tagged at Stations 1 and 2 were among those recaptured in Anchor Bay, even though they did not show up in the catch in recovery Grid D. This indicates that the Anchor Bay northern pike population was composed mostly of migratory individuals; whereas, the population in Grid D had a conspicuous resident portion. It also suggests that pike movements southward from Stations 1 and 2 occurred during periods of low vulnerability to angling, probably during spring and fall.

The average movement rate calculated from all angler recoveries was 0.5 km/day. This was a low value indicating that these northern pike did not move far from their tag site.

<u>**Brown bullhead**</u>.—A total of 689 brown bullheads were tagged during the study, of which, 3.2% were recovered in survey nets and 0.3% were caught and reported by anglers. The number of tags recaptured in nets according to their tag station is shown in Table 110. Most of the brown bullheads (83%) were tagged in the lower Detroit River at Stations 7 and 8. Tagged brown bullheads were most readily recaptured at Station 3 where they were the most vulnerable of all species tagged. These fish were also quite vulnerable to net recapture at Stations 7 and 8 relative to most other species.

The tagging of brown bullheads was spread throughout the year with the peak in September. The net recoveries showed no movement to a different net station indicating little directed movement away from their tagging site even though 61% were taken during subsequent net periods which allowed ample time for movement.

A few angler tag recoveries were taken in recovery Grid J where most tagging had occurred. Angler tags also showed no movement away from the tag site. The low vulnerability of tagged brown bullheads to angling was probably due to their low density in most areas and a lack of interest in this species among the fishermen.

<u>**Channel catfish**</u>.—There were 1,237 channel catfish tagged during the study. Twenty-four (1.9%) of those tagged fish were recaptured in survey nets and 31 (2.5%) were caught and reported by anglers and commercial fishermen. This was a medium exploitation rate calculated

Table 109. Percent of tag returns from the angler fishery by tag recovery grid from northern pike tagged at each station.

Angler tag recovery grid	Trap net station								
	1	2	3	4	5	6	7	8	Sum
O	—	—	—	—	—	—	—	—	—
A	—	—	—	—	—	—	—	—	—
D	—	—	2.3	4.0	—	—	—	—	6.3
B	4.8	3.0	0.6	—	—	—	—	—	8.4
E	—	6.1	1.2	—	—	—	—	—	7.3
I	—	—	—	—	—	—	—	—	—
H	—	—	—	—	—	—	—	—	—
F	—	—	0.6	—	—	—	—	—	0.6
L	—	—	—	—	—	—	—	—	—
C	—	—	—	—	—	—	—	—	—
G	—	—	—	—	—	—	—	—	—
M	—	—	—	—	—	—	—	0.9	0.9
J	—	—	—	—	—	—	—	2.7	2.7
Y	—	—	—	—	—	—	—	—	—
P	—	—	—	—	—	—	—	—	—
Q	—	—	—	—	—	—	—	—	—
W	—	—	—	—	—	—	—	—	—
U	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	—	—
T	—	—	—	—	—	—	—	—	—
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	—	—	—	—
Percent returned	4.8	9.1	4.6	4.0	—	—	—	3.6	3.8

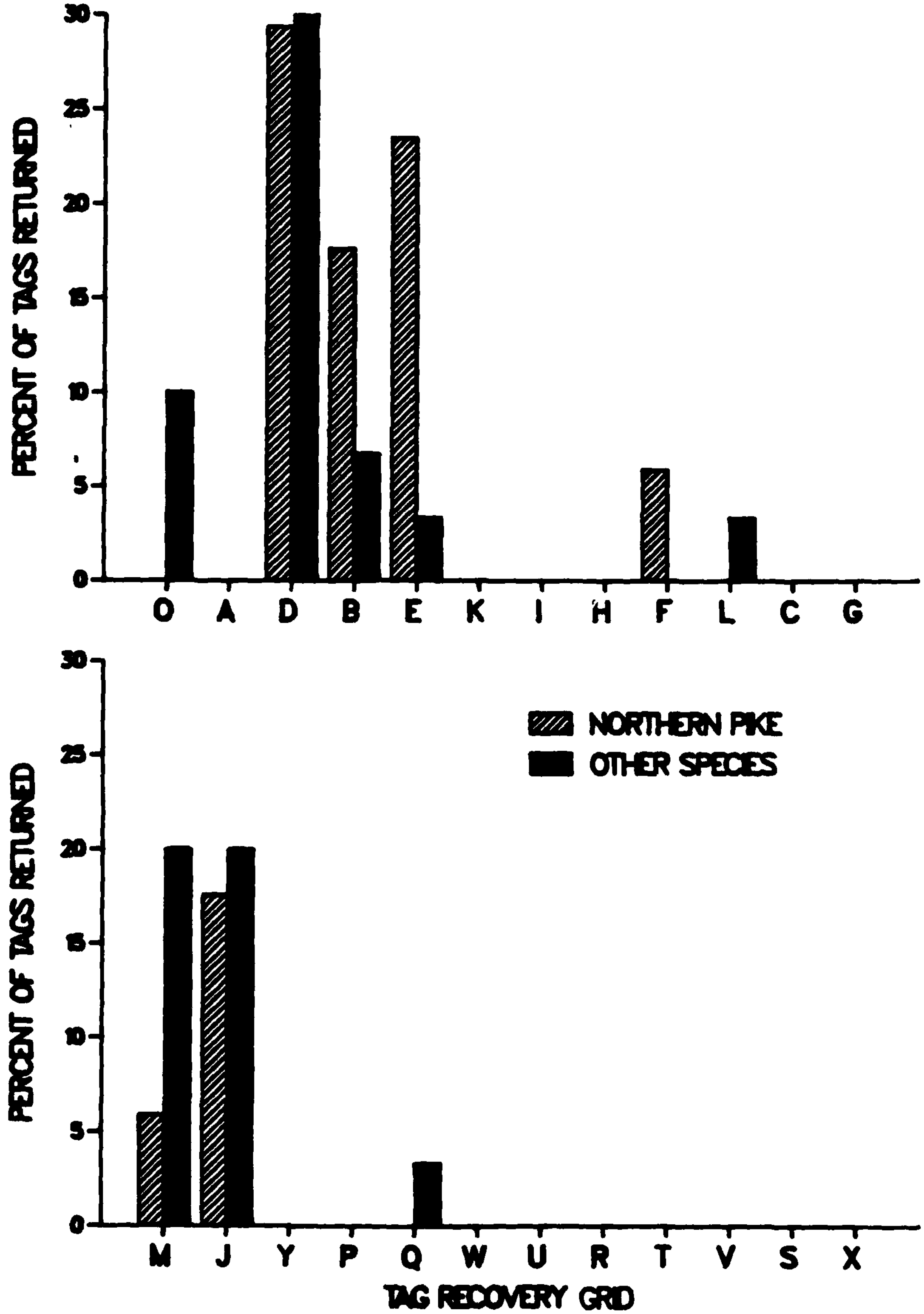

Figure 23. Percent of tagged northern pike and other species recaptured by anglers and commercial fishermen within recovery grids.

Table 110. Number of brown bullhead tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged							
	1	2	3	4	5	6	7	8
1	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—
3	—	—	7	—	—	—	—	—
4	—	—	—	—	—	—	—	—
5	—	—	—	—	—	—	—	—
6	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	7	—
8	—	—	—	—	—	—	—	19

from survey nets and anglers typifying a highly migratory species that was not a major target of the sport fishery.

Most channel catfish were tagged at Stations 4, 5, and 3, in that order, with Stations 7 and 8 also producing above average. The river deltas appeared to have dense catfish populations. Most of the tagged catfish that were recaptured in survey nets were caught at their tagging station (Table 101). There was movement from tag Stations 2, 3, and 4 to the A-marker Station. These tag recaptures, taken during May, were fish tagged during a previous fall. None of the net recaptures at Stations 1-8 were taken during spring. Channel catfish were vulnerable to capture in spring in Anchor Bay but not at Stations 1-8. Their distribution probably changed radically with fish moving into the navigation channel and connecting rivers in summer. The best three months for channel catfish tagging were August, September, and October indicating they were active during this period.

The percent of tags returned by anglers in grids for channel catfish tagged at each net station is shown in Table 111. Most of the angler tag recoveries were caught in recovery Grids E, H, F, J, and Q (Fig. 24). The Anchor Bay angler recoveries were also taken during the spring. They had been tagged at Stations 2, 3, and 4 in late summer and fall. Those tagged catfish caught by anglers in Grids F, G, and H were taken later in the year and had been tagged at net Stations 4 and 5 in the late summer and fall. The angler captures in the Detroit River, primarily Grid J, were caught, on average, more than a month later then the angler recoveries in the main body of Lake St. Clair and more then two months later than the Anchor Bay angler recaptures. The Detroit River returns were later even though the boat and shore fishing effort in the lower river was demonstrably early, during late spring and early summer.

The Lake Erie angler recoveries were primarily caught in the Maumee River in Grid Q. They were taken quite early in the year averaging about mid-May. These fish had been tagged at Stations 3, 7, and 8 during the summer. These angler caught catfish had an earlier Julian recovery date than their tag anniversary. There evidently was a substantial movement of channel catfish from Lake Erie up through SCDRS near the navigation channel in late spring and summer.

The average movement rate calculated from tagged channel catfish angler recoveries was 0.8 km/day. They moved further from tag sites than northern pike and had a higher average rate of travel.

White bass.—There were 712 white bass tagged during the study, primarily at Stations 7, 5, 8, and 2. White bass made up 2.5% of all tagged fish. Only 0.4% of tagged white bass were recaptured in survey trap nets while 1.6% were caught and reported by anglers and commercial fishermen. Tagged white bass were apparently more vulnerable to recapture in the angler fishery which indicated they may have been caught very inefficiently at net Stations 1-8 relative to their true abundance. The calculated angler recovery rate was also quite low.

Table 111. Percent of tag returns from the angler fishery by tag recovery grid from channel catfish tagged at each station.

Angler tag recovery grid	Trap net station								
	1	2	3	4	5	6	7	8	Sum
O	—	—	—	—	—	—	—	—	—
A	—	—	—	—	—	—	—	—	—
D	—	1.1	0.6	—	—	—	—	—	1.7
B	—	—	—	0.2	—	—	—	—	0.2
E	—	1.1	1.8	0.5	—	—	—	—	3.4
I	—	—	—	—	—	—	—	—	—
H	—	—	0.6	1.0	—	—	—	—	1.6
F	—	—	—	0.7	0.6	—	—	—	1.3
L	—	—	—	—	—	—	—	—	—
C	—	—	—	—	—	—	—	—	—
G	—	—	—	—	0.6	—	—	—	—
M	—	—	—	—	—	1.7	—	—	0.6
J	—	—	—	—	—	—	2.0	1.3	1.7
Y	—	—	—	—	—	—	—	—	3.3
P	—	—	—	—	—	—	—	—	—
Q	—	—	1.2	—	—	—	1.3	0.6	—
W	—	—	—	—	—	—	0.7	—	3.1
U	—	—	—	—	—	—	—	—	0.7
R	—	—	—	—	—	—	—	—	—
T	—	—	—	—	—	—	—	—	—
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	—	—	—	—
Percent returned	—	2.1	4.1	2.4	1.1	1.7	4.0	1.9	2.5

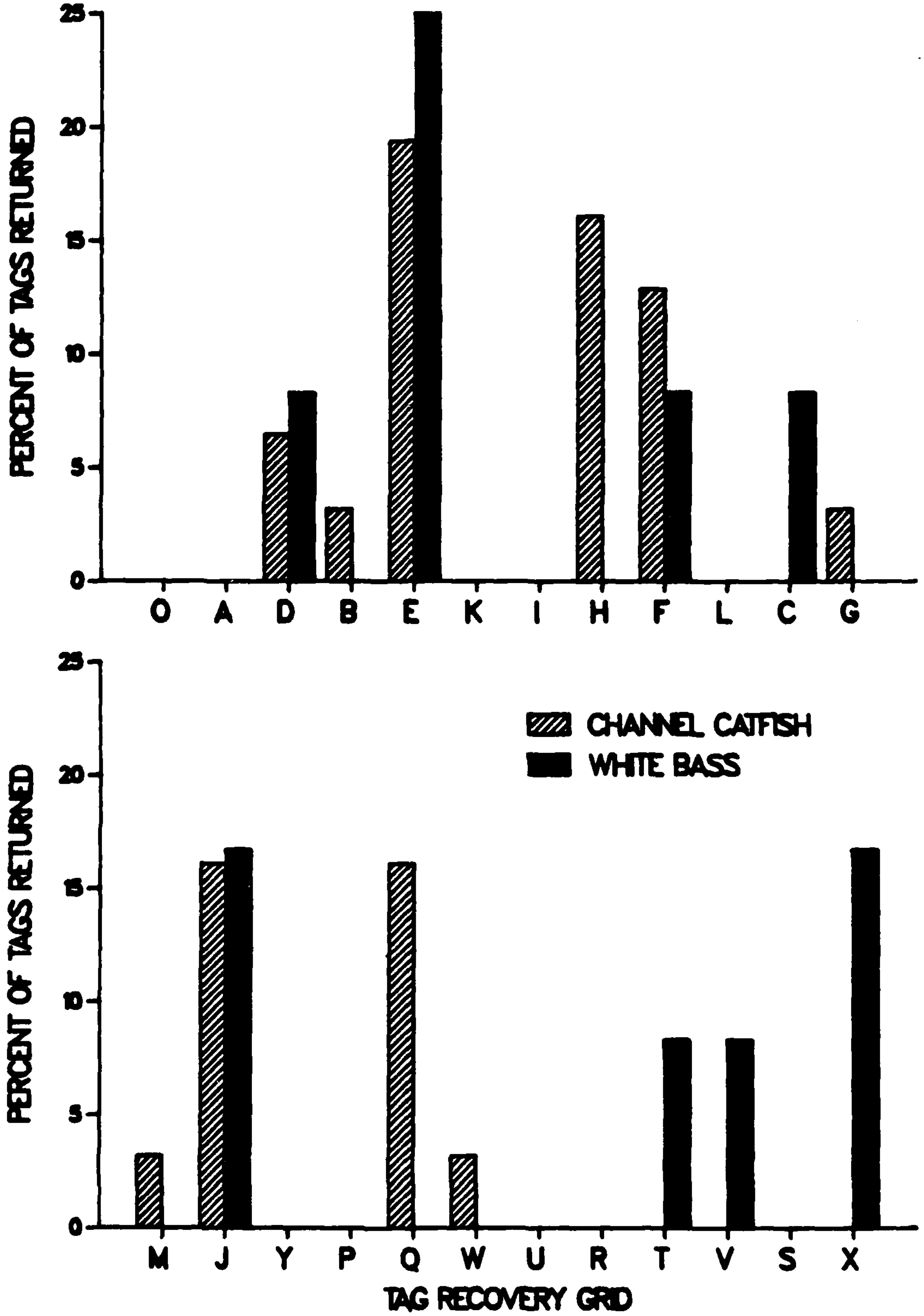

Figure 24. Percent of tagged channel catfish and white bass recaptured by anglers and commercial fishermen within recovery grids.

Most white bass were tagged in June, July, and May with the Lake St. Clair tags being applied later in the year than tags at the river net stations. The early river tagging was probably due to spawning movements of white bass, particularly up into the Detroit River from Lake Erie.

The number of tags recaptured in nets according to their tag station is shown in Table 112. These white bass were taken at the tag station during the same net period which was a further indication of their low vulnerability to trap nets.

Angler tag recoveries showed considerable movement with exchange of fish between the connecting rivers and lakes. The percent of tags returned by anglers in grids for white bass tagged at each net station is given in Table 113. The percent of all tags recovered in these grids is shown in Figure 24. The recoveries taken in Anchor Bay had been tagged in summer and fall at net Stations 3 and 4 and were caught by the anglers during a subsequent spring. The angler and commercial recoveries from Lake Erie had been tagged in the St. Clair and Detroit rivers in summer and were recovered primarily during spring. Since the tag recoveries had a relatively late average Julian date of tagging, overall mortality rates for this species were probably high. White bass tagged early in the year probably experienced enough mortality to have reduced their probability of being caught by an angler in a subsequent spring.

The average rate of movement for the angler and commercial tag recoveries was 1.5 km/day which was high and reflected the high mobility of white bass.

The only winter angler tag recovery came from the Thames River (Grid C) and it had been tagged at Station 4. The Thames River was apparently one of the major overwintering sites for many predator fish species which may have typified tributary rivers. Most tributaries did not support extensive angler ice fisheries and would not supply tag recaptures even if the tagged fish overwintered there. The Thames River is also known for substantial winter angler catches of white bass (R. Haas, MDNR, personal observation).

Freshwater drum.—There were 1,088 freshwater drum tagged during the study with the major tagging success at Stations 4, 3, and 5. Drum comprised 3.7% of the total fish tagged. There were 1.7% of the tags recovered in survey trap nets and only 0.2% caught and reported by anglers and commercial fishermen. Both of these recovery rates were small indicating a low vulnerability to capture. The sport recapture rate may have been heavily influenced by the drum's low attractiveness to anglers. The heavier net catches at Stations 3, 4, and 5 probably show that adult drum were considerably more abundant in Lake St. Clair than in the St. Clair and Detroit rivers where nets were a more effective capture gear for most species.

The best two months for tagging freshwater drum were October and July when they probably had maximum vulnerability to net capture.

The number of tags recaptured in nets according to their tag station is shown in Table 102. All of the freshwater drum tag recaptures in trap nets were taken at their tag site. Almost

Table 112. Number of white bass tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged							
	1	2	3	4	5	6	7	8
1	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—
3	—	—	—	—	—	—	—	—
4	—	—	—	1	—	—	—	—
5	—	—	—	—	—	—	—	—
6	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	1	—
8	—	—	—	—	—	—	—	1

Table 113. Percent of tag returns from the angler fishery by tag recovery grid from white bass tagged at each station.

Angler tag recovery grid	Trap net station								
	1	2	3	4	5	6	7	8	Sum
O	—	—	—	—	—	—	—	—	—
A	—	—	—	—	—	—	—	—	—
D	—	—	—	1.8	—	—	—	—	1.8
B	—	—	—	—	—	—	—	—	—
E	—	—	1.9	3.6	—	—	—	—	5.5
I	—	—	—	—	—	—	—	—	—
H	—	—	—	—	—	—	—	—	—
F	—	1.0	—	—	—	—	—	—	1.0
L	—	—	—	—	—	—	—	—	—
C	—	—	—	1.8	—	—	—	—	1.8
G	—	—	—	—	—	—	—	—	—
M	—	—	—	—	—	—	—	—	—
J	—	—	1.9	—	—	—	0.4	—	2.3
Y	—	—	—	—	—	—	—	—	—
P	—	—	—	—	—	—	—	—	—
Q	—	—	—	—	—	—	—	—	—
W	—	—	—	—	—	—	—	—	—
U	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	—	—
T	—	1.0	—	—	—	—	—	—	1.0
V	—	—	—	—	—	3.1	—	—	3.1
S	—	—	—	—	—	—	—	—	—
X	—	—	1.9	—	—	—	—	0.8	2.7
Percent returned	—	2.0	5.6	7.3	—	3.1	0.4	0.8	1.6

all of these were caught during their tag period so their net vulnerability was probably too low to reflect any movement. None of the drum tagged at Station 4, where most were tagged, were recovered in nets indicating that they had the lowest vulnerability to capture at that station. There were too few angler recoveries of tagged drum to reach any conclusions regarding their movement rate or pattern. The data obtained from nets indicated that drum were not prone to move far.

Common carp.—There were 1,067 common carp tagged which was 3.7% of the total number of fish tagged. The best three tagging stations were 8, 7, and 3 which probably reflected a dense population in the enriched river deltas, particularly the lower Detroit River.

One percent of the tagged carp were recaptured in survey trap nets, primarily from those tagged at Stations 7 and 8. Only 0.4% of tagged carp were caught and reported by anglers showing their low vulnerability. Even the shore fishery demonstrated very little interest and/or ability to harvest this species. A 1978 attitude survey of 1,200 Detroit River shore anglers showed that this group was most interested in catching walleye, white bass, and yellow perch in that order (MDNR, unpublished). Of all species mentioned, freshwater drum had the least amount of interest expressed by these fishermen and common carp were not mentioned at all.

The survey net recaptures were all taken at their tagging station during the same net period (Table 114). They showed both a low movement rate and a low vulnerability to recapture. The angler recaptures also showed little movement and their average movement rate was 0.6 km/day.

White sucker.—There were 1,147 white suckers tagged during the survey which comprised 3.9% of all fish tagged. Most were tagged at Stations 1, 3, and 2 suggesting that the St. Clair River had the highest density of white suckers in the SCDRS. The high density of white sucker in Lake Huron was probably providing some of these fish. There was a rather even distribution across months of numbers of white suckers tagged which suggested that the St. Clair River had a relatively dense resident population. White suckers were the most readily captured and tagged species during the winter months even though their capture rate was relatively low.

Only 1.0% of the tagged white suckers were recaptured in trap nets and 0.8% were caught and reported by anglers. These low recovery rates showed that white suckers were not vulnerable to capture in either the survey nets or the sport fishery. Most of the trap net recaptures of white sucker occurred at Station 1 and showed little movement away from the tag site even though most were recaptured during subsequent net periods which allowed ample time for movement (Table 115).

All of the angler tag recoveries had been tagged at Stations 1-4 and were recovered primarily in the St. Clair and Thames rivers (Table 116 and Fig. 25). Most of these recoveries were taken during mid-April suggesting they were caught during spawning.

Table 114. Number of common carp tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged							
	1	2	3	4	5	6	7	8
1	—	—	—	—	—	—	—	—
2	—	1	—	—	—	—	—	—
3	—	—	1	—	—	—	—	—
4	—	—	—	—	—	—	—	—
5	—	—	—	—	—	—	—	—
6	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	5	—
8	—	—	—	—	—	—	—	4

Table 115. Number of white sucker tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged							
	1	2	3	4	5	6	7	8
1	9	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—
3	—	—	—	—	—	—	—	—
4	—	—	1	—	—	—	—	—
5	—	—	—	—	—	—	—	—
6	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	1	—
8	—	—	—	—	—	—	—	—

Table 116. Percent of tag returns from the angler fishery by tag recovery grid from white sucker tagged at each station.

Angler tag recovery grid	Trap net station								
	1	2	3	4	5	6	7	8	Sum
O	—	—	—	—	—	—	—	—	—
A	0.6	—	—	—	—	—	—	—	0.6
D	—	0.5	—	—	—	—	—	—	0.5
B	—	0.5	—	—	—	—	—	—	0.5
E	—	—	—	—	—	—	—	—	—
I	—	—	—	—	—	—	—	—	—
H	—	—	—	—	—	—	—	—	—
F	0.3	—	—	—	—	—	—	—	0.3
L	—	—	—	—	—	—	—	—	—
C	0.3	0.5	—	1.4	—	—	—	—	2.2
G	—	—	—	—	—	—	—	—	—
M	—	—	—	—	—	—	—	—	—
J	—	—	—	—	—	—	—	—	—
Y	—	—	0.5	—	—	—	—	—	0.5
P	—	—	—	—	—	—	—	—	—
Q	—	—	—	—	—	—	—	—	—
W	—	—	—	—	—	—	—	—	—
U	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	—	—
T	—	—	—	—	—	—	—	—	—
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	—	—	—	—
Percent returned	1.1	1.5	0.5	1.4	—	—	—	—	0.8

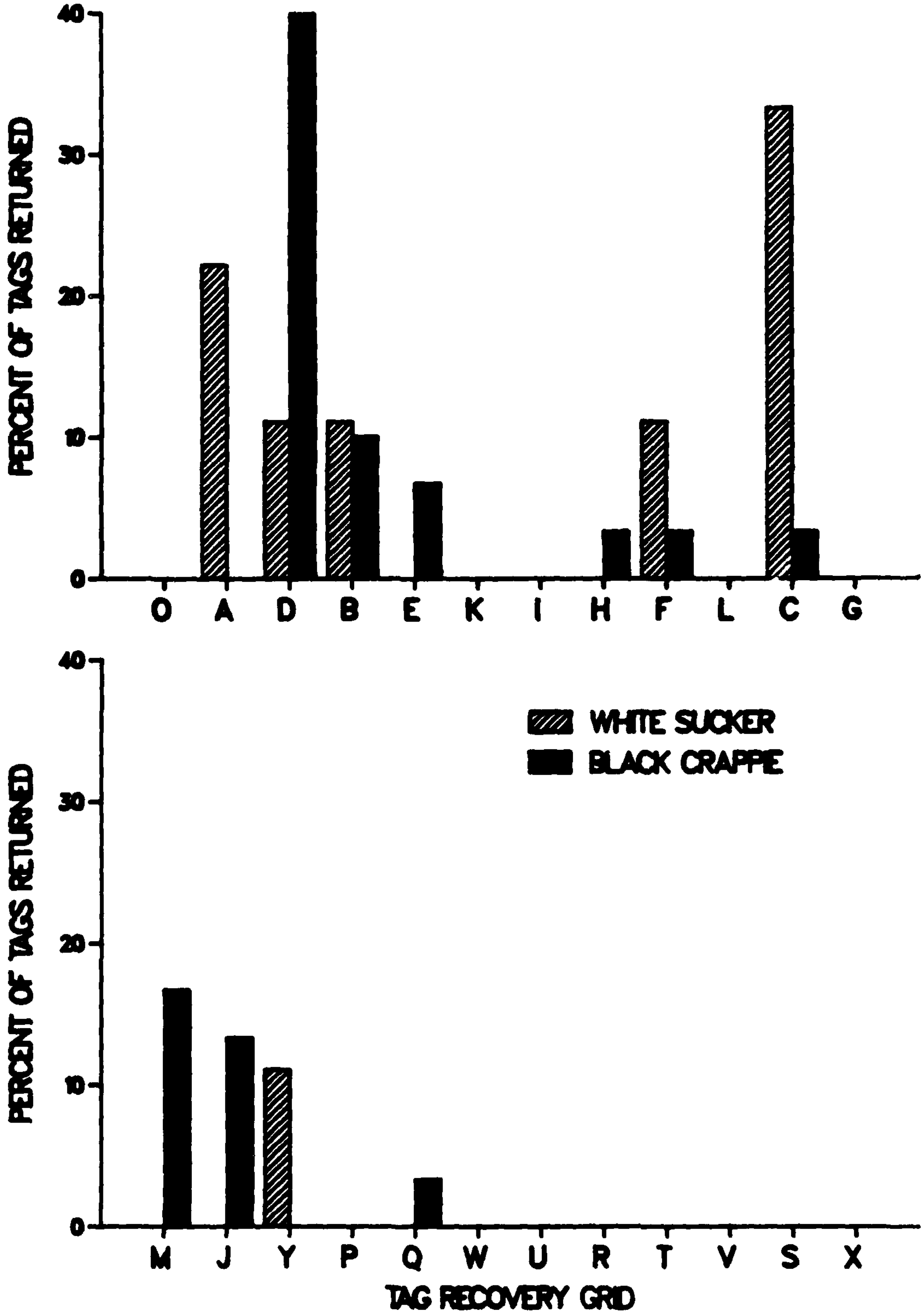

Figure 25. Percent of tagged white sucker and black crappie recaptured by anglers and commercial fishermen within recovery grids.

The average movement rate calculated from these angler recaptures was 2.0 km/day showing that white suckers moved a considerable distance to get to their potential spawning grounds.

Redhorse.—There were 1,477 redhorse of four different species tagged during the survey, primarily shorthead and silver redhorse. All tag data for these four redhorse species were combined for this analysis. The major months of tagging were July, November, October, and June. Stations 4 and 5 produced most of these fish. Redhorse seemed to be more plentiful in Lake St. Clair than either the St. Clair or Detroit rivers, which indicated better adaptation to lake conditions than white suckers even though they may have had similar food and spawning requirements. Redhorse were many times more likely to be captured in survey nets in Lake St. Clair then white suckers.

About 1.0% of the tagged redhorse were recaptured in survey nets and another 0.4% were caught and reported by anglers. These percentages were very similar to white sucker except that the angler recovery of redhorse was lower. This may have occurred due to a denser population of tagged redhorse in Lake St Clair; whereas, the shore anglers that captured suckers and redhorse were predominantly river fishermen.

Most of the survey net recaptures were taken at the tagging station during the same net period (Table 103). Those that were recaptured during subsequent net periods showed movement to other net stations suggesting that redhorse moved more than white suckers or common carp.

All of the angler recoveries of redhorse tags were taken in the connecting channels, mostly in the St. Clair River. The only tag returns at spawning time came from the Sydenham River so their spawning requirements were probably different than white sucker. Too few angler tag returns were obtained to estimate their average movement rate.

Rock bass.—There were 5,912 rock bass tagged during the survey which was the most of any species. They comprised 20.3% of all fish tagged. Net Stations 3, 4, and 7 were highest in number of rock bass tagged. Stations 6, 5, and 2 were not substantially lower. Rock bass were abundant and vulnerable to net capture throughout the SCDRS. June and October were the biggest months for tagging although each month from May through November had considerable numbers tagged.

The tagged rock bass were quite vulnerable to recapture in survey nets since 5.2% were caught a second time. Tagged rock bass were also vulnerable to the sport fishery since 3.2% were eventually caught and reported. These are the highest exploitation measures for any of the abundant species.

All but eight of the net recaptures were taken at their tagging station (Table 104). Most of the movement to a different net station occurred in the St. Clair River with about equal numbers moving upstream and downstream. There was no exchange between net stations in the

Detroit River. The different recapture rates in the St. Clair and the Detroit rivers were probably due to higher vulnerability in the St. Clair River.

The preponderance of recaptures at their tagging station suggests that rock bass did not travel far since many had ample time to travel. Of the total net recaptures, 59.4% were caught during the net period of tagging and 19.5% during later net periods in the same calendar year. The remaining 21.1% were recaptured during subsequent calendar years.

The percent of tags returned by anglers in grids for rock bass tagged at each station is shown in Table 117. Net Stations 2 and 1 produced the highest frequency of tagged rock bass that were eventually recaptured by anglers. Rock bass tagged at Stations 8 and 4 produced the lowest rate of angler tag returns.

Tag recovery Grids D and M produced more of the angler returns than any others and Grids J, B, and E produced more than most (Fig. 26). Many of the net stations produced tagged fish that were recovered by anglers in Anchor Bay, especially from Stations 1-5. Station 8 was the only one that was not represented by Anchor Bay angler recoveries. As with some other species, rock bass tagged at Stations 1 and 2 had a greater tendency to be recovered in Lake St. Clair than those tagged at Station 3.

Rock bass tagged at Station 1 showed the greatest average distance traveled (23.6 km) in the angler catch. However, they had the lowest average movement rate because of the large number of days between recaptures and their tag anniversaries. Angler recaptures of rock bass tagged at Detroit River stations had higher movement rates because the dates caught were close to their tag anniversaries. The overall average movement rate for tagged rock bass was 1.0 km/day which was an intermediate value.

The tagged rock bass that moved from the upper St. Clair River into Lake St. Clair and the Detroit River were caught by anglers during late spring. They had been tagged during a previous fall. The ice fishing captures of tagged rock bass showed movement into Anchor Bay from the St. Clair River. They also moved into shoreline marshes and canals along the St. Clair River. The distribution of these returns in the St. Clair River may have been biased by the pattern of ice angling which could only have operated in shallow bays and canals with fast ice cover.

There were very few angler recaptures of Detroit River tagged rock bass in Lake St. Clair and none in the St. Clair River. There was considerable exchange of rock bass between Lake St. Clair and the St. Clair River but not between Lake St. Clair and the Detroit River.

Black crappie.—There were 599 black crappie tagged during the survey, mostly at net Stations 3, 7, and 8. This species comprised 2.1% of the total fish tagged. The best months for net capture and tagging were September and October at all three stations, indicating that any movements peak during this period and are probably not related to spawning. This species is probably a summer spawner with habitat preferences centered on these river delta areas (Scott

Table 117. Percent of tag returns from the angler fishery by tag recovery grid from rock bass tagged at each station.

Angler tag recovery grid	Trap net station								
	1	2	3	4	5	6	7	8	Sum
O	—	—	—	—	—	—	—	—	—
A	1.4	0.6	0.2	—	—	—	—	—	2.2
D	2.0	2.9	2.3	0.2	0.3	—	—	—	7.7
B	0.6	0.8	0.7	0.2	0.2	—	—	—	2.5
E	—	0.2	0.4	0.5	0.3	0.1	0.1	—	1.6
I	—	—	—	0.1	—	—	—	—	0.1
H	—	0.2	—	0.2	0.2	—	—	—	0.6
F	0.6	—	—	—	0.8	—	—	—	1.4
L	—	0.2	—	—	—	—	—	—	0.2
C	—	—	—	—	—	—	—	—	—
G	—	—	—	—	—	—	—	—	—
M	—	—	—	0.2	2.0	3.2	1.2	—	6.6
J	—	0.2	0.1	—	0.2	0.3	1.7	0.7	3.2
Y	—	—	—	—	—	—	—	—	—
P	—	—	—	—	—	—	—	—	—
Q	—	—	—	—	—	—	—	—	—
W	—	—	—	—	—	—	—	—	—
U	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	—	—
T	—	—	—	—	—	—	—	—	—
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	—	—	—	—
Percent recovered	4.6	4.9	3.6	1.5	3.9	3.6	3.1	0.7	3.2

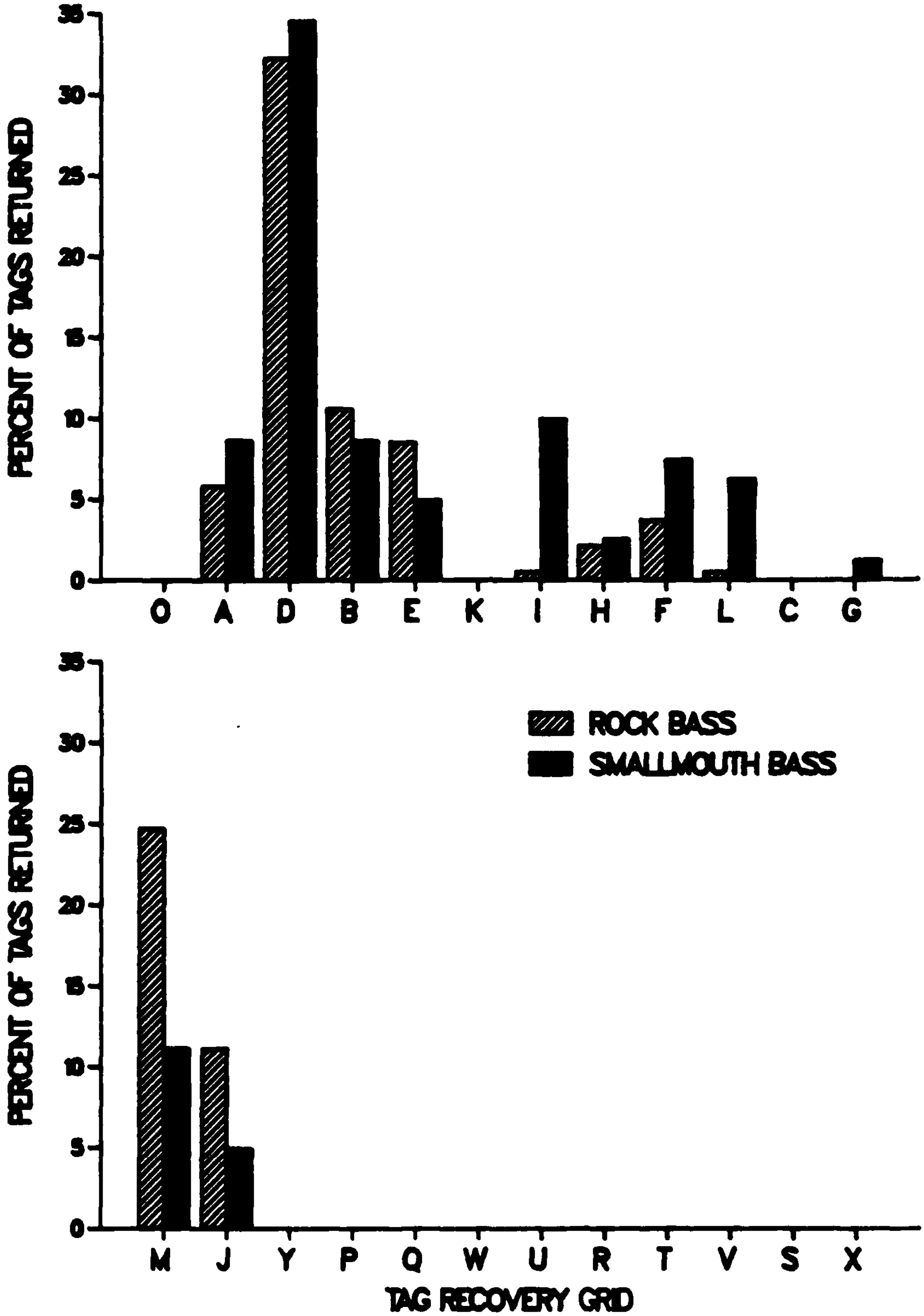

Figure 26. Percent of tagged rock bass and smallmouth bass recaptured by anglers and commercial fishermen within recovery grids.

and Crossman 1973). Some black crappie were tagged at all stations during most months except for January and February.

Tagged black crappie were one of the most vulnerable groups to recapture in survey nets and the angler harvest, with 7.2% of the tagged individuals being recaptured in nets and 5.0% being caught and reported by anglers. Almost all of the survey net recaptures were caught at their tag station (Table 118) with many being taken during later net periods allowing time for movement. Their recovery at their tag station suggested that they did not move far. Since these fish were so vulnerable to recapture, any significant movement away from the tag sites should have been reflected in survey net catches.

Black crappie tagged at Station 3 produced the highest rate of angler recoveries with the majority being caught in recovery Grid D (Table 119 and Fig. 25). However, there were single angler recaptures in six other grids showing some dispersal downstream from Station 3.

Nearly 50% of these angler recaptures occurred during winter, with the highest winter returns in the lower St. Clair River and Anchor Bay grids. As with rock bass, black crappies were most frequently caught in shallow marshes or canals during winter. Crappies differed in that their recaptures occurred from December through March; whereas, the winter rock bass were primarily caught during March. Black crappie appeared to be quite sedentary since their average movement rate was 0.2 km/day based on angler tag returns. They apparently sought shallow marshy and protected areas during winter. Their average day of capture was May 14, due to numerous winter captures, while the average day tagged for these same fish was September 3. The increased fall vulnerability to net capture may have resulted from staging movements preparatory to finding (moving to) the wintering sites (marshes and canals).

Smallmouth bass.—There were 2,338 smallmouth bass tagged at net Stations 1-8 during the survey. They were the fourth most numerous species tagged. Net Station 5 produced many more of these tagged bass than the others and Stations 4 and 6 ranked second and third. Net Station 5 probably was the center of a bass population including its spawning ground. Most net stations produced larger numbers tagged during the summer and fall months. October was the peak month overall, being twice as high as any other month. The spawning months of May and June showed relatively low overall numbers tagged. However, at Station 5 there was a secondary peak catch in May which was the second highest tagging month. No other station had smallmouth catches in May except at A-marker which was thought to be the major Lake St. Clair spawning ground.

Tagged smallmouth bass were vulnerable to recapture in survey nets (4.4% return) and the angler fishery (4.3% return). Most of the survey net recoveries occurred at their tag stations with movement between stations only evident for the Lake St. Clair net stations (Table 105). Some of the individuals tagged at Stations 4 and 5 were recaptured in the St. Clair River. None of the 20 St. Clair River recaptures of smallmouth bass tagged in the St. Clair River

Table 118. Number of black crappie tags recovered in trap nets at each of the net stations.

Net station where recovered	Net station where tagged							
	1	2	3	4	5	6	7	8
1	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—
3	—	1	11	—	—	—	—	—
4	—	—	—	—	—	—	—	—
5	—	—	—	—	1	—	—	—
6	—	—	—	—	—	5	—	—
7	—	—	—	—	—	—	6	—
8	—	—	—	—	—	—	—	8

Table 119. Percent of tag returns from the angler fishery by tag recovery grid from black crappie tagged at each station.

Angler tag recovery grid	Trap net station								Sum
	1	2	3	4	5	6	7	8	
O	—	—	—	—	—	—	—	—	—
A	—	—	—	—	—	—	—	—	—
D	—	6.3	3.6	—	2.6	—	—	—	12.5
B	—	—	0.4	—	2.6	—	0.9	—	3.9
E	—	—	0.4	—	—	—	0.9	—	1.3
I	—	—	—	—	—	—	—	—	—
H	—	—	0.4	—	—	—	—	—	0.4
F	—	—	0.4	—	—	—	—	—	0.4
L	—	—	—	—	—	—	—	—	—
C	—	—	0.4	—	—	—	—	—	0.4
G	—	—	—	—	—	—	—	—	—
M	—	—	—	—	—	3.2	—	3.4	6.6
J	—	—	—	—	—	—	1.8	2.3	4.1
Y	—	—	—	—	—	—	—	—	—
P	—	—	—	—	—	—	—	—	—
Q	—	—	0.4	—	—	—	—	—	0.4
W	—	—	—	—	—	—	—	—	—
U	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	—	—
T	—	—	—	—	—	—	—	—	—
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	—	—	—	—
Percent returned	—	6.3	5.8	—	5.3	3.2	3.6	5.7	5.0

occurred during the tagging net period. Nearly half of these occurred during subsequent calendar years which indicated a highly migratory population with a recurring movement pattern. Larimore (1952) tagged and transferred smallmouth bass in an Illinois stream and found that adults (>229 mm) were very likely to return to their "home" pools whether moved up or downstream. This suggests that individual smallmouth have the ability to navigate and return to their desired living area.

Some of the A-marker tagged bass were recaptured in survey nets at Stations 1-5 with more being taken in the St. Clair River. These St. Clair River recoveries showed a progression through time from mid-summer at Station 3 to fall at Station 1. There was not enough data from survey net recaptures for estimating winter movement patterns for smallmouth bass.

The percent of tagged bass from each net station recaptured by anglers within recovery grids is shown in Table 120. Smallmouth bass tagged at Stations 2 and 3 had the greatest vulnerability to recapture which was probably a function of high vulnerability of target species to the St. Clair River sport fishery. Even though bass tagged in Stations 2 and 3 were most likely to be recaptured, they showed very little movement to other grids. Bass tagged at lake Stations 4 and 5 traveled more extensively and were frequently caught in Anchor Bay and the lower St. Clair River. The movement pattern of Station 5, tagged smallmouth bass was very similar to that for A-marker bass except that they were less frequently taken in Anchor Bay (Fig. 22).

The average movement rate for smallmouth bass calculated from these angler tag returns was 1.3 km/day which showed considerable movement. The bass tagged at Stations 3 and 4 were tagged, on average, at the same time. The Station 4 bass were recovered early, averaging July 8, compared to an average of August 18 for those tagged at Station 3. Since most of the Station 3 tag recoveries were made in the lower St. Clair River, the fishery in that area must concentrate on bass later in the season. There was evidence that a lesser amount of reproduction was occurring in the vicinity of Stations 3 and 4 with those fish probably having a different temporal movement pattern.

As with the netting data, angler recaptures of bass tags offered little opportunity to collect information on their winter movements since their season was closed.

Yellow perch.—There were 5,234 yellow perch tagged during the survey which was 17.9% of the total tagged. The top three stations for numbers tagged were 3, 2, and 4 in that order. Fairly large numbers were tagged at all eight stations.

The peak months for tagging were June, May, and July with good representation from all months except December through March. Tagged yellow perch were vulnerable to recapture in both survey nets (5.0% return) and the angler fishery (7.7% tag return). Most of the trap net recaptures of tagged perch occurred at the tag station indicating maximum vulnerability at those locations (Table 106). The top three net stations in percent of tags recaptured during the

Table 120. Percent of tag returns from the angler fishery by tag recovery grid from smallmouth bass tagged at each station.

Angler tag recovery grid	Trap net station								
	1	2	3	4	5	6	7	8	Sum
O	—	—	—	—	—	—	—	—	—
A	3.2	—	0.7	—	0.1	—	—	—	4.0
D	0.6	8.5	5.3	0.8	0.6	—	—	—	15.8
B	—	—	0.7	0.3	0.4	0.4	—	—	1.8
E	—	—	—	0.3	0.2	0.4	—	—	0.9
I	0.6	—	0.7	0.8	0.3	—	—	—	2.4
H	—	—	—	—	0.2	—	—	—	0.2
F	—	—	—	0.3	1.8	0.7	1.0	—	3.8
L	—	—	—	0.6	0.3	—	—	—	0.9
C	—	—	—	—	—	—	—	—	—
G	—	—	—	—	—	—	—	1.3	1.3
M	—	—	—	0.3	0.5	1.1	—	—	1.9
J	—	—	—	—	—	0.7	1.0	1.3	3.0
Y	—	—	—	—	—	—	—	—	—
P	—	—	—	—	—	—	—	—	—
Q	—	—	—	—	—	—	—	—	—
W	—	—	—	—	—	—	—	—	—
U	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	—	—
T	—	—	—	—	—	—	—	—	—
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	—	—	—	—
Percent returned	4.5	8.5	7.2	3.3	4.3	3.3	2.0	2.6	4.3

same and subsequent net periods were 1, 3, and 2. These stations displayed a considerably higher rate than the others except for Station 6. The majority, except for all but the St. Clair River tagged perch, were recaptured during the same net period indicating relatively low susceptibility after that first net period. However, only about one-third of the St. Clair River net recoveries occurred during the same net period. Many of the survey net recaptures were taken during subsequent years so there was a much greater tendency for yellow perch tagged in the St. Clair River to be recaptured there. There also were yellow perch recaptured at Station 1 which had been tagged at Stations 2 and 3. These were the only yellow perch observed to have moved between net stations. This extended vulnerability over years in the St. Clair River indicated that they had a recurring movement pattern as well as restricted area in which to avoid nets.

The top three net stations in rate of yellow perch tags eventually returned by anglers were Stations 1, 3, and 2 (Table 121). The lowest rate was recorded from Station 8 with the other four stations at an intermediate level. These top three are the same stations, including their rank order, in rate of survey net recovery at the tag station. The rate of angler recovery from yellow perch tagged at Stations 4, 5, 7, and 8 was much higher than the trap net recovery rate at these same stations. Angler recovery rates were highest within the recovery grid that encompassed each net station, including Station 4 (Grid I) which was the only different grid for tagged walleye. Yellow perch movements were apparently not strong enough away from any station to mask the influence that the distribution of angling effort had upon the distribution of angler tag recoveries. The average growth increments calculated from angler recoveries was highest at Station 1 (92 mm) and lowest at Station 8 (-0.4 mm) with a steadily decreasing increment from Station 1 to Station 8. This probably reflected both the different perch populations and their growth potential between the different habitats.

The average date of angler tag recovery was later in the year for tags applied at Stations 3 and 4 compared to the other stations. This probably reflected the extended fall angling in the surrounding recovery grids such as I and D. The angler recoveries of yellow perch tags showed considerable movement away from the tag stations. Most of the net stations produced tagged perch that were recovered in eight to ten different recovery grids. Angler recoveries of yellow perch tagged at Stations 7, 3, and 8 showed the highest average movement rates which were 1.7, 1.4, and 1.2 km/day. Yellow perch tagged at Station 1 showed the lowest movement rate (0.4 km/day). The average movement rate was 0.9 km/day.

Recovery Grid D ranked the highest in percent of angler tags recovered followed by Grids A, M, and J (Fig. 27). Grid D also produced perch recaptures that had been tagged at each net station except 8. While most net stations produced angler recoveries in the St. Clair River, only Stations 5–8 produced recoveries in the Detroit River. Most of the Lake Erie angler tag recoveries were from yellow perch that had been tagged at Stations 7 and 8. These angler

Table 121. Percent of tag returns from the angler fishery by tag recovery grid from yellow perch tagged at each station.

Angler tag recovery grid	Trap net station								Sum
	1	2	3	4	5	6	7	8	
O	—	0.1	0.3	—	—	—	—	—	0.4
A	5.8	2.1	1.8	0.1	0.3	—	—	—	10.1
D	2.5	5.6	5.5	0.6	0.5	0.3	0.2	—	15.2
B	0.4	0.1	0.8	0.9	—	—	0.2	—	2.4
E	0.8	0.4	0.2	1.1	0.3	0.3	—	—	3.1
I	0.2	0.1	0.1	2.6	0.3	—	—	—	3.3
H	0.2	0.1	0.1	0.9	0.8	0.3	0.2	—	2.6
F	—	—	0.1	0.4	1.5	0.3	0.2	—	2.5
L	0.2	0.4	0.1	0.6	0.3	—	—	—	1.6
C	—	—	—	—	—	—	—	—	—
G	—	0.1	—	—	—	—	0.2	—	0.3
M	—	—	—	—	0.8	4.2	0.7	0.7	6.4
J	—	—	—	—	0.3	0.5	3.8	1.6	6.2
Y	—	—	—	—	—	—	—	—	—
P	—	—	—	—	—	—	0.2	0.4	0.6
Q	—	—	—	—	0.3	—	0.2	0.2	0.7
W	—	0.1	—	—	—	—	0.2	0.4	0.7
U	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	0.3	—	—	0.3
T	—	—	—	—	—	—	—	—	—
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	—	—	0.2	0.2
Percent returned	10.6	9.4	9.6	7.2	5.2	6.0	5.9	3.4	7.7

recoveries indicated that there were at least two populations; one in the Detroit River dependent upon Lake Erie and another in Lake St. Clair and the St. Clair River dependent upon Lake Huron. There apparently was substantial movement of yellow perch between Lake St. Clair and southern Lake Huron.

Walleye.—There were a total of 5,826 walleyes tagged at Stations 1-8 which made up 20% of all tagged fish. They were second only to rock bass in total numbers tagged. The best three tag stations were 5, 4, and 7. Lake St. Clair and the St. Clair River each produced more tagged walleyes than the Detroit River. The top 3 months in numbers of walleyes tagged were September, August, and June in that order. When time of tagging was considered on a station by station basis, the fall months were very important for walleye tagging in the St. Clair and Detroit rivers while spring and summer were much more important in Lake St. Clair. The increased availability (net catchability) of walleyes in the two rivers during fall probably resulted from extensive fall walleye movements from their summer to winter living areas.

There were only 0.9% of all walleye tags eventually recovered in the survey nets. This was very low and indicated that walleye, relative to the other species, were not vulnerable to trap net capture. Most of the net recaptures were taken at their tag station (Table 107) in spite of the fact that 36% of these were taken during subsequent net periods allowing ample time for movement. This was most prevalent at the Detroit River stations and probably shows that individual walleyes were most vulnerable to recapture at the site of first capture even though they passed by other net stations during an interim period. An alternative explanation would be that a few walleyes were resident at the net stations and were more likely to be caught, tagged and recaptured.

A total of 4.4% of the tagged walleye were recaptured and reported by anglers which represents high exploitation relative to most of the species tagged. The top three net stations in rate of return from their tagged walleyes were Stations 7, 2, and 5 (Table 122). There was little spread between these three rates with Stations 2 and 5 tied. Station 7 had a 5.6% recovery rate and Station 8 was lowest with a 3.1% rate. The similar exploitation rates calculated from each station's tags suggests that walleyes were either moving in a common pattern through the waterway or the angling fishery exploited the various groups of walleye in a common way.

The fact that Station 7 produced the highest tag return to anglers and the adjacent Station 8 produced the lowest was somewhat perplexing. It probably reflected a tendency for some walleyes that were found at Station 8 to remain at the lower end of the Detroit River or go back into Lake Erie where the walleye exploitation rate has been found to be lower. Station 4 had an angler return rate of 3.6% which was also lower then expected when compared to the overall rate of 4.4%. This station was low on survey net recovery of tags suggesting that these walleyes were somehow less vulnerable to recapture in all gear types. Angler recoveries of walleyes tagged at Station 4 produced catches in more of the angler recovery grids (15) than

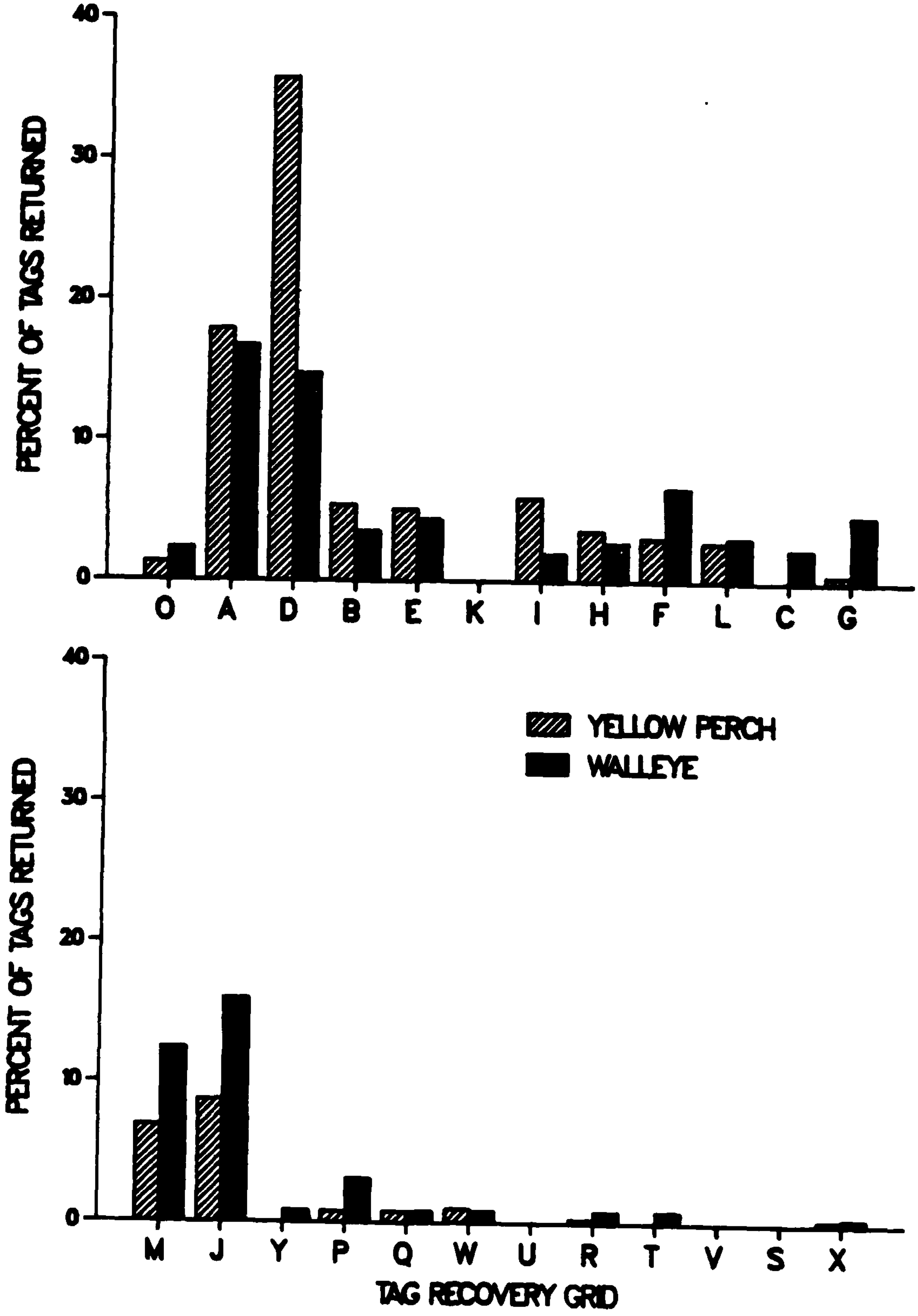

Figure 27. Percent of tagged yellow perch and walleye recaptured by anglers and commercial fishermen within recovery grids.

Table 122. Percent of tag returns from the angler fishery by tag recovery grid from walleye tagged at each station.

Angler tag recovery grid	Trap net station								Sum
	1	2	3	4	5	6	7	8	
O	0.1	0.5	0.1	—	—	—	0.2	—	0.9
A	2.0	1.2	1.1	0.7	0.7	0.3	0.1	0.3	6.4
D	1.0	1.6	1.1	0.6	0.7	—	0.1	—	5.1
B	0.3	0.2	0.2	0.4	—	—	—	—	1.1
E	0.1	—	0.4	0.1	0.3	—	0.2	—	1.1
I	—	0.2	—	0.3	—	0.3	—	—	0.8
H	0.1	—	0.1	0.2	0.2	—	—	—	0.6
F	0.1	0.5	—	0.4	0.7	—	0.1	0.3	2.1
L	0.1	—	0.1	0.2	0.2	—	0.1	0.3	1.0
C	—	0.2	—	0.2	0.2	—	—	—	0.6
G	0.1	—	0.1	—	0.4	0.3	0.3	0.3	1.5
M	0.1	—	0.1	0.2	0.6	3.1	1.3	—	5.4
J	0.1	—	0.4	0.2	0.2	—	2.8	1.6	5.3
Y	—	—	—	—	0.1	—	0.1	—	0.2
P	—	—	—	0.1	0.2	0.3	0.2	0.3	1.1
Q	—	—	0.1	0.1	—	—	—	—	0.2
W	—	0.2	—	—	—	—	0.1	—	0.3
U	—	—	—	—	—	—	—	—	—
R	—	—	—	0.1	—	—	—	0.3	0.4
T	—	—	0.1	—	0.1	—	—	—	0.2
V	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—
X	—	—	—	0.1	—	—	—	—	0.1
Percent returned	4.5	4.7	4.1	3.6	4.7	4.5	5.6	3.1	4.4

any other net station. Walleyes intercepted and tagged at Station 4 apparently were more inclined to move. This increased movement may have lowered vulnerability to recapture. Since Station 4 was located at the outlet of the shipping channel into Lake St. Clair, it may well have been a major thoroughfare for fish movements through the system.

Almost all of the angler recovery grids produced recaptures of tagged walleyes from Stations 1-8 (Fig. 27). Walleyes apparently were moving throughout the system at a much higher rate than any other of the major tagged species. The recovery grids were ranked according to the sum of percent returned from each station. The top four grids were A, M, J, and D. Grid A produced angler tag returns which had been tagged at each of eight net stations plus the A-marker and Monroe tag sites. Walleyes from different populations obviously moved north through the system and were most vulnerable to capture in Grid A. Tag recoveries in the two Detroit River grids were probably high because of the extensive sport fishing effort, strong movements of walleyes up from Lake Erie, and high vulnerability in the middle and lower reaches. Station 6 did not produce angler recaptures in Grid J and Station 8 did not produce them in Grid M. Walleyes intercepted in the Detroit River apparently were only moving part way up or down the river before returning to their respective lake.

The recovery from each tag station was highest in the recovery grid encompassing the station except at Station 4 which had higher recapture rates in Grids A and D. This again suggested higher movement rates for those walleyes tagged at Station 4.

Some of the survey net recaptures of walleyes which occurred during subsequent years, were caught about the same Julian day as tagged. There were two individuals tagged at Station 3 on September 20, 1983 in different nets which were both recaptured at Station 3 on September 19, 1984 in different nets. These fish indicated a recurring movement pattern and a tendency for individual walleyes tagged together to have remained together through time. This may be a common occurrence for migratory predator species. Leider (1985) tagged spawning steelhead in the Kalama River, Washington and found that tagged individuals returned to the river at very similar times on subsequent spawning runs.

The timing of angler tag recoveries tended to follow the pattern of fishing effort as was expected. A comparison of the average movement rate calculated for angler recoveries from each net station showed that walleyes tagged at Stations 5, 3, 8, and 4 had the highest estimated rates of movement which were all greater than 2 km/day. There was so much movement between recovery grids from all net stations that no overall timing pattern was evident. The calculated movement rates were the highest for any species except for white sucker which was heavily biased by the sport fishery which concentrated on the spawning run.

ANALYSIS

Methods

Relative measures of fish abundance are critical for comparing the different habitats, for determining fish movements, and for evaluating potential impacts to the various species and their habitats. Craig (1980) summarized studies on fish sampling and decided that traps were the best sampling tool in a wide range of habitats allowing collection of quantitative data on density and migration. Yeh (1977) studied the relative species-or size-selectivity of gill, hoop, and trap nets in Lake Nasworthy, Texas. He stated "trap nets were the best to sample the maximum number of size-classes of the maximum number of species". The survey was designed to provide data that would reflect relative abundance of the various fish species at comparable times and places throughout the SCDRS. The selection of survey net stations was made to represent the different reaches and habitat types of the entire navigation channel. The abundance of a number of species may be tied to the physical environment and Layher and Maughan (1985) showed that channel catfish biomass in streams is significantly correlated with abiotic factors, including the quantity of certain habitat types. The net stations also allowed tagging of fish at regular intervals throughout the SCDRS in an attempt to provide unbiased fish movement data. The schedule and amount of netting effort was set up to provide sufficient and random samples of the fish populations within physical sampling constraints.

The creel survey was designed to measure angler fishing effort and fish harvest throughout the SCDRS. Anglers, both in their geographical operation and species preference, influenced this fishery as a measure of relative fish abundance.

The coincident net stations, creel survey grids, and angler tag recovery grids are listed in Table 123. Data analyses and parameter estimates were generated for the various angler recovery grids, where possible, to facilitate comparisons using the three major types of data. These three geographical gauging systems did not overlap exactly, but were considered to be equivalent for analysis purposes. Whenever possible data from both years was combined to minimize potential between year variation.

Nonparametric statistical comparisons, using the Kruskal-Wallis and Median tests (Siegel 1956), were performed to compare the survey net catches of major species at the eight primary net stations. These comparisons were made on the combined data set for the entire survey. Significant differences between stations were only recognized when both tests provided the same result and level of significance. Parametric tests were not relied upon for these station by species comparisons because the data for individual species violated assumptions of normality and equality of variances. However, the more precise parametric analysis of covariance test (Snedecor and Cochran 1980) was used to compare stations based on the combined catch of major species which did not violate the above assumptions.

Table 123. Comparable areas for trap net stations, creel survey girds, and tag recovery grids used in data analyses.

Trap net station	Creel survey grids	Tag recovery grids
1	St. Clair River Grids 1–4	A
2	St. Clair River Grids 1–4	A
3	St. Clair River Grids 5–6, and Harsens Island	D
—	Lake St. Clair Grids 1 and 3	E
—	Lake St. Clair Grids 2 and 4	B
4	Lake St. Clair Grid 7	I
—	Lake St. Clair Grids 5, 6, and 9	H
5	Lake St. Clair Grids 8, 10, and 11	F
6	Detroit River Grids 1–7	M
7	Detroit River Grids 8–15	J
8	Detroit River Grids 8–15	J

The trap nets captured fish for tagging and provided catch per unit of effort estimates used as measures of relative abundance. In fisheries literature, catch (C) in any gear is often expressed as a linear function of the catchability in that gear, multiplied by fishing effort and fish abundance. This relationship implies that CPUE is linearly related to fish abundance and that a percent change in CPUE reflects the same percent change in abundance (Bannerot and Austin 1983). Trap nets have been shown to be selective for larger size classes of a number of different species (Latta 1959; Laarman and Ryckman 1982). Absolute selectivity of any fish sampling gear cannot be determined unless the actual fish community structure is known and errors in test netting arise from non-random sampling and selectivity of the gear (Powell et al. 1971). This should not have introduced a significant bias into the tagging and net recapture of tagged individuals since the fish below 170 mm total length were not tagged. Most tagged size groups were almost fully recruited and vulnerable to capture in the nets. Since most of the survey net recaptures of tagged fish occurred during the same net period in which they were tagged, growth would not have altered net vulnerability.

The trap net CPUE data may not measure relative abundance as well as desired, due to changes in fish behavior and/or variable net efficiencies in different habitats (Hamley and Howley 1985; Bannerot and Austin 1983). Hypothetically, the longer a fish remains within the nets' effective area, the more likely its capture. This might be somewhat negated by avoidance reactions or magnified by a tendency to seek out cover. Parker and Hasler (1959) tagged several species in the family Centrarchidae and discerned that repeat captures of individuals apparently did not alter their behavior pattern. They found that certain individuals of a species moved in a random pattern, while others followed a particularly non-random route. Consider hypothetical species, A and B, which are equally dense in the environment, species A has directed and extensive movements and tends to aggregate. Species B remains in an area for extended periods. Species B probably would be captured by nets more effectively, since it would spend more time in the vicinity of the net. Species B would appear to be relatively more abundant than Species A, according to its increased capture frequency. This difference between species would be monitored by the recapture rate of its tagged fish in survey nets, particularly during the net period of tagging.

Results and discussion

Walleye.— Walleye are well adapted to large rivers, and to lakes with habitats similar to that of rivers (Kitchell et al. 1977). They are well suited to the habitat in the SCDRS and western Lake Erie so they would be expected to be abundant.

There is some agreement in walleye abundance measures from trap net and creel data. Both data sets produced CPUE estimates for the south end of Lake St. Clair, which ranked second compared to all other areas. Walleye density is probably highest in this area of the

SCDRS. The high creel CPUE in the St. Clair River probably reflects the ability of anglers to exploit walleyes in the deeper navigation channels as they pass through the river. Nets cannot be effectively fished in these deep, fast waters and walleye anglers regularly fish in the center of the navigation channel (W. Bryant, MDNR, personal observation). The net CPUE is probably a stronger measure of walleye relative abundance throughout the SCDRS.

Statistical comparisons detected significant differences between net catches at Stations 6 and 8 compared to most other stations (Table 124). These two Detroit River stations had low CPUE possibly because they were aside from the main walleye movement pattern. Walleye moving through the connecting channels may orient with the major flow and swim through the main channels where netting is impossible. The same phenomenon was probably causing the lighter than expected net catch of walleyes at Station 2. Schlagenhaft and Murphy (1985) used ultrasonic tags to follow walleye movements in a Texas reservoir and found that they spent over 89% of their time in steep rocky shoreline and open water habitats.

The trap net CPUE was relatively high from May through September, indicating high walleye density. CPUE at Station 4 was particularly high in June, Stations 5 and 7 in May. The fall capture rates were not substantially lower and some walleyes were evident throughout the system at all times. The creel CPUE estimates indicate that walleyes are most vulnerable to angler exploitation in the fall. Certain anglers may be much more effective at capturing walleye and their fishing activity may continue through the summer and fall; whereas, the typical angler is relatively unskilled and may fish primarily in summer.

The high net CPUE in May and June probably resulted from post-spawning movements from the major spawning tributaries in Lake St. Clair (Thames River) and Lake Erie (Maumee River). High net capture rates in Lake St. Clair during summer indicate that walleyes are abundant and also that diurnal movements to and from shore may make them more vulnerable to net capture. Carlander and Cleary (1949) studied daily activity patterns of several species in lakes with gill nets, and found that walleye tended to move into shallow water at night. This may help account for a higher catch rate in Lake St. Clair, because walleyes may not move inshore at night in the rivers.

Walleyes caught by anglers and by survey nets showed the same pattern in size distribution through the SCDRS. The largest fish were caught in the north half of the St. Clair River and the smallest in the south half of the Detroit River. The mean lengths of creeled walleye were about 60 mm larger than that for netted walleye, which is probably due to the angler's minimum size limit of 330 mm. The St. Clair River walleye population is probably most dependent upon the Thames River spawning stock and the Detroit River upon the Lake Erie stocks. The age distribution is older and mean size larger for the Thames River stock (R. Haas, MDNR, unpublished data). The males making up the Thames River spawning run

Table 124. Results of 28 pairs of between-station statistical tests for walleye trap net CPUE.

Net station	Net station							
	1	2	3	4	5	6	7	8
1	—					*		
2	—	—	*	*		**	**	
3	—	—	—			**		*
4	—	—	—	—		**		**
5	—	—	—	—	—	**		*
6	—	—	—	—	—	—	**	
7	—	—	—	—	—	—	—	**
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

are estimated to be almost 2 years older on average than males in the Maumee River spawning run.

Tag recovery data provides the link necessary to tie the net and creel results together. Most legal sized walleyes were tagged and Stations 5, 4, and 7 were ranked in that order of number tagged during the survey. The top 3 months for walleye tagging were September, August and June.

There was a very low rate of recaptures of tagged walleye in the survey nets (0.9%). This indicates that walleye are not readily caught in trap nets. Walleyes had one of the lowest tendencies of all major species toward recapture in trap nets at each of the eight net stations (Table 125). In prior surveys, tagged walleyes were also not vulnerable to recapture in the nets during the net period when tagged or during net surveys in subsequent years (W. Bryant, MDNR, unpublished data). Apparently trap nets are inefficient at capturing the walleyes that occur in the vicinity of the nets; or more likely, the individual walleyes are continually and rapidly moving through. The latter case suggests that walleyes are very abundant in the environment relative to other species. The ranking of the percent of tag recaptures for major species from survey nets at Stations 1-8 is shown in Table 125.

Even though tagged walleyes were recaptured in nets at a low rate, the recaptures at Station 4 were considerably lower than expected (Table 107). Walleyes intercepted at Station 4 may be moving even faster than those at most other stations since this station is located at the opening of the main channel into Lake St. Clair, which may well be a major migration route.

Tagged walleye were frequently recaptured by anglers relative to other species, being exceeded only by tagged yellow perch. There was not much difference between the rate of angler return from the tags applied at different stations, except that Station 4 again showed a lower than expected return. This provides additional evidence that walleyes tagged at Station 4 had higher movement rates.

The creel survey showed that walleye harvest was highest in recovery Grids M, J, A, and D. Angler tag returns were consistent with the creel results and the top four grids were J, M, A, and D (Fig. 27). The top three recovery grids based on survey net CPUE were I, F, and J. Based on angler CPUE, the ranking was Grids A, F, and D, in that order. The tagged walleye population was apparently representative of the population being harvested by sport fishermen throughout the SCDRS.

Anglers reported the capture of walleyes tagged at net Stations 1-8 throughout the SCDRS. Walleyes apparently move more than any of the other major species. Stations 1-8 produced tagged walleyes that were eventually caught by anglers in an average of nine recovery grids. These recaptures showed movement both upstream and down and the observed movement north predominated.

Table 125. Rank (highest to lowest) of the percent of tags recovered in trap nets from each net station during entire survey.

Trap net station			
1	2	3	4
Yellow perch	Rock bass	Brown bullhead	Smallmouth bass
Smallmouth bass	Yellow perch	Yellow perch	Rock bass
Rock bass	Black crappie	Rock bass	White bass
Northern pike	Common carp	Black crappie	Channel catfish
Freshwater drum	Walleye	Channel catfish	Yellow perch
White sucker	Redhorse	Northern pike	Walleye
Redhorse	Smallmouth bass	Smallmouth bass	Redhorse
Walleye		Walleye	
Common carp		Freshwater drum	
		White sucker	
		Common carp	

Trap net station			
5	6	7	8
Rock bass	Black crappie	Black crappie	Black crappie
Smallmouth bass	Rock bass	Rock bass	Northern pike
Yellow perch	Smallmouth bass	Brown bullhead	Rock bass
Black crappie	Yellow perch	Channel catfish	Brown bullhead
Redhorse	Walleye	Freshwater drum	Channel catfish
Freshwater drum	Freshwater drum	Smallmouth bass	Redhorse
Channel catfish		Common carp	Smallmouth bass
Walleye		Yellow perch	Common carp
		Walleye	Freshwater drum
		White sucker	White bass
		Redhorse	Walleye
		White bass	Yellow perch

The creel survey showed that most walleyes (58%) were caught during June and July (Fig. 28). The subsequent tag returns from the A-marker station were very similar in distribution to the walleye harvest. The major divergence was the relatively high tag return in April and May, when the creel survey showed that walleye harvest was low. Many of these spring tag returns were being recovered in known walleye spawning areas, such as the Thames River, where the creel survey was not operating. Walleyes are also known to be quite vulnerable to capture on spawning runs, so they have a good probability of being recovered then.

Station 6 walleyes showed very little movement away from their tag site (Table 122), which indicates this was more of a resident tagged population. This supports the hypothesis that net Station 6 was located away from the general movement route for walleyes, which must pass to the east of Belle Isle.

The geographical distribution of angler returns for walleyes tagged at A-marker, Monroe, and the North Channel stations is shown in Figures 20 and 21. These data were based only on tagged walleyes having at least one full calendar year of vulnerability so that the percent recovered in grids would not be biased by angling during only a portion of a fishing year. The distribution of angler recaptures of these tags was quite different than tags from net Stations 1-8, due to the predilection for Anchor Bay and Monroe tags to be recaptured in Lake St. Clair and Lake Erie. However, the St. Clair River (Grids A and D) remains as the major tag recovery area for all tag sites, including Monroe. Anchor Bay and Lake St. Clair grids also produced substantial and similar tag return rates from these three lake stations, showing a common movement pattern within Lake St. Clair for walleyes regardless of source. The greatest difference between tag sites was the lack of angler returns from the A-marker and North Channel stations in the Detroit River and Lake Erie. Walleyes encountered in the SCDRS have very low vulnerability to exploitation in Lake Erie; whereas, those encountered in Lake Erie (during spring) have very substantial vulnerability in the SCDRS.

The timing pattern for all angler recaptures of walleyes tagged at A-marker and Monroe during subsequent fishing seasons is shown in Figures 29 and 30. July was the best recovery month for both tag sites. However, the A-marker tags were more evenly spread through the period from April-November, showing that the Lake St. Clair angler fishery operates efficiently over the entire open water season.

The monthly distribution of Monroe tags was much more peaked and heavily weighted to June and July. This seasonal pattern is apparently typical for western Lake Erie, where walleye vulnerability to angling decreases sharply in August (D. Davies, Ohio Department of Natural Resources (ODNR), personal communication).

The monthly sequence of walleye tag returns from the A-marker station, compared to the North Channel station is shown in Figure 31. The North Channel tags, which were applied

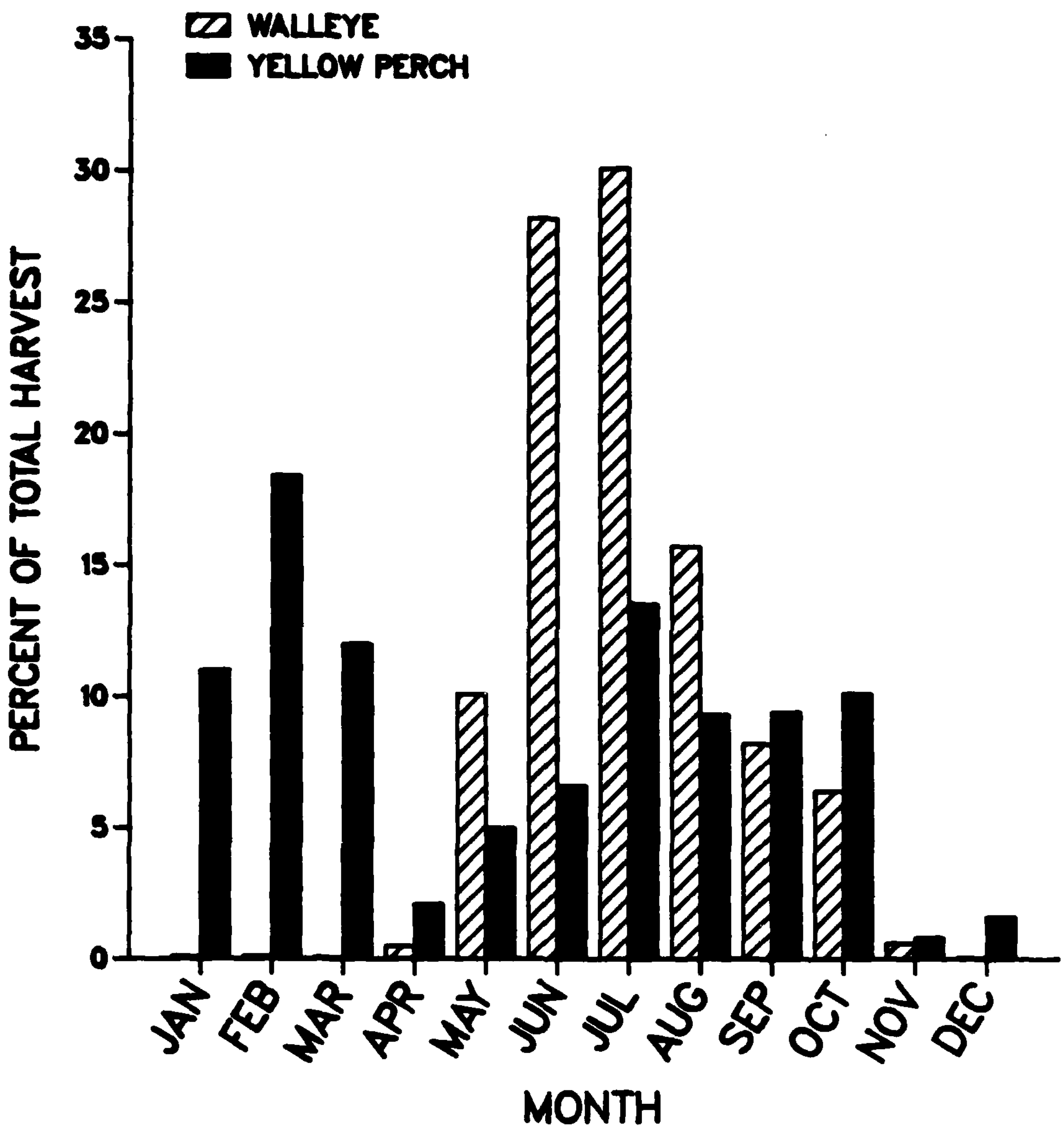

Figure 28. Monthly percentage of angler catch of walleye and yellow perch in the SCDRS.

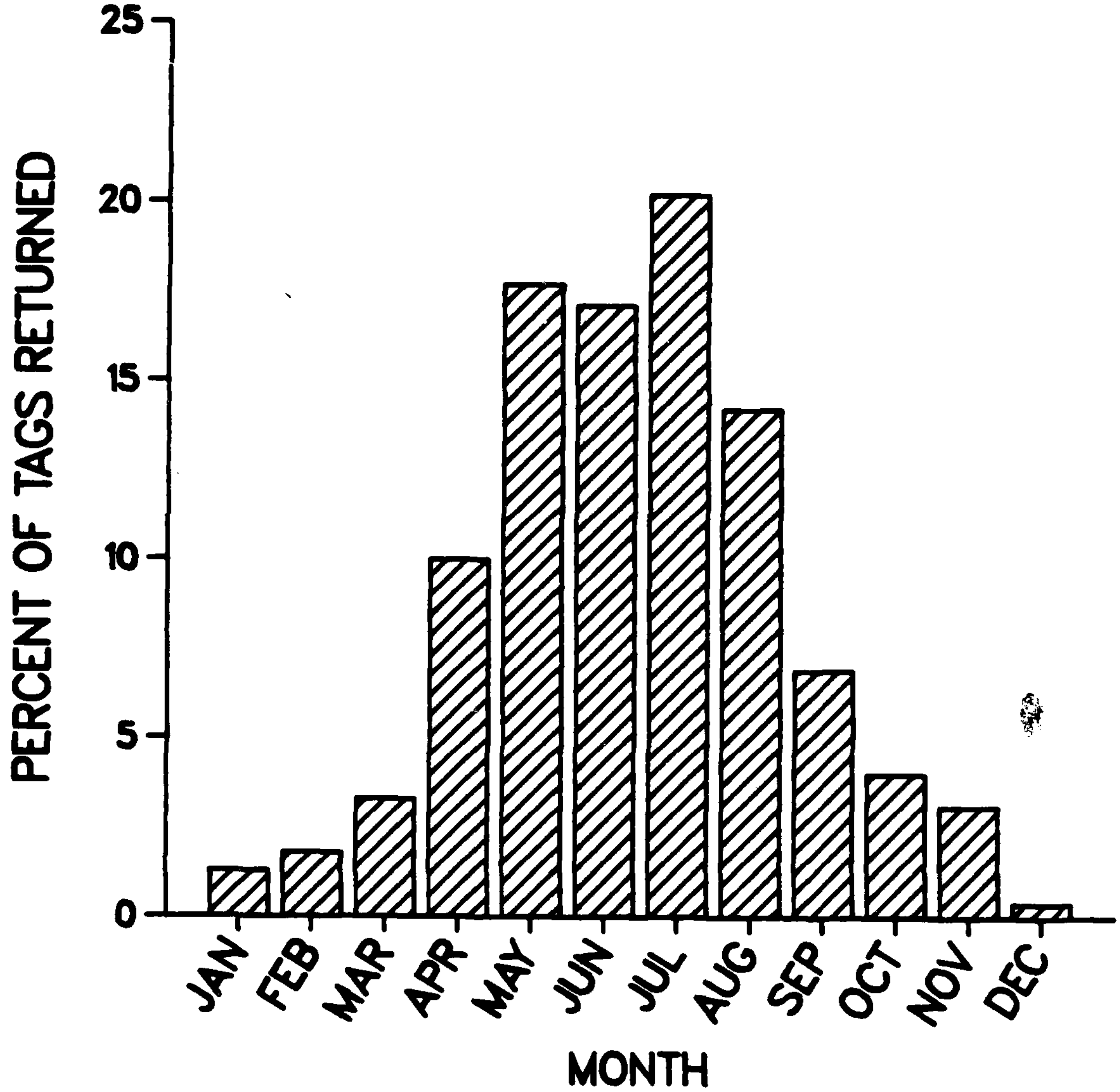

Figure 29. Monthly percentage of 451 A-marker walleye tags returned during subsequent years from 1976 through 1984 by all anglers.

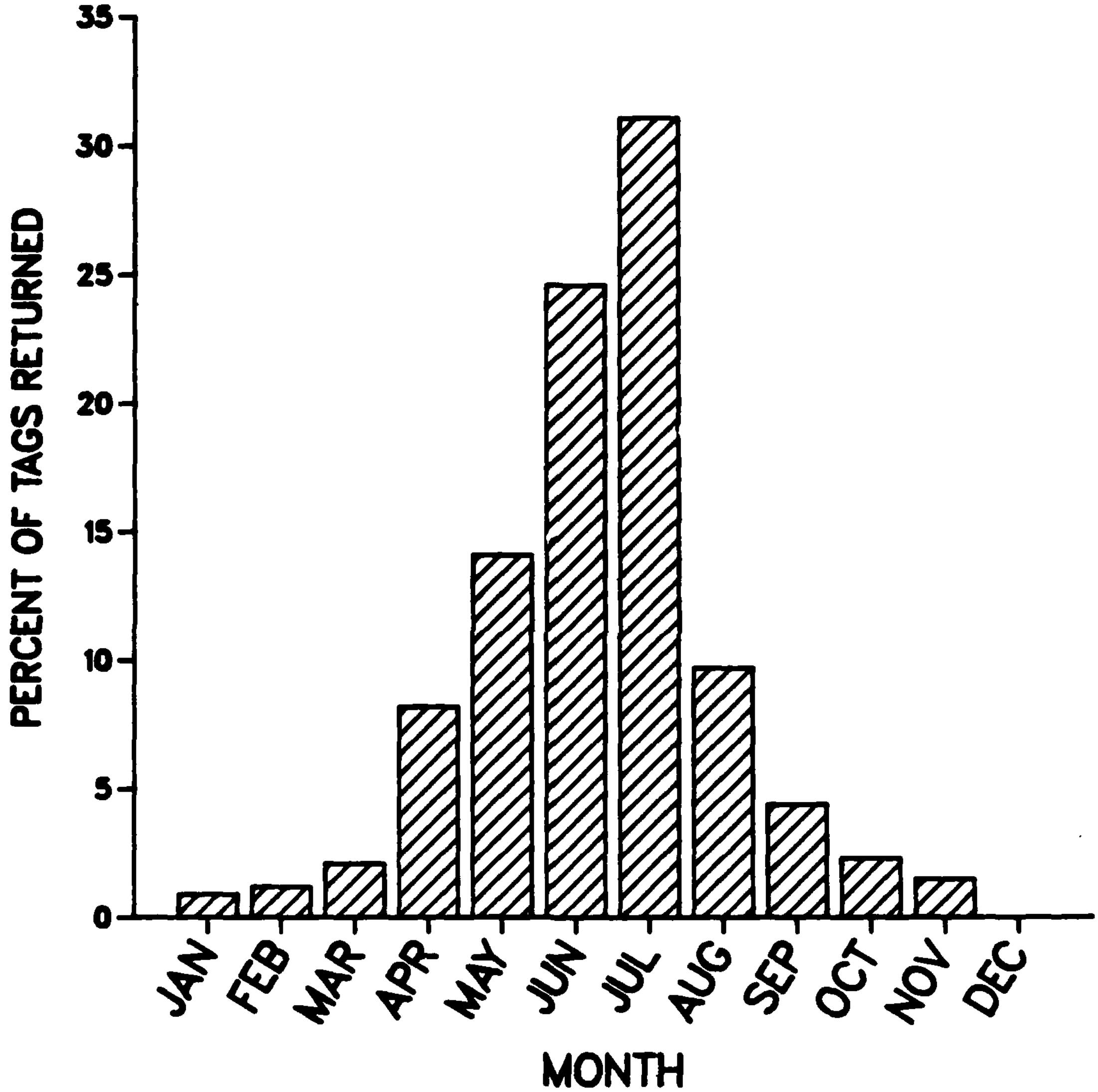

Figure 30. Monthly percentage of 341 Monroe walleye tags returned during subsequent years from 1979 through 1984 by all anglers.

during the fall, show a strong predilection to be recovered in subsequent fall periods. Many of these fall angler recaptures occurred in Grid B, close to where they were tagged during a previous year (Fig. 21). None of these walleyes were taken during their tag year. The predilection to be recaptured in the vicinity of their tag site during the same seasons, but in subsequent years, shows the recurrent nature of their movements.

The monthly sequence of walleye tag recaptures by anglers in the SCDRS, compared to Lake Erie from the A-marker and Monroe tag sites is shown in Figures 32 and 33. These clearly show the pervasive movement pattern of the Lake St. Clair and Lake Erie walleye populations through the SCDRS. The few A-marker tagged walleye that were later recaptured in Lake Erie were recaptured quite early in the fishing season, well ahead of the Lake Erie peak fishery in July. These walleyes which were originally tagged in Anchor Bay during May and June had apparently just arrived in Lake St. Clair after spawning in Lake Erie. These tagged walleyes were then recaptured by Lake Erie anglers in early spring on their way back upstream to Lake St. Clair. Since these particular fish spawn in Lake Erie and soon move north to Lake St. Clair, they are only vulnerable to angling in Lake Erie for a brief period in the spring. However, the numerous Monroe-tagged walleyes that were recovered from SCDRS waters (over 50% of all Monroe returns) showed a pattern very similar to the Lake St. Clair-tagged walleyes. They differed in that there was a much less peaked distribution, with substantial returns from May through October. This is strong evidence that many of these Lake Erie walleyes move rapidly into the SCDRS after spawning, where they remain during the bulk of the fishing season.

The angler fishery produced only a few walleyes during the winter months in the SCDRS. The combined catch during December, January, February, and March produced only 0.3% of the estimated walleye harvest. Since walleyes can readily be caught by anglers during winter, the low catch indicates that walleyes do not overwinter in areas of fast ice cover in Michigan waters of the SCDRS. Walleye tag returns during winter from anglers were primarily caught in Grids C, G, and L, where water is deeper and a winter ice fishery operates (Ontario Ministry of Natural Resources 1981). Schlagenhaft and Murphy (1985) found that walleyes moved out to open water as the water cooled, and were commonly in areas having depths greater than 15 m during winter.

The walleye population in the SCDRS is composed of individuals from a number of different spawning sites, including those associated with the western basin of Lake Erie. These individuals probably will return to their natal spawning ground each spring, but intermingle during the remainder of the year. Movements to and from the spawning vicinity may occur very close to actual spawning and probably are limited in winter. Changes in water level during the late winter and early spring may trigger some walleye movement. Doan (1945) examined commercial ice angling catches of walleye in western Lake Erie in relation to water level

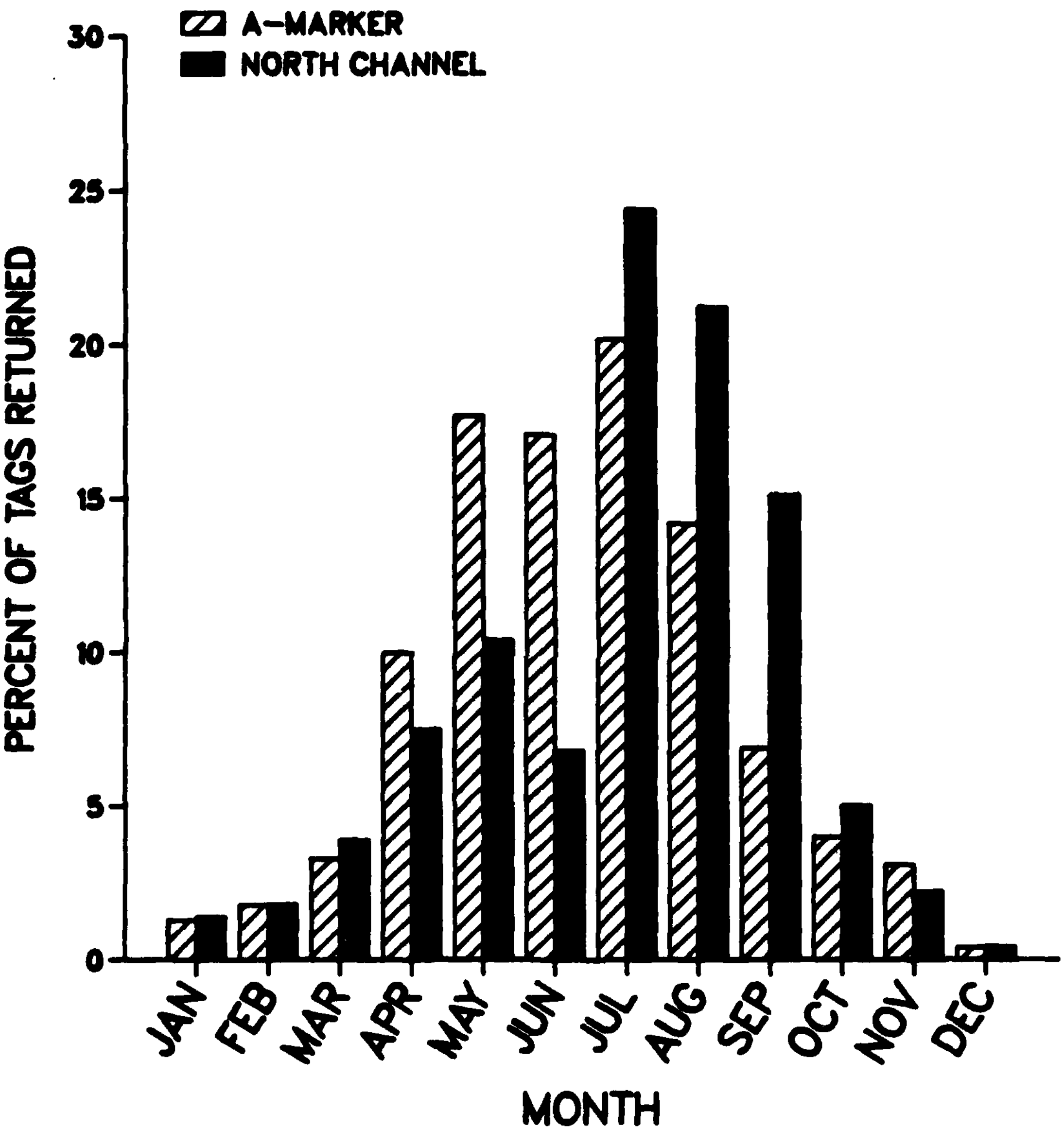

Figure 31. Monthly percentage of walleye tags returned during subsequent years from the A-marker and North Channel stations.

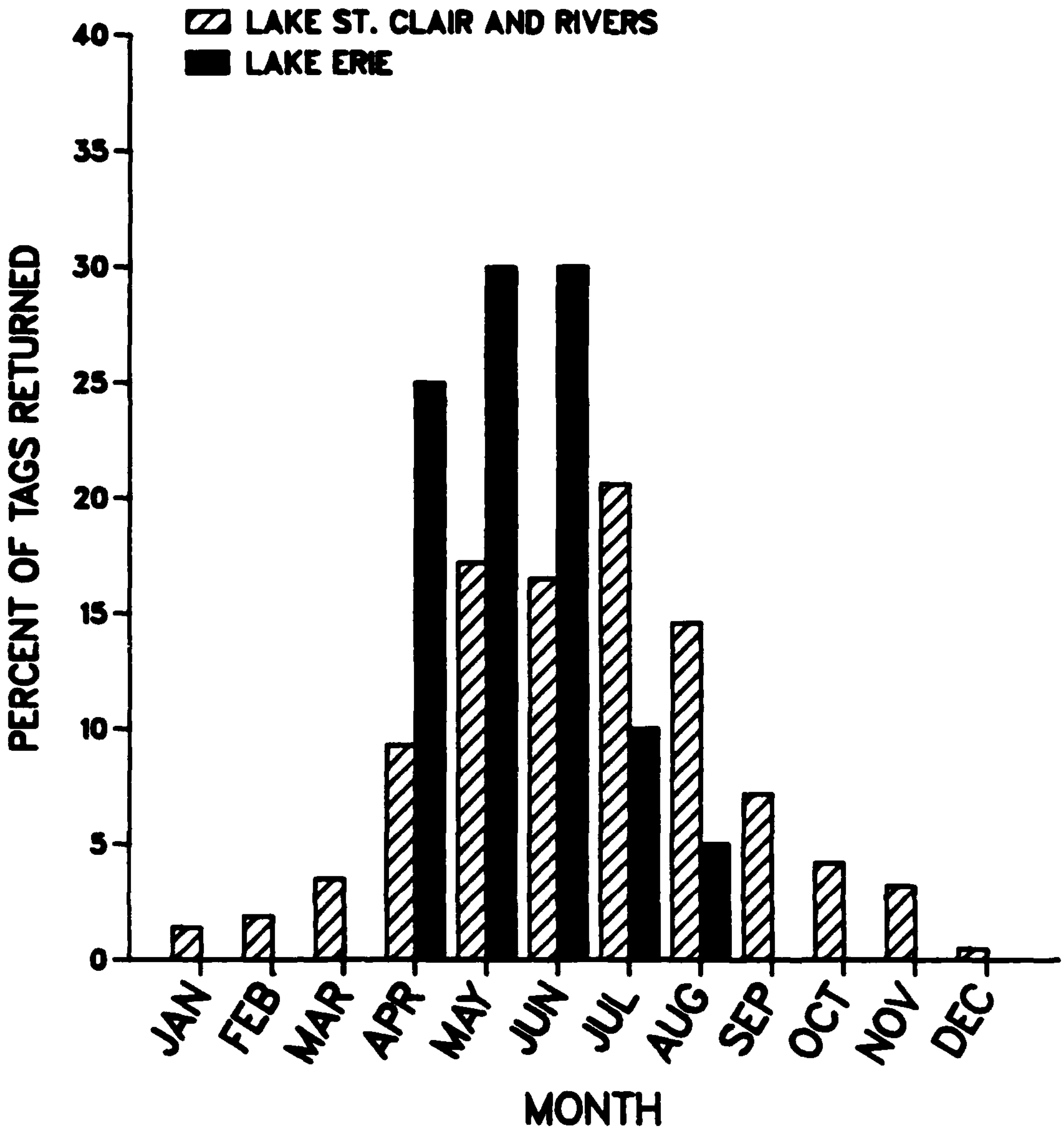

Figure 32. Monthly percentage of A-marker walleye tags returned during subsequent years from SCDRS anglers versus Lake Erie anglers.

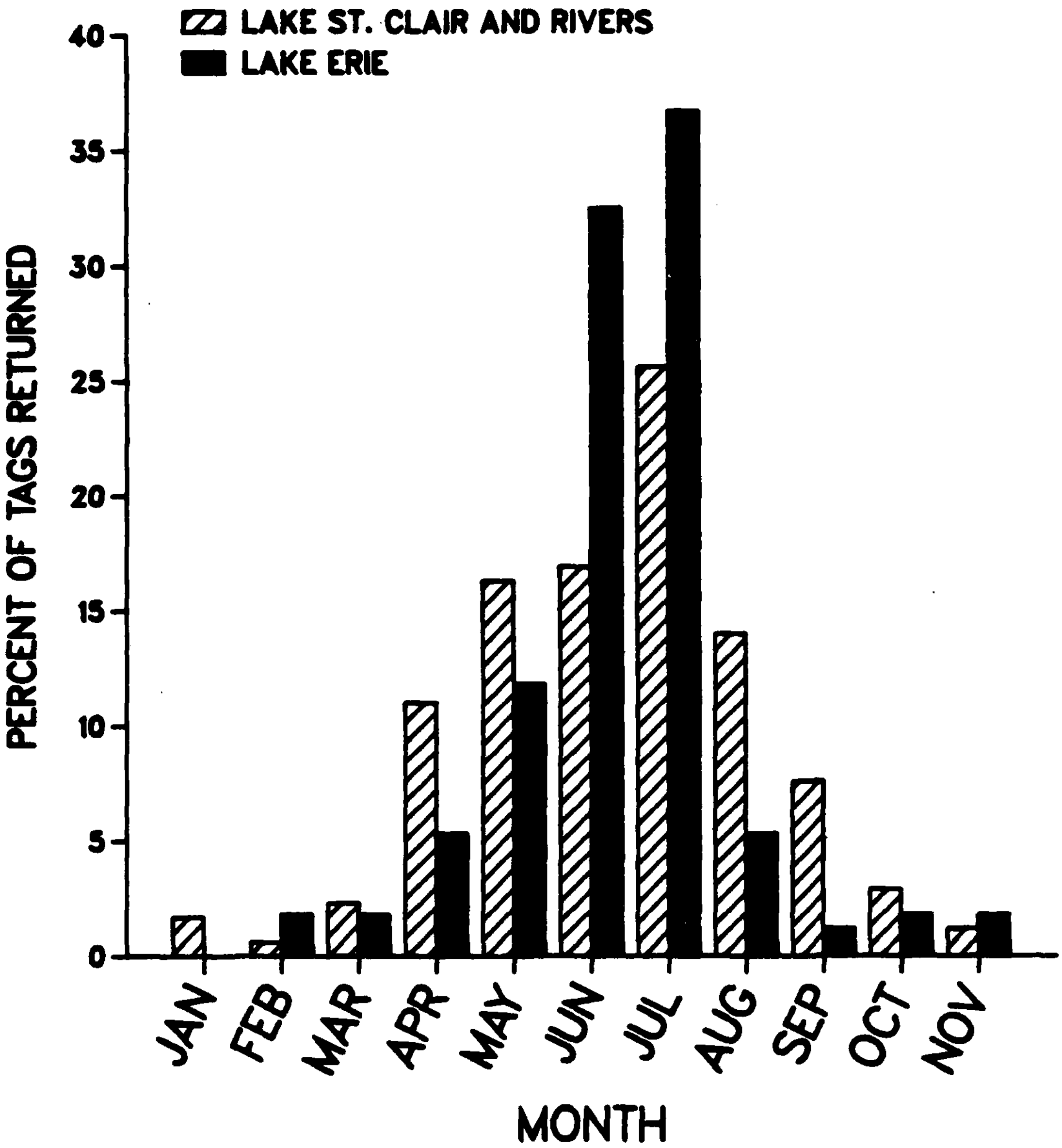

Figure 33. Monthly percentage of Monroe walleye tags returned during subsequent years from SCDRS anglers versus Lake Erie anglers.

fluctuation and found higher catch rates during periods of water level change which the author attributed to increased fish movements. The data available indicates that walleyes overwinter in deeper lake areas close to spawning grounds or in the smaller tributaries themselves, such as the Thames River. Ferguson and Derksen (1968) tagged 2,793 spawning walleyes in the Thames River and showed that the bulk of the recaptures were from Lake St. Clair, the St. Clair River, and southern Lake Huron. Only a few of these tagged walleyes were recovered in Lake Erie. However, the fact that some of the Thames River tags showed up in Lake Erie may account for the Thames River recaptures of our Monroe tags. Presumably, these are Thames River spawners that have moved downstream into Lake Erie right after spawning.

VanVooren (1978) tagged 8,749 walleyes at three major spawning sites in Ohio waters of the western basin of Lake Erie. Angler tag recoveries showed substantial movement into the SCDRS from all three tag sites, with slight domination by the Maumee River stock. Distribution of VanVooren's tag returns in the western basin of Lake Erie showed a definite predilection for the Maumee stock to remain close to the western Lake Erie shore and to move up into the Detroit River. This is similar to the pattern of return observed from our Monroe-tagged walleyes, which presumably were mostly Maumee River stock. None of VanVooren's spawning site walleyes were recovered in subsequent years at spawning sites other than the site where tagged. The Monroe-tagged walleyes were about equally likely to be recaptured by anglers in the Maumee and Thames rivers. This is somewhat misleading, since a lot of the Thames River recaptures were made in the middle of winter. These fish might easily have returned to the Maumee River in March or April to spawn. One male walleye, tagged by the OMNR in the Thames River in March, was recaptured one week later in the Maumee River by an angler (D. MacLennan, OMNR, personal communication). The recaptures in the Maumee River occurred during the brief spawning season from late March to the end of April. The Maumee River does not support a winter walleye fishery (C. Baker, ODNR, personal communication).

Yellow perch.—Yellow perch, like walleyes, are considered best adapted to lake habitats which are extensions of riverine environments (Kitchell et al. 1977). Lake St. Clair and the lower reaches of the St. Clair and Detroit rivers should be very good perch habitat. Yellow perch are predators that feed extensively on invertebrates and forage fish (Scott and Crossman 1973).

The trap nets caught an average of five yellow perch per lift during the entire survey, which made them second only to rock bass in the net catch. Net Stations 3, 7, and 8 produced the highest CPUE. These stations are located in the river deltas where perch habitat is ideal, so, the high CPUE probably reflects maximum density over the survey period.

June, July, and May were the best 3 months for overall CPUE, and the top three stations did not differ substantially from this pattern. May includes the latter part of perch spawning, and June is the beginning of the growth period, which may encourage peak activity during this time. The deltas presumably provide good perch spawning habitat and they harbor the densest benthic food organisms.

The statistical comparisons of survey net CPUE's at Stations 1-8 for yellow perch are given in Table 126. The adjacent river net stations were very similar and all river stations had quite high CPUE. The two lake stations had low CPUE, which were significantly lower than most of the river stations. Station 5 had a particularly low CPUE, and probably shows that this area is a demarcation zone between the Lake St. Clair and Detroit River-Lake Erie populations.

Yellow perch comprised about 38% of the total angler harvest in the SCDRS during the survey. This was the largest contribution of any species. The top three grids for angler CPUE were I, E, and B. The largest perch catches came from Grids E, B, H, and M. Grid I ranked very low in total catch, so high CPUE apparently did not attract a lot of angling effort into Grid I. Michigan's waters of Lake St. Clair produced 85% of the perch harvested and the Detroit River produced 13%. The St. Clair River had less than 2% of the total.

The fall and winter months, particularly February, produced the largest harvest of perch (Fig. 28). October, March, and February had the highest estimated angler CPUE. July was the best summer month for perch, when anglers harvested 13.5% of the total. October probably has the highest CPUE because experienced and dedicated anglers tend to fish for perch then. Many of the general fishermen, at the basic skill level, have stopped fishing for the season.

The timing of net and angler estimates of CPUE did not agree, probably because so much of the angler catch and effort occurred in areas of Lake St. Clair, such as Anchor Bay, that were not represented by trap net stations.

The survey net and angler catch data both showed a decline in average size of yellow perch from the head of the SCDRS down to Lake Erie. The mean length in the Detroit River net catch was 32 mm smaller than in the St. Clair River, and the mean length in the Detroit River angler catch was 36 mm smaller. Age and growth data from the net catch indicates that the Detroit River perch are considerably slower growing and may be a different population from Lake St. Clair. Some ripe females were captured in nets at Stations 7 and 8 during May and June, indicating that this population is not strongly tied to Lake St. Clair spawning grounds.

Tagged yellow perch were relatively vulnerable to recapture in the survey nets and angler harvest, since they ranked third and first out of the major species on these criteria. The nets at the St. Clair River stations had a much higher tag recapture rate (9–11%) than the other five stations (1–4%). The nets were apparently more efficiently capturing perch in the St. Clair River and the catch rate there probably represented a much lower density of fish. Probably this

Table 126. Results of 28 pairs of between-station statistical tests for yellow perch trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—		**	*			**	**
2	—	—	*		**			
3	—	—	—	**	**	**		
4	—	—	—	—	**			*
5	—	—	—	—	—	**	**	**
6	—	—	—	—	—	—		**
7	—	—	—	—	—	—	—	
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

occurred because perch habitat is much scarcer in the St. Clair River, concentrating them and making it easier to trap them; or perch in the St. Clair River move in a way that makes them more catchable in nets.

Tagged perch moved from net Stations 2 and 3 upstream to be netted again at Station 1, which was more movement between net stations than shown by any other species except smallmouth bass. Over 60% of the St. Clair River net recaptures occurred during net periods subsequent to the period of tagging, indicating that perch may be moving less or are extremely vulnerable to net capture as they pass by.

The creel survey indicated that yellow perch were not very abundant in the St. Clair River, since so little of the total harvest was taken there. Grids A and D supported about 19% of all angling effort in the SCDRS but only provided 2% of the perch harvest.

Anglers in the St. Clair River also captured and reported a lot of the yellow perch tags. Grids D, A, M, and J ranked 1, 2, 3, and 4; according to the sum of percent of returns from each tag station. Anglers in Grid D recovered perch that were tagged at net Stations 1-7. Net Stations 1-3 each had about 10% of their tagged perch recaptured by anglers primarily within Grids A and D. This indicates higher angler exploitation on yellow perch in the St. Clair River than any other species/area combination. A relatively high percentage of the perch population in the St. Clair River was tagged and the anglers were exploiting it. The perch are probably vulnerable to angling in the river for the same reasons they are easily netted.

The tagged yellow perch moved quite extensively, based on angler recaptures, although somewhat less movement than walleye displayed. Heaviest movement occurred from the St. Clair River stations into Lake St. Clair, where anglers caught them primarily during winter and fall. There were also some tagged perch moving upstream into Lake Huron, where they were captured in early summer. The St. Clair River anglers recaptured tagged perch in summer.

The yellow perch populations of southern Lake Huron, the St. Clair River, and Lake St. Clair are closely linked together. The average tag and recovery dates in the St. Clair River indicate that the density pattern is moving north to south during fall, and south to north in spring. Many of these fish apparently overwinter and spawn in Lake St. Clair, especially Anchor Bay, and then spend summer and fall in the St. Clair River and/or Lake Huron.

There was almost no observed movement of perch, tagged at Stations 1-4, into the Detroit River or Lake Erie. The yellow perch tagged in the Detroit River were caught by anglers in the Detroit River, Lake St. Clair, and Lake Erie. The angler tag recaptures in the Detroit River were caught earlier in subsequent years than their tagging day, probably because of the expansive sport fishery in spring, which targets on white bass, but also harvests yellow perch. The angler recaptures in Lake Erie show a similar pattern to the Lake St. Clair returns, in that yellow perch are apparently moving downstream into the lake in fall, overwintering, and spawning in Lake Erie and moving back upstream in early summer. There appears to be little exchange of Lake Erie perch up into Lake St. Clair.

Yellow perch contribute more than twice as many fish to the angler harvest than walleye, with many being taken during the winter. Perch migrate, but not as much as walleye. The perch seem to relate to shore whereas walleye tend to associate with the navigation channels. Yellow perch are readily captured in trap nets in the rivers, where they remain in the limited shoreline habitat. Walleyes are more readily captured in the lake, since they frequent deeper, channel waters of the rivers.

Tagged perch apparently moved during the fall, from summer feeding areas in Anchor Bay and Lake St. Clair. Thorpe (1977) summarized yellow perch studies which showed that, in general, pre-wintering migration occurred in autumn. Other studies have shown that perch often overwinter in deep waters. This is definitely not the case in the SCDRS, where they could overwinter in Lake Huron, but instead choose shallow Anchor Bay. The Anchor Bay water during winter is probably similar in temperature to deep waters of inland lakes, since it is moving rapidly and originated in relatively deep areas of Lake Huron. Perch that overwinter in Anchor Bay are already close to good spawning grounds. Anchor Bay is probably an ideal spawning and nursery ground for many species of fish. Southern Lake Huron and the upper reaches of the St. Clair River probably offer little spawning habitat.

Rawson and Bartholomew (1979) found that yellow perch tagged at various sites in western Lake Erie were recaptured at low rates ranging from 0.8% to 3.1%. These tag returns showed considerable movement, but the data were too preliminary to calculate movement distances or rates.

Northern pike.—The highest ranking stations for northern pike based on mean CPUE were 3, 8, 6, and 4. The most productive netting months were May and April. The St. Clair River and Detroit River delta areas (Stations 3 and 8) are both shallow, marshy, food-rich areas, providing excellent feeding and nursery habitat for pike which probably accounts for their top CPUE ranking.

The boat fishery at Harsens Island took 700 pike, mostly in June, July, and August. The estimated Detroit River catch was minimal with 100 taken in February in the upper river, and 200 in February in the lower stretch. The main winter harvest in Lake St. Clair was from shanties in Grid B in the northeast corner of Anchor Bay. This apparently is a wintering area for northern pike.

Mean lengths from the creel survey were 630 mm (Harsens Island), 640 mm (Lake St. Clair), and 624 mm (Detroit River); and 639 mm, 713 mm, and 610 mm, respectively, from the net catches. The mean lengths of pike from creel data were quite similar, but the mean length from net data was 103 mm greater in Lake St. Clair than in the Detroit River. Faster growth is indicated for Lake St. Clair pike population.

A total of 445 northern pike were tagged which was 1.5% of the total fish tagged. Stations 3, 8, and 6 produced the most tagged pike and the highest mean trap net CPUE. The most productive tagging months were May, April, and June. The trap net recapture rate was 1.8% which was low. Three of four Station 3 recoveries were from Station 3 and the other was recovered upstream at Station 2 soon after being tagged. Three Station 8 pike, two tagged in May and one in October, were recaptured in May.

There was a 3.8% recovery rate of pike by anglers which indicated that anglers exploit pike at a relatively high rate. Areas ranking highest for recoveries were: northeast Anchor Bay (tagged at Stations 1, 2, and 3); northwest Anchor Bay (tagged at Stations 2 and 3); and the St. Clair River delta (tagged at Stations 3 and 4). Pike recovered in January in the St. Clair River delta had been tagged at Station 4 (northern Lake St. Clair) in November. St. Clair River delta pike tagged in the summer were recovered in the summer. Northeast Anchor Bay pike recaptures had been tagged in the spring and were recovered in the summer. Northwest Anchor Bay tag recoveries of pike had been tagged in May, while lower Detroit River recoveries had been tagged in spring.

Angler returns indicate that northern pike in the St. Clair River return to Anchor Bay to spawn. The northeastern part of Anchor Bay is a prime wintering area. Trap net returns also indicate that the St. Clair River delta area is a spawning area. The Detroit River probably has a separate population with spawning centered in the lower river.

Freshwater drum.—Net Stations 4, 3, and 5 ranked highest in net CPUE for freshwater drum. Station 8 ranked fourth. This indicated drum were more abundant in their preferred habitat of large, shallow waters (Scott and Crossman 1973) typified by Lake St. Clair and the river deltas. The highest CPUE at Station 4 was in October due to an extraordinarily high catch in 1983. Otherwise, July ranked number one and was also first at Stations 3, 5, and 8. Drum were rarely netted in the winter, indicating that they were inactive.

Statistical analyses (Table 127) revealed no significant differences in trap net catches of drum between any adjacent stations. Stations 3, 4, 5, and 8 were similar, which was consistent with their 1–4 ranking in mean CPUE. Station 5 was significantly different from Stations 6 and 7, but not 8. This may indicate that there is some movement of abundant western basin, Lake Erie drum into the lower Detroit River. Evidence of the abundance of Lake Erie drum was shown by the Monroe trap net CPUE, which was 6–17 times greater than at the A-marker station during the 1983–85 period (Table 15).

The three highest ranked areas for angler catch as well as angler CPUE were, in descending order, the upper Detroit River, lower Detroit and upper St. Clair rivers. The upper Detroit River had twice the estimated catch of the lower which was likely due to the angler's preference rather than actual differences in drum abundance. Most of the angler catch was taken during summer (Fig. 34). Angler harvest was high in the Detroit River, but quite low in

Table 127. Results of 28 pairs of between-station statistical tests for freshwater drum trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—			**	**			*
2	—	—		*	*			
3	—	—	—					
4	—	—	—	—				
5	—	—	—	—	—	*	*	
6	—	—	—	—	—	—		*
7	—	—	—	—	—	—	—	
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

the remainder of the SCDRS. The sport fishery for drum does not reflect the species' real abundance, due to low angler interest, other than by Detroit River shore anglers.

Mean lengths of drum from the net and creel catches in the St. Clair River were 357 mm and 395 mm, respectively, but only 252 mm and 279 mm from the Detroit River. A higher growth rate is indicated in the St. Clair River, where density is probably low compared to the Detroit River. The Detroit River angler harvest is probably biased by their culling of smaller individuals.

A total of 1,088 drum were tagged which was 3.7% of the total fish tagged. Stations 4, 3, 5, and 8 had the highest number of tagged drum and the highest CPUE's. The majority of drum were tagged in October and July. Only 0.9% of tagged drum were recovered in the nets. This is a comparatively low rate and indicates low vulnerability to the nets and underestimation of their abundance based on net efficiency. All recaptures were taken within their tagging area. None of the drum were recaptured in a subsequent year, and only one was captured in a subsequent netting period. Tag returns from nets showed no movement of drum out of the tagging areas.

There were only two angler tag recoveries. This might indicate a high tagging mortality rate, considering the fairly large number of drum tagged. One tag recovery was caught in the lower St. Clair River in the area in which it was tagged. The other recovery was the only one that moved, having been tagged in northern Lake St. Clair (Station 4) and recovered in the lower Detroit River.

Low angler as well as net return rates may show that drum are more abundant than catch rates suggest. There is no evidence of wintertime movement of drum. They probably move into wintering grounds in the lake in fall and there is some movement into the rivers in the spring (probably to spawn). Drum either move into the Detroit River from Lake Erie in the summer or there is a resident population in the river.

<u>Carp</u>.—Stations 7, 8, and 3 had the highest mean CPUE for carp. Spring and early summer produced the highest catches.

Carp were most abundant in the nets at shallow, weedy, stations where water quality may have been depressed sufficiently to give carp a competitive advantage over less tolerant species. The St. Clair River delta is probably a spawning site for carp from many areas of the upper SCDRS.

A total of 1,067 carp were tagged which was 3.7% of the fish tagged. Most carp were tagged at Stations 8, 7, and 3 during the month of June. Trap nets recaptured only 1% of the tagged carp. All recoveries were at the station where they were tagged and during the same netting period suggesting that movement is rapid and direct. Carp movement patterns could not be determined from the nets due to their low net vulnerability.

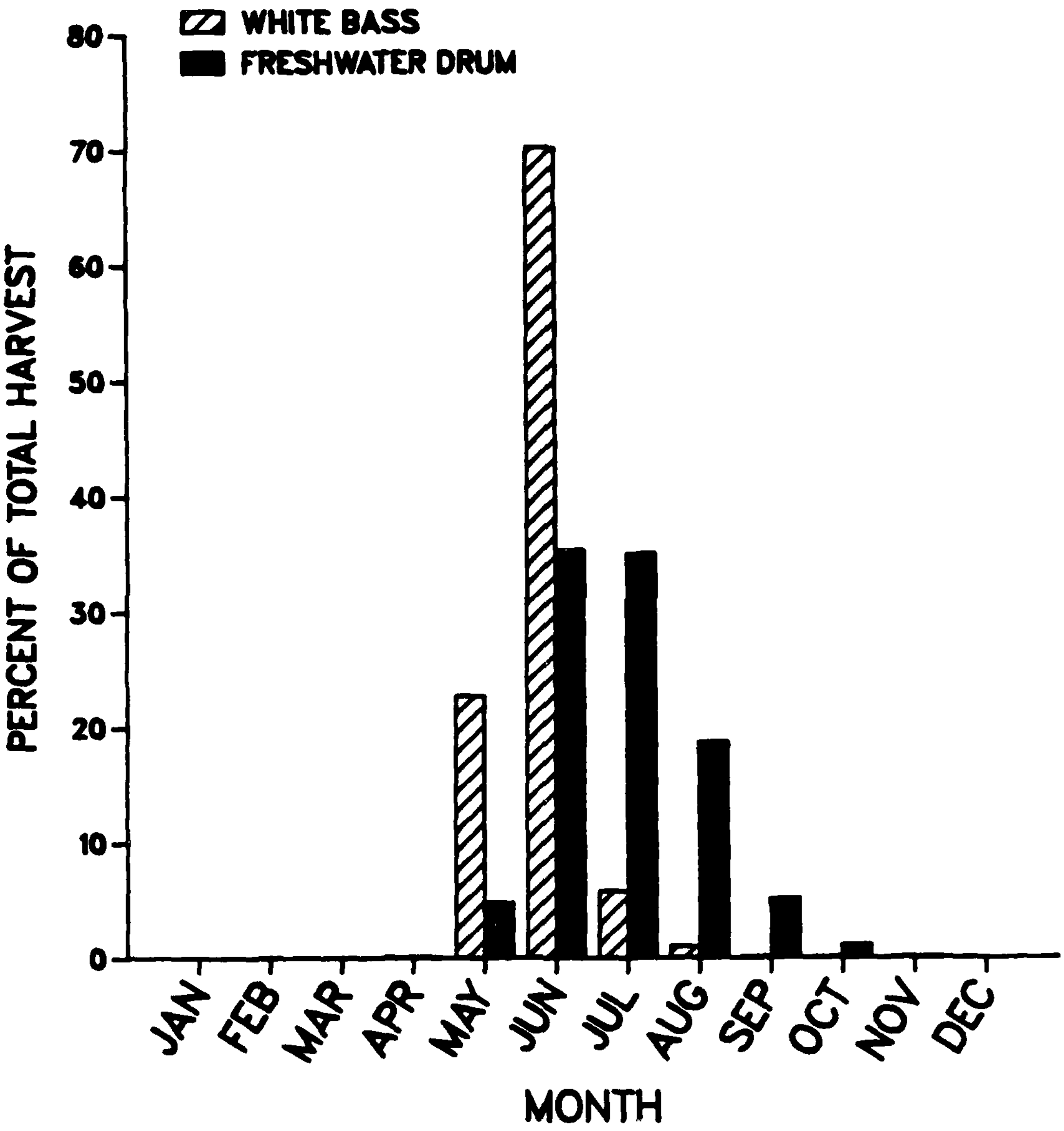

Figure 34. Monthly percentage of angler catch of white bass and freshwater drum in the SCDRS.

Anglers took only 0.4% of the total number tagged which was very low. None of the carp tagged in the Detroit River were recovered. Three carp tagged at Station 4 were caught in the St. Clair River delta and another at Station 2. Recoveries of carp tagged in the St. Clair River delta were made at the tag site, in southern Lake Huron (commercial fisherman), and in the upper Detroit River.

A few angler recaptures revealed substantial movement of carp both upstream and downstream in the SCDRS. The lower Detroit River is apparently a center of carp abundance, probably due to optimal habitat and depressed water quality.

White sucker.—The net catches indicated that the catostomids differed greatly in their centers of abundance, St. Clair River for white suckers and Lake St. Clair for the redhorses. The highest CPUE's for white suckers occurred in February and November at Stations 2, 1, and 3.

The highest angler CPUE, similar to the nets, was during February near Station 2. The white sucker sport harvest is taken mainly during their spawning run in the spring. The small Detroit River harvest came mainly in the fall and the fishery provided no evidence of spawning in the Detroit River.

Mean lengths of white suckers from the net catches were 435 mm in the St. Clair River and 371 mm from the Detroit River, compared to 432 mm and 358 mm, respectively, from the angler harvest. Mean lengths were lowest in the Detroit River which was most likely due to less abundant and poorer quality invertebrate (oligochaete dominated) food.

Statistical analyses of trap net catches of white suckers among the stations (Table 128) agreed with conclusions derived from ranking the stations by their CPUE. Station 1 was significantly different from all stations except 2. Catches at Stations 1-3 (highest CPUE's) were significantly different from Stations 4 and 5 (lowest CPUE's). There were no significant differences between the two Lake St. Clair and three Detroit River stations which all had relatively low CPUE's.

A total of 1,147 white suckers were tagged which was 3.9% of the total number of tagged fish. Station 1 had the most recaptures (9), all but one of which were recovered during the tag year; two were recaptured in the same netting period. One white sucker tagged at Station 3 in June was recovered in northern Lake St. Clair (Station 4) in November. One tagged at Station 7 (lower Detroit River) in December was recovered in the same area in July. These trap net recoveries indicated relatively little movement of suckers. Population density of the species is apparently low in Lake St. Clair since Monroe trap net CPUE's have been 10–20 times greater than in the A-marker nets during the past 8 years.

The angler return rate of tagged white sucker was 0.8%. Three recoveries in April were caught in the Thames River near London, Ontario. Two tagged at Station 1 were recovered in that area, one in April, and one in June. One tagged at Station 3 was recaptured in the

Table 128. Results of 28 pairs of between-station statistical tests for white sucker trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—		*	*	**	**	**	**
2	—	—			**	**		*
3	—	—	—		*	*		
4	—	—	—	—				
5	—	—	—	—	—			
6	—	—	—	—	—	—		
7	—	—	—	—	—	—	—	
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

northern part of the western basin of Lake Erie. White suckers probably move out of Lake Huron into the St. Clair River, contributing to the densities in that area. Some suckers spawn in the Thames River but there is no evidence of sucker spawning activity in the Detroit River or of any substantial ingress from Lake Erie.

Redhorse.—The highest mean CPUE's for the combined redhorses were taken at lake Stations 4 and 5. Stations 2 and 7 were tied for third highest mean CPUE. November, June, and July produced the highest CPUE's. The netting results show that redhorse in the SCDRS are primarily lake dwellers except during spawning time. Spawning and wintering areas appear to be close together.

Statistical analyses of redhorse trap net catches (Table 129) showed that the river station catches (low) were significantly different from the two lake stations with their higher CPUE's. The exception was Station 2, with its intermediate and highly variable CPUE.

Areas with the highest boat and shore angler CPUE were the upper Detroit River, the upper St. Clair River, and the lower Detroit River. Shore angling provided over 95% of the catch in these areas, except in the lower Detroit River (50%) where shore fishing opportunities are limited. Highest CPUE's occurred during the fall, indicating redhorse movement into areas of increased angler vulnerability. Because the redhorse harvest was primarily by shore anglers, creel data did not necessarily reflect areas of redhorse abundance.

Mean length of redhorse from the creel survey was 441 mm from the St. Clair River, and 381 mm from the Detroit River. These were fairly similar to the 426 mm and 372 mm mean lengths, respectively, from the net catches. Higher growth rates are indicated for St. Clair River redhorse compared to those from the Detroit River.

There were 990 redhorse tagged which was 3.4% of all fish tagged. The highest numbers tagged were at Stations 4, 5, and 7 during the months of July and November.

There was a 1.0% return rate from the trap nets, most of which were tagged at Station 5. The recaptures revealed moderate redhorse movements. One fish tagged at Station 4 in May was recovered at Station 3 in June. Another tagged at Station 5 in July was recaptured at Station 7 in October. A redhorse tagged in the fall at Station 7 was recovered one day later at Station 8.

There was a 0.4% tag return rate from the sport fishery. Two redhorse tagged at Station 1, in May and September, were recovered in the upper St. Clair River in July. One fish tagged Station 4 in November was recovered in April in Ontario's Sydenham River, tributary to Lake St. Clair. Another fish tagged at Station 4 in November was recovered in the upper Detroit River in mid-July.

Netting and creel data indicate a springtime spawning movement of redhorse into tributary streams such as the Sydenham River and the Belle River (at Marine City). Other times of the year, they are primarily an inhabitant of Lake St. Clair. Low net and creel catches

Table 129. Results of 28 pairs of between-station statistical tests for redhorse trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—			**	*		*	
2	—	—						
3	—	—	—	*		*		
4	—	—	—	—		**		**
5	—	—	—	—	—	**		*
6	—	—	—	—	—	—	**	
7	—	—	—	—	—	—	—	*
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

in the Detroit River in the spring indicate that neither it nor its tributaries are widely used for spawning.

Rock bass.—Rock bass were the most frequently captured fish in survey nets. Stations 3, 7, and 4 produced the highest net CPUE.

Rock bass are benthic predators which nest and spawn inshore in late spring and early summer. Inshore density of adults is probably a maximum at spawning time (Gross and Nowell 1980). Helfman (1981) showed that rock bass are primarily nocturnal foragers with some daytime and crepuscular activity.

Trap nets caught more rock bass in June, July, and October. June and July are probably the primary spawning months, and these three stations undoubtedly have good spawning habitat. The October catch was probably high because rock bass were congregating inshore, or moving into Lake St. Clair for overwintering. Net Stations 1, 2, and 8 had the lowest CPUE, probably because these areas of the river contain little suitable habitat. Station 8 might be poor habitat because the benthic invertebrate community is grossly altered by enrichment.

The statistical comparisons of net station CPUE showed that Station 1 was significantly lower than all other stations except 8 (Table 130). Station 8 was significantly lower than most other stations.

The mean length of rock bass in the net catches was quite similar throughout the SCDRS. The Detroit River fish were only slightly smaller. The mean length in the Detroit River angler harvest was considerably smaller than the size in the angler harvest in the St. Clair River and Lake St. Clair. The Detroit River anglers may be less selective to the size of rock bass kept, which would account for the smaller average size.

Rock bass made up only about 4.0% of the total estimated angler harvest in the SCDRS. They are not a primary target for many sport fishermen and probably do not constitute as large a percentage of the fish community as the trap net CPUE suggests. Most of the angler harvest came from Grids J, M, and E. The harvest in J and M came primarily from shore fishermen.

The major months for rock bass harvest were June, July, and August, when the shore fishery was most active. Both the survey net and angler catches indicate that inshore density of rock bass peaks in June. The angler harvest in Grid E, by boat anglers only, also was taken primarily in June, July, and August.

Tag recovery data showed that rock bass were vulnerable to capture in both the angler harvest and the survey nets. The tag recovery rate in traps was 5.2%, which was second only to black crappies among major species. Anglers recovered 3.2% which was a medium level of tag recovery. Rock bass tagged at Station 2 had the highest return in both the survey nets and the angler harvest. In both instances, movement to the south was exhibited. Seven net recaptures in the St. Clair River showed movement to another net station, which was the most of any species. Some were heading downstream and some up.

Table 130. Results of 28 pairs of between-station statistical tests for rock bass trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—	*	**	**	**	**	**	
2	—	—	**					
3	—	—	—		*	**		**
4	—	—	—	—		**		**
5	—	—	—	—	—			*
6	—	—	—	—	—	—		
7	—	—	—	—	—	—	—	*
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

The high susceptibility to recapture in trap nets in the upper St. Clair River is probably a function of the relatively small amount of habitat available. Rock bass are also likely to remain at one location for extended periods, which increase their probability of being recaptured.

The St. Clair River net stations produced low CPUE of rock bass in spring relative to the other stations. This suggests that spawning was probably not occurring, especially at Stations 1 and 2, and that movement upstream probably occurred after spawning in downstream areas was concluded.

Anglers recaptured tagged rock bass in 10 recovery grids. Grids D, M, S, B, and A provided most of the recoveries. Grids E and J had recaptures of tags from six of the eight net stations, showing considerable movement. The tagged rock bass from the Detroit River did not show as much movement as those from the St. Clair River and Lake St. Clair net stations.

Rock bass recovered by anglers in Grid D had a later average recovery date than any other grid (Table 131). Grid D also had the latest average day of angling effort which indicates that the distribution of rock bass tag returns was influenced by the distribution of sportfishing effort.

There was good agreement between the areas of angler harvest and angler tag recovery except for Grid D. It had the highest angler tag return rate, but had a low estimated angler harvest. The distribution of shore angler effort may account for this disparity since a lot occurred on islands, in canals, and marshes which were inaccessible to the survey. Seven (11%) of the angler tag recaptures in Grid D were caught in winter through the ice, all from marshes west of Algonac.

Rock bass showed an above average tendency to make substantial movements, which was unexpected, based on some other published studies (Gross and Nowell 1980; Keast and Welsh 1968). There was a considerable exchange between the St. Clair River and Lake St. Clair. The winter angler recoveries of tags were taken primarily in late February and early March, and clearly showed that these fish were overwintering in shallow marshes and canals away from the navigation channels. There was very little movement of rock bass out of the Detroit River into Lake St. Clair. The Anchor Bay angler recoveries were originally caught and tagged at Stations 1-7 during late summer and fall. They were recaptured by anglers in late spring and early summer, which indicated spawning in Anchor Bay.

<u>Smallmouth bass</u>.—The highest trap net CPUE for smallmouth bass during the entire study period occurred at Station 5. Stations 4 and 6 were second and third, respectively. The highest monthly trap net CPUE's occurred in October, September, and August. On a station by station basis July was one of the top 3 months at Station 5 and 4. The June CPUE was third at Station 6. Smallmouth bass are probably most vulnerable to net capture in October while

Table 131. Weighted average date (Julian) for fishing effort and average angler tag recapture date for selected species from each tag recovery grid based on fish tagged at net Stations 1–8. (Sample size in parentheses.)

Angler tag recovery grid	Average fishing date			Average angler tag recovery date								
	Boat	Shore	Ice	Northern pike	Channel catfish	White bass	White sucker	Rock bass	Small-mouth bass	Black crappie	Yellow perch	Walleye
O	—	—	—	—	—	—	—	—	—	—	188	148
	—	—	—	—	—	—	—	—	—	—	(5)	(6)
A	207	202	—	—	—	—	135	184	206	—	166	199
	—	—	—	—	—	—	(2)	(11)	(7)	—	(70)	(47)
D	208	204	—	172	219	229	112	203	214	145	209	210
	—	—	—	(5)	(2)	(1)	(1)	(61)	(28)	(12)	(139)	(38)
B	210	—	44	186	134	—	246	184	205	29	175	189
	—	—	—	(3)	(1)	—	(1)	(20)	(7)	(3)	(21)	(9)
E	196	—	41	158	160	131	—	164	193	117	91	165
	—	—	—	(4)	(5)	(3)	—	(16)	(4)	(2)	(20)	(11)
I	211	—	28	—	—	—	—	228	204	—	226	197
	—	—	—	—	—	—	—	(1)	(8)	—	(23)	(5)
H	194	—	45	—	156	—	—	176	195	118	210	160
	—	—	—	—	(5)	—	—	(4)	(2)	(1)	(14)	(7)
F	204	—	88	153	177	156	187	192	184	309	177	184
	—	—	—	(1)	(4)	(1)	(1)	(7)	(24)	(1)	(2)	(17)
L	—	—	—	—	—	—	—	203	187	—	49	181
	—	—	—	—	—	—	—	(1)	(5)	—	(11)	(8)
C	—	—	—	—	—	35	106	—	—	115	—	97
	—	—	—	—	—	(1)	(3)	—	—	(1)	—	(6)
G	—	—	—	—	248	—	—	—	180	—	130	150
	—	—	—	—	(1)	—	—	—	(1)	—	(2)	(12)
M	186	187	—	137	290	—	—	172	229	173	150	194
	—	—	—	(1)	(1)	—	—	(47)	(10)	(5)	(27)	(32)
J	183	183	—	103	211	164	—	192	202	121	126	181
	—	—	—	(3)	(5)	(2)	—	(21)	(4)	(4)	(34)	(41)
Y	—	—	—	—	—	—	145	—	—	—	—	144

Table 131. Continued:

Angler tag recovery grid	Average fishing date: Boat	Shore	Ice	Average angler tag recovery date: Northern pike	Channel catfish	White bass	White sucker	Rock bass	Small-mouth bass	Black crappie	Yellow perch	Walleye
	—	—	—	—	—	—	(1)	—	—	—	—	(2)
P	—	—	—	—	—	—	—	—	—	—	22	166
	—	—	—	—	—	—	—	—	—	—	(3)	(8)
Q	—	—	—	—	146	—	—	—	—	71	257	122
	—	—	—	—	(5)	—	—	—	—	(1)	(3)	(2)
W	—	—	—	—	130	—	—	—	—	—	148	173
	—	—	—	—	(1)	—	—	—	—	—	(4)	(2)
U	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	—	—	—	35	189
	—	—	—	—	—	—	—	—	—	—	(1)	(1)
T	—	—	—	—	—	105	—	—	—	—	—	164
	—	—	—	—	—	(1)	—	—	—	—	—	(2)
V	—	—	—	—	—	97	—	—	—	—	—	—
	—	—	—	—	—	(1)	—	—	—	—	—	—
S	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
X	—	—	—	—	—	234	—	—	—	—	214	182
	—	—	—	—	—	(2)	—	—	—	—	(1)	(1)

aggregating prior to moving to wintering areas. Summer catches at lake stations were probably high because they were closer to the major spawning grounds.

The descending rank based on catch per hour by all anglers during the entire study period of tag recovery grids was E, F (Station 5), and H. The rank of monthly catch per hour at E was June, September, and October; at F it was August, July, and June; and, at H it was September, June, and July.

The netting and creel data were similar in terms of timing and locality. Recovery Grid I (Station 4) and Grid M (Station 6) produced essentially the same angler CPUE which came next in the ranking below Grid H. If nets had been set in recovery Grids E and H, it is assumed that the rankings for the net and creel CPUE would have been the same.

Timing for angler harvest was as follows: in Grid E it was June, July, and August; in Grid F it was July, August, and June; and, in Grid H it was June, July, and September. September was first overall in angler CPUE but it ranked third in total catch. The fishing season did not open until late June after spawning had occurred. The catch was the highest in June indicating that anglers were targeting on smallmouth bass at this time. The CPUE in June shows that in the top three areas of Lake St. Clair, these fish are quite vulnerable to anglers. The September data also suggest that smallmouth bass are quite vulnerable to angling at this time; however, few fishermen take advantage of this fall fishery.

The angler catch in the Detroit river was twice that in the St. Clair River. This was probably due to the intense white bass fishery in June and July which increased the chance of capturing other species, and the tendency for Detroit River fishermen to keep all fish they catch.

The above data suggest that Lake St. Clair is prime habitat for smallmouth bass. A large spawning population had been located previously at the A-marker station and this study provided strong evidence that another existed at trap net Station 5. Bass were also quite dense at both Stations 5 and 6 in September and October relative to the other stations. CPUE at Stations 2 and 3 increased from early spring to July then dropped off. This indicated that bass were moving up the St. Clair River after spawning and actually returning to Lake St. Clair in the fall.

Nonparametric statistical comparisons between net stations demonstrated a similar pattern as observed for walleye (Table 132). The lake net stations had higher overall CPUE's than any of the other stations. This was unexpected because the nets should not have been as efficient in a large lake setting as compared to a river if fish density was similar. This implies that bass density is much higher in Lake St. Clair than in the rivers. Another possibility would be different bass behavior within lake and river habitats. Studies in other waters have indicated that, while smallmouth tend to be sedentary, a strong diurnal on-shore movement to procure food has been noted in lake dwelling bass (Helfman 1981).

Table 132. Results of 28 pairs of between-station statistical tests for smallmouth bass trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—				**			
2	—	—		*	**			
3	—	—	—		**			
4	—	—	—	—			**	**
5	—	—	—	—	—	**	**	**
6	—	—	—	—	—	—		*
7	—	—	—	—	—	—	—	
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

Mean length from trap net samples were 290 mm from the St. Clair River, 260 mm from Lake St. Clair, and 211 mm from the Detroit River. The mean lengths for the creel catches were 335 mm in the St. Clair River, 344 mm in Lake St. Clair, and 224 mm in the Detroit River. The mean lengths from the creel are biased upward by the 305 mm size limit except in the Detroit River where fishermen tend to keep undersize bass.

Smallmouth bass represented eight percent of all fish tagged, which ranked fourth overall. The major tagging stations were 5, 4, and 6. Survey trap nets recovered 4.4% of the tagged smallmouth bass. This was the third highest percentage of the major species, indicating that smallmouth are relatively vulnerable to recapture in trap nets. These fish had a low tendency to be recovered in the same netting period, relative to other species, suggesting at least some movement. The timing of recaptures of smallmouth bass in nets at Stations 5, 4, and 6 was the same as shown above for trap net CPUE by station.

Most of the tagged smallmouth bass recovered in survey nets were taken at the station where they were tagged, the majority being recovered in later years. These fish were most vulnerable at Station 1, with fish tagged at Station 5 also captured at Station 1. Station 4 tagged fish were recovered at Stations 3 and 5, showing no movement outside of the Lake St. Clair area. Station 6 had a high rate of recoveries of its own tags showing little movement in the upper Detroit River system.

A-marker tagged fish were recaptured at Stations 1-5, with twice as many smallmouth bass recovered at A-marker itself than at any other lake station. The A-marker station has been documented to be located in a large spawning area utilized by smallmouth bass (R. Haas, MDNR, unpublished data).

The general pattern exhibited by smallmouth bass was that those utilizing the Lake St. Clair area, primarily Anchor Bay, for wintering and spawning moved into the St. Clair River during summer and returned to the lake in the fall. The smallmouth bass netted in the northern Detroit River probably came from Lake St. Clair (Grid F) and would return there to winter, although some of these fish may be resident to this part of the river.

Anglers reported catching 4.3% of all smallmouth bass tags. Net Stations 2, 3, and 5 had the highest angler tag recovery rates. The angler recaptures showed a somewhat different pattern than the sport harvest (Figs. 35-37). July and August were the top months for angler tag recovery, while June showed the largest angler harvest. This discrepancy might have occurred because some ardent bass fishermen (returned many tags), who fished actively in July and August, were not subject to interview. Many of these skillful anglers reside on the lake and are inaccessible to land-based survey clerks. This would bias the total harvest estimate of bass downward for the July-August period. However, both the creel estimates and tag recovery data indicate that smallmouth bass are not being harvested before June and by October the bass sport fishery is essentially over.

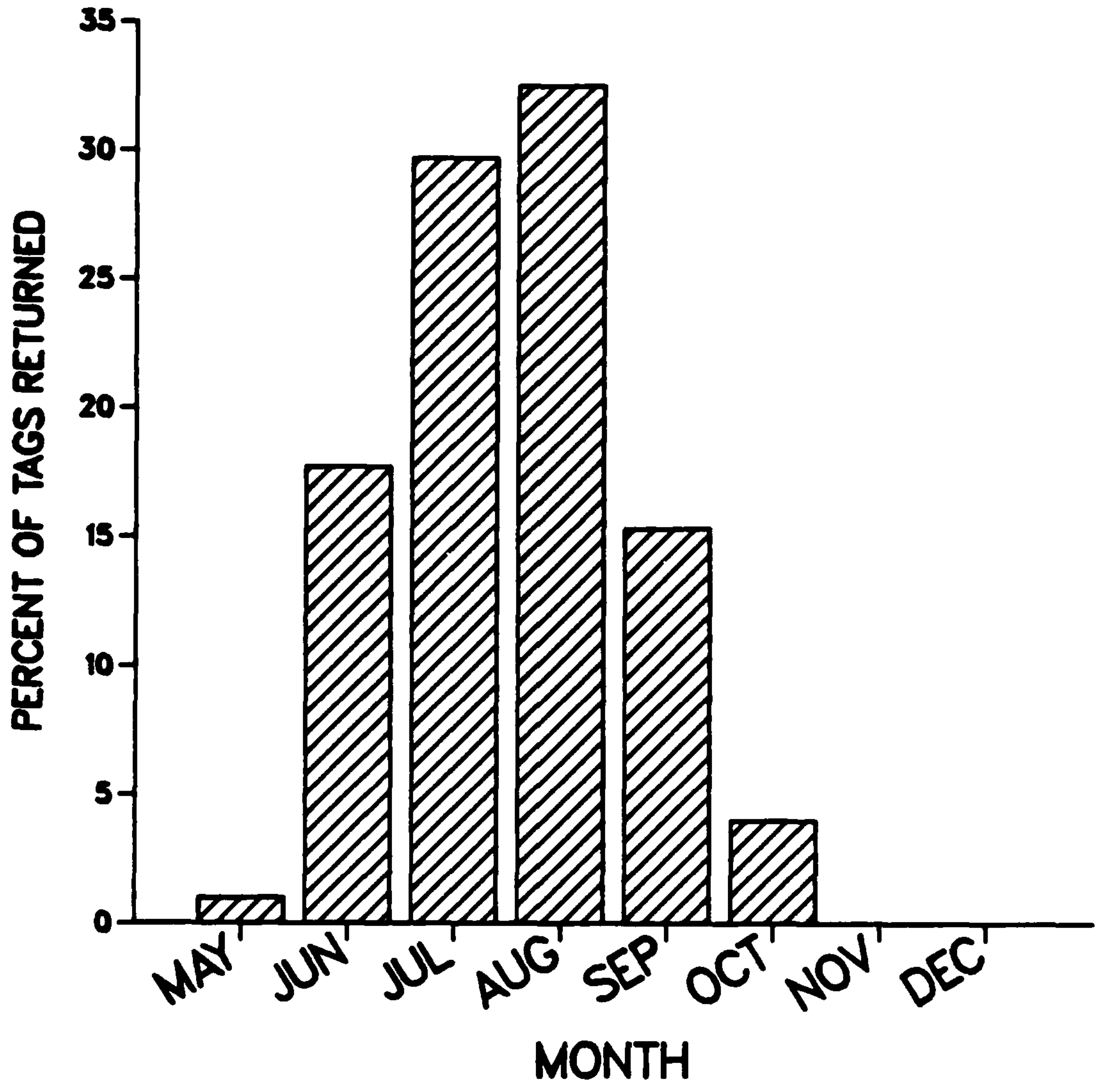

Figure 35. Percent of all A-marker smallmouth bass tags recaptured by month during the tag year during 1980–84.

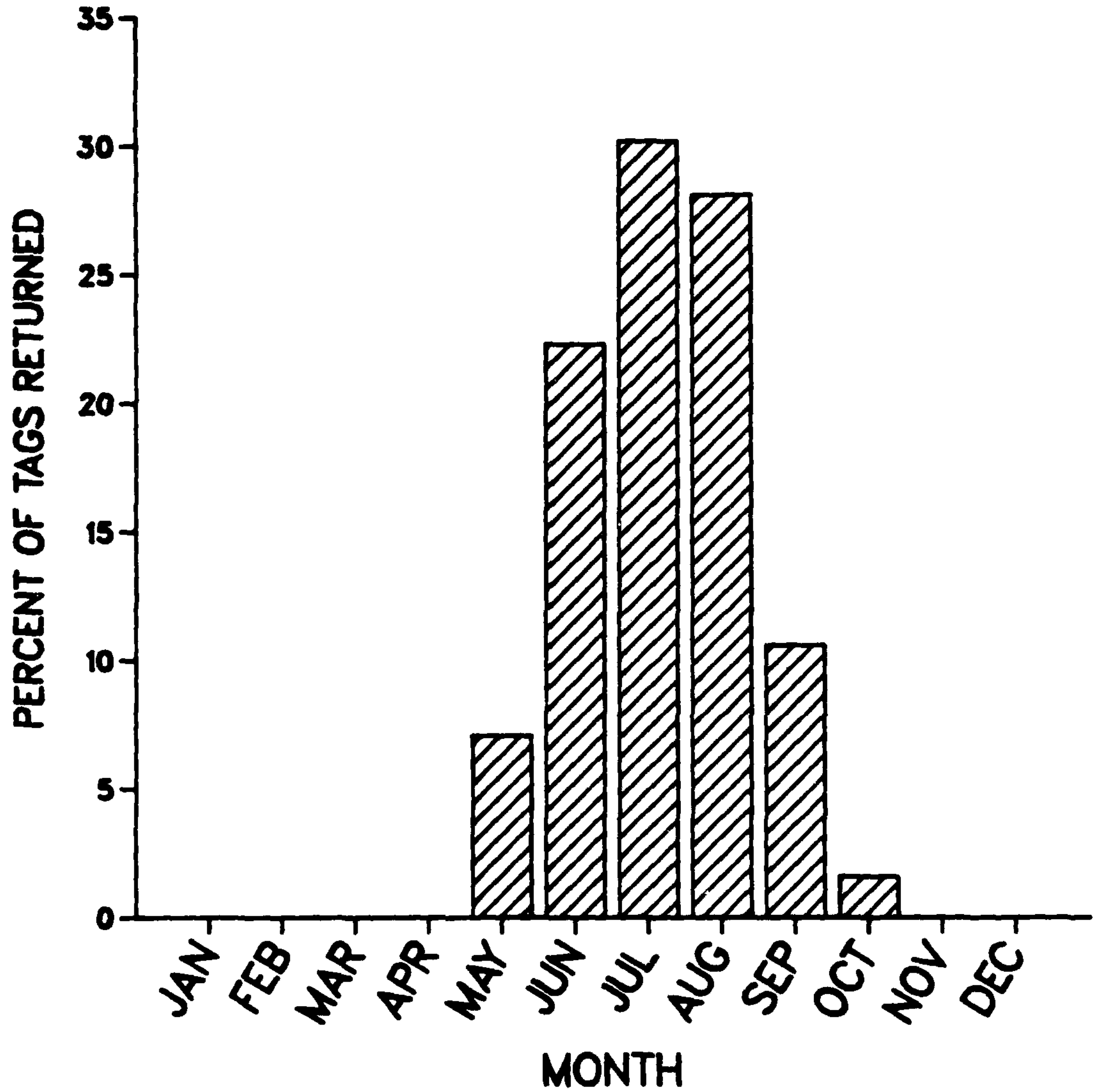

Figure 36. Percent of all A-marker smallmouth bass tags recaptured by month during subsequent fishing seasons from 1979–83.

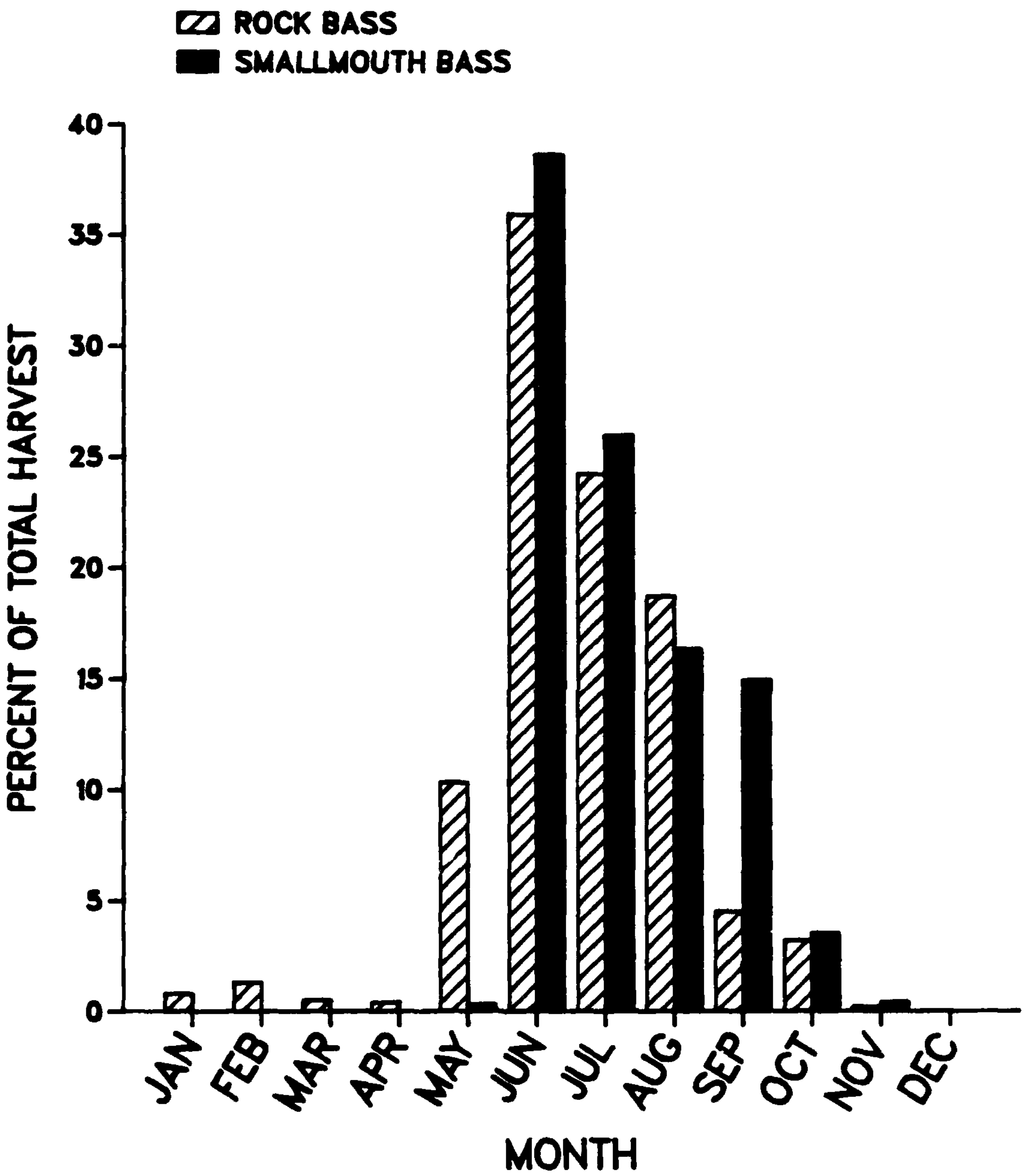

Figure 37. Monthly percentage of angler catch of rock bass and smallmouth bass in the SCDRS.

The angler recaptures of tagged smallmouth bass strongly substantiated the movement pattern described by net recaptures. The A-marker tagged bass were most readily recaptured in Anchor Bay or in the St. Clair River with movement back to Anchor Bay indicated prior to winter. The angler recoveries of bass tagged at Station 5 (an apparent spawning site) were more likely to be taken on the east side of Lake St. Clair then the A-marker tagged bass which indicated that the two spawning populations have different movement patterns.

White bass.—The highest trap net CPUE for white bass during the entire study period was at Station 7. Stations 5, 8, and 2 were second through fourth, respectively. The highest monthly trap net CPUE's for Station 7 were June, August, and July. July, August, and May were the highest at Station 5; and June, May, and July provided the high CPUE's at Station 8.

The descending rank for catch per hour by all anglers during the entire study period for tag recovery grids was J, M, and F.

The rank of total catch of white bass by anglers at the above creel grids was the same as observed for CPUE. The monthly catch per hour at these three creel grids ranked June, May, and July. Ranking of total angler catch by month at these grids was, again, the same as the rank for CPUE by month. The ranks for netting and creel CPUE's were essentially matched in locality and timing of the catch. The Detroit River apparently contains large numbers of white bass during the summer months when they utilize the river for spawning and feeding.

Creel data also showed that the catch per hour in the northern Detroit River (Grid M) was four times that in Lake St. Clair (Grid F). This indicated that, although the fish were present in the northern Detroit River and easily exploited by the angler fishery, white bass were not susceptible to trap netting at Station 6. This could be caused by a variety of reasons (e.g., net placement) and it should be noted that net CPUE is a poor estimator of white bass abundance at this station.

The creel data indicated that the density pattern (based on total catch and catch per unit of effort) was ranked June, May, and July (Fig. 34). This was close to the same pattern as demonstrated by trap nets. However, the trap nets greatly underestimated the abundance of white bass since the only substantial net catches were recorded in May of 1983 at Station 2 and June of 1984 at Station 8.

Sportfishing effort in the St. Clair River was 70% boat and 30% shore and the largest catches for both boat and shore followed the same timing pattern. The majority of white bass were caught in recovery Grid D during July and August of 1983 and in June of 1984. One large net catch in May of 1983 at Station 2 caused the upper St. Clair River area to be ranked fourth overall. However, the creel data indicated that the lower St. Clair River had a higher density of white bass then the upper half.

The statistical analysis comparing trap net CPUE by station for the entire 2-year study period demonstrated again that trap net CPUE did not reflect true abundance (Table 133). It showed that the net catches were extremely variable, especially at Station 8 in the Detroit River which had the highest overall trap net CPUE of white bass in June.

Trap nets caught white bass averaging 283 mm in the St. Clair River, 285 mm in Lake St. Clair and 263 mm in the Detroit River. White bass samples from the creel averaged 242 mm, 274 mm, and 286 mm, respectively. The larger average size in the Detroit River creel sample again reflects the spawning migration of adult fish up from Lake Erie.

During the 2-year study, 735 white bass were tagged at the trap net stations which comprised 2.5% of all tagged fish. The majority were tagged in June and July. The highest number of white bass were tagged at Station 7, followed by Stations 5, 8, and 2, respectively. No white bass were recovered in survey trap nets which again points to the low vulnerability of white bass to capture by trap nets.

Twelve (1.6%) of all white bass tagged were recovered by anglers and commercial fishermen. The highest number of fish recovered were tagged at Station 4, followed by those tagged at Station 3, and Station 2. Stations 6, 7, and 8 each contributed one tag return of the 12 tags recovered from anglers.

The ranking of angler recaptures by recovery grid were E, V, X, J, C and D, F and T. The majority of angler recoveries were from Lake St. Clair, the Detroit River, and Lake Erie. White bass recovered at Grids T, V, and X (Lake Erie) were tagged at Stations 2, 3, 6, and 8, with most being tagged at Station 8. Fish tagged at Station 7 (Grid J) and subsequently recovered by anglers were all caught in the Detroit River. There were no recoveries by anglers of fish tagged at Stations 5 through 8 north of the Detroit River. Fish tagged at Station 5 were not recovered; while, some of the fish tagged at Station 2 and 3 were recovered in Lake Erie. Fish recovered in Grid C were tagged at Station 4. These fish appeared to be using the Thames River for spawning and Anchor Bay in Lake St. Clair for wintering grounds.

The trap net, creel, and tagging data suggest that there are resident populations of white bass in Lake St. Clair and Lake Erie. The fish have a general tendency to use the river systems as spawning and feeding grounds in early spring and summer, while wintering in the lakes. Movements, as suggested by tag returns, are from lake to river in the early spring, and back to the lake in late summer to fall. The fish in Lake St. Clair use the Thames and Clinton rivers for spawning, while those from Lake Erie use the Detroit River. Some fish do travel from Lake Erie to the lower St. Clair River although this number seems small. There is no evidence of travel to, or a resident population in, southern Lake Huron.

Black crappie.—The highest trap net CPUE for black crappie during the entire study period was at Station 3, followed by Stations 7, and 8. The highest 3-monthly trap net CPUE's for Station 3 were October, September, and May. Station 7 had high CPUE's in October, September, and June; and Station 8 had them in September, October, and August/April.

Table 133. Results of 28 pairs of between-station statistical tests for white bass trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—				*		*	
2	—	—		**				
3	—	—	—					
4	—	—	—	—				
5	—	—	—	—	—			
6	—	—	—	—	—	—	**	
7	—	—	—	—	—	—	—	
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

The catch of black crappie by anglers was quite small during the 2-year study period. The majority of the catch came from Lake St. Clair and the Detroit River during the ice fishing season. Open ice anglers were more successful than shanty ice fishermen, probably due to their mobility and, therefore, ability to move to good fishing.

The ranks for netting and creel CPUE's essentially matched in locality, but timing of the catch was quite different. Whereas, crappie were susceptible to trap netting during the spring and again in late summer-fall, the anglers were not targeting for this species except in the winter months when angling for crappie is quite popular. Thus, the nets provided a better picture of crappie abundance than did the creel catch. The netting and creel data indicated that these fish inhabit the delta-river type areas both as feeding areas and for spawning. The nets also demonstrated that some crappie were wintering and spawning in Anchor Bay of Lake St. Clair.

The mean lengths for the net catches were 224 mm in the St. Clair River, 209 mm in Lake St. Clair, and 205 mm in the Detroit River. The creel data averaged 212 mm for Lake St. Clair and 215 mm for the Detroit River.

There were a total of 599 black crappie tagged at the eight net stations during the 2-year study. This made up 2.1% of all fish tagged. The highest number of fish were tagged at Station 3, followed by Station 7, and 8, respectively. The descending rank, by month, of numbers tagged showed October first, September second, and finally June.

Survey trap nets caught 7.2% of the fish that were tagged. This was the highest recapture rate of the major species discussed, showing that black crappie were highly susceptible to trap net capture. Station 3 had the highest number of returns while Station 2 had the largest percentage returned. Most of the crappie recovered in the trap nets were taken during the same period in which they were tagged, at the same net station. These data show very little movement of black crappie during the study period.

Anglers returned 28 tags from black crappie during the study period. Most of the returns came from Grid D (winter fishing), followed by Grids M, J, B, and E. The general pattern was for fish which were tagged in Lake St. Clair to be recovered in the lake grids; while, fish tagged in the Detroit River were recovered both in the river itself and in Lake Erie. Sixteen of the 19 fish recovered by anglers from the Lake St. Clair-lower St. Clair River system were tagged in that system. Of the other three, two were tagged at Station 7 and one at Station 2. Nine of 11 fish tagged in the Detroit River were returned from Detroit River grids (4 at M, 5 at J).

The above analysis demonstrates very little movement throughout the SCDRS by black crappie. Individual populations seem to exist in the lower St. Clair River-Harsens Island area, in Lake St. Clair, and in the Detroit River. These populations do not seem to intermingle and, in general, spend the winters in the lake and marshes, and other periods in delta areas.

Channel catfish.—The top three stations for CPUE of channel catfish were Stations 4, 5, and 3. The top 3 months were October, August, and September when the catfish had substantially higher net vulnerability. The very high fall average net catches were caused by extraordinary catches on particular days which suggested that extensive, short-term movements were occurring, possibly to form wintering concentrations.

The mean length of netted channel catfish was highest in Lake St. Clair (566 mm), next highest in the St. Clair River (484 mm) and lowest in the Detroit River (422 mm). This length distribution is consistent with the good growth potential for catfish in Lake St. Clair.

The channel catfish in the angler harvest showed the same growth pattern since the average length was 504 mm in Lake St. Clair, 450 mm in the St. Clair River and 359 mm in the Detroit River. It appears that the Detroit River supports the poorest growth.

Channel catfish ranked fifth overall in the number tagged and Stations 4, 5, and 3 had the most catfish tagged. There were very few tagged catfish recaptured in survey nets with the highest recapture rates observed at Stations 7, 3, and 4. They had a high percentage of recaptures taken in subsequent net periods (68%) which indicated a low movement rate or substantially higher vulnerability at the tag site. About 1.0% of the catfish tagged at Stations 2, 3, and 4 were recaptured during subsequent spring seasons in trap nets at A-marker. This is a relatively high rate of exchange to Anchor Bay and suggests that for some catfish, wintering and spawning may occur in Anchor Bay followed by summer movements into the St. Clair River. Of the six A-marker tag recaptures in spring, one was tagged at Station 2 in August, two were tagged at Station 3 in September, and three were tagged at Station 4 in October. They appeared to be moving downstream into Lake St. Clair in fall.

Anglers recovered 2.5% of the tags which indicated that channel catfish were more likely to be recaptured by anglers than by survey trap nets, even though the angler harvest was estimated to have been very low. The creel survey may have missed a significant part of the catfish harvest if it occurred at night or by Lake St. Clair shore anglers which were not censused.

The Lake St. Clair harvest rate is probably low relative to other waters. Hubley (1963) obtained an 8.3% tag recapture rate from 6,011 channel catfish in the upper Mississippi River.

Fish tagged at trap net Stations 3, 7, and 4 had the highest angler recapture rates. These angler recaptures showed a dispersal pattern similar to the one for trap net recaptures. Anchor Bay Grid E had the most returns with fish moving there from net Stations 2, 3, and 4. They had been tagged in summer and fall and were recaptured in Grid E in spring showing the same general movement pattern as the A-marker net recaptures.

The next two highest angler recovery grids were J and Q. The recaptures in Grid Q were taken during spring and early summer indicating that overwintering and spawning probably occur in the Maumee River. These fish had been tagged at Stations 3, 7, and 8. Data from other sources has shown that some channel catfish overwinter in the Thames River. Scott and Crossman (1973) state that channel catfish may migrate into rivers at spawning time. They reviewed a channel catfish tagging study in the St. Lawrence River which found that 50% of the tagged individuals moved 16.1–62.8 km. Hubley (1963) found that some tagged individuals moved both upstream and downstream at an average rate of 1.6 km/day. None of the angler tags were recovered during the winter.

It is likely that catfish are wintering in the two lakes, St. Clair and Erie, and moving up through the major rivers in summer and fall. Possibly, mass fall movements to wintering grounds are responsible for some of the high net catches of channel catfish taken in late fall. Channel catfish are abundant in the Thames River in winter where they are routinely snagged by ice anglers fishing for walleyes (D. Hector, OMNR, personal communication). They are not known to be vulnerable to capture using traditional angling methods, so their predilection to be snagged suggests high abundance in this tributary. Some catfish were caught at the mouth of Belle River in February showing that they also winter in tributaries of the St. Clair River.

Brown bullhead.—Brown bullhead were found in substantial numbers only at Detroit River net stations. The top three survey net CPUE's were taken at Stations 8, 7, and 3. There was no apparent pattern of CPUE through the seasons which suggested that little movement was occurring.

The size distribution of brown bullhead in the net catches followed a similar pattern to that of channel catfish. Lake St. Clair exhibited the highest average length at 334 mm, the St. Clair River was next at 289 mm, and the Detroit River fish averaged 263 mm. Length measurements from angler caught brown bullheads were only available from the Detroit River (235 mm average).

Tagged brown bullhead made up 2.4% of all tagged fish. Most of them were tagged at Stations 8, 7, and 3. These fish were relatively susceptible to recapture in trap nets at the tagging station. There was little movement observed since 61% of these netted recaptures were taken during subsequent net periods with no migration to other stations. The high net recapture rates of 8.8% at Station 3 and 5.5% at Station 8 indicated that these fish were particularly sedentary.

There were only three angler recaptures and they had been tagged at Station 7. They were caught very close to their tag site by shore anglers. The estimated angler harvest of brown bullhead in the Detroit River was only 215 fish which reflects the anglers disinterest. McCammon and Seeley (1961) tagged 724 brown bullhead in Clear Lake, California and observed limited and nondirectional movement. They estimated that brown bullhead comprised 0.4% to 9.7% of the total boat catch and the average annual angler exploitation was 70%.

Rawstron (1967) tagged brown bullhead in Folsom Lake, California and found an average travel distance of 2.7 km for 41 tag returns. His estimated exploitation was 14.0%.

According to Scott and Crossman (1973) brown bullhead are very tolerant of limiting conditions of temperature, oxygen, and pollution and are often the last species to inhabit heavily polluted rivers. We feel that the lower half of the Detroit River is artificially degraded by organic material which probably allows the omnivorous brown bullhead to be more competitive.

Combined species.—Total catch and tag recovery data for 13 major species at the primary net stations is presented in Tables 134–141. A summary of the data in the for these above tables is presented in Table 142. Of the 13 species selected for analysis, yellow perch made the highest contribution to all sources of capture and recapture. Estimated angler harvest of perch was over 2 million fish and their angler tag return rate was the highest. Perch are an abundant species and are vulnerable to capture. White bass angler harvest nearly equalled that of yellow perch, but low tag recovery rates showed that this species was not being harvested nearly as efficiently. Other species that were being harvested relatively efficiently by anglers were black crappie, northern pike, smallmouth bass, and walleye. Brown bullhead, freshwater drum, and common carp were being exploited at a very low level, either due to low angler attractiveness or vulnerability.

The nonparametric statistical tests that were used to compare survey net CPUE for nine frequently captured species at Stations 1–8 are summarized in Table 143. This analysis was performed to assist in the evaluation of stations. The net catches at Station 5 differed the most from the other stations, while Station 2 differed the least. This is similar but not identical to the station ranking by overall CPUE for these same nine species (Table 13). Stations 4, 5, and 7 ranked 1–3. The high rank of the Lake St. Clair stations is particularly interesting because the tag recovery data on individual species shows nets at these sites were relatively inefficient at recapturing many tagged species. Stations 1, 6, and 8 had the lowest CPUE due mainly to isolation from high density areas of these species and their movement paths. Station 1 had the lowest survey net CPUE for five of the nine species in spite of the fact that tagged fish had the highest vulnerability at this station.

The percent of all tags recaptured from those tagged at the eight net stations is shown in Table 100. Station 1 had the highest recapture rate at 4.9% and Station 2 was second at 4.8%. A careful examination of the net recapture of tagged fish of these nine species showed that the St. Clair River net stations were the best at recapturing fish tagged at those stations. Stations 1–3 averaged 4.6% recapture of fish originally tagged at those stations. Stations 4 and 5 averaged 2.1%, and Stations 6–8 averaged 2.6%.

The St. Clair River nets were approximately 10 times more efficient at capturing fish tagged at other net stations, compared to the downstream stations. Stations 1–3 averaged a

Table 134. Number of fish tagged at trap net Station 1 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid A[1]	Percent recovered by anglers
Northern pike	21	0.08	4.8	—	0.0
Brown bullhead	0	0.00	0.0	—	0.0
Channel catfish	12	0.04	0.0	—	0.0
White bass	6	0.03	0.0	3,607	0.0
Freshwater drum	35	0.11	2.9	13,218	0.0
Common carp	22	0.17	0.0	—	0.0
White sucker	352	1.21	2.6	—	0.1
Redhorse	133	0.45	0.8	5,043	1.5
Rock bass	346	1.89	7.5	1,555	3.8
Smallmouth bass	156	0.53	9.0	1,391	4.5
Black crappie	3	0.01	0.0	—	0.0
Yellow perch	481	2.14	10.6	12,168	8.7
Walleye	684	2.27	0.6	141,720	4.4
Total	2,251	8.93	4.8	178,702	4.3

[1]Angler catch very small or zero, designated "—".

Table 135. Number of fish tagged at trap net Station 2 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid A[1]	Percent recovered by anglers
Northern pike	33	0.11	0.0	—	9.1
Brown bullhead	2	0.01	0.0	—	0.0
Channel catfish	94	0.30	0.0	—	2.1
White bass	104	0.37	0.0	3,607	1.9
Freshwater drum	64	0.22	0.0	13,218	0.0
Common carp	31	0.21	3.2	—	3.2
White sucker	199	1.45	0.0	—	1.5
Redhorse	98	0.85	1.0	5,043	0.0
Rock bass	526	3.68	9.5	1,555	4.9
Smallmouth bass	106	0.32	0.9	1,391	2.9
Black crappie	16	0.06	6.3	—	6.3
Yellow perch	726	3.45	7.7	12,168	9.6
Walleye	426	1.59	1.4	141,720	5.2
Total	2,425	12.62	4.8	178,702	5.7

[1]Angler catch very small or zero, designated "—".

Table 136. Number of fish tagged at trap net Station 3 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid D[1]	Percent recovered by anglers
Northern pike	180	0.49	2.3	730	4.3
Brown bullhead	119	0.29	8.8	—	0.0
Channel catfish	182	0.54	2.9	—	4.1
White bass	80	0.23	0.0	6,981	5.6
Freshwater drum	263	0.74	0.9	11,069	0.5
Common carp	262	1.29	0.5	—	1.5
White sucker	319	0.90	0.5	—	0.5
Redhorse	219	0.67	0.0	1,751	0.0
Rock bass	3,554	10.12	4.6	6,207	3.7
Smallmouth bass	165	0.45	1.3	4,795	7.2
Black crappie	308	0.89	4.0	608	6.8
Yellow perch	2,796	8.00	7.5	29,491	9.3
Walleye	845	2.45	1.0	126,565	5.1
Total	9,292	27.06	2.4	188,197	3.1

[1]Angler catch very small or zero, designated "—".

Table 137. Number of fish tagged at trap net Station 4 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid I[1]	Percent recovered by anglers
Northern pike	25	0.12	0.0	361	4.0
Brown bullhead	1	0.02	0.0	—	0.0
Channel catfish	418	2.18	1.4	—	1.4
White bass	55	0.30	1.8	653	7.3
Freshwater drum	281	1.26	0.0	1,678	0.4
Common carp	36	0.20	0.0	—	0.0
White sucker	71	0.36	0.0	—	0.0
Redhorse	439	2.14	0.2	—	0.5
Rock bass	917	7.00	3.2	1,762	2.0
Smallmouth bass	360	1.59	5.8	815	3.9
Black crappie	3	0.03	0.0	381	0.0
Yellow perch	699	4.08	1.1	73,391	6.9
Walleye	1,074	4.75	0.5	8,362	4.1
Total	4,379	24.03	1.6	87,403	3.2

[1]Angler catch very small or zero, designated "—".

Table 138. Number of fish tagged at trap net Station 5 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid F[1]	Percent recovered by anglers
Northern pike	4	0.02	0.0	25	0.0
Brown bullhead	2	0.01	0.0	—	0.0
Channel catfish	178	0.65	1.1	—	1.1
White bass	125	0.42	0.0	92,390	0.0
Freshwater drum	212	0.71	1.4	6,056	0.0
Common carp	28	0.14	0.0	—	0.0
White sucker	64	0.24	0.0	—	0.0
Redhorse	357	1.30	2.0	—	0.0
Rock bass	645	5.29	5.4	8,582	4.0
Smallmouth bass	1,113	4.12	3.8	5,062	4.8
Black crappie	38	0.11	2.6	304	7.9
Yellow perch	388	1.89	2.6	143,222	5.2
Walleye	1,215	4.06	0.8	81,001	5.3
Total	4,369	18.96	2.5	337,092	3.8

[1]Angler catch very small or zero, designated "—".

Table 139. Number of fish tagged at trap net Station 6 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid M[1]	Percent recovered by anglers
Northern pike	51	0.17	0.0	—	0.0
Brown bullhead	29	0.09	0.0	—	0.0
Channel catfish	59	0.18	0.0	—	1.7
White bass	32	0.12	0.0	310,489	3.1
Freshwater drum	88	0.30	1.1	121,601	0.0
Common carp	108	0.37	0.0	—	0.0
White sucker	53	0.20	0.0	—	0.0
Redhorse	86	0.30	0.0	10,921	0.0
Rock bass	725	4.85	7.2	56,665	4.0
Smallmouth bass	274	1.11	6.6	8,492	3.6
Black crappie	62	0.28	8.1	—	3.2
Yellow perch	384	3.30	4.4	171,074	6.0
Walleye	291	0.86	1.7	164,485	5.2
Total	2,242	12.13	4.4	843,727	3.6

[1]Angler catch very small or zero, designated "—".

Table 140. Number of fish tagged at trap net Station 7 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid J[1]	Percent recovered by anglers
Northern pike	27	0.09	0.0	—	0.0
Brown bullhead	232	0.81	3.4	—	1.3
Channel catfish	151	0.55	3.3	—	4.6
White bass	241	0.84	0.4	1,468,296	0.4
Freshwater drum	75	0.27	2.7	70,659	0.0
Common carp	268	2.25	1.9	—	0.0
White sucker	136	0.71	0.7	—	0.0
Redhorse	167	0.82	0.6	3,611	0.0
Rock bass	753	7.82	3.7	70,463	3.1
Smallmouth bass	101	0.45	2.0	4,350	4.0
Black crappie	111	0.50	7.2	—	4.5
Yellow perch	580	6.30	1.9	98,668	6.2
Walleye	941	3.20	1.1	163,171	6.4
Total	3,783	24.61	2.2	1,879,218	3.7

[1]Angler catch very small or zero, designated "—".

Table 141. Number of fish tagged at trap net Station 8 and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged at station	Trap net CPUE at station	Percent recovered in all trap net lifts	Total angler catch in Grid J[1]	Percent recovered by anglers
Northern pike	111	0.46	2.7	—	3.6
Brown bullhead	343	1.25	2.0	—	0.3
Channel catfish	154	0.53	1.9	—	3.2
White bass	118	0.42	0.8	1,468,296	0.8
Freshwater drum	115	0.58	0.9	70,659	0.0
Common carp	374	1.91	1.1	—	0.0
White sucker	70	0.31	0.0	—	0.0
Redhorse	50	0.31	2.0	3,611	0.0
Rock bass	448	3.73	2.2	70,463	0.7
Smallmouth bass	76	0.31	1.3	4,350	2.6
Black crappie	88	0.35	18.2	—	5.7
Yellow perch	552	6.10	0.7	98,668	3.6
Walleye	386	1.50	0.8	163,171	3.9
Total	2,885	17.76	1.9	1,879,218	1.9

[1]Angler catch very small or zero, designated "—".

Table 142. Number of fish tagged at trap net stations and their subsequent recovery data by trap nets and anglers over entire survey area.

Species	Total tagged	Overall trap net CPUE	Percent recovered in trap net	Total angler catch[1]	Percent recovered by all anglers
Northern pike	452	0.21	1.8	—	4.4
Brown bullhead	728	0.31	3.0	—	0.5
Channel catfish	1,248	0.56	1.7	—	2.4
White bass	761	0.34	0.4	1,890,627	1.6
Freshwater drum	1,133	0.50	0.9	253,189	0.2
Common carp	1,129	0.83	1.0	—	0.4
White sucker	1,264	0.69	0.9	—	0.6
Redhorse	1,549	0.81	0.8	21,326	0.3
Rock bass	7,914	5.56	3.8	238,957	2.5
Smallmouth bass	2,351	1.08	4.3	59,338	4.7
Black crappie	629	0.29	6.7	—	5.6
Yellow perch	6,606	4.44	4.0	2,049,053	5.9
Walleye	5,862	2.51	0.9	860,855	5.0

[1]Angler catch very small or zero, designated "—".

Table 143. Number of statistically different between-station comparisons of trap net CPUE.

Species	Trap net station 1	2	3	4	5	6	7	8	Total	Rank
White perch	2	2	2	2	3	2	6	5	24	4
White bass	2	1	0	1	1	1	2	0	8	8
Freshwater drum	3	2	0	2	4	2	1	2	16	7
White sucker	6	3	3	1	3	3	1	2	22	5
Redhorse	3	0	2	4	3	4	3	3	22	5
Rock bass	6	2	5	3	3	3	2	4	28	2
Smallmouth bass	1	2	1	3	6	3	2	3	21	6
Yellow perch	4	2	5	4	6	3	2	4	30	1
Walleye	1	4	3	3	2	6	3	4	26	3
Total	28	18	21	23	31	27	22	277		
Rank	2	7	6	4	1	3	5	3		

0.13% recapture of fish tagged at two adjacent stations; while Stations 4 and 5, and Stations 6–8 both averaged 0.02%.

The rank of the percent of tags applied at Stations 1–8 and recaptured at these stations is shown in Table 125. Stations 7, 8, and 3 had the largest number of species recovered. Stations 6, 2, and 5 had the fewest species. Comparing water bodies, yellow perch ranked high in the St. Clair River, medium in Lake St. Clair, and low in the Detroit River. Rock bass ranked high at all stations. Smallmouth bass ranked high in the lake and much lower in the two rivers. The omnivorous brown bullhead were only high in the lower half of the Detroit River. Black crappie ranked high at stations in the two rivers, except for Station 1. The recovery of tagged walleye ranked low at all stations.

The covariance analysis indicated that the sampling variables tested – net lifts, sampling times, and sample years, were significantly related to CPUE but did not account for the difference in total CPUE between net stations. The sampling design was apparently adequate to eliminate effects due to these variables for the data set from combined years. The adult fish community represented by net samples at each station is unique enough to provide significantly different results.

<u>Station 1</u>.—Walleye, yellow perch, rock bass, and white sucker had the highest survey net CPUE among the 13 major species (Table 134). Walleye and yellow perch were also two of the top four species in the angler harvest in Grid A, which includes net Station 1.

Tag recoveries indicated that walleyes were the main target of the anglers in this area of the St. Clair River, since they made up 79% of the number of fish harvested in Grid A. The tag recapture rate was, not surprisingly, much higher in the angler catch than in the survey net catches. The survey nets were probably not capturing walleye with as high relative efficiency as the angler harvest and neither one was capturing a very sizeable portion of the walleyes that occurred in this area. Walleyes must be the most abundant of the 13 fish species in this grid.

<u>Station 2</u>.—Rock bass, yellow perch, walleye, and white sucker had the highest CPUE at Station 2 (Table 135). These are the same species as Station 1, but their order is different. There is an expansion of shallow water habitat types and amounts in the transition from Station 1 to Station 2 which probably accounts for this shift to rock bass and yellow perch. Walleye and white sucker probably frequent the deeper channel areas.

Tag recoveries in the survey nets indicated that they were capturing walleye and rock bass more efficiently and yellow perch and white sucker less efficiently than at Station 1. Anglers captured and reported a higher percentage of most species tagged at Station 2.

<u>Station 3</u>.—The survey nets at Station 3 captured rock bass, yellow perch, walleye, and common carp most frequently (Table 136). The trend of increasing shallow water habitat continues from Station 2 to Station 3, which probably encouraged the high densities of shallow water species, such as rock bass and yellow perch. Other species which require shallow waters

for spawning and living, such as northern pike, common carp, black crappie, and brown bullhead, are also more abundant at Station 3.

Survey net recaptures of tagged brown bullhead, yellow perch, rock bass and black crappie were quite high at Station 3. Anglers primarily recovered yellow perch, smallmouth bass, black crappie, white bass, and walleye that had been tagged at Station 3. There was a marked increase in the angler recovery rate of smallmouth bass tagged at 3 compared to those tagged at Station 2.

Station 4.—Rock bass, walleye, yellow perch, and redhorse were the most frequently caught species at net Station 4, which was located in Lake St. Clair (Table 137).

The average CPUE for smallmouth bass, walleye, redhorse, and channel catfish increased substantially compared to the St. Clair River stations, but it declined for most other species. This general decline can probably be attributed to an expansion of the area available for the fishes' movements relative to the nets. The fishing power of the net might be reduced even if a decrease in density did not occur.

High survey net recaptures of tagged fish at Station 4 indicated that smallmouth bass and redhorse increased in vulnerability over Stations 1-3, and may not have undergone substantial density increases. However, walleyes and channel catfish probably increased in abundance quite substantially, compared to Stations 1-3, since their net recapture rate went down.

Angler harvest and tag recovery indicates that yellow perch at Station 4 increase in density relative to Stations 1-3. The estimated harvest by anglers was three times higher than in Grid D, and the angler tag return rate was lower. The survey net CPUE declined 50% compared to Station 3, but the tag recapture rate declined by a factor of 7. Therefore, the relative inefficiency of the nets misrepresented CPUE as a measure of real perch abundance.

Angler recovery of tagged white bass increased substantially indicating that these fish were more vulnerable to angling. These white bass recoveries tended to be caught in Anchor Bay at spawning time, so the Station 4 tagged white bass probably had a higher representation from a Lake St. Clair spawning population.

Station 5.—The top four species in survey net CPUE at Station 5 were rock bass, smallmouth bass, walleye, and yellow perch (Table 138). Most species were caught less frequently than at Station 4 which, without further analysis, indicates lower density. Smallmouth bass were the exception since they had their highest CPUE of any station.

Tag recaptures in trap nets generally were higher compared to Station 4, showing that most of the major species were more vulnerable to the nets. It was postulated that Station 4 is located at a site of maximal movement, where fish are likely to pass through whether their origination was Lake St. Clair or Lake Erie. Fish intercepted at Station 5 are more likely to be of Lake Erie origin, since Lake St. Clair fish have indicated a strong predilection to travel upstream into the St. Clair River.

The angler recovery of fish tagged at Station 5 was somewhat higher than at Station 4 and generally supported the greater vulnerability to capture. This suggests that fish are less abundant at Station 5, but more likely to be caught, probably due to a longer stay in the area. White bass were unusual, in that angler harvest in Grid F was quite high; survey net catches were relatively good, but both the survey nets and the anglers did not recapture tags anywhere. This probably means that white bass intercepted at Station 5 are traveling upstream from Lake Erie, probably as part of the spawning migration. Station 5 is probably their upstream limit from which they may quickly return to Lake Erie, thus having a small probability of being recaptured compared to white bass that frequent Lake St. Clair.

Station 6.—Rock bass, yellow perch, smallmouth bass, and walleye were the top ranked species at Station 6, based on survey net CPUE (Table 139). Most of the major species declined in CPUE, compared to Station 5. Yellow perch were an exception in that average CPUE at Station 5 was 1.9, and it was 3.3 at Station 6. A higher recovery of tagged yellow perch in trap nets at Station 6 suggests that perch density may not have increased as much as their vulnerability to capture. The angler harvest of yellow perch was also high in this area (Grid M), and it produced a relatively high tag recovery rate.

Many of the species, such as smallmouth bass, rock bass, and walleye showed a decline in survey net CPUE and an increased tag recapture rate when compared to Station 5 data, so these species probable had a much lower density at this net station. Probably this is partly a function of the location of the net station (Fig. 1) being away from the main river flow where many of the migrating fish such as walleye, white bass, and smallmouth bass normally pass.

The angler fishery in Grid M, which includes net Station 6, has a substantial shore fishing component. These shore anglers have different characteristics compared to boat fishermen and harvest a substantial number of freshwater drum, white bass, and yellow perch. The white bass harvest has increased substantially compared to upstream grids, consistent with large spawning migrations up from Lake Erie.

Station 7.—Rock bass, yellow perch, walleye, and common carp are the species with the highest CPUE's at Station 7 (Table 140). Trap net catch frequency for most species increased compared to Station 6. This increase can be attributed to the lower amount of suitable habitat which tends to concentrate the fish and greatly increase their density within the effective capture area of the nets. The tag recapture rate in the survey nets declined for most species compared to Station 6, which suggests that individual fish are considerably less vulnerable possibly due to higher movement rate. Their density was probably even higher than the CPUE indicated.

Common carp and brown bullhead had a considerably higher CPUE at Station 7 than at Stations 1-6. Probably cultural enrichment has modified the environment enough to favor these tolerant omnivores.

The angler recovery of fish tagged at Station 7 was not very different from that at Station 6. The estimated harvest in Grid J was very high, due primarily to the exceptional catch of white bass. These fish are primarily spawning migrants from Lake Erie.

Station 8.—Yellow perch, rock bass, common carp, and walleye had the highest CPUE at Grosse Ile (Table 141). Brown bullhead were also caught frequently. The fish habitat in the lower Detroit River is probably degraded enough to favor common carp and brown bullheads even more than at Station 7.

Station 8 had the lowest combined tag recovery rate of any station. This probably reflects a tendency for more of the fish to be moving directly through in this delta area which would decrease their time vulnerable to recapture. In addition, the expanded river delta area has more shallow water habitat which may make the nets less efficient at recapturing fish in the area. These phenomena were also hypothesized to account for a reduced tag recovery rate at river delta Stations 3 and 4 compared to Stations 1 and 2.

Species comparisons.—The 23 tag recovery grids designated O through X have been used for various analyses to facilitate the summary and comparison of data from trap nets and the fisheries (refer to Fig. 19 and Table 123). The various tag and recovery analyses were performed in the original 13 major species, or a subset of them, depending on the adequacy of the data.

The average tag day and the average time of vulnerability for tagged individuals of eight representative species are shown in Table 144. These species were selected because they comprised a substantial portion of the net and angler catch. The average tag day is the arithmetic mean of tag dates for all individuals tagged at Stations 1-8 during the entire survey. The time vulnerable is based on the number of days from that point until August 1, 1985, which was the cutoff date for inclusion of tag recovery data. Time vulnerable was important because the percent of tags returned by anglers was used as an approximate and minimal estimate of the rate of exploitation. These should not be construed to be annual estimates, since their average vulnerability ranges between 1.4 and 1.9 years. These values would be minimal because corrections cannot be made for handling mortality or non-reporting of tag recaptures by some anglers and commercial fishermen.

Tagged smallmouth bass had the shortest time vulnerable, while white sucker had the longest. Species like white sucker that were captured and tagged primarily on their spawning migrations, tended to be tagged earlier.

A summary of tag data for nine species from Stations 1-8 and the A-marker, Monroe, and North Channel stations (smallmouth bass and walleye only) is provided in Table 145. The

Table 144. Average day of tagging and average time vulnerable to recapture for individual tagged fish of selected species.[1]

Species	Average tag day	Average time vulnerable (years)
White bass	October 29, 1983	1.8
Freshwater drum	February 12, 1984	1.5
White sucker	September 24, 1983	1.9
Redhorse	January 3, 1984	1.6
Rock bass	January 24, 1984	1.5
Smallmouth bass	February 22, 1984	1.4
Yellow perch	January 18, 1984	1.5
Walleye	January 27, 1984	1.5
Midpoint of net period	April 1, 1984	
Midpoint of recovery period	June 1, 1984	

[1] Anchor Bay and Monroe tag data not included. Based on the net period from April 1, 1983 to April 1, 1985 and the tag recovery period from April 1, 1983 to August 1, 1985.

average tag and recovery day were computed as the average Julian day, irrespective of year. The days out estimate is the absolute number of days between tagging and recovery within a recurring 365-day period.

The average length when caught is subject to considerable variation, since it relies upon the individual angler's ability to measure or estimate length. This problem was most evident for white sucker, which had an average length at recovery that was 51 mm shorter than their tag length at tagging. Apparently, most of these fishermen guessed the length, rather than taking an actual measurement. The distance traveled is the distance between the tag station and the center of the tag recovery grid; and the rate is the distance divided by the days out. These estimates are not presented as accurate measures of the species behavior pattern. They provide an approximate and comparative measure of movement dynamics for the various species. The tag recovery data from the A-marker and Monroe stations, especially from subsequent years, provides more reliable estimates, since the sample sizes are large and span a considerable period of years.

Walleye invariably show more movement than smallmouth bass, both in average distance traveled and rate. In fact, walleye had the highest travel rate (2.9 km/day) of any species calculated from subsequent returns from A-marker tags. Walleye angler tag returns from all net stations showed that they move considerable distances. Subsequent angler recoveries of the Monroe tags had the further most average movement (40 km) and the North Channel recaptures were the only group that averaged less than 30 km traveled. A major difference between walleyes and the white bass and white suckers is that walleyes were tagged after spawning had occurred. This means that many of these walleyes had already moved a considerable distance form their spawning grounds into areas of high angler tag recovery rate. The effect should be to minimize the apparent movement distance since tag returns on subsequent spawning runs are relatively infrequent. Channel catfish have also shown considerable movement in the SCDRS with an average distance of 25.4 km for 31 angler tag returns.

Walleyes are known for extensive movement and homing behavior, and walleyes in the SCDRS are no exception. The net and tag data indicate that walleyes are moving more, on an individual fish basis, than any other species.

The average distance traveled may provide a better comparative measure between species tagged at Stations 1-8, since travel rate, based on days out, might be strongly influenced by the distribution of angling effort. The species were grouped arbitrarily by those averaging more, and those less, than a 20 km distance traveled. White bass, white sucker, walleye, channel catfish, and black crappie all had an average movement distance greater than 20 km. Horrall (1981) showed that white bass in Lake Mendota traveled extensively to return to previous spawning grounds (probably homing to natal grounds) and that they were distributed

Table 145. Summary by stations of average statistics for angler tag returns from selected species.

Species	Total angler tag returns	Average tag day (Julian)	Average recovery day (Julian)	Average number days out	Average length: Tagged (mm)	Average length: Caught (mm)	Average growth (mm)	Average distance traveled (km)	Average movement rate (km per day)
Stations 1–8									
Northern pike	17	160	155	63	616	801	44	17.7	0.50
Channel catfish	31	231	176	78	513	526	4	25.4	0.79
White bass	12	212	150	77	296	298	4	68.3	1.48
White sucker	9	183	142	76	443	403	-51	39.4	2.00
Rock bass	189	214	187	61	192	200	0	14.5	1.05
Smallmouth bass	100	224	203	53	293	323	12	17.4	1.32
Black crappie	30	246	134	117	237	246	10	22.4	0.24
Yellow perch	391	191	175	59	214	239	20	15.9	0.93
Walleye	258	217	184	72	371	401	21	31.9	1.67
A-marker (same year returns)									
Smallmouth bass	726	153	213	60	339	355	16	10.3	0.23
Walleye	204	149	203	54	406	415	8	29.8	0.61
A-marker (subsequent year returns)									
Smallmouth bass	377	153	203	52	327	378	51	8.7	0.19
Walleye	197	151	169	47	418	466	51	36.7	2.87

Table 145. Continued:

Species	Total angler tag returns	Average tag day (Julian)	Average recovery day (Julian)	Average number days out	Average length		Average growth (mm)	Average distance traveled (mm)	Average movement rate (km per day)
					Tagged (mm)	Caught (mm)			
Monroe (same year returns)									
Walleye	191	114	181	66	408	404	2	35.4	0.87
Monroe (subsequent year returns)									
Walleye	69	117	163	54	395	429	30	39.6	1.32
North Channel (subsequent year return)									
Walleye	280	296	195	102	492	526	36	27.0	0.43

throughout the lake during the remainder of the year. The white bass and white sucker probably displayed the greatest movement because they were most vulnerable to net and angler capture during their extensive spawning migrations. Olson and Scidmore (1963) found that white suckers in an inland lake homed to prior spawning grounds and dispersed throughout the lake during the year. Coble (1967) tagged white suckers in Lake Huron and found first year travel distances ranging from 0.6 to 12.9 km (average 3.8 km). The white sucker tag recoveries here showed distances traveled from 1 to 103 km (average 39.4 km). It is likely that white suckers in the SCDRS have to travel much further to reach adequate summer living areas.

The order for those species showing shorter travel distances, from least to most, were rock bass, yellow perch, smallmouth bass, and northern pike. Fish and Savitz (1983) studied home range of yellow perch and three centrarchid species in an Illinois lake and found that piscivores had larger and more variable home ranges than the benthic croppers. Storr et al. (1983) found that tagged rock bass in Lake Ontario traveled an average of 15.5 km before recapture, based on approximately five years for recovery of each tagged group. The tagged rock bass in this study moved an average of 14.5 km during 1.5 years. It appears that the SCDRS rock bass travel further than those of Lake Ontario which were shown to increase their distance away from the tag site as time progressed. The Lake Ontario rock bass would have traveled about 11 or 12 km on the average, if they had only 1.5 years to move.

Yellow perch are not known to make extensive movements (Thorpe 1977). Mraz (1952) tagged yellow perch in Green Bay, Lake Michigan, and found that most were recaptured at their tag site and they traveled an average distance of 7.7 km. The yellow perch tagged in this study traveled an average distance of 15.9 km.

Several tagging studies on Great Lakes smallmouth bass populations have indicated that they do not travel extensively. Latta (1963) found that smallmouth bass tagged at Waugoschance Point, Lake Michigan, tended to be caught in the tagging vicinity, but that 3% of the angler recaptures had traveled more than 32 km. Hair (1978) found that smallmouth bass tagged in western Lake Erie apparently moved very little, since 87% of angler tag recaptures were less than 0.8 km from the tag site. Only 8% were taken more than 3.2 km away. Fraser (1955) tagged smallmouth bass in South Bay, Lake Huron, and found that only 5% of 753 recaptures were taken more than 8 km from the tag site. The angler tag recovery data from Stations 1-8 and A-marker show considerably more smallmouth bass movement, with average distance values from 8.7 km to 17.4 km.

Smallmouth bass and other centrarchids may be limited in their migratory ability because of a reliance on shoreline features for navigation. Quinn et al. (1978) tagged 2,100 largemouth bass for a mark-recapture study in a South Carolina reservoir and found that those individuals which moved considerable distances to return to home areas appeared to follow shoreline cues.

Deepwater areas between their home range and the release point seemed to interfere with "homing" ability.

Scott and Crossman (1973) report that northern pike are usually quite sedentary but that extensive movements have been reported during spring (spawning) and fall. Carbine and Applegate (1948) tagged 783 northern pike in Houghton Lake, Michigan and observed a 27% total recovery rate. These pike had moved an average of 4.8 km. The tag data also indicated that northern pike do not move great distances in the SCDRS. The average distance traveled was 17.7 km with maximum exchange between the lower St. Clair River and Anchor Bay.

The average distance calculations for most species observed from angler tag recoveries indicates that these species move further in the SCDRS than in other waters where movements have been examined. Probably the optimal habitats for the various life stages of most species are widely separated in the SCDRS. This would make it advantageous for adults to inhabit growth areas that are distant from their desired spawning and nursery habitats. The migratory movements of predatory fishes may be influenced by movements of their preferred prey fish (Schmidt-Koenig 1975). Prey migration may in turn be determined by their food or reproductive demands. Leggett (1977) states that homing to natal spawning grounds maximizes reproductive success and allows development of population-specific adaptations to the particular habitat occupied. It appears that forage fishes also undergo considerable movements throughout the SCDRS which probably account for some movements of the piscivorous species during the growth season. Anchor Bay is probably particularly attractive as a spawning and nursery ground for a number of species which have either been observed there in dense spawning concentrations (smallmouth bass, muskellunge, and yellow perch) or have shown potential prespawning movements into Anchor Bay during fall and winter (northern pike, rock bass, white bass, and black crappie). Savitz et al. (1983) radio tagged largemouth bass in Cedar Lake, Illinois, and found that prey density and home range size were inversely correlated. This indicates that predators respond positively to changes in prey density and adjust by varying their movement pattern.

The average dates for fishing activity and angler tag recovery for the major species within tag recovery grids are shown in Tables 131 and 146. These average dates were calculated from the entire data set and were treated independently from the year. The dates calculated from other years (subsequent to the tagging year) are more informative since they were not biased by being vulnerable for only a portion of the recovery year. The average tag recovery dates that differ from the average fishing effort date indicate a substantial difference between the fishes and the fisheries movement patterns.

The walleye dates were highly variable and difficult to arrange into a pattern. The lower halves of the St. Clair and Detroit rivers consistently produced a later walleye tag recovery date than the upper portions for subsequent recoveries. The opposite pattern was evident for same

Table 146. Weighted average date (Julian) for fishing effort and average angler tag recapture date for smallmouth bass and walleye from each tag recovery grid based on fish tagged at net stations in Anchor Bay and Lake Erie. (Sample size in parentheses.)

Angler tag recovery grid	Average fishing date			Average angler tag recovery date						
				Smallmouth bass[1]		Walleye[1]		Walleye[2]		Walleye[3]
	Boat	Shore	Ice	Same year	Other years	Same year	Other years	Same year	Other years	Other years
0	—	—	—	—	—	229	192	—	—	236
	—	—	—	—	—	(32)	(18)	—	—	(8)
A	207	202	—	227	220	215	179	182	210	219
	—	—	—	(14)	(7)	(31)	(23)	(9)	(2)	(33)
D	208	204	—	227	217	209	192	208	182	221
	—	—	—	(87)	(36)	(23)	(34)	(5)	(6)	(42)
B	210	—	44	222	217	—	200	—	—	224
	—	—	—	(201)	(100)	—	(24)	—	—	(54)
E	196	—	41	200	188	175	178	—	187	200
	—	—	—	(268)	(170)	(56)	(26)	—	(2)	(19)
I	211	—	28	222	208	—	—	—	—	242
	—	—	—	(23)	(10)	—	—	—	—	(9)
H	194	—	45	217	206	—	160	156	215	184
	—	—	—	(67)	(19)	—	(6)	(2)	(2)	(12)
F	204	—	88	222	219	222	199	171	179	210
	—	—	—	(30)	(19)	(10)	(8)	(2)	(1)	(24)
L	—	—	—	182	165	—	122	196	—	131
	—	—	—	(2)	(2)	—	(4)	(1)	—	(9)
C	—	—	—	—	—	—	98	—	29	103
	—	—	—	—	—	—	(32)	—	(1)	(37)
G	—	—	—	238	—	—	188	279	180	211
	—	—	—	(2)	—	—	(3)	(1)	(1)	(9)
M	186	187	—	206	212	—	173	180	134	175
	—	—	—	(7)	(2)	—	(7)	(12)	(7)	(11)
J	183	183	—	187	227	—	270	189	180	190
	—	—	—	(3)	(1)	—	(1)	(17)	(7)	(7)
Y	—	—	—	—	225	—	—	184	167	—
	—	—	—	—	(1)	—	—	(5)	(2)	—
P	—	—	—	—	—	—	158	179	174	—
	—	—	—	—	—	—	(1)	(42)	(13)	—
Q	—	—	—	—	—	—	99	183	133	—
	—	—	—	—	—	—	(3)	(8)	(5)	—

Table 146. Continued:

Angler tag recovery grid	Average fishing date			Average angler tag recovery date						
				Smallmouth bass[1]		Walleye[1]		Walleye[2]		Walleye[3]
	Boat	Shore	Ice	Same year	Other years	Same year	Other years	Same year	Other years	Other years
W	—	—	—	—	—	—	—	194	144	—
	—	—	—	—	—	—	—	(5)	(3)	—
U	—	—	—	—	—	—	132	150	150	—
	—	—	—	—	—	—	(3)	(9)	(3)	—
R	—	—	—	—	—	—	167	180	195	191
	—	—	—	—	—	—	(1)	(31)	(2)	(1)
T	—	—	—	—	—	—	118	173	148	106
	—	—	—	—	—	—	(2)	(24)	(9)	(2)
V	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
S	—	—	—	—	—	—	—	179	135	—
	—	—	—	—	—	—	—	(4)	(1)	—
X	—	—	—	—	—	—	130	180	193	—
	—	—	—	—	—	—	(1)	(9)	(1)	—

[1] A-marker Station

[2] Monroe Station

[3] North Channel Station

year recoveries. The same year recoveries were apparently heading upstream when tagged and were caught first in the lower half. Some of the subsequent year recoveries apparently had passed through the lower rivers prior to the angler fishery and were vulnerable to angler capture in the upstream area first.

Smallmouth bass showed a more consistent tag recovery pattern with good agreement between fish tagged at A-marker and Stations 1-8. The biggest difference was found between the average recovery date in Grid F for A-marker (Julian 222) and Stations 1-8 (Julian 184). The boat fishing effort which recaptured all of these fish peaked on Julian day 204. The Station 1-8 bass, were primarily tagged within Grid F, represented a spawning population which were more likely to be caught prior to their dispersal around the lake. However, the majority of smallmouth bass are probably part of the Anchor Bay spawning stock since there was such good agreement between the different tag sites.

Many of the species in Table 131 had average recapture dates earlier than the peak date of fishing activity. The sport fishery is largely targeting on walleye and white bass or responding to news about angling success for these two species. Species such as northern pike, black crappie, and yellow perch are most vulnerable during winter and spring spawning and therefore have early angler tag recovery dates.

The rank of recovery grids based on the percent of each species' tags that were recovered is shown in Table 147. The top four grids for combined species were D, J, M, and A which reflects the combination of angling diversity and species vulnerability in the Detroit and St. Clair rivers. The lower portions of the two rivers were the best for overall tag recovery. The two Anchor Bay Grids E and B ranked next which is surprising since the tag sites were quite a distance away. This shows that Anchor Bay is an attractive habitat for most of these species as well as supporting a substantial portion of the angler harvest.

The comparisons among the 13 major species based on catch per effort and total stock size estimates from total catch and tag recovery rates in survey nets and the angler harvest are presented in Table 148. The data used to make these calculations would not satisfy assumptions necessary for precise estimation so this analysis was only expected to provide a relative measure of these fishes importance to the fish community and angler harvest. The basic data used to derive the relative stock sizes and their ranks is shown in Table 148. Stock size was calculated as the total catch divided by the exploitation rate (tag recovery rate). Of course, the catch of some species was highly biased in one or both types of gear as explained previously. The top four species based on stock size from trap net data were walleye, rock bass, yellow perch, and redhorse. The angler harvest data provided top stock sizes for freshwater drum, white bass, yellow perch, and walleye. There was agreement in that yellow perch were abundant and ranked third, walleye were one of the top four and smallmouth bass ranked lowest in abundance.

Table 147. Numerical rank based on percent of tags recovered within each angler recovery grid for selected species and for the total based on all tags applied during entire survey at net Stations 1–8.[1]

Angler tag recovery grid	Species									
	Northern pike	Channel catfish	White bass	White sucker	Rock bass	Small-mouth bass	Black crappie	Yellow perch	Walleye	Total
O	—	—	—	—	—	—	—	3	7	10
A	—	—	—	3	6	9	—	14	15	47
D	4	6	2	2	10	10	6	15	12	67
B	6	1	—	2	7	4	3	7	9	39
E	5	9	1	—	5	2	2	10	9	43
I	—	—	—	—	1	6	—	11	6	24
H	—	5	—	—	3	1	1	9	5	24
F	1	4	1	1	4	8	1	8	11	39
L	—	—	—	—	2	2	—	6	8	18
C	—	—	2	4	—	—	1	—	5	12
G	—	2	—	—	—	3	—	2	10	17
M	2	6	—	—	9	5	5	13	14	54
J	3	8	3	—	8	7	4	12	13	58
Y	—	—	—	2	—	—	—	—	2	4
P	—	—	—	—	—	—	—	4	9	13
Q	—	7	—	—	—	—	1	5	2	15
W	—	3	—	—	—	—	—	5	3	11
U	—	—	—	—	—	—	—	—	—	—
R	—	—	—	—	—	—	—	2	4	6
T	—	—	1	—	—	—	—	—	2	3
V	—	—	5	—	—	—	—	—	—	5
S	—	—	—	—	—	—	—	—	—	—
X	—	—	4	—	—	—	—	1	1	6

[1] Grids ranked from highest number of returns to the lowest.

Table 148. Estimates of stock size based on catches and tag returns by survey trap nets and by anglers.

Species	Trap net data				Angler data			
			Stock estimate				Stock estimate	
	Catch	Exploitation	Number	Rank	Total catch	Exploitation	Number	Rank
Northern pike	494	0.018	27,444	—	—	—	—	—
Brown bullhead	789	0.03	26,300	—	—	—	—	—
Channel catfish	1,359	0.017	79,941	—	—	—	—	—
White bass	961	0.004	240,250	5	1,890,627	0.016	118,164,188	2
Freshwater drum	1,259	0.009	139,889	6	253,189	0.002	126,594,500	1
Common carp	2,135	0.01	213,500	—	—	—	—	—
White sucker	1,701	0.009	189,000	—	—	—	—	—
Redhorse	2,058	0.008	257,250	4	21,326	0.003	7,108,667	6
Rock bass	13,971	0.038	367,658	2	238,957	0.025	9,558,280	5
Smallmouth bass	2,757	0.043	64,116	7	59,338	0.047	1,262,511	7
Black crappie	739	0.067	11,030	—	—	—	—	—
Yellow perch	11,299	0.04	282,475	3	2,049,053	0.059	34,729,712	3
Walleye	6,221	0.009	691,222	1	860,885	0.05	17,217,700	4

Table 149. Results of 28 pairs of between-station statistical tests for white perch trap net CPUE.

Net station	Net station 1	2	3	4	5	6	7	8
1	—						**	**
2	—	—					*	*
3	—	—	—				**	**
4	—	—	—	—	*		*	
5	—	—	—	—	—		**	**
6	—	—	—	—	—	—	**	**
7	—	—	—	—	—	—	—	
8	—	—	—	—	—	—	—	—

* Stations significantly different at 0.05 level.

**Stations significantly different at 0.01 level.

This ranking exercise was carried further in Table 150 by adding ranks from the CPUE data for both gears and then ranking the 7 species according to a sum of the four criteria. The top four species were yellow perch, walleye, rock bass, and white bass. Only these 7 species were used because the creel data were minimal or lacking for the other 6. These other 6 species ranked as follows from the net estimates of stock size; common carp, white sucker, channel catfish, northern pike, brown bullhead, and black crappie. All of these ranks of abundance appear reasonable. Without more consistent data on all species, it appears that channel catfish, common carp, and white sucker would rank about equal to redhorse and northern pike, brown bullhead and black crappie would be less abundant then smallmouth bass.

Species diversity of the fish community was examined at each of the eight primary stations. Measurement of species diversity involves assessment of not only species richness (number of species) but evenness of the distribution of individuals among species. A commonly used method of measurement is the Shannon-Weiner function:

$$H = -\Sigma P_i \ln(P_i)$$

where P_i is the fraction of all individuals in the community contained in species i (Vandermeer 1981). The value of H is largest where the number of species is largest and when individuals are apportioned most evenly among the species.

If all the species in the community have an equal number of individuals, then H_{max} = ln(S), where S is equal to the number of species. Therefore, evenness (J) may be defined as: J = H/H_{max}.

Station 8 had the highest Shannon-Weiner index value for the entire survey period along with the second highest value for evenness and the fourth highest number of species netted (Table 151). The value of H at Station 3 was third largest, despite having the lowest evenness value, because richness was much higher (eight species more) than at any other station.

The range of Shannon-Weiner index values (2.16–2.34) and evenness values (0.59–0.64) for the entire survey period was narrow. For this reason, the Shannon-Weiner function provided few instances of conclusive differences in species diversity within the SCDRS. However, the analyses did support the general ecological principle that relates increased species diversity with increased habitat diversity. The St. Clair and Detroit River deltas probably have the most diverse habitats in the SCDRS. Station 8, in the Detroit River delta, had the largest species diversity index, while Station 3, in the St. Clair River, had the third (virtually tied for second) largest index.

Table 150. Rank of selected species based on abundance estimates from tag recoveries in the angler and trap net catches and from catch per effort in both.

Species	Rank from angler stock size	Rank from trap net stock size	Rank from CPUE trap nets	Rank from CPUE angler catch	Sum of all ranks	Overall ranks
White bass	2	5	7	2	16	4
Freshwater drum	1	6	6	4	17	5
Redhorse	6	4	5	7	22	6
Rock bass	5	2	1	5	13	3
Smallmouth bass	7	7	4	6	24	7
Yellow perch	3	3	2	1	9	1
Walleye	4	1	3	3	11	2

Table 151. Indices of species diversity (Shannon-Weiner) at the eight net stations.

Year	Net station	Total catch	Diversity (H)	Richness (S)	Evenness (J)	Diversity (H_{max})
1983–84	1	3,174	1.93	31	0.56	3.43
	2	3,413	2.35	36	0.66	3.58
	3	6,999	2.22	41	0.60	3.71
	4	3,954	2.18	25	0.68	3.22
	5	2,301	2.00	21	0.66	3.04
	6	2,134	2.41	28	0.72	3.33
	7	7,297	2.27	37	0.63	3.61
	8	3,167	2.17	29	0.64	3.37
1984–85	1	1,618	2.07	30	0.61	3.40
	2	1,341	1.88	24	0.59	3.18
	3	4,538	2.28	40	0.62	3.69
	4	2,507	2.20	32	0.64	3.47
	5	4,073	2.15	36	0.60	3.58
	6	2,852	2.03	32	0.59	3.47
	7	4,245	2.24	32	0.65	3.47
	8	3,966	2.37	37	0.66	3.61
1983–85	1	4,792	2.18	38	0.60	3.64
	2	4,754	2.31	40	0.63	3.69
	3	11,537	2.30	49	0.59	3.89
	4	6,461	2.27	36	0.63	3.58
	5	6,374	2.16	37	0.60	3.61
	6	4,986	2.28	35	0.64	3.56
	7	11,542	2.29	41	0.62	3.71
	8	7,133	2.35	39	0.64	3.66

CONCLUSIONS AND RECOMMENDATIONS

This study was conducted to describe the present adult fish community and to address the potential impact upon this community in the SCDRS from extended winter navigation to 31 January ±2 weeks. Winter vessel traffic has occurred through the SCDRS for many years. Therefore, the fish community described in this study presumably existed at the observed level without severe stress from the ongoing winter ship travel. The question is would some increased winter vessel traffic (unknown level) have measurable impacts.

Potential impacts from winter navigation might take two basic forms: affecting the adult fish community directly, or interfering with the winter angling fishery. The fish community might be affected during certain life stages such as spawning, food production/growth, or migration. Spawning and food availability would most likely be affected by physical disruption of critical habitats by ice gouging or, less likely, by interference with migration at critical times. The winter passage of additional vessels might alter patterns of ice formation which could affect ice angling. All these effects would most likely occur at, or adjacent to, the navigation channel. The probability of any impacts would decrease with greater distance from the ships path.

Lake St. Clair and the connecting rivers support a valuable fish community and angling fishery. Even though angling effort and catch in the SCDRS are exceptionally high, the portion which occurs in the St. Clair River, in what we feel is the area most vulnerable to winter navigation, is relatively low. The combined shore and boat angling effort on Michigan's waters of the St. Clair River and Harsens Island averaged 810,000 hours (19% of total annual SCDRS effort) compared to 1,953,000 hours for Lake St. Clair and 1,409,000 hours for the Detroit River. The average annual harvest was 164,000 fish (6% of total annual SCDRS catch) for Michigan's waters of the St. Clair River and Harsens Island compared to 1,198,000 fish in Lake St. Clair and 1,421,000 fish for the Detroit River.

The sport fishery on the SCDRS apparently is much more intense and productive per unit area than on the other Michigan Great Lakes waters. Comprehensive sportfishing effort and catch statistics are not available for all of Michigan's waters of the Great Lakes. However, the total 1983 boat fishing effort on Michigan's waters of the southern half of Lake Michigan (Muskegon County and south) was 1,200,000 hours and the estimated catch of salmonids and yellow perch were 154,000 fish and 599,000 fish, respectively (G. Rakoczy, MDNR, personal communication). Total angling effort during 1983 on Michigan's waters of Lake Huron from Port Austin south to Port Huron was estimated to have been 470,000 hours and the catch only 46,000 fish.

The following approach to evaluate extended shipping during the first few years of operation is recommended. Data should be collected at sites and times that can be compared statistically with the results from this study as well as most efficiently providing data that has a reasonable probability of demonstrating impacts that may have occurred.

Trap net catches are usually quite variable; however, the catches observed during this study showed lower variability between seasons and years than that reported for Lake Erie by Hamley and Howley (1985). As a minimal evaluation effort we recommend at least 2 years of trap net sampling at net Stations 1–4 at the same level of effort. Physical impacts from winter vessel passage and ice movement would probably be greatest in the St. Clair River so that effects upon the adult fish community would be most readily observed.

Redhorse, rock bass, yellow perch, and walleye are the best species for evaluation since they are quite abundant, have a variety of habitat requirements and behavior patterns, and contribute substantially to the angler harvest. These species showed low variability in trap net CPUE compared to the other species encountered during the netting. For example, a post-extended navigation 2-year mean CPUE at Stations 1–4 for these species might be compared on a seasonal basis with results from this study.

It is important to remember that any area of the SCDRS has some fish present during all parts of the year from many, if not most, species. The combined catch of nine selected species at Stations 1–8 varied approximately 23% from 1983 to 1984. Extended winter navigation would probably have to cause changes in fish abundance considerably greater than this to be readily observable.

The winter survey periods provided the least amount of fishery data per effort and were the most difficult to sample. Trap net catches generally peaked during the summer months and winter average CPUE's were only about 8% of the summertime highs. Angler tag returns also showed that winter was a low capture period for most species since only 10% of all tags were recaptured during December, January, February, and March.

Because of the low catches it is more difficult to make judgements about wintertime fish behavior. However, two critical behavioral points are evident from the data. Fish movement (activity) is much reduced during winter and it is inferred from net catches and tag data that fish concentrations are substantially reduced in the vicinity of the channels. Fall migrations to overwintering areas and low wintertime movement rates have frequently been reported for many of these species (Aitken 1937; Greenbank 1956; Schlagenhaft and Murphy 1985).

The angler effort and harvest in the SCDRS were quite low during the winter months with the exception of the yellow perch fishery. Even this fishery which operated primarily in Anchor Bay showed that perch had concentrated there probably for overwintering. Winter tag returns indicate that species such as walleye, yellow perch, black crappie, northern pike, and rock bass have sought out overwintering areas in the lake, tributary streams or in marshes and canals adjacent to the main channels. The other species that were tagged apparently did not contribute to the harvest since tags were not reported by anglers. Probably fall movements into the lake, particularly Anchor Bay, occur because it functions as a staging area for spawning as well as a good overwintering site. Haas (1978) found that the main spawning ground for Lake St. Clair muskellunge (spring spawners) was in Anchor Bay. Muskellunge tag returns showed a clockwise movement pattern with many of the adults concentrated back in Anchor Bay in late fall after probably spending the summer along the south and east shores of the main part of the lake.

Most of the data on winter fish distribution in the SCDRS suggests that they generally move to overwintering areas in fall, that wintertime activity levels are much reduced, and that fish which remain near the navigation channels seek out the adjacent marshes and channels as overwintering sites. Ice angling made up only 12% of the total fishing effort surveyed and 17% of the catch of all species. Much of the St. Clair and Detroit rivers, as well as their delta areas, remains ice free (free of fast ice) and therefore offers limited opportunity for ice angling. Some ice fishing occurs adjacent to shore in the delta areas, but it has shown a relatively low catch rate compared to Anchor Bay.

There is considerable evidence from the net catches and angler tag returns that general movement rates accelerate again in the spring probably as fish move to and from spawning and summer feeding grounds. Aitken (1937) studied fish movement during winter and found increased movements of common carp and buffalo in March as the water warmed. Greenbank (1956) studied fish movements under ice cover in Target Lake, Wisconsin and found that movements were directional and inversely related to light intensity. There also was more movement at the beginning and end of the winter survey period, January through February.

Both boat and shore angling effort and catch are lower in the St. Clair River than in Lake St. Clair or the Detroit River. Total fish abundance must be quite low in the St. Clair River relative to these other areas. However, tag data show that fish are generally more vulnerable to capture by nets and anglers in the St. Clair River, probably due to concentration from lack of habitat type and amount. Presumably winter ship passage would be most likely to impact the sport fishery in this area. The St. Clair River would be the most likely point for physical influence from winter vessel passage. It is also reasonable to expect that future data collection to evaluate the impact of vessel traffic upon the angler harvest would be most efficient and likely to measure changes in the St. Clair River and in Anchor Bay. To evaluate the impact of extended navigation to the sport fishery a creel survey should be run for a minimum of 2 years on the St. Clair River, Harsens Island, and Lake St. Clair Grids 1–4 (Anchor Bay) and 7. Hopefully, a comparison of the angling effort and harvest by species would detect major changes in fish density which might be related to the shipping. Major weather changes with resultant fluctuations in reproductive success are an example of an environmental event which might significantly alter fish density. Related variables should be readily separated from effects of winter navigation by correlating them with changes in angling effort, catch, and trap-net catch through time. Fishing effort, particularly during January and February in the lower St. Clair River and Anchor Bay, would also indicate whether winter shipping may have affected the ice cover and anglers' access to the resource.

From the data collected in this study, the level and timing of extended winter navigation in the SCDRS, due to a 3 or 4 week extension, would be unlikely to alter the adult fish community enough to be readily observed by the methods used in this study or other fishery sampling techniques.

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APPENDIX

Appendix 1. List of scientific and common names of fish observed in study.

Common name	Scientific name
Sea lamprey	Petromyzon marinus
Lake sturgeon	Acipenser fulvescens
Longnose gar	Lepisosteus osseus
Bowfin	Amia calva
Alewife	Alosa pseudoharengus
Gizzard shad	Dorosoma cepedianum
Smelt	Osmerus mordax
Mooneye	Hiodon tergisus
Northern pike	Esox lucius
Muskellunge	Esox masquinongy
Black bullhead	Ictalurus melas
Yellow bullhead	Ictalurus natalis
Brown bullhead	Ictalurus nebulosus
Channel catfish	Ictalurus punctatus
Stonecat	Noturus flavus
American eel	Anguilla rostrata
Burbot	Lota lota
Trout-perch	Percopsis omiscomaycus
White perch	Morone americana
White bass	Morone chrysops
Freshwater drum	Aplodinotus grunniens
Lake whitefish	Coregonus clupeaformis
Chinook salmon	Oncorhynchus tshawytscha
Coho salmon	Oncorhynchus kisutch
Pink salmon	Oncorhynchus gorbuscha
Rainbow trout	Salmo gairdneri
Brown trout	Salmo trutta
Lake trout	Salvelinus namaycush
Goldfish	Carassius auratus
Common carp	Cyprinus carpio
Quillback	Carpiodes cyprinus
Longnose sucker	Catostomus catostomus

Appendix 1. Continued:

Common name	Scientific name
White sucker	Catostomus commersoni
Hogsucker	Hypentelium nigricans
Bigmouth buffalo	Ictiobus cyprinellus
Smallmouth buffalo	Ictiobus bubalus
Spotted sucker	Minytrema melanops
Redhorse, unidentified	Moxostoma spp.
Silver redhorse	Moxostoma anisurum
Golden redhorse	Moxostoma erythrurum
Shorthead redhorse	Moxostoma macrolepidotum
River redhorse	Moxostoma carinatum
Silver chub	Hybopsis storeiana
Golden shiner	Notemigonus crysoleucas
Emerald shiner	Notropis atherinoides
Spottail shiner	Notropis hudsonius
Rock bass	Ambloplites rupestris
Green sunfish	Lepomis cyanellus
Pumpkinseed	Lepomis gibbosus
Bluegill	Lepomis macrochirus
Smallmouth bass	Micropterus dolomieui
Largemouth bass	Micropterus salmoides
White crappie	Pomoxis annularis
Black crappie	Pomoxis nigromaculatus
Logperch	Percina ceprodes
Yellow perch	Perca flavescens
Sauger	Stizostedion canadense
Walleye	Stizostedion vitreum

Appendix 2. Catch per net lift for each species of fish at Station 1 (St. Clair) from March 1983 through March 1984.

Species	Month													Mean CPUE
	Mar[1]	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb[1]	Mar[1]	
Longnose gar	—	—	0.25	—	—	—	—	—	—	—	—	—	—	0.03
Alewife	—	—	37.25	3.57	71.25	—	—	—	—	—	—	—	—	7.89
Gizzard shad	—	0.05	0.20	—	—	—	—	—	0.05	—	—	—	—	0.04
Smelt	—	1.08	1.00	14.50	—	—	—	—	—	0.25	—	—	1.29	1.64
Northern pike	—	0.51	0.10	—	0.25	—	—	—	—	—	—	—	—	0.14
Muskellunge	—	—	0.10	—	—	—	—	—	—	—	—	—	—	0.01
Yellow bullhead	—	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
Channel catfish	—	—	0.05	—	—	0.60	—	—	—	—	—	—	—	0.06
Trout-perch	—	—	0.20	0.36	—	—	—	—	—	—	—	—	—	0.05
White perch	—	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
White bass	—	—	0.10	—	—	—	0.05	—	0.05	—	—	—	—	0.02
Freshwater drum	—	—	—	0.07	0.25	0.20	0.42	0.10	0.05	—	—	—	—	0.10
Chinook salmon	—	0.03	—	—	—	—	—	—	—	—	—	—	—	0.01
Coho salmon	—	0.05	—	—	—	—	—	—	—	—	—	—	—	0.01
Rainbow trout	—	0.05	0.10	—	—	—	—	—	0.10	—	—	—	—	0.03
Carp	—	1.05	0.20	0.50	0.13	0.13	—	0.05	—	—	—	—	—	0.32
Quillback	—	—	—	—	—	0.07	—	—	—	—	—	—	—	0.01
White sucker	—	0.95	0.90	0.36	0.88	0.80	1.42	1.20	3.80	2.25	—	—	1.00	1.32
Hog sucker	—	0.05	—	—	—	—	0.26	0.10	0.10	—	—	—	0.07	0.07
Spotted sucker	—	—	0.20	0.07	0.13	—	—	—	0.05	—	—	—	—	0.04
Redhorse, unidentified	—	0.26	0.25	0.50	0.25	0.47	0.16	0.30	1.60	0.50	—	—	—	0.43
Golden shiner	—	—	—	0.07	—	—	—	—	—	—	—	—	—	0.01
Rock bass	—	0.18	0.30	0.79	0.88	4.13	3.68	1.25	0.25	0.75	—	—	0.07	1.14
Green sunfish	—	—	—	—	0.13	—	—	—	—	—	—	—	—	0.01
Pumpkinseed	—	—	0.05	—	0.38	—	0.11	—	—	—	—	—	—	0.03
Bluegill	—	—	—	—	0.13	—	—	—	—	—	—	—	—	0.01
Smallmouth bass	—	—	0.05	—	0.25	1.00	3.53	0.05	—	—	—	—	—	0.50
Black crappie	—	—	0.05	—	—	—	0.05	—	—	—	—	—	—	0.01
Yellow perch	—	0.59	4.30	1.79	3.75	3.73	4.32	3.20	0.45	—	—	—	0.57	2.21

Appendix 2. Continued:

Species	Month													Mean CPUE
	Mar[1]	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb[1]	Mar[1]	
Sauger	—	—	—	—	—	—	—	—	0.10	—	—	—	—	0.01
Walleye	—	0.03	—	0.14	1.25	5.93	9.05	1.70	3.40	0.50	—	—	—	2.18
Total CPUE	—	4.88	45.75	22.72	79.91	17.06	23.05	7.95	10.05	4.25	—	—	3.00	18,35
Total net lifts	—	39	20	14	8	15	19	20	20	4	—	—	14	173
Number of scales sampled	—	30	37	14	50	144	160	94	44	4	—	—	4	581
Number of fish tagged	—	71	117	49	58	155	380	137	139	13	—	—	22	1,141

[1]No survey.

Appendix 3. Catch per net lift for each species of fish at Station 2 (Marine City) from March 1983 through March 1984.

Species	Month													Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb	Mar[1]	
Longnose gar	—	—	0.10	—	—	—	—	—	—	—	—	—	—	0.01
Bowfin	—	—	—	—	0.06	—	—	—	—	—	—	—	—	0.01
Alewife	—	—	—	2.15	0.28	—	—	—	—	—	—	—	—	0.27
Gizzard shad	0.15	1.68	0.80	—	—	—	0.07	—	13.1	0.43	—	1.00	—	1.07
Smelt	13.00	0.24	—	10.00	—	—	—	—	—	0.07	—	—	—	2.10
Mooneye	—	—	0.10	—	—	—	—	—	—	—	—	0.33	—	0.02
Northern pike	0.08	0.32	0.30	—	—	0.05	0.07	0.05	0.11	0.14	—	—	—	0.12
Black bullhead	—	—	—	—	0.06	—	—	—	—	—	—	—	—	0.01
Brown bullhead	—	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
Channel catfish	—	—	0.50	0.05	—	0.50	0.71	1.35	—	—	—	1.50	—	0.37
Stonecat	—	—	0.10	—	—	—	—	0.10	—	—	—	—	—	0.02
Burbot	—	—	0.15	—	—	—	—	—	—	—	—	—	—	0.02
Trout-perch	0.08	—	0.10	0.25	—	—	—	—	—	—	—	—	—	0.04
White perch	—	—	—	—	0.06	0.30	0.14	—	—	—	—	—	—	0.07
White bass	—	0.12	4.90	—	0.06	0.05	0.29	—	—	0.14	000	0.17	—	0.60
Freshwater drum	—	—	0.20	—	0.72	0.15	0.21	0.50	0.11	—	—	—	—	0.19
Chinook salmon	—	—	—	0.05	—	—	—	—	—	—	—	—	—	0.01
Coho salmon	—	0.04	—	—	—	—	—	—	—	—	—	—	—	0.01
Brown trout	0.08	—	—	—	—	—	—	—	—	—	—	—	—	0.01
Carp	—	0.08	1 35	0.10	0.11	0.10	—	0.45	0.22	0.07	—	0.17	—	0.27
Quillback	—	0.04	0 05	—	—	—	—	—	—	—	—	—	—	0.01
Longnose sucker	—	—	—	—	0.06	—	—	—	—	—	—	—	—	0.01
White sucker	1.38	4.60	1.70	0.95	0.78	0.55	0.36	1.10	1.33	0.93	—	14.83	—	1.97
Hog sucker	—	—	0.05	—	—	—	—	—	—	—	—	0.17	—	0.01
Bigmouth buffalo	—	0.04	—	—	—	—	—	—	—	—	—	—	—	0.01
Redhorse, unidentified	0.85	2.44	3.25	0.15	0.33	0.30	0.14	0.30	2.11	0.57	—	4.17	—	1.18
Rock bass	—	1.76	1.55	0.35	4.22	14.45	6.14	5.65	1.67	2.21	—	—	—	3,87
Green sunfish	—	—	—	—	0.06	—	—	—	—	—	—	—	—	0.01
Pumpkinseed	—	—	—	0.05	0.33	0.35	2.21	0.15	—	—	—	—	—	0.27
Bluegill	—	—	0.05	0.15	0.17	0.05	—	0.05	—	—	—	—	—	0.05

Appendix 3. Continued:

Species	Month													Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb	Mar[1]	
Smallmouth bass	—	—	—	0.05	—	1.00	1.21	0.55	—	—	—	—	—	0.27
Largemouth bass	—	—	—	—	—	0.15	0.29	—	—	—	—	—	—	0.04
Black crappie	—	0.16	0.35	—	—	0.05	—	0.15	—	—	—	0.17	—	0.09
Yellow perch	0.31	0.72	4.05	0.90	8.61	10.75	6.43	6.75	1.33	0.79	—	—	—	4.13
Sauger	—	—	—	—	—	—	—	—	0.11	—	—	—	—	0.01
Walleye	—	0.32	1.55	—	3.72	2.45	3.57	3.35	5.89	1.29	—	1.27	—	1.96
Total CPUE	15.93	12.56	21.25	15.20	19.63	31.25	21.84	20.50	26.00	6.64	—	23.67	—	19.12
Total net lifts	13	25	20	20	18	20	14	20	9	14	—	6	—	179
Number of scales sampled	6	30	154	23	201	151	106	94	38	11	—	—	—	814
Number of fish tagged	1	106	290	41	208	347	201	307	73	56	—	21	0	1,651

[1]No survey.

Appendix 4. Catch per net lift for each species of fish at Station 3 (Algonac) from March 1983 through March 1984.

Species	Month													Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb	Mar[1]	
Lake sturgeon	—	—	—	—	—	—	—	—	0.10	—	—	—	—	0.01
Longnose gar	—	—	—	0.77	—	—	0.03	—	—	—	—	—	—	0.12
Bowfin	0.06	0.44	0.74	0.52	0.38	0.11	0.10	—	—	—	—	—	—	0.25
Alewife	—	—	—	0.55	—	0.04	—	—	—	—	—	—	—	0.09
Gizzard shad	0.19	1.22	0.63	0.03	—	—	0.07	0.10	1.55	—	—	—	—	0.36
Smelt	1.94	0.17	—	4.81	—	—	—	—	—	—	—	—	—	0.91
Mooneye	—	—	0.10	—	—	—	—	—	—	—	—	—	—	0.01
Northern pike	0.81	1.44	3.16	0.32	0.06	0.14	0.21	0.40	0.20	—	—	0.50	—	0.67
Muskellunge	—	—	—	0.03	—	—	—	—	—	—	—	—	—	*
Black bullhead	—	0.22	—	0.03	—	—	—	—	—	—	—	—	—	0.02
Yellow bullhead	—	0.06	0.16	—	—	—	—	—	—	—	—	—	—	0.02
Brown bullhead	—	0.11	0.95	0.26	0.81	0.07	0.10	0.60	0.15	—	—	—	—	0.30
Channel catfish	—	—	0.21	0.03	0.12	0.86	1.31	0.20	0.45	—	—	—	—	0.41
Stonecat	—	—	—	0.06	—	—	—	—	—	—	—	—	—	0.01
Trout-perch	—	0.06	—	0.03	—	—	—	—	—	—	—	—	—	0.01
White bass	—	—	0.21	0.03	—	0.61	0.52	0.05	0.45	—	—	—	—	0.05
White perch	—	—	—	6.00	0.12	0.14	0.17	—	—	—	—	—	—	0.23
Freshwater drum	0.06	0.06	0.16	0.35	0.94	0.36	0.31	0.85	0.35	—	—	0.25	—	0.37
Lake trout	—	—	0.05	0.00	—	—	—	—	—	—	—	—	—	*
Rainbow trout	—	—	—	0.03	—	0.04	—	—	—	—	—	—	—	0.01
Splake	—	—	—	—	0.06	—	—	—	—	—	—	—	—	*
Goldfish	—	—	—	—	0.06	—	—	0.10	—	—	—	—	—	0.01
Carp	6.75	1.50	5.79	4.06	0.62	0.71	0.55	0.45	0.10	—	—	1.50	—	2.16
Carp X goldfish	—	—	0.10	—	—	—	—	—	—	—	—	—	—	0.01
Quillback	—	—	0.16	0.03	0.06	0.43	0.28	0.05	—	—	—	—	—	0.13
Longnose sucker	0.06	—	—	—	—	—	—	—	—	—	—	—	—	*
White sucker	2.19	2.33	2.32	1.45	0.38	0.29	0.69	0.30	0.65	—	—	0.50	—	1.10
Hog sucker	—	—	—	0.03	—	—	0.07	0.05	0.05	—	—	—	—	0.02
Bigmouth buffalo	—	—	0.10	—	—	—	—	—	—	—	—	—	—	0.01
Spotted sucker	—	—	—	0.06	—	—	—	—	—	—	—	—	—	0.01

Appendix 4. Continued:

Species	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb	Mar[1]	Mean CPUE
Redhorse, unidentified	0.69	0.72	1.26	1.45	0.50	0.50	0.97	0.05	0.45	—	—	0.25	—	0.77
Spottail shiner	—	—	—	0.39	—	—	—	—	—	—	—	—	—	0.06
Rock bass	0.19	0.44	5.32	17.26	19.44	18.11	8.31	17.50	7.90	—	—	3.50	—	11.08
Pumpkinseed	—	0.22	1.32	1.00	5.19	7.39	5.48	1.95	—	—	—	—	—	2.73
Bluegill	—	—	0.10	0.13	0.19	0.39	0.24	0.05	—	—	—	—	—	0.14
Smallmouth bass	—	—	0.05	0.03	0.31	1.46	0.97	0.05	0.05	—	—	—	—	0.39
Largemouth bass	—	—	0.16	0.06	0.06	0.82	0.59	0.20	—	—	—	—	—	0.25
White crappie	—	0.22	—	—	—	—	—	—	—	—	—	—	—	0.02
Black crappie	0.25	0.56	2.05	0.55	1.56	1.00	0.83	3.70	0.15	—	—	—	—	1.11
Yellow perch	1.25	1.89	15.74	7.29	38.88	14.00	2.45	2.40	1.10	—	—	0.25	—	8.63
Walleye	0.06	—	0.53	0.23	2.19	2.96	5.52	2.65	5.40	—	—	0.75	—	2.29
Total CPUE	14.50	11.66	41.37	41.87	71.93	50.43	29.77	31.70	19.10	—	—	7.50	—	34.77
Total net lifts	16	18	19	31	16	28	29	20	20	—	—	4	—	201
Number of scales sampled	33	59	141	154	156	270	187	50	118	—	—	12	—	1,180
Number of fish tagged	13	185	464	636	410	639	480	366	264	—	—	10	0	3,467

[1]No survey

* = ≤0.005

Appendix 5. Catch per net lift for each species of fish at Station 4 (St. Clair Cutoff) from March 1983 through March 1984.

Species	Month													Mean CPUE
	Mar[1]	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar[1]	
Lake sturgeon	—	—	—	0.10	—	—	0.07	0.29	—	—	—	—	—	0.06
Longnose gar	—	—	0.08	—	—	—	—	—	—	—	—	—	—	0.01
Bowfin	—	—	0.15	—	0.06	0.04	—	—	—	—	—	—	—	0.04
Alewife	—	—	1.00	0.30	—	0.09	0.07	—	—	—	—	—	—	0.18
Gizzard shad	—	—	—	—	—	—	—	1.21	0.67	—	—	—	—	0.25
Smelt	—	—	—	0.30	—	—	—	—	—	—	—	—	—	0.03
Mooneye	—	—	—	—	—	—	—	0.07	—	—	—	—	—	0.01
Northern pike	—	—	0.15	—	—	0.09	—	0.21	0.40	—	—	—	—	0.12
Muskellunge	—	—	—	—	—	—	—	0.07	0.13	—	—	—	—	0.03
Brown bullhead	—	—	—	—	0.06	—	—	—	0.07	—	—	—	—	0.02
Channel catfish	—	—	0.23	0.50	2.65	2.26	0.40	13.50	2.47	—	—	—	—	3.15
White perch	—	—	—	0.10	2.82	2.96	2.07	0.86	0.20	—	—	—	—	1.52
White bass	—	—	0.23	0.70	0.53	0.30	—	1.29	0.47	—	—	—	—	0.48
Freshwater drum	—	—	—	1.40	0.29	0.74	0.13	14.57	0.47	—	—	—	—	2.33
Rainbow trout	—	—	—	—	—	—	—	—	0.07	—	—	—	—	0.01
Carp	—	—	0.15	0.90	0.12	0.09	—	0.07	0.40	—	—	—	—	0.21
Quillback	—	—	0.08	0.10	0.24	0.43	0.13	3.43	0.27	—	—	—	—	0.65
White sucker	—	—	0.46	2.70	0.29	0.04	—	0.64	0.87	—	—	—	—	0.57
Redhorse, unidentified	—	—	1.46	8.70	1.00	1.17	1.53	4.86	8.27	—	—	—	—	3.41
Rock bass	—	—	1.77	8.50	5.82	10.83	10.00	27.29	1.47	—	—	—	—	9.44
Pumpkinseed	—	—	—	—	0.06	0.17	0.07	—	—	—	—	—	—	0.06
Smallmouth bass	—	—	0.08	0.20	1.24	3.04	6.27	3.00	—	—	—	—	—	2.15
Black crappie	—	—	—	0.30	0.06	—	—	—	—	—	—	—	—	0.04
Yellow perch	—	—	0.77	20.50	6.06	2.74	1.13	3.29	1.60	—	—	—	—	4.37
Walleye	—	—	1.62	19.10	8.76	12.04	3.07	3.50	7.00	—	—	—	—	7.83

Appendix 5. Continued:

Species	Month													Mean CPUE
	Mar[1]	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar[1]	
Total CPUE	—	—	8.23	64.40	30.06	37.03	24.94	78.15	24.83	—	—	—	—	36.97
Total net lifts	—	—	13	10	17	23	15	14	15	—	—	—	—	107
Number of scales sampled	0	0	23	273	206	248	114	107	111	0	0	0	0	1,082
Number of fish tagged	0	0	79	484	316	531	196	986	333	0	—	—	0	2,925

[1]No survey

Appendix 6. Catch per net lift for each species of fish at Station 5 (Dumping Grounds) from March 1983 through March 1984.

Species	Month													Mean CPUE
	Mar[1]	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar[1]	
Alewife	—	—	—	—	0.20	—	—	—	—	—	—	—	—	0.04
Gizzard shad	—	—	—	—	0.05	0.38	0.07	0.45	0.70	—	—	—	—	0.21
Northern pike	—	—	—	—	—	—	—	0.05	—	—	—	—	—	0.01
Channel catfish	—	—	0.28	0.13	0.55	0.92	2.73	0.95	0.10	—	—	—	—	0.81
Stonecat	—	—	0.11	0.38	0.05	0.23	0.33	0.05	—	—	—	—	—	0.16
Burbot	—	—	0.10	0.13	—	—	—	0.05	—	—	—	—	—	0.03
White perch	—	—	0.17	—	0.60	0.38	0.07	0.20	0.20	—	—	—	—	0.24
White bass	—	—	0.44	—	4.30	0.54	0.13	0.45	0.10	—	—	—	—	1.01
Freshwater drum	—	—	0.44	—	3.10	0.62	0.13	0.55	0.10	—	—	—	—	0.82
Rainbow trout	—	—	—	—	0.05	—	—	—	—	—	—	—	—	0.01
Carp	—	—	0.11	0.06	0.55	0.15	0.13	0.05	—	—	—	—	—	0.17
Quillback	—	—	—	—	0.35	0.15	—	—	—	—	—	—	—	0.08
White sucker	—	—	0.06	0.13	0.40	0.08	0.07	—	—	—	—	—	—	0.12
Bigmouth buffalo	—	—	—	—	—	—	0.07	—	—	—	—	—	—	0.01
Redhorse, unidentified	—	—	0.50	0.31	7.60	1.69	0.53	0.55	0.30	—	—	—	—	1.88
Rock bass	—	—	4.50	3.13	4.05	5.08	2.27	13.85	2.90	—	—	—	—	5.52
Bluegill	—	—	0.06	—	0.05	—	—	—	—	—	—	—	—	0.02
Smallmouth bass	—	—	0.94	0.88	5.05	3.77	5.07	14.10	3.80	—	—	—	—	5.15
Black crappie	—	—	—	—	—	—	0.13	0.10	—	—	—	—	—	0.04
Yellow perch	—	—	0.17	0.63	1.10	1.77	0.07	0.20	—	—	—	—	—	0.56
Walleye	—	—	2.11	1.00	8.95	3.46	1.87	4.50	1.60	—	—	—	—	3.68
Total CPUE	—	—	9.89	6.75	37.00	19.22	13.67	36.10	9.80	—	—	—	—	20.57
Total net lifts	—	—	18	16	20	13	15	20	10	—	—	—	—	112
Number of scales sampled	—	—	60	60	327	112	110	438	56	—	—	—	—	1,163

Appendix 6. Continued:

Species	Month													Mean CPUE
	Mar[1]	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar[1]	
Number of fish tagged	0	0	126	108	599	158	171	604	76	—	—	—	—	1,837

[1]No survey

Appendix 7. Catch per net lift for each species of fish at Station 6 (Belle Isle) from March 1983 through March 1984.

Species	Month													Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar[1]	
Longnose gar	—	—	—	—	0.08	—	—	—	—	—	—	—	—	0.01
Alewife	—	—	—	—	0.33	0.04	—	—	—	—	—	—	—	0.03
Gizzard shad	—	0.04	—	0.13	1.08	0.08	0.03	—	3.70	—	—	—	—	0.52
Northern pike	—	0.36	1.50	—	—	—	—	—	—	—	—	—	—	0.19
Muskellunge	—	—	0.06	—	—	—	—	—	—	0.25	—	—	—	0.01
Brown bullhead	—	0.04	0.38	—	—	0.08	0.03	—	—	—	—	—	—	0.06
Channel catfish	0.10	0.04	—	0.07	0.17	0.31	0.27	0.30	0.15	—	—	—	—	0.17
Stonecat	—	—	—	—	0.33	0.42	0.20	0.40	0.55	—	—	—	—	0.22
White perch	—	—	0.06	0.07	8.00	1.00	0.20	0.10	0.25	0.50	—	—	—	0.78
White bass	—	0.04	—	—	0.75	0.19	0.30	0.05	0.45	—	—	—	—	0.19
Freshwater drum	—	0.08	—	0.07	1.83	0.65	0.40	0.15	—	—	—	—	—	0.32
Chinook salmon	0.10	—	—	—	—	—	—	—	—	—	—	—	—	0.01
Coho salmon	—	—	0.75	—	—	—	—	—	—	—	—	—	—	0.07
Goldfish	—	0.04	0.13	0.07	—	—	—	—	—	—	—	—	—	0.02
Carp	0.10	1.00	0.63	0.40	1.25	0.35	0.37	0.05	0.10	—	—	—	—	0.45
Quillback	—	0.04	0.31	0.40	—	—	—	—	—	—	—	—	—	0.07
White sucker	0.10	0.16	0.25	—	0.17	—	0.30	0.25	0.20	0.25	—	—	—	0.17
Redhorse, unidentified	0.10	0.08	—	0.40	1.08	0.38	0.30	0.45	0.30	—	—	—	—	0.31
Emerald shiner	—	—	0.06	—	—	—	—	—	—	—	—	—	—	0.01
Rock bass	0.60	0.44	1.50	11.67	11.25	5.19	1.73	4.55	0.60	1.25	—	—	—	3.63
Pumpkinseed	0.10	0.04	1.38	0.20	0.33	0.04	—	0.15	—	—	—	—	—	0.20
Bluegill	—	—	0.06	0.40	0.83	0.12	0.07	0.15	0.10	—	—	—	—	0.15
Smallmouth bass	—	—	—	0.13	0.42	3.88	1.60	6.45	—	—	—	—	—	1.60
Largemouth bass	—	—	—	—	—	—	—	0.05	—	—	—	—	—	0.01
White crappie	—	—	0.25	—	0.08	—	—	—	—	—	—	—	—	0.03
Black crappie	0.10	0.52	1.06	0.07	0.17	0.04	0.27	0.20	0.05	—	—	—	—	0.27
Yellow perch	0.10	0.40	2.75	1.60	8.75	0.96	0.43	0.60	0.90	4.25	—	—	—	1.51
Walleye	—	0.24	0.25	0.53	0.58	1.38	2.03	1.15	1.65	—	—	—	—	1.00
Total CPUE	1.40	3.56	11.37	16.21	37.50	15.11	8.53	15.05	9.00	6.50	—	—	—	12.01

Appendix 7. Continued:

Species	Month													Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar[1]	
Total net lifts	10	25	16	15	12	26	30	20	20	4	—	—	—	178
Number of scales sampled	—	5	34	32	5	193	154	44	28	0	—	—	—	495
Number of fish tagged	0	70	116	198	179	191	175	178	85	9	—	—	—	1,201

[1]No survey.

Appendix 8. Catch per net lift for each species of fish at Station 7 (Wyandotte) from March 1983 through March 1984.

Species	Mar[1]	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb	Mar	Mean CPUE
Longnose gar	—	—	—	1.07	—	—	—	—	—	—	—	—	—	0.15
Bowfin	—	0.03	—	0.04	—	—	—	—	—	—	—	—	—	0.01
Alewife	—	—	—	1.15	0.33	—	—	—	—	—	—	—	—	0.20
Gizzard shad	—	—	—	0.26	0.08	0.05	—	0.70	4.70	1.64	—	—	—	0.48
Smelt	—	0.03	—	—	—	—	—	—	—	—	—	—	—	0.01
Northern pike	—	0.16	0.07	0.22	—	0.05	—	—	—	0.07	—	—	0.33	0.08
Muskellunge	—	—	—	0.04	—	—	—	0.05	0.20	0.29	—	—	0.33	0.05
Black bullhead	—	0.03	—	—	0.04	0.05	—	—	—	—	—	—	—	0.02
Yellow bullhead	—	—	0.07	—	—	0.15	—	—	0.10	0.07	—	—	—	0.03
Brown bullhead	—	0.54	4.33	1.19	0.25	0.85	0.35	0.15	0.50	—	—	—	—	0.80
Channel catfish	—	—	—	0.22	1.04	1.45	0.45	0.40	—	—	—	—	—	0.40
Stonecat	—	—	—	0.15	0.25	0.05	0.20	2.55	0.20	—	—	—	—	0.35
American eel	—	—	—	—	0.04	—	—	—	—	—	—	—	—	0.01
Trout-perch	—	—	0.20	—	—	—	—	—	—	—	—	0.50	—	0.03
White perch	—	—	0.33	52.33	9.13	5.90	1.45	2.50	—	0.14	—	—	—	9.46
White bass	—	—	0.07	5.00	1.50	0.80	0.45	0.50	—	—	—	—	—	1.07
Freshwater drum	—	—	0.40	1.30	0.25	0.20	0.25	0.35	0.30	0.07	—	—	—	0.35
Goldfish	—	0.05	1.00	1.07	0.21	0.05	0.10	—	0.20	0.43	—	—	1.33	0.34
Carp	—	0.30	3.07	6.41	4.00	2.65	1.35	0.70	1.80	0.57	—	—	0.33	2.30
Carp X goldfish	—	0.03	—	—	—	—	0.10	—	—	—	—	—	—	0.02
Quillback	—	0.03	0.07	0.56	1.00	0.80	0.10	0.85	—	—	—	—	—	0.39
White sucker	—	0.32	1.27	0.56	0.50	0.20	0.60	1.20	3.20	1.14	—	0.50	—	0.76
Bigmouth buffalo	—	—	—	0.04	—	—	0.05	—	—	—	—	—	—	0.01
Redhorse, unidentified	—	0.05	0.73	1.04	0.21	1.10	0.35	2.60	2.00	0.14	—	0.25	1.00	0.79
Silver redhorse	—	—	—	0.04	—	—	—	—	—	—	—	—	—	0.01
Silver chub	—	—	—	—	—	—	—	—	—	—	—	—	0.33	0.01
Spottail shiner	—	—	5.07	0.19	—	—	—	—	—	—	—	—	—	0.42
Rock bass	—	—	5.53	21.45	18.00	4.30	6.65	6.70	2.20	4.86	—	1.00	0.33	7.95
Pumpkinseed	—	—	0.47	0.26	0.17	0.20	0.45	0.30	—	—	—	—	—	0.19
Bluegill	—	—	0.13	0.22	0.08	—	—	0.10	—	—	—	—	—	0.06

Appendix 8. Continued:

Species	Month													Mean CPUE
	Mar[1]	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb	Mar	
Smallmouth bass	—	—	—	0.41	2.54	0.70	0.30	0.15	—	—	—	—	—	0.49
Largemouth bass	—	—	—	—	—	—	0.05	0.15	—	—	—	—	—	0.02
White crappie	—	—	—	—	—	—	0.05	0.10	—	—	—	—	—	0.02
Black crappie	—	0.05	0.73	0.63	0.04	0.20	0.60	0.65	0.20	0.21	—	—	0.33	0.34
Log perch	—	—	0.13	—	—	—	—	—	—	—	—	—	—	0.01
Yellow perch	—	8.35	1.33	21.37	13.42	4.05	1.20	1.10	1.10	5.71	—	3.00	1.00	7.53
Walleye	—	—	2.13	3.48	3.00	4.00	2.15	6.85	2.20	0.14	—	—	0.33	2.49
Total CPUE	—	9.97	27.13	120.66	56.08	27.80	17.25	28.65	18.90	15.50	—	5.25	5.67	37.65
Total net lifts	—	37	15	27	24	20	20	20	10	14	—	4	3	194
Number of scales sampled	—	30	48	235	166	110	63	63	21	0	—	17	4	757
Number of fish tagged	0	177	256	460	389	224	167	299	88	49	—	8	15	2,132

[1]No survey.

Appendix 9. Catch per net lift for each species of fish at Station 8 (Grosse Ile) from March 1983 through March 1984.

Species	Month													Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar[1]	
Longnose gar	1.26	—	—	0.06	0.13	0.12	0.05	—	—	—	—	—	—	0.23
Bowfin	—	—	—	0.06	—	—	—	0.20	—	—	—	—	—	0.02
Alewife	—	—	—	0.25	—	0.59	—	—	—	—	—	—	—	0.11
Gizzard shad	—	—	—	—	0.20	1.41	0.60	0.40	—	—	—	—	—	0.32
Northern pike	0.32	—	1.06	0.25	0.13	0.06	0.15	0.50	0.07	—	—	—	—	0.31
Muskellunge	—	—	—	—	—	—	—	—	0.07	—	—	—	—	0.01
Black bullhead	—	—	0.06	—	0.27	—	—	0.20	—	—	—	—	—	0.05
Yellow bullhead	—	—	0.06	—	—	—	—	—	—	—	—	—	—	0.01
Brown bullhead	—	0.33	0.44	0.06	0.33	0.18	1.60	0.40	0.13	—	—	—	—	0.42
Channel catfish	—	—	—	0.13	0.53	2.29	0.50	0.30	0.07	—	—	—	—	0.47
Stonecat	—	—	—	1.19	0.13	0.18	0.15	0.60	0.07	—	—	—	—	0.26
American eel	—	—	0.06	—	—	—	—	—	—	—	—	—	—	0.01
White perch	—	—	0.72	61.06	0.87	3.18	1.00	0.60	0.07	—	—	—	—	8.15
White bass	—	—	0.11	1.81	0.33	0.06	0.10	—	—	—	—	—	—	0.29
Freshwater drum	—	—	0.39	0.44	1.93	0.47	0.20	0.20	0.13	—	—	—	—	0.44
Goldfish	0.21	—	—	—	—	—	0.05	—	—	—	—	—	—	0.04
Carp	0.47	4.00	3.67	0.88	2.20	1.65	2.55	0.40	0.20	—	—	—	—	1.65
Quillback	—	—	0.06	0.13	0.07	1.00	0.65	—	—	—	—	—	—	0.26
White sucker	—	—	0.50	0.25	0.27	0.59	0.30	0.10	0.47	—	—	—	—	0.31
Redhorse, unidentified	0.16	—	0.06	0.50	0.33	0.47	0.25	—	—	—	—	—	—	0.24
Spottail shiner	0.05	—	—	—	—	—	—	—	0.13	—	—	—	—	0.01
Rock bass	0.32	3.33	8.67	8.69	2.60	2.29	3.20	3.80	1.20	—	—	—	—	3.83
Pumpkinseed	0.05	—	0.44	0.13	0.13	0.41	0.60	0.30	—	—	—	—	—	0.26
Bluegill	—	—	—	—	—	—	0.15	—	—	—	—	—	—	0.02
Smallmouth bass	—	—	0.11	0.50	0.07	0.35	0.50	—	0.13	—	—	—	—	0.22
White crappie	—	—	—	—	0.07	—	—	0.10	—	—	—	—	—	0.02
Black crappie	0.11	0.33	0.11	0.06	0.27	0.47	0.30	1.60	—	—	—	—	—	0.30
Yellow perch	0.95	5.33	0.61	19.19	3.33	4.18	2.45	2.50	1.53	—	—	—	—	4.29
Walleye	—	—	0.33	2.19	0.73	3.00	2.50	0.70	0.67	—	—	—	—	1.28

Appendix 9. Continued:

Species	Month													Mean CPUE
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar[1]	
Total CPUE	3.90	13.32	17.45	97.81	14.92	22.95	17.85	12.90	4.93	—	—	—	—	23.81
Total net lifts	19	3	18	16	15	17	20	10	15	—	—	—	—	133
Number of scales sampled	12	0	16	260	51	112	60	24	32	—	—	—	—	567
Number of fish tagged	6	40	209	176	111	163	155	75	41	—	—	—	—	976

[1]No survey.

Appendix 10. Catch per net lift for each species of fish at Station 1 (St. Clair) from April 1984 through March 1985.

Species	Month												Mean CPUE
	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan	Feb	Mar	
Sea lamprey	—	—	0.05	—	—	—	—	—	—	—	—	—	0.01
Alewife	—	—	0.05	—	—	—	—	—	—	—	—	—	0.01
Smelt	—	0.15	2.15	—	—	—	—	—	—	0.25	—	—	0.29
Northern pike	—	—	—	—	0.05	0.07	0.03	—	—	—	—	—	0.02
Muskellunge	—	—	—	—	0.05	—	—	—	—	—	—	—	0.01
Channel catfish	—	—	—	—	0.05	0.13	—	—	—	—	—	—	0.02
Stonecat	—	—	0.05	0.07	—	0.07	0.07	0.10	—	—	—	—	0.05
Burbot	—	0.05	—	—	—	—	0.03	—	—	—	0.25	—	0.02
Trout-perch	—	0.10	0.25	—	—	—	—	—	—	—	—	—	0.04
White perch	—	—	—	0.20	0.10	—	—	—	—	—	—	—	0.03
White bass	—	—	—	—	0.10	0.07	0.03	0.03	—	—	—	—	0.03
Freshwater drum	—	—	—	0.53	0.30	0.40	0.03	0.03	—	—	—	—	0.14
Chinook salmon	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
Rainbow trout	—	0.05	—	—	0.05	—	—	—	—	—	—	—	0.01
Brown trout	—	—	—	—	—	0.07	—	—	—	—	—	—	0.01
Carp	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
White sucker	—	0.35	0.20	0.60	1.40	1.33	2.10	1.90	—	2.00	0.75	—	1.24
Hog sucker	—	0.15	0.05	—	0.10	0.13	0.33	0.13	—	0.25	—	—	0.14
Spotted sucker	—	—	—	—	—	—	—	0.03	—	—	—	—	0.01
Redhorse, unidentified	—	0.25	0.20	0.07	—	—	—	—	—	—	—	—	0.06
Silver redhorse	—	—	—	—	0.20	—	0.10	0.03	—	—	—	—	0.05
Golden redhorse	—	—	—	—	—	0.40	0.07	0.03	—	—	—	—	0.06
Shorthead redhorse	—	—	—	0.27	0.80	1.67	0.33	0.23	—	—	—	—	0.39
Rock bass	—	0.90	1.65	4.13	4.10	1.73	3.20	3.13	—	—	0.75	—	2.59
Pumpkinseed	—	—	—	—	0.15	0.13	0.03	—	—	—	—	—	0.04
Bluegill	—	—	0.10	0.07	0.10	0.20	—	—	—	—	—	—	0.05
Smallmouth bass	—	0.10	—	0.27	1.25	1.60	0.70	0.47	—	—	0.25	—	0.57
Black crappie	—	—	—	—	—	—	0.03	—	—	—	—	—	0.01
Yellow perch	—	0.65	2.00	4.73	1.65	1.67	3.50	1.00	—	—	1.75	—	2.02

Appendix 10. Continued:

Species	Month												Mean CPUE
	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan	Feb	Mar	
Walleye	—	0.10	0.75	6.07	2.65	4.80	3.20	0.73	—	—	—	—	2.19
Total CPUE	—	2.95	7.50	17.00	13.10	14.47	13.80	7.87	—	2.50	3.75	—	10.13
Total net lifts	—	20	20	15	20	15	30	30	—	4	4	2	160
Number of scales sampled	—	33	67	73	88	110	136	23	0	0	11	0	541
Number of fish tagged	—	41	59	159	182	185	328	198	0	9	12	0	1,173

[1]No survey.

Appendix 11. Catch per net lift for each species of fish at Station 2 (Marine City) from April 1984 through March 1985.

Species	Month												Mean CPUE
	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Sea lamprey	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
Bowfin	—	—	—	0.05	—	—	—	—	—	—	—	—	0.01
Smelt	—	0.20	—	—	—	—	—	—	—	—	0.25	—	0.04
Northern pike	—	0.05	—	0.05	—	0.20	0.30	—	—	—	—	—	0.09
Brown bullhead	—	—	—	—	—	0.05	—	—	—	—	—	—	0.01
Channel catfish	—	—	0.05	0.05	0.10	—	—	—	—	—	—	—	0.22
Stonecat	—	—	0.05	0.05	0.10	—	—	—	—	—	—	—	0.03
White perch	—	—	—	—	0.10	—	—	—	—	—	—	—	0.02
Freshwater drum	—	—	—	0.15	0.70	0.30	0.55	—	—	—	—	—	0.26
Brown trout	—	—	0.05	0.05	—	—	—	—	—	—	—	—	0.02
Carp	—	0.05	—	0.40	0.05	0.05	0.40	—	—	—	—	—	0.15
White sucker	—	0.60	0.75	0.30	0.80	0.40	1.10	—	—	4.25	0.50	—	0.75
Hog sucker	—	—	—	—	—	0.15	0.05	—	—	—	—	—	0.03
Redhorse, unidentified	—	0.15	—	—	—	0.20	—	—	—	—	—	—	0.02
Silver redhorse	—	—	—	0.05	0.40	—	0.75	—	—	—	—	—	0.21
Golden redhorse	—	—	—	—	—	—	0.05	—	—	—	—	—	0.01
Shorthead redhorse	—	—	—	—	0.50	0.15	0.35	—	—	—	—	—	0.16
Rock bass	—	0.65	4.40	10.40	2.90	2.40	4.20	—	—	—	—	—	3.84
Pumpkinseed	—	—	—	0.30	0.40	—	0.05	—	—	—	—	—	0.12
Bluegill	—	—	—	—	—	0.05	—	—	—	—	—	—	0.01
Smallmouth bass	—	—	—	2.45	0.45	0.20	—	—	—	—	—	—	0.48
Black crappie	—	—	—	—	—	0.10	—	—	—	—	—	—	0.02
Yellow perch	—	2.75	3.90	5.20	2.35	2.85	0.60	—	—	0.50	1.75	—	2.78
Walleye	—	0.35	1.35	1.90	0.80	0.75	1.65	—	—	—	—	0.50	1.05

Appendix 11. Continued:

Species	Month												
	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Mean CPUE
Total CPUE	—	4.85	10.50	21.35	10.65	8.05	10.15	—	—	4.75	2.50	0.50	10.34
Total net lifts	—	20	20	20	20	20	20	0	0	4	4	2	130
Number of scales sampled	0	58	86	161	25	77	61	0	0	1	1	0	470
Number of fish tagged	0	65	129	254	125	90	145	0	0	18	2	1	829

[1]No survey

Appendix 12. Catch per net lift for each species of fish at Station 3 (Algonac) from April 1984 through March 1985.

	Month												
Species	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb[1]	Mar	Mean CPUE
Sea lamprey	—	0.25	—	—	—	—	0.05	—	—	—	—	—	0.04
Lake sturgeon	—	—	—	—	—	—	—	0.07	—	—	—	—	0.01
Bowfin	—	—	0.16	0.30	0.05	0.05	—	—	—	—	—	—	0.08
Alewife	—	3.50	5.68	—	—	—	—	—	—	—	—	—	1.39
Gizzard shad	—	0.05	—	0.20	0.05	—	—	0.20	—	—	—	—	0.06
Smelt	—	0.80	—	—	—	—	—	—	—	—	—	—	0.11
Northern pike	—	0.35	0.44	0.35	0.30	0.40	0.20	0.13	0.25	—	—	—	0.30
Black bullhead	—	—	—	0.15	—	—	—	—	—	—	—	—	0.02
Brown bullhead	—	0.25	0.28	0.40	—	0.05	0.25	0.93	—	—	—	0.13	0.27
Channel catfish	—	0.35	0.24	0.05	1.25	0.65	0.95	1.93	—	—	—	—	0.66
Stonecat	—	0.05	0.24	—	0.20	—	—	—	—	—	—	—	0.07
Burbot	—	—	—	—	—	—	—	0.20	—	—	—	0.13	0.03
Trout-perch	—	0.20	—	—	—	—	—	—	—	—	—	—	0.03
White perch	—	0.05	4.32	0.45	0.15	0.15	—	—	—	—	—	—	0.82
White bass	—	—	0.44	0.10	0.55	0.05	0.10	0.40	—	—	—	—	0.22
Freshwater drum	—	0.15	0.20	4.20	0.25	0.85	0.55	3.93	—	—	—	0.50	1.24
Rainbow trout	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
Brown trout	—	—	0.04	—	—	—	—	—	—	—	—	—	0.01
Lake trout	—	0.05	—	—	—	—	—	—	—	—	—	—	0.01
Goldfish	—	—	0.04	—	—	—	—	—	—	—	—	—	0.01
Carp	—	0.25	0.80	0.90	0.15	0.40	0.10	0.40	0.50	—	—	—	0.42
Quillback	—	—	—	0.25	0.30	0.30	—	0.07	—	—	—	—	0.12
White sucker	—	1.00	0.20	0.25	0.20	0.30	0.65	2.40	0.50	—	—	0.88	0.64
Hog sucker	—	0.05	—	—	0.05	—	—	—	—	—	—	—	0.01
Spotted sucker	—	—	—	0.05	—	—	—	0.07	—	—	—	—	0.01
Redhorse, unidentified	—	0.15	0.04	—	—	—	—	—	—	—	—	—	0.03
Silver redhorse	—	—	—	—	0.35	0.10	—	0.20	—	—	—	—	0.08
Golden redhorse	—	—	—	—	—	—	—	0.07	—	—	—	—	0.01
Shorthead redhorse	—	—	0.08	0.55	0.55	0.45	0.30	1.33	—	—	—	0.25	0.40

Appendix 12. Continued:

Species	Month												
	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb[1]	Mar	Mean CPUE
Silver chub	—	0.05	—	—	—	—	—	0.07	—	—	—	—	0.01
Rock bass	—	4.00	21.84	11.65	4.15	3.85	11.40	4.87	1.50	—	—	—	8.72
Green sunfish	—	0.25	0.12	—	—	—	—	—	—	—	—	—	0.02
Pumpkinseed	—	—	7.32	4.65	6.35	1.95	1.40	—	—	—	—	—	3.12
Bluegill	—	—	0.28	0.15	0.25	—	—	0.07	—	—	—	—	0.11
Smallmouth bass	—	0.05	0.12	3.40	0.35	0.20	0.20	—	—	—	—	—	0.57
Largemouth bass	—	—	0.04	0.05	0.05	0.10	—	—	—	—	—	—	0.03
White crappie	—	—	—	—	0.05	—	—	—	—	—	—	—	0.01
Black crappie	—	0.25	1.04	0.55	0.45	1.25	1.20	0.07	—	—	—	—	0.66
Yellow perch	—	7.25	13.16	4.25	8.85	3.45	10.40	1.53	4.25	—	—	1.00	6.98
Walleye	—	1.40	7.20	1.80	1.15	2.55	1.75	2.07	—	—	—	0.13	2.53
Total CPUE	—	20.80	64.32	34.70	26.05	17.10	29.50	21.00	7.00	—	—	3.00	29.87
Total net lifts	—	20	25	20	20	20	20	15	4	—	—	8	152
Number of scales sampled	—	125	294	132	47	121	61	38	0	0	0	10	828
Number of fish tagged	—	1,241	735	445	203	186	216	240	17	0	0	17	2,300

[1]No survey.

Appendix 13. Catch per net lift for each species of fish at Station 4 (St. Clair Cutoff) from April 1984 through March 1985.

Species	Month												Mean CPUE
	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar	
Lake sturgeon	—	—	—	—	—	—	—	0.07	—	—	—	—	0.01
Longnose gar	—	0.07	0.06	0.13	—	—	0.05	—	—	—	—	—	0.05
Bowfin	—	—	0.24	0.04	0.09	—	—	—	—	—	—	—	0.05
Alewife	—	—	2.35	0.04	—	—	—	—	—	—	—	—	0.31
Gizzard shad	—	—	—	0.04	0.09	—	0.05	—	—	—	—	—	0.02
Northern pike	—	—	0.12	0.17	—	0.07	0.25	0.07	—	—	—	0.08	0.11
Brown bullhead	—	—	—	0.04	—	—	—	—	—	—	—	—	0.01
Channel catfish	—	—	0.88	2.25	2.18	1.33	1.45	0.93	—	—	—	0.25	1.21
Burbot	—	—	—	—	—	—	—	0.07	—	—	—	—	0.01
Trout-perch	—	0.13	—	—	—	—	—	—	—	—	—	—	0.02
White perch	—	—	4.24	1.38	1.00	1.40	0.75	—	—	—	—	—	1.16
White bass	—	—	0.12	0.42	0.27	0.47	0.05	—	—	—	—	—	0.18
Freshwater drum	—	0.13	0.12	0.75	0.65	1.60	0.20	0.13	—	—	—	—	0.45
Chinook salmon	—	0.07	—	—	—	—	—	—	—	—	—	—	0.01
Carp	—	—	0.18	0.21	1.09	—	0.05	0.13	—	—	—	0.08	0.18
Quillback	—	—	0.47	1.47	0.91	—	0.05	0.07	—	—	—	0.08	0.42
White sucker	—	—	0.65	0.08	—	0.47	0.10	0.27	0.50	—	—	0.08	0.21
Redhorse, unidentified	—	0.07	—	—	—	—	—	—	—	—	—	—	0.01
Silver redhorse	—	—	0.06	0.67	0.09	0.33	0.05	0.13	—	—	—	—	0.20
Golden redhorse	—	—	—	—	—	—	0.05	—	—	—	—	—	0.01
Shorthead redhorse	—	—	1.77	0.79	0.73	2.67	0.85	1.27	0.50	—	—:	0.50	1.07
River redhorse	—	—	0.06	—	—	—	—	—	—	—	—	—	0.01
Silver chub	—	—	—	—	—	—	—	—	—	—	—	0.33	0.03
Rock bass	—	2.87	7.00	6.88	4.36	5.40	12.25	1.40	—	—	—	0.08	5.52
Pumpkinseed	—	0.20	—	0.13	0.18	—	—	—	—	—	—	—	0.06
Bluegill	—	—	—	—	—	—	—	0.07	—	—	—	—	0.01
Smallmouth bass	—	0.20	1.77	2.88	2.18	1.60	0.60	0.20	0.50	—	—	—	1.27
Largemouth bass	—	—	—	—	—	0.07	—	0.07	—	—	—	—	0.02
White crappie	—	—	—	0.08	—	—	—	—	—	—	—	—	0.02

Appendix 13. Continued:

Species	Month												
	Apr[1]	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar	Mean CPUE
Black crappie	—	0.07	—	—	—	—	0.05	—	—	—	—	—	0.02
Yellow perch	—	11.80	8.35	0.92	0.36	4.80	2.65	3.13	2.00	—	—	0.50	4.02
Walleye	—	1.33	9.35	1.38	1.18	1.27	1.90	1.87	1.50	—	—	1.17	2.50
Total CPUE	—	16.94	37.79	20.70	15.35	21.48	21.40	9.87	5.00	—	—	3.17	19.18
Total net lifts	—	15	17	24	11	15	20	15	2	—	—	12	131
Number of scales sampled	—	198	86	136	48	39	75	34	7	—	—	6	629
Number of fish tagged	—	156	443	280	118	156	310	120	8	—	—	20	1,611

[1]No survey.

Appendix 14. Catch per net lift for each species of fish at Station 5 (Dumping Grounds) from April 1984 through March 1985.

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar[1]	Mean CPUE
Sea lamprey	—	0.04	—	—	—	—	—	—	—	—	—	—	*
Longnose gar	0.05	—	—	—	—	—	—	—	—	—	—	—	0.01
Alewife	—	—	0.08	—	—	—	—	—	—	—	—	—	0.01
Gizzard shad	—	—	—	—	—	0.07	—	—	—	—	—	—	*
Smelt	0.03	—	—	—	—	—	—	—	—	—	—	—	*
Northern pike	0.03	—	—	—	—	—	0.04	—	0.50	—	—	—	0.02
Muskellunge	—	—	—	—	0.10	—	—	—	—	—	—	—	0.01
Black bullhead	—	0.04	—	—	—	—	—	—	—	—	—	—	*
Brown bullhead	—	—	—	—	0.05	0.07	—	—	—	—	—	—	0.02
Channel catfish	0.40	0.33	0.20	0.05	0.50	1.27	0.49	0.86	—	—	—	—	0.56
Stonecat	1.13	0.63	2.56	1.25	0.20	0.27	0.84	2.21	—	—	—	—	1.21
Burbot	0.13	0.08	0.08	—	—	—	0.08	0.07	—	—	—	—	0.06
White perch	0.30	0.17	1.12	0.35	0.05	0.27	0.20	0.04	—	—	—	—	0.31
White bass	0.33	0.08	0.04	—	—	0.07	0.04	0.07	—	—	—	—	0.10
Freshwater drum	0.98	1.33	0.20	0.80	0.30	0.47	0.44	0.38	—	—	—	—	0.64
Rainbow trout	0.03	—	—	—	0.05	—	—	—	—	—	—	—	0.01
Brown trout	—	0.04	—	—	—	—	—	—	—	—	—	—	*
Goldfish	—	—	0.04	—	—	—	—	—	—	—	—	—	*
Carp	0.30	0.13	.08	—	0.15	0.07	—	0.04	—	—	—	—	0.11
Quillback	0.18	—	0.04	0.20	—	—	0.04	—	—	—	—	—	0.06
White sucker	0.80	0.13	0.08	0.05	0.10	0.27	0.28	0.17	—	—	—	—	0.28
Hog sucker	—	—	—	—	0.05	—	—	—	—	—	—	—	*
Redhorse, unidentified	2.23	1.33	0.12	—	—	—	—	—	—	—	—	—	0.62
Silver redhorse	—	—	—	—	0.10	0.13	—	—	—	—	—	—	0.02
Golden redhorse	—	—	—	—	0.05	—	0.04	—	—	—	—	—	0.01
Shorthead redhorse	—	—	0.28	0.45	0.30	0.80	0.52	0.52	—	—	—	—	0.31
Silver chub	0.68	—	—	—	—	—	0.04	0.14	—	—	—	—	0.16
Rock bass	1.70	14.33	5.12	3.70	3.90	2.00	4.64	7.04	1.00	—	—	—	5.24
Pumpkinseed	0.03	0.08	0.16	—	0.10	—	0.04	0.04	—	—	—	—	0.06

Appendix 14. Continued:

Species	Month												Mean CPUE
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar[1]	
Bluegill	—	—	—	—	0.15	0.07	0.08	—	—	—	—	—	0.03
Smallmouth bass	0.35	4.67	1.72	3.70	2.80	3.93	10.84	2.48	—	—	—	—	3.50
Largemouth bass	—	—	—	—	—	—	—	0.04	—	—	—	—	*
White crappie	—	—	—	—	0.05	—	—	—	—	—	—	—	*
Black crappie	0.03	—	—	—	0.05	0.87	0.72	0.07	—	—	—	—	0.18
Yellow perch	9.33	0.75	2.88	0.20	1.15	0.73	0.88	0.24	1.50	—	—	—	2.66
Walleye	7.80	13.71	4.20	1.90	0.95	1.87	0.72	0.83	3.50	—	—	—	4.20
Total CPUE	26.85	37.87	17.44	12.65	11.15	13.23	21.04	15.21	6.50	—	—	—	20.36
Total net lifts	40	24	25	20	20	15	25	29	2	—	—	—	200
Number of scales sampled	330	205	168	118	105	66	283	31	6	—	—	—	1,312
Number of fish tagged	823	616	215	168	114	158	434	187	10	—	—	—	2,725

[1]No survey.

* = ≤0.005

Appendix 15. Catch per net lift for each species of fish at Station 6 (Belle Isle) from April 1984 through March 1985.

	Month												
Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar	Mean CPUE
Longnose gar	—	0.07	—	—	—	0.05	—	—	—	—	—	—	0.01
Bowfin	—	—	—	0.05	—	—	—	—	—	—	—	—	0.01
Smelt	0.06	—	—	—	—	—	—	—	—	—	—	0.25	0.02
Northern pike	0.23	0.13	0.10	0.50	—	—	0.05	—	—	—	—	—	0.14
Muskellunge	—	—	—	0.05	—	—	—	—	—	—	—	—	0.01
Brown bullhead	0.03	—	0.15	0.15	0.10	0.05	0.45	—	—	—	—	—	0.12
Channel catfish	—	—	—	—	0.45	0.40	0.65	—	—	—	—	—	0.18
Stonecat	1.29	—	0.45	0.30	0.20	0.45	0.80	—	—	—	—	—	0.54
White perch	0.17	—	3.05	0.05	0.15	—	—	—	—	—	—	—	0.43
White bass	0.09	0.07	0.05	—	0.05	0.15	—	0.10	—	—	—	—	0.06
Freshwater drum	0.03	0.07	0.30	0.55	0.65	0.20	0.15	0.30	—	—	—	—	0.26
Chinook salmon	—	—	—	—	—	0.10	—	—	—	—	—	—	0.01
Coho salmon	—	—	—	—	—	0.35	0.35	—	—	—	—	—	0.09
Rainbow trout	0.06	0.07	—	—	—	0.10	—	—	—	—	—	—	0.03
Goldfish	—	0.07	—	—	—	0.05	—	—	—	—	—	—	0.01
Carp	0.20	0.07	0.50	0.90	0.25	—	0.30	0.10	—	—	—	—	0.29
Quillback	0.11	0.07	0.10	—	—	—	—	—	—	—	—	—	0.04
White sucker	0.11	0.33	—	0.25	0.20	0.15	0.20	0.80	—	—	—	0.25	0.21
Redhorse, unidentified	0.11	—	—	—	0.10	—	—	—	—	—	—	—	0.04
Silver redhorse	—	—	—	0.20	0.10	—	—	—	—	—	—	—	0.04
Shorthead redhorse	—	—	0.50	0.45	0.45	0.05	0.10	0.20	—	—	—	—	0.20
River redhorse	—	—	—	—	—	0.05	—	—	—	—	—	—	0.01
Rock bass	1.74	9.20	22.85	5.80	3.35	3.40	4.20	0.60	—	—	—	2.25	6.13
Green sunfish	—	—	0.05	—	—	—	—	—	—	—	—	—	0.01
Pumpkinseed	0.03	0.87	0.70	1.05	1.40	0.10	0.20	—	—	—	—	—	0.51
Bluegill	—	0.33	0.15	0.95	1.05	5.00	0.35	—	—	—	—	—	0.95
Smallmouth bass	—	0.07	2.00	1.00	0.20	0.70	0.75	—	—	—	—	—	0.57
Largemouth bass	—	—	0.05	0.05	—	0.40	0.20	—	—	—	—	—	0.09
White crappie	—	—	0.10	0.15	—	—	—	—	—	—	—	—	0.03

Appendix 15. Continued:

Species	Month												Mean CPUE
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec[1]	Jan[1]	Feb[1]	Mar	
Black crappie	0.37	—	0.50	0.35	0.15	0.30	0.45	—	—	—	—	—	0.29
Yellow perch	6.71	3.53	730	3.55	5.95	7.05	4.30	1.70	—	—	—	1.25	5.32
Walleye	0.74	1.07	0.75	1.15	0.50	0.75	0.45	1.00	—	—	—	—	0.76
Total CPUE	12.08	16.00	39.65	17.50	15.35	19.85	13.95	4.80	—	—	—	4.00	17.37
Total net lifts	35	15	20	20	20	20	20	10	—	—	—	4	164
Number of scales sampled	65	111	172	141	44	38	47	9	—	—	—	5	632
Number of fish tagged	161	103	438	160	104	107	123	34	—	—	—	3	1,233

[1]No survey.

Appendix 16. Catch per net lift for each species of fish at Station 7 (Wyandotte) from April 1984 through March 1985.

Species	Month												Mean CPUE
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov[1]	Dec	Jan[1]	Feb[1]	Mar	
Longnose gar	—	—	0.55	0.47	—	—	—	—	—	—	—	—	0.14
Bowfin	—	—	0.20	0.13	0.05	0.05	—	—	—	—	—	—	0.06
Alewife	—	—	0.05	—	—	—	—	—	—	—	—	—	0.01
Gizzard shad	0.15	—	—	0.20	0.20	0.20	—	—	—	—	—	—	0.11
Northern pike	0.05	0.10	0.25	0.20	0.10	—	—	—	—	—	—	—	0.09
Muskellunge	0.15	—	—	—	—	—	—	—	—	—	—	—	0.02
Brown bullhead	1.20	0.10	1.20	1.00	0.90	0.85	0.33	—	0.25	—	—	—	0.82
Channel catfish	—	—	0.05	1.87	1.15	1.90	—	—	—	—	—	—	0.70
Stonecat	—	—	0.05	0.33	0.30	0.10	0.27	—	—	—	—	—	0.14
Trout-perch	—	—	—	—	—	—	—	—	0.25	—	—	0.25	0.02
White perch	—	—	35.90	7.47	6.05	1.95	0.33	—	—	—	—	—	7.77
White bass	0.05	—	0.80	0.20	1.45	1.30	0.07	—	—	—	—	—	0.59
Freshwater drum	—	—	0.10	0.33	0.25	0.15	0.13	—	0.50	—	—	—	0.15
Rainbow trout	0.05	—	—	—	—	0.05	—	—	—	—	—	—	0.02
Goldfish	—	—	0.25	0.33	0.10	0.20	—	—	—	—	—	—	0.12
Carp	1.25	0.20	0.65	9.73	1.25	2.90	0.73	—	—	—	—	—	2.19
Quillback	0.45	—	0.10	0.40	0.60	0.90	0.27	—	—	—	—	—	0.40
White sucker	0.35	0.10	0.05	0.53	0.20	0.35	1.27	—	0.25	—	—	0.25	0.38
Redhorse, unidentified	0.25	0.60	—	—	—	—	—	—	—	—	—	—	0.09
Silver redhorse	—	—	—	0.20	0.90	1.95	0.27	—	—	—	—	—	0.50
Golden redhorse	—	—	—	—	—	0.25	—	—	—	—	—	—	0.04
Shorthead redhorse	—	—	0.10	0.40	0.60	0.30	0.93	—	—	—	—	—	0.31
Silver chub	0.05	—	—	—	—	—	—	—	—	—	—	0.50	0.02
Rock bass	1.10	5.50	24.45	11.20	2.35	2.15	7.13	—	2.00	—	—	—	7.34
Green sunfish	—	—	0.05	—	—	—	—	—	—	—	—	—	0.01
Pumpkinseed	0.05	0.10	0.50	0.87	—	0.30	0.13	—	—	—	—	—	0.26
Bluegill	—	—	—	0.13	0.05	0.05	—	—	—	—	—	—	0.03
Smallmouth bass	—	—	0.30	0.60	1.10	0.45	1.20	—	—	—	—	—	0.50
Largemouth bass	—	—	—	—	—	—	0.07	—	—	—	—	—	0.01

Appendix 16. Continued:

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov[1]	Dec	Jan[1]	Feb[1]	Mar	Mean CPUE
Black crappie	0.65	—	0.25	0.13	0.40	1.05	2.13	—	0.50	—	—	—	0.65
Yellow perch	3.10	9.20	10.40	5.33	1.60	2.70	8.47	—	8.75	—	—	1.25	5.43
Walleye	3.90	8.10	2.10	3.00	4.70	7.70	3.13	—	0.50	—	—	—	4.24
Total CPUE	12.80	24.00	78.35	45.07	24.30	27.80	26.87	—	13.00	—	—	2.25	33.16
Total net lifts	20	10	20	15	20	20	15	—	4	—	—	4	128
Number of scales sampled	97	95	159	85	159	153	103	—	2	—	—	1	854
Number of fish tagged	194	170	390	256	300	370	201	0	16	—	—	3	1,900

[1]No survey.

Appendix 17. Catch per net lift for each species of fish at Station 8 (Grosse Ile) from April 1984 through March 1985.

Species	Month												Mean CPUE
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar	
Sea lamprey	—	0.07	—	—	—	—	—	—	—	—	—	—	0.01
Longnose gar	—	—	0.80	0.15	0.10	—	—	—	—	—	—	—	0.10
Bowfin	0.05	—	—	0.10	—	0.15	—	—	—	—	—	—	0.04
Alewife	—	—	—	—	0.05	—	—	—	—	—	—	—	0.01
Gizzard shad	0.10	0.07	0.07	—	1.10	0.25	0.05	0.05	—	—	—	—	0.20
Northern pike	1.60	1.13	0.47	0.05	0.70	0.50	0.25	0.50	0.25	—	—	0.13	0.60
Muskellunge	0.05	—	0.07	—	—	—	—	—	—	—	—	—	0.01
Yellow bullhead	0.05	—	—	—	—	—	—	—	—	—	—	—	0.01
Brown bullhead	3.45	0.13	0.47	0.45	3.20	5.50	1.30	2.00	—	—	—	1.00	2.07
Channel catfish	0.05	—	0.27	0.55	2.80	0.90	0.20	—	—	—	—	—	0.58
Stonecat	0.15	0.20	0.33	0.25	0.10	0.25	0.55	0.05	—	—	—	—	0.22
American eel	—	—	—	0.05	0.05	—	—	—	—	—	—	—	0.01
Trout-perch	—	0.07	—	—	—	—	—	—	—	—	—	—	0.01
White perch	—	0.27	14.00	1.40	6.70	1.00	0.30	0.10	—	—	—	—	2.49
White bass	—	0.40	4.87	—	0.15	0.10	0.10	—	—	—	—	—	0.53
Freshwater drum	0.20	—	1.33	1.35	2.55	0.45	0.10	0.25	—	—	—	—	0.73
Coho salmon	—	—	—	—	—	0.05	—	—	—	—	—	—	0.01
Goldfish	0.10	—	—	0.05	0.05	0.05	0.35	0.30	0.25	—	—	—	0.12
Carp	3.50	0.20	2.00	0.90	5.20	3.15	1.10	1.50	1.25	—	—	0.75	2.17
Quillback	0.05	0.20	0.40	0.05	0.15	0.25	0.05	0.10	—	—	—	—	0.14
White sucker	0.65	0.67	0.20	0.05	0.25	0.20	0.10	0.15	0.50	—	—	0.13	0.27
Hog sucker	—	—	0.13	—	—	—	—	—	—	—	—	—	0.01
Spotted sucker	0.05	—	—	—	—	—	—	0.05	—	—	—	—	0.01
Redhorse, unidentified	0.10	0.07	0.87	—	—	—	—	—	—	—	—	—	0.10
Silver redhorse	—	—	—	—	0.50	0.05	0.35	0.20	—	—	—	—	0.14
Golden redhorse	—	—	—	—	—	0.10	—	—	—	—	—	—	0.01
Shorthead redhorse	—	—	—	0.05	0.45	0.15	0.10	0.05	—	—	—	0.13	0.10
Silver chub	0.05	0.07	—	—	—	—	0.10	0.10	0.75	—	—	0.25	0.07
Rock bass	2.70	3.93	10.93	4.10	1.25	2.70	1.85	4.75	0.25	—	—	0.50	3.55

Appendix 17. Continued:

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan[1]	Feb[1]	Mar	Mean CPUE
	Month												
Pumpkinseed	—	0.20	0.27	0.25	0.40	0.45	0.15	0.10	—	—	—	—	0.21
Bluegill	—	—	—	—	0.05	0.05	—	—	—	—	—	—	0.01
Smallmouth bass	—	—	0.67	0.20	1.45	0.95	—	0.05	—	—	—	—	0.39
Largemouth bass	—	—	—	—	—	0.20	0.05	—	—	—	—	—	0.03
White crappie	—	—	—	0.05	—	—	—	—	—	—	—	—	0.01
Black crappie	0.65	0.20	0.33	0.10	0.10	1.15	0.35	0.40	—	—	—	—	0.39
Yellow perch	9.40	23.60	6.27	5.40	3.15	3.85	6.05	9.10	8.00	—	—	1.75	7.58
Walleye	0.30	0.40	6.00	0.65	1.70	1.35	2.95	0.60	—	—	—	—	1.52
Total CPUE	23.25	31.87	50.73	16.20	32.20	23.80	16.40	20.40	11.25	—	—	4.63	24.53
Total net lifts	20	15	15	20	20	20	20	20	4	—	—	8	162
Number of scales sampled	128	174	105	65	118	99	93	55	1	—	—	11	849
Number of fish tagged	344	208	373	131	334	285	196	202	12	—	—	30	2,115

[1]No survey.

Appendix 18. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, June through October 1983.

Month	Age 2	3	4	5	6	7
June						
Mean length (mm)	—	—	179	208	205	221
Number	—	—	2	3	2	1
Percent	—	—	23.33	38.33	25.83	12.50
CPUE	—	—	0.17	0.27	0.18	0.09
July						
Mean length (mm)	—	170	193	210	—	—
Number	—	1	3	3	—	—
Percent	—	14.29	42.86	42.86	—	—
CPUE	—	0.13	0.38	0.38	—	—
August						
Mean length (mm)	148	155	182	210	212	242
Number	4	9	5	2	3	1
Percent	20.43	41.57	20.20	7.20	8.90	1.69
CPUE	0.80	1.64	0.79	0.28	0.35	0.07
September						
Mean length (mm)	127	148	194	193	—	249
Number	2	2	3	3	—	1
Percent	16.67	18.60	23.67	33.82	—	7.25
CPUE	0.58	0.64	0.82	1.17	—	0.25
October						
Mean length (mm)	140	171	197	203	248	—
Number	1	5	4	3	1	—
Percent	4.41	39.71	23.53	22.06	10.29	—
CPUE	0.08	0.68	0.40	0.38	0.18	—

Appendix 19. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 2, June through October 1983.

	Age								
Month	1	2	3	4	5	6	7	8	9
June									
Mean length (mm)	—	—	—	—	—	206	—	231	—
Number	—	—	—	—	—	1	—	1	—
Percent	—	—	—	—	—	80.00	—	20.00	—
CPUE	—	—	—	—	—	0.20	—	0.05	—
July									
Mean length (mm)	—	131	166	194	205	247	250	279	287
Number	—	1	9	8	9	2	1	1	1
Percent	—	3.62	27.56	24.12	27.60	7.89	3.95	3.95	1.32
CPUE		0.15	1.16	1.02	1.17	0.33	0.17	0.17	0.06
August									
Mean length (mm)	—	126	165	186	197	225	—	246	—
Number	—	9	4	5	4	1	—	2	—
Percent	—	48.21	13.73	15.99	13.84	3.94	—	4.30	—
CPUE	—	6.73	1.92	2.23	1.93	0.55	—	0.60	—
September									
Mean length (mm)	103	118	146	—	234	—	—	—	—
Number	1	3	6	—	1	—	—	—	—
Percent	4.11	12.32	76.33	—	7.25	—	—	—	—
CPUE	0.20	0.61	3.76	—	0.36	—	—	—	—
October									
Mean length (mm)	—	120	169	204	209	—	—	—	—
Number	—	4	5	1	2	—	—	—	—
Percent	—	25.50	51.50	6.50	16.50	—	—	—	—
CPUE	—	1.28	2.58	0.33	0.83	—	—	—	—

Appendix 20. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 3, March 1983 through February 1984.

	Age								
Month	2	3	4	5	6	7	8	9	10
March									
Mean length (mm)	98	—	—	—	—	—	—	—	—
Number	1	—	—	—	—	—	—	—	—
Percent	100.00	—	—	—	—	—	—	—	—
CPUE	0.06	—	—	—	—	—	—	—	—
June									
Mean length (mm)	108	142	170	184	197	210	223	229	253
Number	4	10	14	8	15	12	5	4	1
Percent	3.65	11.88	18.59	10.45	18.64	15.74	10.37	5.81	4.87
CPUE	0.63	2.05	3.20	1.80	3.21	2.71	1.79	1.00	0.84
July									
Mean length (mm)	126	149	195	211	224	—	—	—	270
Number	7	17	4	2	3	—	—	—	1
Percent	16.16	48.60	18.79	5.16	9.35	—	—	—	1.94
CPUE	3.13	9.42	3.64	1.00	1.81	—	—	—	0.38
August									
Mean length (mm)	122	157	184	198	207	—	245	—	—
Number	11	11	9	5	3	—	3	—	—
Percent	32.52	28.83	18.20	10.32	5.96	—	4.16	—	—
CPUE	5.59	4.95	3.13	1.77	1.02	—	0.71	—	—
September									
Mean length (mm)	124	148	—	198	229	233	218	282	—
Number	4	2	—	3	1	2	1	1	—
Percent	51.07	18.64	—	17.24	1.97	6.28	4.31	0.49	—
CPUE	3.57	1.30	—	1.21	0.14	0.44	0.30	0.03	—
November									
Mean length (mm)	144	160	191	213	—	—	—	—	—
Number	2	9	4	6	—	—	—	—	—
Percent	5.26	24.84	26.41	43.44	—	—	—	—	—
CPUE	0.40	1.89	2.01	3.31	—	—	—	—	—

Appendix 20. Continued:

Month	Age 2	3	4	5	6	7	8	9	10
February									
Mean length (mm)	91	113	149	185	—	—	—	—	—
Number	1	3	3	1	—	—	—	—	—
Percent	23.08	38.46	30.77	7.69	—	—	—	—	—
CPUE	0.75	1.25	1.00	0.25	—	—	—	—	—

Appendix 21. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 4, June through November 1983.

	Age					
Month	2	3	4	5	6	8
June						
Mean length (mm)	109	152	175	189	186	—
Number	1	15	5	4	1	—
Percent	1.90	42.98	23.94	24.22	6.96	—
CPUE	0.15	3.40	1.89	1.91	0.55	—
July						
Mean length (mm)	—	160	186	195	195	—
Number	—	8	2	4	3	—
Percent	—	60.15	8.42	18.45	12.98	—
CPUE	—	3.36	0.47	1.03	0.73	—
August						
Mean length (mm)	126	151	174	188	—	251
Number	24	14	5	4	—	1
Percent	30.19	31.07	26.48	10.24	—	2.01
CPUE	3.27	3.36	2.87	1.11	—	0.22
September						
Mean length (mm)	130	155	169	184	—	—
Number	2	11	1	1	—	—
Percent	19.11	69.92	4.18	6.79	—	—
CPUE	1.78	6.53	0.39	0.63	—	—
October						
Mean length (mm)	—	171	187	183	205	249
Number	—	2	1	1	1	2
Percent	—	35.62	13.81	13.81	17.29	19.47
CPUE	—	8.17	3.17	3.17	3.96	4.46
November						
Mean length (mm)	—	—	201	—	—	—
Number	—	—	1	—	—	—
Percent	—	—	100.00	—	—	—
CPUE	—	—	0.60	—	—	—

Appendix 22. *Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 5, June through November 1983.*

	Age							
Month	2	3	4	5	6	7	8	9
June								
Mean length (mm)	—	149	152	174	169	205	188	223
Number	—	3	6	2	1	1	1	3
Percent	—	17.78	30.83	18.40	2.78	3.47	15.63	11.11
CPUE	—	0.53	0.93	0.55	0.08	0.10	0.47	0.33
July								
Mean length (mm)	145	145	176	194	212	206	—	—
Number	1	5	5	3	2	1	—	—
Percent	4.21	25.72	36.51	19.74	9.21	4.61	—	—
CPUE	0.16	0.98	1.39	0.75	0.35	0.18	—	—
August								
Mean length (mm)	107	158	184	205	—	—	—	—
Number	2	6	2	1	—	—	—	—
Percent	15.38	63.08	12.31	9.23	—	—	—	—
CPUE	0.77	3.15	0.62	0.46	—	—	—	—
September								
Mean length (mm)	126	155	177	202	—	—	—	—
Number	7	4	2	2	—	—	—	—
Percent	38.38	28.28	16.67	16.67	—	—	—	—
CPUE	0.84	0.62	0.37	0.37	—	—	—	—
October								
Mean length (mm)	132	155	170	192	203	209	212	236
Number	4	4	4	15	18	7	3	2
Percent	9.57	14.74	10.95	25.46	23.25	8.74	3.30	3.99
CPUE	1.33	2.04	1.52	3.53	3.22	1.21	0.46	0.55
November								
Mean length (mm)	—	146	—	185	197	—	—	—
Number	—	1	—	1	1	—	—	—
Percent	—	12.50	—	43.75	43.75	—	—	—
CPUE	—	0.20	—	0.70	0.70	—	—	—

Appendix 23. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 6, August through November 1983.

Month	Age 2	3	4	5	6	8
August						
Mean length (mm)	103	142	189	188	195	213
Number	26	14	9	2	1	1
Percent	41.00	32.90	17.88	4.83	2.26	1.13
CPUE	2.10	1.68	0.91	0.25	0.12	0.06
September						
Mean length (mm)	121	147	178	198	—	261
Number	6	8	4	2	—	1
Percent	41.71	26.29	17.00	13.00	—	2.00
CPUE	0.70	0.44	0.28	0.22	—	0.03
October						
Mean length (mm)	148	—	168	—	—	—
Number	2	—	1	—	—	—
Percent	62.79	—	37.21	—	—	—
CPUE	1.35	—	0.80	—	—	—
November						
Mean length (mm)	—	—	—	—	202	—
Number	—	—	—	—	1	—
Percent	—	—	—	—	100.00	—
CPUE	—	—	—	—	0.30	—

Appendix 24. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 7, June 1983 through February 1984.

	Age							
Month	1	2	3	4	5	6	7	9
June								
Mean length (mm)	—	—	141	163	174	206	211	213
Number	—	—	10	14	8	7	3	1
Percent	—	—	21.85	32.39	20.64	16.18	7.25	1.68
CPUE	—	—	4.63	6.86	4.37	3.43	1.54	0.36
July								
Mean length (mm)	—	125	129	163	189	212	—	—
Number	—	2	4	3	2	5	—	—
Percent	—	13.29	26.58	35.07	7.96	17.10	—	—
CPUE	—	2.36	4.73	6.24	1.42	3.04	—	—
August								
Mean length (mm)	—	119	151	169	205	212	—	—
Number	—	7	10	9	3	2	—	—
Percent	—	30.24	28.79	30.26	6.55	4.17	—	—
CPUE	—	1.27	1.21	1.27	0.28	0.18	—	—
September								
Mean length (mm)	90	119	152	163	194	—	—	—
Number	2	6	6	5	3	—	—	—
Percent	4.13	39.92	29.49	15.60	10.85	—	—	—
CPUE	0.27	2.58	1.90	1.01	0.70	—	—	—
February								
Mean length (mm)	—	—	—	137	—	197	233	—
Number	—	—	—	1	—	1	2	—
Percent	—	—	—	25.00	—	25.00	50.00	—
CPUE	—	—	—	0.25	—	0.25	0.50	—

Appendix 25. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 8, June through November 1983.

Month	Age 2	3	4	5	6	7	8	10
June								
Mean length (mm)	99	127	157	180	191	223	216	240
Number	5	15	17	10	12	2	2	2
Percent	5.04	22.33	26.41	17.72	20.24	2.70	2.70	2.88
CPUE	0.44	1.94	2.29	1.54	1.76	0.23	0.23	0.25
July								
Mean length (mm)	113	148	160	185	207	—	—	—
Number	2	4	3	3	1	—	—	—
Percent	21.62	28.11	17.84	16.22	16.22	—	—	—
CPUE	0.53	0.69	0.44	0.40	0.40	—	—	—
August								
Mean length (mm)	112	—	167	191	—	—	—	—
Number	6	—	2	7	—	—	—	—
Percent	36.36	—	12.12	51.52	—	—	—	—
CPUE	0.71	—	0.24	1.00	—	—	—	—
September								
Mean length (mm)	121	156	—	205	—	—	—	—
Number	6	1	—	2	—	—	—	—
Percent	70.49	14.75	—	14.75	—	—	—	—
CPUE	2.15	0.45	—	0.45	—	—	—	—
October								
Mean length (mm)	114	159	182	212	—	205	—	—
Number	2	4	1	1	—	1	—	—
Percent	17.78	55.56	10.00	8.33	—	8.33	—	—
CPUE	0.53	1.67	0.30	0.25	—	0.25	—	—
November								
Mean length (mm)	122	146	135	—	209	—	—	—
Number	3	1	1	—	2	—	—	—
Percent	46.67	16.67	16.67	—	20.00	—	—	—
CPUE	0.31	0.11	0.11	—	0.13	—	—	—

Appendix 26. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, July through October 1983.

Month	Age 2	3	4	5	6	7
July						
Mean length (mm)	170	273	—	—	—	—
Number	1	1	—	—	—	—
Percent	50.00	50.00	—	—	—	—
CPUE	0.13	0.13	—	—	—	—
August						
Mean length (mm)	239	273	328	410	374	—
Number	7	4	2	1	1	—
Percent	46.67	26.67	13.33	6.67	6.67	—
CPUE	0.47	0.27	0.13	0.07	0.07	—
September						
Mean length (mm)	263	301	369	373	414	406
Number	25	17	3	6	2	1
Percent	49.43	30.11	4.55	10.35	3.54	2.02
CPUE	1.63	0.99	0.15	0.34	0.12	0.07
October						
Mean length (mm)	253	—	—	—	—	—
Number	1	—	—	—	—	—
Percent	100.00	—	—	—	—	—
CPUE	0.05	—	—	—	—	—

Appendix 27. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 2, June through October 1983.

	Age				
Month	2	3	4	6	7
June					
Mean length (mm)	—	—	—	—	415
Number	—	—	—	—	1
Percent	—	—	—	—	100.00
CPUE	—	—	—	—	0.05
August					
Mean length (mm)	229	300	315	338	—
Number	11	6	2	1	—
Percent	55.00	30.00	10.00	5.00	—
CPUE	0.55	0.30	0.10	0.05	—
September					
Mean length (mm)	276	318	357	413	—
Number	8	7	1	1	—
Percent	47.06	41.18	5.88	5.88	—
CPUE	0.57	0.50	0.07	0.07	—
October					
Mean length (mm)	262	337	373	453	—
Number	4	1	2	1	—
Percent	55.56	11.11	22.22	11.11	—
CPUE	0.25	0.05	0.10	0.05	—

Appendix 28. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 3, May through November 1983.

Month	Age 1	2	3	4	5	6	7	8
May								
Mean length (mm)	—	—	—	—	—	352	—	—
Number	—	—	—	—	—	1	—	—
Percent	—	—	—	—	—	100.00	—	—
CPUE	—	—	—	—	—	0.05	—	—
June								
Mean length (mm)	—	—	275	—	—	—	—	—
Number	—	—	1	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—
CPUE	–	—	0.03	—	—	—	—	—
July								
Mean length (mm)	—	288	292	—	380	386	—	—
Number	—	1	2	—	1	1	—	—
Percent	—	20.00	40.00	—	20.00	20.00	—	—
CPUE	—	0.06	0.13	—	0.06	0.06	—	—
August								
Mean length (mm)	—	225	292	322	363	365	—	425
Number	—	10	12	9	3	1	—	2
Percent	—	27.56	33.12	23.93	7.69	2.56	—	5.13
CPUE	—	0.38	0.46	0.33	0.11	0.04	—	0.07
September								
Mean length (mm)	172	261	312	372	383	—	392	—
Number	4	6	5	3	4	—	1	—
Percent	23.08	23.08	19.23	11.54	19.23	—	3.85	—
CPUE	0.21	0.21	0.17	0.10	0.17	—	0.03	—
October								
Mean length (mm)	—	290	—	—	—	—	—	—
Number	—	1	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—
CPUE	—	0.05	—	—	—	—	—	—

Appendix 28. Continued:

Month	Age 1	2	3	4	5	6	7	8
<u>November</u>								
Mean length (mm)	—	—	373	—	—	—	—	—
Number	—	—	1	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—
CPUE	—	—	0.05	—	—	—	—	—

Appendix 29. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 4, June through October 1983.

	Age					
Month	1	2	3	4	5	6
June						
Mean length (mm)	—	185	—	—	—	—
Number	—	2	—	—	—	—
Percent	—	100.00	—	—	—	—
CPUE	—	0.20	—	—	—	—
July						
Mean length (mm)	166	220	305	322	—	362
Number	2	11	7	2	—	1
Percent	8.70	47.83	30.43	8.70	—	4.35
CPUE	0.12	0.65	0.41	0.12	—	0.06
August						
Mean length (mm)	167	247	306	358	339	—
Number	10	34	16	4	4	—
Percent	15.43	50.29	22.86	5.71	5.71	—
CPUE	0.47	1.53	0.70	0.17	0.17	—
September						
Mean length (mm)	194	258	309	327	377	390
Number	25	50	4	2	1	1
Percent	34.77	56.59	4.33	2.15	1.08	1.08
CPUE	2.16	3.51	0.27	0.13	0.07	0.07
October						
Mean length (mm)	197	263	322	352	411	—
Number	2	31	5	3	1	—
Percent	4.76	73.81	11.90	7.14	2.38	—
CPUE	0.14	2.21	0.36	0.21	0.07	—

Appendix 30. Estimate of smallmouth bass age-growth relationship and percentage of age groups in trap-net catches at Station 5, May through November 1983.

	Age							
Month	1	2	3	4	5	6	7	9
May								
Mean length (mm)	—	219	267	287	302	372	432	—
Number	—	3	9	1	1	1	1	—
Percent	—	19.61	56.86	5.88	5.88	5.88	5.88	—
CPUE	—	0.19	0.54	0.06	0.06	0.06	0.06	—
June								
Mean length (mm)	—	226	261	269	302	—	—	—
Number	—	4	5	2	1	—	—	—
Percent	—	35.71	42.86	14.29	7.14	—	—	—
CPUE	—	0.31	0.38	0.13	0.06	—	—	—
July								
Mean length (mm)	193	212	272	327	—	403	403	—
Number	1	78	12	4	—	1	1	—
Percent	1.06	80.13	11.88	3.96	—	1.49	1.49	—
CPUE	0.05	4.05	0.60	0.20	—	0.08	0.08	—
August								
Mean length (mm)	154	236	301	360	403	—	—	—
Number	15	11	16	4	3	—	—	—
Percent	30.61	22.45	32.65	8.16	6.12	—	—	—
CPUE	1.15	0.85	1.23	0.31	0.23	—	—	—
September								
Mean length (mm)	182	246	300	370	409	—	451	467
Number	43	7	10	2	2	—	1	2
Percent	66.84	9.47	14.47	2.63	2.63	—	1.32	2.63
CPUE	3.39	0.48	0.73	0.13	0.13	—	0.07	0.13
October								
Mean length (mm)	211	272	320	355	405	—	—	—
Number	15	193	63	6	2	—	—	—
Percent	5.62	69.21	22.34	2.13	0.71	—	—	—
CPUE	0.79	9.76	3.15	0.30	0.10	—	—	—

Appendix 30. Continued:

Month	Age 1	2	3	4	5	6	7	9
November								
Mean length (mm)	234	271	298	345	361	389	—	—
Number	1	15	14	3	4	1	—	—
Percent	2.63	39.47	36.84	7.89	10.53	2.63	—	—
CPUE	0.10	1.50	1.40	0.30	0.40	0.10	—	—

Appendix 31. Estimate of smallmouth bass age-growth relationship and percentage of age groups in trap-net catches at Station 6, June through October 1983.

Month	Age 0	1	2	3	4	5
June						
Mean length (mm)	—	—	—	265	—	304
Number	—	—	—	1	—	1
Percent	—	—	—	50.00	—	50.00
CPUE	—	—	—	0.07	—	0.07
July						
Mean length (mm)	—	—	—	313	—	—
Number	—	—	—	1	—	—
Percent	—	—	—	100.00	—	—
CPUE	—	—	—	0.08	—	—
August						
Mean length (mm)	—	158	225	303	350	363
Number	—	33	27	9	3	1
Percent	—	59.50	27.50	9.00	3.00	1.00
CPUE	—	2.29	1.06	0.35	0.12	0.04
September						
Mean length (mm)	—	174	270	322	—	393
Number	—	30	13	2	—	2
Percent	—	62.50	29.17	4.17	—	4.17
CPUE	—	1.00	0.47	0.07	—	0.07
October						
Mean length (mm)	130	200	260	311	332	385
Number	1	11	13	4	2	2
Percent	2.61	36.27	51.55	5.65	2.17	1.74
CPUE	0.15	2.09	2.96	0.33	0.13	0.10

Appendix 32. Estimate of smallmouth bass age-growth relationship and percentage of age groups in trap-net catches at Station 7, June through October 1983.

Month	Age 1	2	3	4	5
June					
Mean length (mm)	—	180	—	282	324
Number	—	9	—	1	1
Percent	—	81.82	—	9.09	9.09
CPUE	—	0.33	—	0.04	0.04
July					
Mean length (mm)	149	204	280	321	—
Number	14	37	3	1	—
Percent	27.24	66.31	4.84	1.61	—
CPUE	0.70	1.71	0.13	0.04	—
August					
Mean length (mm)	180	208	—	354	—
Number	1	5	—	1	—
Percent	20.00	70.00	—	10.00	—
CPUE	0.10	0.35	—	0.05	—
September					
Mean length (mm)	179	253	—	—	—
Number	4	2	—	—	—
Percent	66.67	33.33	—	—	—
CPUE	0.20	0.10	—	—	—
October					
Mean length (mm)	—	256	280	—	—
Number	—	1	1	—	—
Percent	—	50.00	50.00	—	—
CPUE	—	0.05	0.05	—	—

Appendix 33. Estimate of smallmouth bass age-growth relationship and percentage of age groups in trap-net catches at Station 8, May through November 1983.

	Age					
Month	0	1	2	3	4	5
May						
Mean length (mm)	—	—	—	273	—	340
Number	—	—	—	1	—	1
Percent	—	—	—	50.00	—	50.00
CPUE	—	—	—	0.06	—	0.06
June						
Mean length (mm)	—	—	184	—	—	321
Number	—	—	7	—	—	1
Percent	—	—	87.50	—	—	12.50
CPUE	—	—	0.44	—	—	0.06
July						
Mean length (mm)	—	167	—	—	—	—
Number	—	1	—	—	—	—
Percent	—	100.00	—	—	—	—
CPUE	—	0.07	—	—	—	—
August						
Mean length (mm)	—	—	246	—	—	—
Number	—	—	6	—	—	—
Percent	—	—	100.00	—	—	—
CPUE	—	—	0.35	—	—	—
September						
Mean length (mm)	129	191	214	—	—	—
Number	1	5	3	—	—	—
Percent	10.00	60.00	30.00	—	—	—
CPUE	0.05	0.30	0.15	—	—	—
November						
Mean length (mm)	125	—	—	—	351	—
Number	1	—	—	—	1	—
Percent	50.00	—	—	—	50.00	—
CPUE	0.07	—	—	—	0.07	—

Appendix 34. Estimate of yellow perch age-growth relationship and percentage of age groups in trap-net catches at Station 1, April 1983 through March 1984.

	Age								
Month	1	2	3	4	5	6	7	8	9
April									
Mean length (mm)	—	—	146	240	277	284	—	—	295
Number	—	—	1	5	5	11	—	—	1
Percent	—	—	4.17	20.83	22.22	48.15	—	—	4.63
CPUE	—	—	0.03	0.13	0.14	0.30	—	—	0.03
May									
Mean length (mm)	—	179	171	195	232	257	—	284	—
Number	—	1	8	3	3	15	—	1	—
Percent	—	1.98	17.06	10.52	11.08	56.98	—	2.38	—
CPUE	—	0.08	0.72	0.44	0.47	2.39	—	0.10	—
June									
Mean length (mm)	—	151	—	226	—	283	318	249	—
Number	—	3	—	1	—	6	1	1	—
Percent	—	13.04	—	4.35	—	58.70	6.52	17.39	—
CPUE	—	0.21	—	0.07	—	0.96	0.11	0.29	—
July									
Mean length (mm)	156	175	228	220	250	291	312	—	—
Number	1	2	6	6	4	8	2	—	—
Percent	3.33	6.67	20.00	20.00	13.33	28.89	7.78	—	—
CPUE	0.13	0.25	0.75	0.75	0.50	1.08	0.29	—	—
August									
Mean length (mm)	—	177	204	—	270	328	—	—	—
Number	—	8	5	—	1	1	—	—	—
Percent	—	40.31	31.12	—	14.29	14.29	—	—	—
CPUE	—	1.32	1.02	—	0.47	0.47	—	—	—
September									
Mean length (mm)	162	211	228	256	282	259	—	—	—
Number	2	6	12	2	3	2	—	—	—
Percent	5.56	13.25	51.13	7.32	13.81	8.93	—	—	—
CPUE	0.23	0.56	2.15	0.31	0.58	0.38	—	—	—

Appendix 34. Continued:

Month	Age 1	2	3	4	5	6	7	8	9
October									
Mean length (mm)	—	181	213	277	286	291	—	—	—
Number	—	1	10	2	1	10	—	—	—
Percent	—	4.93	46.16	7.13	3.86	37.92	—	—	—
CPUE	—	0.17	1.59	0.25	0.13	1.31	—	—	—
March									
Mean length (mm)	—	136	180	—	303	—	331	—	—
Number	—	1	1	—	1	—	1	—	—
Percent	—	16.67	16.67	—	33.33	—	33.33	—	—
CPUE	—	0.07	0.07	—	0.14	—	0.14	—	—

Appendix 35. Estimate of yellow perch age-growth relationship and percentage of age groups in trap-net catches at Station 2, March through October 1983.

Month	Age 1	2	3	4	5	6	7	8	9
March									
Mean length (mm)	143	—	—	—	208	244	—	259	—
Number	1	—	—	—	1	1	—	1	—
Percent	25.00	—	—	—	25.00	25.00	—	25.00	—
CPUE	0.08	—	—	—	0.08	0.08	—	0.08	—
April									
Mean length (mm)	—	—	209	232	220	245	321	—	—
Number	—	—	3	3	2	7	1	—	—
Percent	—	—	19.44	19.44	12.50	43.06	5.56	—	—
CPUE	—	—	0.14	0.14	0.09	0.31	0.04	—	—
May									
Mean length (mm)	—	—	207	217	226	279	289	283	—
Number	—	—	2	1	5	59	6	1	—
Percent	—	—	2.75	1.50	6.75	79.46	8.17	1.36	—
CPUE	—	—	0.11	0.06	0.27	3.18	0.33	0.05	—
June									
Mean length (mm)	—	141	—	—	259	265	—	—	299
Number	—	3	—	—	4	10	—	—	1
Percent	—	16.67	—	—	22.22	55.56	—	—	5.56
CPUE	—	0.15	—	—	0.20	0.50	—	—	0.05
July									
Mean length (mm)	—	155	186	206	245	269	271	—	—
Number	—	45	34	11	5	9	2	—	—
Percent	—	39.58	36.73	11.05	3.99	7.05	1.60	—	—
CPUE	—	3.21	2.98	0.90	0.32	0.57	0.13	—	—
August									
Mean length (mm)	—	171	214	216	—	314	—	—	—
Number	—	32	16	3	—	1	—	—	—
Percent	—	70.07	24.39	5.05	—	0.49	—	—	—
CPUE	—	7.22	2.51	0.52	—	0.05	—	—	—

Appendix 35. Continued:

Month	Age 1	2	3	4	5	6	7	8	9
September									
Mean length (mm)	—	200	235	—	268	266	276	—	—
Number	—	9	4	—	1	1	1	—	—
Percent	—	72.35	18.28	—	3.13	3.13	3.13	—	—
CPUE	—	4.55	1.15	—	0.20	0.20	0.20	—	—
October									
Mean length (mm)	151	164	198	229	228	262	—	—	—
Number	3	2	13	1	2	1	—	—	—
Percent	7.28	6.69	58.13	8.66	11.36	7.87	—	—	—
CPUE	0.46	0.43	3.69	0.55	0.72	0.50	—	—	—

Appendix 36. Estimate of yellow perch age-growth relationship and percentage of age groups in trap-net catches at Station 3, March through November 1983.

Month	Age 1	2	3	4	5	6	7	8	9	10
March										
Mean length (mm)	—	130	170	211	—	253	—	291	—	—
Number	—	3	8	1	—	3	—	1	—	—
Percent	—	15.00	50.00	10.00	—	20.00	—	5.00	—	—
CPUE	—	0.19	0.63	0.13	—	0.25	—	0.06	—	—
April										
Mean length (mm)	—	146	175	223	234	283	283	293	—	—
Number	—	3	5	5	11	7	1	1	—	—
Percent	—	8.82	14.71	14.71	33.82	22.06	2.94	2.94	—	—
CPUE	—	0.17	0.28	0.28	0.64	0.42	0.06	0.06	—	—
May										
Mean length (mm)	—	—	192	223	247	285	301	317	357	339
Number	—	—	3	4	13	85	17	3	1	2
Percent	—	—	2.84	3.01	9.29	66.41	13.68	2.64	0.67	1.46
CPUE	—	—	0.45	0.47	1.46	10.45	2.15	0.42	0.11	0.23
June										
Mean length (mm)	—	150	172	204	226	254	—	—	—	—
Number	—	21	23	1	6	13	—	—	—	—
Percent	—	26.84	36.42	2.83	9.03	24.88	—	—	—	—
CPUE	—	1.94	2.63	0.20	0.65	1.80	—	—	—	—
July										
Mean length (mm)	—	160	188	207	223	256	—	337	—	—
Number	—	41	29	4	3	5	—	1	—	—
Percent	—	41.40	40.40	5.79	4.72	7.47	—	0.22	—	—
CPUE	—	11.54	11.26	1.61	1.31	2.08	—	0.06	—	—
August										
Mean length (mm)	—	175	202	175	237	266	282	—	—	—
Number	—	26	16	1	2	7	4	—	—	—
Percent	—	58.14	24.24	2.87	2.82	7.64	4.29	—	—	—
CPUE	—	7.95	3.32	0.39	0.39	1.04	0.59	—	—	—

Appendix 36. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
September										
Mean length (mm)	137	183	208	236	284	292	311	—	—	—
Number	1	5	1	1	3	4	1	—	—	—
Percent	1.35	41.89	8.11	6.76	13.51	23.65	4.73	—	—	—
CPUE	0.03	1.07	0.21	0.17	0.34	0.60	0.12	—	—	—
October										
Mean length (mm)	—	—	—	—	—	297	—	—	—	—
Number	—	—	—	—	—	1	—	—	—	—
Percent	—	—	—	—	—	100.00	—	—	—	—
CPUE	—	—	—	—	—	0.20	—	—	—	—
November										
Mean length (mm)	—	173	190	245	264	300	—	—	—	—
Number	—	3	7	2	2	2	—	—	—	—
Percent	—	15.08	37.30	19.05	19.05	9.52	—	—	—	—
CPUE	—	0.16	0.39	0.20	0.20	0.10	—	—	—	—

Appendix 37. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 4, May through November 1983.

	Age						
Month	2	3	4	5	6	7	10
May							
Mean length (mm)	—	—	243	—	275	—	—
Number	—	—	1	—	8	—	—
Percent	—	—	10.00	—	90.00	—	—
CPUE	—	—	0.08	—	0.69	—	—
June							
Mean length (mm)	171	180	214	225	232	—	—
Number	3	12	6	9	16	—	—
Percent	3.43	14.94	13.29	23.77	44.58	—	—
CPUE	0.68	2.97	2.64	4.73	8.87	—	—
July							
Mean length (mm)	166	184	200	202	258	—	—
Number	2	4	2	1	4	—	—
Percent	18.30	27.97	23.92	6.27	23.53	—	—
CPUE	1.10	1.68	1.44	0.38	1.41	—	—
August							
Mean length (mm)	159	197	199	237	—	—	—
Number	1	7	2	1	—	—	—
Percent	15.22	55.12	20.96	8.70	—	—	—
CPUE	0.30	1.10	0.42	0.17	—	—	—
September							
Mean length (mm)	—	216	—	—	224	—	—
Number	—	1	—	—	1	—	—
Percent	—	50.00	—	—	50.00	—	—
CPUE	—	0.13	—	—	0.13	—	—
October							
Mean length (mm)	—	—	189	—	—	—	264
Number	—	—	1	—	—	—	1
Percent	—	—	16.00	—	—	—	84.00
CPUE	—	—	0.29	—	—	—	1.50

Appendix 37. Continued:

Month	Age 2	3	4	5	6	7	10
November							
Mean length (mm)	—	—	—	—	279	317	—
Number	—	—	—	—	1	1	—
Percent	—	—	—	—	93.75	6.25	—
CPUE	—	—	—	—	1.00	0.07	—

Appendix 38. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 5, May through September 1983.

	Age				
Month	2	3	4	5	6
May					
Mean length (mm)	—	—	195	—	272
Number	—	—	1	—	2
Percent	—	—	33.33	—	66.67
CPUE	—	—	0.06	—	0.11
June					
Mean length (mm)	—	183	191	230	240
Number	—	3	3	1	3
Percent	—	30.00	30.00	10.00	30.00
CPUE	—	0.19	0.19	0.06	0.19
July					
Mean length (mm)	—	188	—	—	263
Number	—	1	—	—	3
Percent	—	75.00	—	—	25.00
CPUE	—	0.45	—	—	0.15
August					
Mean length (mm)	163	—	243	229	269
Number	1	—	1	1	1
Percent	42.86	—	17.86	17.86	21.43
CPUE	0.46	—	0.19	0.19	0.23
September					
Mean length (mm)	—	175	—	—	—
Number	—	1	—	—	—
Percent	—	100.00	—	—	—
CPUE	—	0.07	—	—	—

Appendix 39. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 6, May through November 1983.

	Age						
Month	1	2	3	4	5	6	7
May							
Mean length (mm)	—	—	177	178	166	227	269
Number	—	—	16	8	1	2	2
Percent	—	—	50.02	24.07	2.66	11.63	11.63
CPUE	—	—	1.34	0.65	0.07	0.31	0.31
June							
Mean length (mm)	—	—	195	200	206	239	—
Number	—	—	15	4	1	2	—
Percent	—	—	68.26	18.70	4.35	8.70	—
CPUE	—	—	1.05	0.29	0.07	0.13	—
August							
Mean length (mm)	—	162	200	233	—	259	—
Number	—	11	3	3	—	3	—
Percent	—	60.00	14.00	14.00	—	12.00	—
CPUE	—	0.58	0.13	0.13	—	0.12	—
September							
Mean length (mm)	130	165	197	196	—	—	—
Number	1	4	2	2	—	—	—
Percent	7.69	46.15	23.08	23.08	—	—	—
CPUE	0.03	0.20	0.10	0.10	—	—	—
October							
Mean length (mm)	—	—	182	—	—	—	—
Number	—	—	1	—	—	—	—
Percent	—	—	100.00	—	—	—	—
CPUE	—	—	0.15	—	—	—	—
November							
Mean length (mm)	—	—	200	—	241	—	—
Number	—	—	2	—	2	—	—
Percent	—	—	55.00	—	45.00	—	—
CPUE	—	—	0.28	—	0.23	—	—

Appendix 40. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 7, April 1983 through March 1984.

	Age						
Month	1	2	3	4	5	6	7
April							
Mean length (mm)	—	157	171	186	201	210	—
Number	—	1	18	5	2	1	—
Percent	—	1.68	53.53	30.01	10.93	3.85	—
CPUE	—	0.08	2.63	1.48	0.54	0.19	—
May							
Mean length (mm)	—	141	170	187	214	194	223
Number	—	2	2	7	5	1	1
Percent	—	10.53	11.18	39.47	27.63	5.92	5.26
CPUE	—	0.13	0.14	0.50	0.35	0.08	0.07
June							
Mean length (mm)	—	144	158	177	211	190	—
Number	—	3	58	18	2	1	—
Percent	—	4.18	75.93	18.02	1.18	0.69	—
CPUE	—	0.87	15.86	3.76	0.25	0.15	—
July							
Mean length (mm)	138	152	161	173	—	—	—
Number	1	8	14	2	—	—	—
Percent	4.51	33.79	54.99	6.71	—	—	—
CPUE	0.60	4.51	7.33	0.89	—	—	—
August							
Mean length (mm)	—	152	163	—	—	—	—
Number	—	3	10	—	—	—	—
Percent	—	24.89	75.11	—	—	—	—
CPUE	—	0.62	1.88	—	—	—	—
September							
Mean length (mm)	139	140	157	—	—	—	—
Number	3	1	1	—	—	—	—
Percent	42.86	14.29	42.86	—	—	—	—
CPUE	0.45	0.15	0.45	—	—	—	—

Appendix 40. Continued:

Month	Age 1	2	3	4	5	6	7
February							
Mean length (mm)	—	128	137	187	—	—	—
Number	—	7	3	2	—	—	—
Percent	—	58.33	25.00	16.67	—	—	—
CPUE	—	1.75	0.75	0.50	—	—	—
March							
Mean length (mm)	—	124	—	192	—	—	—
Number	—	1	—	2	—	—	—
Percent	—	33.33	—	66.67	—	—	—
CPUE	—	0.33	—	0.67	—	—	—

Appendix 41. Estimate of yellow perch age-growth relationship and percentage of age groups in trap-net catches at Station 8, March through November 1983.

Month	Age 0	1	2	3	4	5	6
March							
Mean length (mm)	—	95	—	169	187	246	205
Number	—	1	—	4	2	1	1
Percent	—	6.67	—	56.67	13.33	13.33	10.00
CPUE	—	0.05	—	0.45	0.11	0.11	0.08
April							
Mean length (mm)	—	—	—	185	192	210	226
Number	—	—	—	2	11	2	1
Percent	—	—	—	5.41	90.35	3.47	0.76
CPUE	—	—	—	2.36	39.45	1.52	0.33
May							
Mean length (mm)	—	—	—	153	204	192	222
Number	—	—	—	2	2	1	5
Percent	—	—	—	19.44	21.53	8.33	50.69
CPUE	—	—	—	0.13	0.14	0.06	0.34
June							
Mean length (mm)	—	—	141	154	166	215	198
Number	—	—	5	104	29	1	1
Percent	—	—	3.90	73.45	20.98	0.69	0.98
CPUE	—	—	0.70	13.27	3.79	0.13	0.18
July							
Mean length (mm)	—	—	145	154	198	—	—
Number	—	—	2	7	3	—	—
Percent	—	—	19.69	68.57	11.73	—	—
CPUE	—	—	0.64	2.24	0.38	—	—
August							
Mean length (mm)	—	—	144	156	182	231	—
Number	—	—	7	19	2	2	—
Percent	—	—	22.84	66.83	6.46	3.87	—
CPUE	—	—	0.95	2.79	0.27	0.16	—

Appendix 41. Continued:

Month	Age 0	1	2	3	4	5	6
September							
Mean length (mm)	—	—	167	165	201	—	—
Number	—	—	1	4	1	—	—
Percent	—	—	15.31	72.45	12.24	—	—
CPUE	—	—	0.38	1.78	0.30	—	—
October							
Mean length (mm)	—	—	—	150	157	—	233
Number	—	—	—	5	1	—	1
Percent	—	—	—	72.22	22.22	—	5.56
CPUE	—	—	—	1.30	0.40	—	0.10
November							
Mean length (mm)	79	139	144	158	185	207	—
Number	1	1	2	4	2	1	—
Percent	4.35	11.96	23.91	38.04	13.04	8.70	—
CPUE	0.07	0.18	0.37	0.58	0.20	0.13	—

Appendix 42. Estimate of walleye age-growth relationship and percentage of age groups in trap-net catches at Station 1, April through December 1983.

	Age							
Month	1	2	3	4	5	6	7	10
April								
Mean length (mm)	—	—	355	—	—	—	—	—
Number	—	—	1	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—
CPUE	—	—	0.03	—	—	—	—	—
June								
Mean length (mm)	—	—	—	449	—	—	—	—
Number	—	—	—	2	—	—	—	—
Percent	—	—	—	100.00	—	—	—	—
CPUE	—	—	—	0.14	—	—	—	—
July								
Mean length (mm)	239	366	392	—	—	—	—	—
Number	4	3	3	—	—	—	—	—
Percent	40.00	30.00	30.00	—	—	—	—	—
CPUE	0.50	0.38	0.38	—	—	—	—	—
August								
Mean length (mm)	260	371	392	426	450	—	—	—
Number	75	1	7	3	3	—	—	—
Percent	84.27	1.12	7.87	3.37	3.37	—	—	—
CPUE	5.00	0.07	0.47	0.20	0.20	—	—	—
September								
Mean length (mm)	285	341	393	435	497	517	—	713
Number	33	9	8	7	2	2	—	1
Percent	77.11	9.94	5.72	4.22	1.20	1.20	—	0.60
CPUE	6.40	0.83	0.48	0.35	0.10	0.10	—	0.05
October								
Mean length (mm)	319	330	424	469	475	524	532	—
Number	19	2	14	6	5	4	1	—
Percent	42.86	3.57	25.00	10.71	8.93	7.14	1.79	—
CPUE	1.20	0.10	0.70	0.30	0.25	0.20	0.05	—

Appendix 42. Continued:

Month	Age 1	2	3	4	5	6	7	10
November								
Mean length (mm)	319	359	412	445	475	514	—	—
Number	18	2	6	5	6	4	—	—
Percent	62.19	3.48	9.95	8.46	9.95	5.97	—	—
CPUE	2.08	0.12	0.33	0.28	0.33	0.20	—	—
December								
Mean length (mm)	302	—	—	—	—	—	—	—
Number	1	—	—	—	—	—	—	—
Percent	100.00	—	—	—	—	—	—	—
CPUE	0.50	—	—	—	—	—	—	—

Appendix 43. Estimate of walleye age-growth relationship and percentage of age groups in trap-net catches at Station 2, April 1983 through February 1984.

	Age									
Month	1	2	3	4	5	6	7	8	10	12
April										
Mean length (mm)	—	—	369	460	—	508	—	—	—	—
Number	—	—	3	1	—	1	—	—	—	—
Percent	—	—	75.00	12.50	—	12.50	—	—	—	—
CPUE	—	—	0.24	0.04	—	0.04	—	—	—	—
May										
Mean length (mm)	—	344	376	428	456	477	—	—	—	648
Number	—	6	13	2	4	5	—	—	—	1
Percent	—	19.35	41.94	6.45	12.90	16.13	—	—	—	3.23
CPUE	—	0.30	0.65	0.10	0.20	0.25	—	—	—	0.05
July										
Mean length (mm)	226	355	328	—	448	452	—	—	—	—
Number	40	1	1	—	3	1	—	—	—	—
Percent	91.04	1.49	1.49	—	4.48	1.49	—	—	—	—
CPUE	3.39	0.06	0.06	—	0.17	0.06	—	—	—	—
August										
Mean length (mm)	258	356	382	431	461	535	497	—	599	—
Number	27	6	8	2	2	2	1	—	1	—
Percent	55.10	12.24	16.33	4.08	4.08	4.08	2.04	—	2.04	—
CPUE	1.35	0.30	0.40	0.10	0.10	0.10	0.05	—	0.05	—
September										
Mean length (mm)	282	351	441	447	499	511	568	—	705	—
Number	20	9	7	1	4	1	1	—	1	—
Percent	45.93	20.74	15.56	2.22	8.89	2.22	2.22	—	2.22	—
CPUE	1.48	0.67	0.50	0.07	0.29	0.07	0.07	—	0.07	—
October										
Mean length (mm)	311	389	436	456	492	489	545	599	—	—
Number	8	4	11	8	11	4	2	2	—	—
Percent	28.81	6.78	18.64	13.56	18.64	6.78	3.39	3.39	—	—
CPUE	0.85	0.20	0.55	0.40	0.55	0.20	0.10	0.10	—	—

Appendix 43. Continued:

Month	Age 1	2	3	4	5	6	7	8	10	12
November										
Mean length (mm)	336	380	437	464	492	562	—	—	—	—
Number	3	4	14	7	7	2	—	—	—	—
Percent	18.60	9.30	34.88	16.28	16.28	4.65	—	—	—	—
CPUE	0.89	0.44	1.67	0.78	0.78	0.22	—	—	—	—
December										
Mean length (mm)	320	—	392	465	495	—	—	—	—	—
Number	6	—	3	3	2	—	—	—	—	—
Percent	55.56	—	16.67	16.67	11.11	—	—	—	—	—
CPUE	0.71	—	0.21	0.21	0.14	—	—	—	—	—
February										
Mean length (mm)	—	301	—	382	461	—	—	—	—	—
Number	—	5	—	1	1	—	—	—	—	—
Percent	—	71.43	—	14.29	14.29	—	—	—	—	—
CPUE	—	0.83	—	0.17	0.17	—	—	—	—	—

Appendix 44. Estimate of walleye age-growth relationship and percentage of age groups in trap-net catches at Station 3, March 1983 through February 1984.

	Age									
Month	1	2	3	4	5	6	7	8	9	11
March										
Mean length (mm)	—	—	339	—	—	—	—	—	—	—
Number	—	—	1	—	—	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—	—	—
CPUE	—	—	0.06	—	—	—	—	—	—	—
May										
Mean length (mm)	—	352	388	—	—	527	—	—	—	681
Number	—	1	4	—	—	2	—	—	—	2
Percent	—	11.11	44.44	—	—	22.22	—	—	—	22.22
CPUE	—	0.05	0.21	—	—	0.11	—	—	—	0.11
June										
Mean length (mm)	—	—	387	501	—	523	—	—	—	—
Number	—	—	3	1	—	3	—	—	—	—
Percent	—	—	42.86	14.29	—	42.86	—	—	—	—
CPUE	—	—	0.10	0.03	—	0.10	—	—	—	—
July										
Mean length (mm)	249	370	402	—	490	—	—	—	—	—
Number	11	9	5	—	1	—	—	—	—	—
Percent	31.43	45.71	17.14	—	5.71	—	—	—	—	—
CPUE	0.69	1.00	0.38	—	0.13	—	—	—	—	—
August										
Mean length (mm)	259	347	408	474	467	493	—	557	514	—
Number	43	4	18	3	5	6	—	3	1	—
Percent	51.19	5.95	21.43	3.57	5.95	7.14	—	3.57	1.19	—
CPUE	1.54	0.18	0.64	0.11	0.18	0.21	—	0.11	0.04	—
September										
Mean length (mm)	291	355	418	461	507	529	579	608	—	—
Number	52	7	21	9	8	5	2	2	—	—
Percent	62.13	5.26	14.99	6.32	5.45	3.25	1.30	1.30	—	—
CPUE	3.30	0.28	0.80	0.34	0.29	0.17	0.07	0.07	—	—

Appendix 44. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	11
October										
Mean length (mm)	314	381	457	501	501	526	—	537	—	—
Number	6	4	13	5	8	11	—	1	—	—
Percent	18.75	8.17	25.00	9.62	15.38	21.15	—	1.92	—	—
CPUE	0.49	0.21	0.65	0.25	0.40	0.55	—	0.05	—	—
November										
Mean length (mm)	325	391	443	466	516	529	—	—	537	—
Number	23	12	20	5	10	4	—	—	1	—
Percent	49.12	12.20	18.87	4.72	10.38	3.77	—	—	0.94	—
CPUE	2.60	0.65	1.00	0.25	0.55	0.20	—	—	0.05	—
February										
Mean length (mm)	—	310	—	—	—	—	—	—	—	—
Number	—	3	—	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—	—
CPUE	—	0.75	—	—	—	—	—	—	—	—

Appendix 45. Estimate of walleye age-growth relationship and percentage of age groups in trap-net catches at Station 4, May through November 1983.

	Age									
Month	1	2	3	4	5	6	7	8	9	10
May										
Mean length (mm)	—	—	370	428	—	464	—	—	—	—
Number	—	—	5	4	—	3	—	—	—	—
Percent	—	—	41.00	32.00	—	27.00	—	—	—	—
CPUE	—	—	0.63	0.49	—	0.42	—	—	—	—
June										
Mean length (mm)	251	339	364	413	439	467	538	—	—	523
Number	2	62	104	8	6	4	3	—	—	1
Percent	1.31	32.72	54.45	4.19	3.14	2.09	1.57	—	—	0.52
CPUE	0.25	6.25	10.40	0.80	0.60	0.40	0.30	—	—	0.10
July										
Mean length (mm)	249	352	381	422	436	475	—	—	—	602
Number	104	17	16	1	4	2	—	—	—	3
Percent	70.75	11.56	10.88	0.68	2.72	1.36	—	—	—	2.04
CPUE	6.12	1.00	0.94	0.06	0.24	0.12	—	—	—	0.18
August										
Mean length (mm)	247	323	386	464	490	528	509	—	577	605
Number	79	12	11	3	2	2	2	—	3	1
Percent	82.76	8.08	4.45	1.09	0.72	0.72	0.72	—	1.09	0.36
CPUE	9.93	0.97	0.53	0.13	0.09	0.09	0.09	—	0.13	0.04
September										
Mean length (mm)	320	—	405	—	—	516	—	—	—	—
Number	7	—	2	—	—	1	—	—	—	—
Percent	93.02	—	4.65	—	—	2.33	—	—	—	—
CPUE	2.67	—	0.13	—	—	0.07	—	—	—	—
October										
Mean length (mm)	289	417	433	487	505	549	—	624	657	621
Number	9	3	15	1	4	12	—	2	1	2
Percent	18.37	6.12	30.61	2.04	8.16	24.49	—	4.08	2.04	4.08
CPUE	0.64	0.21	1.07	0.07	0.29	0.86	—	0.14	0.07	0.14

Appendix 45. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
November										
Mean length (mm)	315	380	426	444	487	521	578	—	—	—
Number	58	7	18	8	6	5	2	—	—	—
Percent	55.24	6.67	17.14	7.62	6.19	5.24	1.90	—	—	—
CPUE	3.87	0.47	1.20	0.53	0.43	0.37	0.13	—	—	—

Appendix 46. Estimate of walleye age-growth relationship and percentage of age groups in trap-net catches at Station 5, May through November 1983.

Month	Age 1	2	3	4	5	6	7	8	10
May									
Mean length (mm)	262	336	399	426	478	498	—	—	—
Number	1	17	13	3	2	1	—	—	—
Percent	2.63	46.32	35.26	7.89	5.26	2.63	—	—	—
CPUE	0.06	0.98	0.74	0.17	0.11	0.06	—	—	—
June									
Mean length (mm)	—	357	349	386	—	—	—	—	—
Number	—	7	6	1	—	—	—	—	—
Percent	—	46.43	47.32	6.25	—	—	—	—	—
CPUE	—	0.46	0.47	0.06	—	—	—	—	—
July									
Mean length (mm)	252	356	394	458	464	508	—	—	—
Number	18	70	61	8	11	6	—	—	—
Percent	10.17	40.77	34.92	4.53	6.21	3.39	—	—	—
CPUE	0.90	3.61	3.09	0.40	0.55	0.30	—	—	—
August									
Mean length (mm)	255	375	447	—	535	—	—	—	—
Number	28	9	7	—	1	—	—	—	—
Percent	62.22	20.00	15.56	—	2.22	—	—	—	—
CPUE	2.15	0.69	0.54	—	0.08	—	—	—	—
September									
Mean length (mm)	271	—	426	—	—	—	—	—	—
Number	24	—	1	—	—	—	—	—	—
Percent	96.43	—	3.57	—	—	—	—	—	—
CPUE	1.80	—	0.07	—	—	—	—	—	—
October									
Mean length (mm)	309	369	399	420	498	487	534	583	693
Number	44	15	12	4	4	5	3	2	1
Percent	48.89	16.67	13.33	4.44	4.44	5.56	3.33	2.22	1.11
CPUE	2.20	0.75	0.60	0.20	0.20	0.25	0.15	0.10	0.05

Appendix 46. Continued:

Month	Age 1	2	3	4	5	6	7	8	10
November									
Mean length (mm)	304	334	393	453	481	—	—	—	—
Number	9	2	1	1	2	—	—	—	—
Percent	62.50	12.50	6.25	6.25	12.50	—	—	—	—
CPUE	1.00	0.20	0.10	0.10	0.20	—	—	—	—

Appendix 47. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 6, April through November 1983.

Month	Age 1	2	3	4	5	6	7	8
April								
Mean length (mm)	—	394	—	459	467	591	—	—
Number	—	1	—	2	1	1	—	—
Percent	—	33.33	—	33.33	16.67	16.67	—	—
CPUE	—	0.08	—	0.08	0.04	0.04	—	—
May								
Mean length (mm)	—	—	435	507	524	517	—	—
Number	—	—	1	1	1	1	—	—
Percent	—	—	25.00	25.00	25.00	25.00	—	—
CPUE	—	—	0.06	0.06	0.06	0.06	—	—
June								
Mean length (mm)	—	322	423	—	—	528	—	—
Number	—	2	2	—	—	3	—	—
Percent	—	25.00	25.00	—	—	50.00	—	—
CPUE	—	0.13	0.13	—	—	0.27	—	—
July								
Mean length (mm)	207	345	—	—	572	—	583	—
Number	1	1	—	—	1	—	1	—
Percent	25.00	25.00	—	—	25.00	—	25.00	—
CPUE	0.08	0.08	—	—	0.08	—	0.08	—
August								
Mean length (mm)	255	358	438	—	—	—	—	677
Number	28	4	3	—	—	—	—	1
Percent	77.78	11.11	8.33	—	—	—	—	2.78
CPUE	1.08	0.15	0.12	—	—	—	—	0.04
September								
Mean length (mm)	275	371	429	—	—	—	—	—
Number	55	2	3	—	—	—	—	—
Percent	91.80	3.28	4.92	—	—	—	—	—
CPUE	1.87	0.07	0.10	—	—	—	—	—

Appendix 47. Continued:

Month	Age 1	2	3	4	5	6	7	8
October								
Mean length (mm)	314	404	—	—	—	—	—	629
Number	3	1	—	—	—	—	—	1
Percent	75.00	12.50	—	—	—	—	—	12.50
CPUE	0.30	0.05	—	—	—	—	—	0.05
November								
Mean length (mm)	316	—	479	—	—	556	—	—
Number	17	—	2	—	—	3	—	—
Percent	81.48	—	7.41	—	—	11.11	—	—
CPUE	1.10	—	1.10	—	—	0.15	—	—

Appendix 48. Estimate of walleye age-growth relationship and percentage of age groups in trap-net catches at Station 7, May 1983 through March 1984.

Month	Age 1	2	3	4	5	6	7	8	9
May									
Mean length (mm)	—	332	378	474	490	519	—	—	—
Number	—	9	10	2	6	4	—	—	—
Percent	—	28.13	31.25	6.25	20.83	13.54	—	—	—
CPUE	—	0.60	0.67	0.13	0.44	0.29	—	—	—
June									
Mean length (mm)	220	345	404	429	474	513	—	—	—
Number	47	10	10	4	5	6	—	—	—
Percent	56.38	12.82	12.07	4.68	6.06	7.98	—	—	—
CPUE	1.96	0.45	0.42	0.16	0.21	0.28	—	—	—
July									
Mean length (mm)	231	344	422	—	447	—	—	642	—
Number	52	8	6	—	1	—	—	1	—
Percent	77.78	11.11	8.33	—	1.39	—	—	1.39	—
CPUE	2.33	0.33	0.25	—	0.04	—	—	0.04	—
August									
Mean length (mm)	256	364	450	—	537	—	—	—	—
Number	37	3	6	—	6	—	—	—	—
Percent	80.00	3.75	8.13	—	8.13	—	—	—	—
CPUE	3.20	0.15	0.33	—	0.33	—	—	—	—
September									
Mean length (mm)	294	390	419	464	—	496	—	—	626
Number	12	3	2	1	—	2	—	—	1
Percent	78.05	7.32	4.88	2.44	—	4.88	—	—	2.44
CPUE	1.60	0.15	0.10	0.05	—	0.10	—	—	0.05
October									
Mean length (mm)	313	396	446	457	561	592	583	—	—
Number	23	12	10	3	3	5	1	—	—
Percent	72.39	9.40	9.10	2.39	2.24	3.73	0.75	—	—
CPUE	4.85	0.63	0.61	0.16	0.15	0.25	0.05	—	—

Appendix 48. Continued:

Month	Age 1	2	3	4	5	6	7	8	9
November									
Mean length (mm)	322	411	456	—	—	501	—	—	—
Number	15	2	1	—	—	1	—	—	—
Percent	80.00	10.00	5.00	—	—	5.00	—	—	—
CPUE	1.60	0.20	0.10	—	—	0.10	—	—	—
December									
Mean length (mm)	306	—	—	—	—	—	—	—	—
Number	2	—	—	—	—	—	—	—	—
Percent	100.00	—	—	—	—	—	—	—	—
CPUE	0.14	—	—	—	—	—	—	—	—
March									
Mean length (mm)	—	—	—	462	—	—	—	—	—
Number	—	—	—	1	—	—	—	—	—
Percent	—	—	—	100.00	—	—	—	—	—
CPUE	—	—	—	0.33	—	—	—	—	—

Appendix 49. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 8, May through November 1983.

	Age							
Month	1	2	3	4	5	6	7	8
May								
Mean length (mm)	—	350	—	—	—	513	—	—
Number	—	1	—	—	—	4	—	—
Percent	—	20.00	—	—	—	80.00	—	—
CPUE	—	0.06	—	—	—	0.22	—	—
June								
Mean length (mm)	226	—	423	—	555	—	541	—
Number	31	—	1	—	2	—	1	—
Percent	88.57	—	2.86	—	5.71	—	2.86	—
CPUE	1.94	—	0.06	—	0.13	—	0.06	—
July								
Mean length (mm)	228	365	—	486	—	—	—	—
Number	6	4	—	1	—	—	—	—
Percent	54.55	36.36	—	9.09	—	—	—	—
CPUE	0.40	0.27	—	0.07	—	—	—	—
August								
Mean length (mm)	250	366	458	—	—	—	—	—
Number	44	5	2	—	—	—	—	—
Percent	86.27	9.80	3.92	—	—	—	—	—
CPUE	2.59	0.29	0.12	—	—	—	—	—
September								
Mean length (mm)	279	378	417	556	581	—	565	646
Number	16	8	1	1	1	—	2	1
Percent	72.00	16.00	2.00	2.00	2.00	—	4.00	2.00
CPUE	1.80	0.40	0.05	0.05	0.05	—	0.10	0.05
October								
Mean length (mm)	300	—	488	—	—	570	—	—
Number	1	—	1	—	—	1	—	—
Percent	60.00	—	20.00	—	—	20.00	—	—
CPUE	0.30	—	0.10	—	—	0.10	—	—

Appendix 49. Continued:

Month	Age 1	2	3	4	5	6	7	8
November								
Mean length (mm)	335	405	—	—	—	—	—	—
Number	7	2	—	—	—	—	—	—
Percent	80.00	20.00	—	—	—	—	—	—
CPUE	0.53	0.13	—	—	—	—	—	—

Appendix 50. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, May 1984 through February 1985.

	Age						
Month	2	3	4	5	6	7	8
May							
Mean length (mm)	—	141	167	187	—	—	—
Number	—	5	10	2	—	—	—
Percent	—	30.56	58.33	11.11	—	—	—
CPUE	—	0.28	0.53	0.10	—	—	—
June							
Mean length (mm)	—	147	175	211	223	223	—
Number	—	9	5	2	3	2	—
Percent	—	34.75	28.89	13.64	12.88	9.85	—
CPUE	—	0.57	0.48	0.23	0.21	0.16	—
July							
Mean length (mm)	—	—	187	—	—	—	220
Number	—	—	4	—	—	—	1
Percent	—	—	71.43	—	—	—	28.57
CPUE	—	—	1.33	—	—	—	0.53
August							
Mean length (mm)	113	145	164	—	213	—	—
Number	1	4	3	—	2	—	—
Percent	5.41	31.31	22.75	—	40.54	—	—
CPUE	0.20	1.16	0.84	—	1.50	—	—
September							
Mean length (mm)	—	180	—	—	—	—	—
Number	—	1	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—
CPUE	—	0.60	—	—	—	—	—
November							
Mean length (mm)	—	189	—	—	—	—	—
Number	—	4	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—
CPUE	—	1.30	—	—	—	—	—

Appendix 50. Continued:

	Age						
Month	2	3	4	5	6	7	8
February							
Mean length (mm)	—	—	181	206	—	—	—
Number	—	—	2	1	—	—	—
Percent	—	—	66.67	33.33	—	—	—
CPUE	—	—	0.50	0.25	—	—	—

Appendix 51. Estimate of rock bass age-growth relationship and percentage of age groups in trap-net catches at Station 2, May through October 1984.

	Age									
Month	1	2	3	4	5	6	7	8	9	11
May										
Mean length (mm)	—	—	—	167	180	215	—	235	—	—
Number	—	—	—	4	1	2	—	1	—	—
Percent	—	—	—	61.54	7.69	15.38	—	15.38	—	—
CPUE	—	—	—	0.40	0.05	0.10	—	0.10	—	—
June										
Mean length (mm)	—	—	137	162	197	202	206	238	—	—
Number	—	—	8	10	5	4	4	2	—	—
Percent	—	—	21.72	33.41	16.38	12.54	12.54	3.41	—	—
CPUE	—	—	0.96	1.47	0.72	0.55	0.55	0.15	—	—
July										
Mean length (mm)	—	—	152	157	208	220	228	—	265	284
Number	—	—	8	5	4	3	2	—	1	1
Percent	—	—	34.86	20.34	22.09	6.79	12.10	—	3.28	0.55
CPUE	—	—	3.19	1.86	2.02	0.62	1.11	—	0.30	0.05
August										
Mean length (mm)	—	99	162	—	—	—	—	—	—	—
Number	—	1	9	—	—	—	—	—	—	—
Percent	—	2.50	97.50	—	—	—	—	—	—	—
CPUE	—	0.05	1.95	—	—	—	—	—	—	—
September										
Mean length (mm)	93	119	171	199	206	—	256	—	—	—
Number	1	2	11	5	1	—	1	—	—	—
Percent	2.33	4.65	60.93	25.12	4.65	—	2.33	—	—	—
CPUE	0.05	0.10	1.31	0.54	0.10	—	0.05	—	—	—
October										
Mean length (mm)	—	114	155	195	239	210	238	—	—	—
Number	—	1	4	2	2	2	2	—	—	—
Percent	—	7.32	27.64	14.63	8.13	28.86	13.41	—	—	—
CPUE	—	0.30	1.13	0.60	0.33	1.18	0.55	—	—	—

Appendix 52. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 3, May through November 1984.

Month	Age 2	3	4	5	6	7	8	9	10	12
May										
Mean length (mm)	—	119	153	200	205	212	229	241	—	—
Number	—	4	4	2	5	6	3	2	—	—
Percent	—	10.13	21.52	9.30	24.43	22.03	8.04	4.56	—	—
CPUE	—	0.40	0.85	0.37	0.97	0.87	0.32	0.18	—	—
June										
Mean length (mm)	—	141	154	173	197	223	—	—	—	—
Number	—	7	14	15	11	6	—	—	—	—
Percent	—	10.87	22.86	27.15	22.48	16.65	—	—	—	—
CPUE	—	1.40	2.94	3.50	2.90	2.14	—	—	—	—
July										
Mean length (mm)	—	149	181	213	215	236	272	234	255	288
Number	—	2	3	5	3	4	1	1	1	1
Percent	—	18.38	20.77	26.61	14.30	12.82	2.35	1.99	2.35	0.43
CPUE	—	2.15	2.43	3.11	1.67	1.50	0.28	0.23	0.28	0.05
August										
Mean length (mm)	126	142	200	—	198	229	—	—	—	—
Number	1	4	1	—	1	2	—	—	—	—
Percent	9.38	37.50	11.72	—	11.72	29.69	—	—	—	—
CPUE	0.30	1.20	0.38	—	0.38	0.95	—	—	—	—
September										
Mean length (mm)	103	—	171	174	—	—	—	—	—	—
Number	3	—	3	2	—	—	—	—	—	—
Percent	26.32	—	50.88	22.81	—	—	—	—	—	—
CPUE	0.75	—	1.45	0.65	—	—	—	—	—	—
November										
Mean length (mm)	—	—	192	—	231	—	—	—	—	—
Number	—	—	1	—	2	—	—	—	—	—
Percent	—	—	54.29	—	45.71	—	—	—	—	—
CPUE	—	—	1.27	—	1.07	—	—	—	—	—

Appendix 53. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 4, May through December 1984.

Month	Age 2	3	4	5	6	7	8	9	10
May									
Mean length (mm)	96	129	162	180	206	232	232	230	261
Number	1	8	8	3	5	5	5	2	1
Percent	2.33	24.03	22.09	7.36	12.40	12.14	12.40	4.91	2.33
CPUE	0.07	0.69	0.63	0.21	0.36	0.35	0.36	0.14	0.07
June									
Mean length (mm)	—	131	182	191	200	—	—	—	—
Number	—	2	1	1	1	—	—	—	—
Percent	—	63.64	12.12	12.12	12.12	—	—	—	—
CPUE	—	2.88	0.55	0.55	0.55	—	—	—	—
July									
Mean length (mm)	111	142	167	208	227	227	243	—	—
Number	1	5	7	6	4	3	2	—	—
Percent	4.88	31.91	19.92	25.20	11.69	4.57	1.83	—	—
CPUE	0.28	1.80	1.13	1.43	0.66	0.26	0.10	—	—
August									
Mean length (mm)	—	—	163	201	217	—	—	—	—
Number	—	—	2	3	1	—	—	—	—
Percent	—	—	26.32	59.21	14.47	—	—	—	—
CPUE	—	—	0.91	2.05	0.50	—	—	—	—
November									
Mean length (mm)	—	—	202	—	—	215	—	—	—
Number	—	—	1	—	—	1	—	—	—
Percent	—	—	54.55	—	—	45.45	—	—	—
CPUE	—	—	0.40	—	—	0.33	—	—	—
December									
Mean length (mm)	—	135	—	—	—	—	—	—	—
Number	—	1	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—
CPUE	—	0.50	—	—	—	—	—	—	—

Appendix 54. Estimate of rock bass age-growth relationship and percentage of age groups in trap-net catches at Station 5, April through November 1984.

	Age							
Month	2	3	4	5	6	7	8	11
April								
Mean length (mm)	—	142	163	194	204	199	215	—
Number	—	2	4	5	5	2	1	—
Percent	—	17.65	32.35	20.83	18.38	7.60	3.19	—
CPUE	—	0.30	0.55	0.35	0.31	0.13	0.05	—
May								
Mean length (mm)	—	133	157	179	206	228	—	272
Number	—	3	16	12	7	2	—	1
Percent	—	15.26	45.33	23.50	11.74	3.88	—	0.29
CPUE	—	2.19	6.50	3.37	1.68	0.56	—	0.04
June								
Mean length (mm)	100	125	156	188	195	211	—	—
Number	2	11	17	4	6	2	—	—
Percent	1.56	26.42	48.58	7.81	10.42	5.21	—	—
CPUE	0.08	1.35	2.49	0.40	0.53	0.27	—	—
July								
Mean length (mm)	117	129	162	—	201	217	—	—
Number	2	5	6	—	4	2	—	—
Percent	12.79	26.48	33.33	—	19.18	8.22	—	—
CPUE	0.47	0.97	1.22	—	0.70	0.30	—	—
August								
Mean length (mm)	110	144	174	212	—	—	—	—
Number	5	8	4	1	—	—	—	—
Percent	25.54	45.54	24.10	4.82	—	—	—	—
CPUE	1.06	1.89	1.00	0.20	—	—	—	—
September								
Mean length (mm)	124	151	177	199	—	—	—	—
Number	2	2	3	1	—	—	—	—
Percent	27.59	32.76	31.61	8.05	—	—	—	—
CPUE	0.57	0.68	0.65	0.17	—	—	—	—

Appendix 54. Continued:

Month	Age 2	3	4	5	6	7	8	11
October								
Mean length (mm)	112	145	181	—	222	—	—	—
Number	2	10	2	—	2	—	—	—
Percent	5.71	61.55	23.21	—	9.52	—	—	—
CPUE	0.29	3.10	1.17	—	0.48	—	—	—
November								
Mean length (mm)	—	—	—	208	—	—	—	—
Number	—	—	—	1	—	—	—	—
Percent	—	—	—	100.00	—	—	—	—
CPUE	—	—	—	0.79	—	—	—	—

Appendix 55. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 6, April through October 1984.

Month	Age 2	3	4	5	6	7	8	9	10	11
April										
Mean length (mm)	—	114	134	176	206	195	—	244	—	242
Number	—	6	5	1	1	2	—	1	—	1
Percent	—	28.07	24.56	8.77	9.65	23.68	—	2.63	—	2.63
CPUE	—	0.46	0.40	0.14	0.16	0.39	—	0.04	—	0.04
May										
Mean length (mm)	—	116	149	175	210	210	—	252	—	—
Number	—	15	20	14	3	5	—	1	—	—
Percent	—	23.62	31.92	25.48	6.01	10.80	—	2.17	—	—
CPUE	—	2.17	2.94	2.34	0.55	0.99	—	0.20	—	—
June										
Mean length (mm)	88	123	153	179	195	212	242	222	250	245
Number	1	19	12	18	13	9	3	1	1	1
Percent	0.84	21.41	15.53	26.99	17.98	12.40	2.09	1.37	0.70	0.70
CPUE	0.20	5.12	3.71	6.45	4.30	2.96	0.50	0.33	0.17	0.17
July										
Mean length (mm)	103	140	170	176	214	—	248	—	—	—
Number	2	9	1	3	3	—	1	—	—	—
Percent	8.70	60.05	4.71	14.04	10.87	—	1.63	—	—	—
CPUE	0.40	2.76	0.22	0.65	0.50	—	0.80	—	—	—
August										
Mean length (mm)	—	112	—	—	—	—	—	—	—	—
Number	—	2	—	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—	—
CPUE	—	0.70	—	—	—	—	—	—	—	—
September										
Mean length (mm)	—	—	185	201	218	—	—	—	—	—
Number	—	—	3	1	2	—	—	—	—	—
Percent	—	—	42.19	14.06	43.75	—	—	—	—	—
CPUE	—	—	0.34	0.11	0.35	—	—	—	—	—

Appendix 55. Continued:

Month	Age 2	3	4	5	6	7	8	9	10	11
October										
Mean length (mm)	114	142	179	196	—	210	—	265	—	—
Number	2	3	1	1	—	1	—	1	—	—
Percent	29.33	49.33	6.00	6.00	—	6.67	—	2.67	—	—
CPUE	1.10	1.85	0.23	0.23	—	0.25	—	0.10	—	—

Appendix 56. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 7, April through October 1984.

	Age							
Month	1	2	3	4	5	6	7	8
April								
Mean length (mm)	—	—	119	—	185	—	214	—
Number	—	—	4	—	3	—	1	—
Percent	—	—	59.09	—	31.82	—	9.09	—
CPUE	—	—	0.65	—	0.35	—	0.10	—
May								
Mean length (mm)	—	—	136	166	174	226	214	235
Number	—	—	5	7	3	1	1	1
Percent	—	—	28.85	37.64	12.36	9.62	9.62	1.92
CPUE	—	—	1.50	1.96	0.64	0.50	0.50	0.10
June								
Mean length (mm)	—	94	130	148	178	197	192	230
Number	—	1	17	9	11	10	3	2
Percent	—	0.41	37.65	19.18	21.75	14.37	4.54	2.10
CPUE	—	0.10	9.21	4.69	5.32	3.51	1.11	0.51
July								
Mean length (mm)	—	—	126	158	187	170	199	226
Number	—	—	1	4	1	1	1	1
Percent	—	—	18.93	52.76	6.31	10.36	6.31	5.33
CPUE	—	—	2.13	5.94	0.71	1.17	0.71	0.60
August								
Mean length (mm)	—	116	149	175	213	245	—	—
Number	—	2	3	3	1	1	—	—
Percent	—	15.38	51.92	25.00	5.77	1.92	—	—
CPUE	—	0.40	1.35	0.65	0.15	0.05	—	—
September								
Mean length (mm)	—	118	—	—	—	—	—	—
Number	—	1	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—
CPUE	—	0.15	—	—	—	—	—	—

Appendix 56. Continued:

Month	Age 1	2	3	4	5	6	7	8
October								
Mean length (mm)	104	131	141	161	—	—	—	—
Number	1	2	5	3	—	—	—	—
Percent	5.90	14.03	44.86	35.21	—	—	—	—
CPUE	0.38	0.90	2.87	2.25	—	—	—	—

Appendix 57. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 8, April 1984 through March 1985.

Month	Age 1	2	3	4	5	6	7	8
April								
Mean length (mm)	—	—	121	—	176	186	206	217
Number	—	—	2	—	8	2	6	1
Percent	—	—	10.20	—	29.32	17.01	38.98	4.49
CPUE	—	—	0.25	—	0.72	0.42	0.96	0.11
May								
Mean length (mm)	77	89	126	160	189	204	217	228
Number	1	5	13	7	5	4	1	1
Percent	2.26	11.28	29.27	20.35	17.11	13.60	3.07	3.07
CPUE	0.09	0.43	1.11	0.77	0.65	0.52	0.12	0.12
June								
Mean length (mm)	—	—	127	152	180	198	186	232
Number	—	—	6	3	4	7	4	2
Percent	—	—	25.73	11.22	16.13	23.61	14.92	8.38
CPUE	—	—	2.81	1.23	1.76	2.58	1.63	0.92
July								
Mean length (mm)	—	116	122	162	181	211	216	—
Number	—	2	5	3	4	2	1	—
Percent	—	12.60	40.24	20.02	21.04	4.07	2.03	—
CPUE	—	0.52	1.65	0.82	0.86	0.17	0.08	—
August								
Mean length (mm)	92	124	155	—	182	243	185	—
Number	1	2	4	—	1	1	1	—
Percent	8.00	32.00	44.00	—	6.00	4.00	6.00	—
CPUE	0.10	0.40	0.55	—	0.08	0.05	0.08	—
September								
Mean length (mm)	—	154	141	—	176	—	202	—
Number	—	2	5	—	2	—	1	—
Percent	—	18.71	57.48	—	16.67	—	7.14	—
CPUE	—	0.46	1.41	—	0.41	—	0.81	—

Appendix 57. Continued:

Month	Age 1	2	3	4	5	6	7	8
October								
Mean length (mm)	102	—	—	174	—	222	—	—
Number	2	—	—	2	—	1	—	—
Percent	22.22	—	—	62.96	—	14.81	—	—
CPUE	0.29	—	—	0.81	—	0.19	—	—
March								
Mean length (mm)	—	—	—	—	—	207	—	216
Number	—	—	—	—	—	1	—	1
Percent	—	—	—	—	—	50.00	—	50.00
CPUE	—	—	—	—	—	0.13	—	0.13

Appendix 58. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, May through November 1984.

Month	Age 1	2	3	4	5	6	7
May							
Mean length (mm)	—	—	—	—	326	—	410
Number	—	—	—	—	1	—	1
Percent	—	—	—	—	50.00	—	50.00
CPUE	—	—	—	—	0.05	—	0.05
July							
Mean length (mm)	—	—	240	—	—	375	400
Number	—	—	1	—	—	1	1
Percent	—	—	50.00	—	—	25.00	25.00
CPUE	—	—	0.13	—	—	0.07	0.07
August							
Mean length (mm)	136	—	280	359	357	351	—
Number	1	—	15	4	1	2	—
Percent	4.00	—	68.00	16.00	4.00	8.00	—
CPUE	0.05	—	0.85	0.20	0.05	0.10	—
September							
Mean length (mm)	—	—	291	351	—	414	425
Number	—	—	18	3	—	1	1
Percent	—	—	79.17	12.50	—	4.17	4.17
CPUE	—	—	1.27	0.20	—	0.07	0.07
November							
Mean length (mm)	—	262	305	340	—	417	395
Number	—	2	5	3	—	1	1
Percent	—	15.38	46.15	23.08	—	7.69	7.69
CPUE	—	0.07	0.20	0.10	—	0.03	0.03

Appendix 59. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 2, July through September 1984.

Month	Age 1	2	3	4	5	6	7
July							
Mean length (mm)	—	217	276	316	380	—	399
Number	—	1	31	13	2	—	2
Percent	—	2.04	63.27	26.53	4.08	—	4.08
CPUE	—	0.05	1.55	0.65	0.10	—	0.10
August							
Mean length (mm)	151	—	272	330	362	416	—
Number	1	—	2	2	2	1	—
Percent	11.11	—	33.33	22.22	22.22	11.11	—
CPUE	0.05	—	0.15	0.10	0.10	0.05	—
September							
Mean length (mm)	134	—	329	316	—	—	—
Number	1	—	2	1	—	—	—
Percent	25.00	—	50.00	25.00	—	—	—
CPUE	0.05	—	0.10	0.05	—	—	—

Appendix 60. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 3, May through September 1984.

Month	Age 1	2	3	4	5	6	7	8
May								
Mean length (mm)	—	—	—	—	—	350	—	—
Number	—	—	—	—	—	1	—	—
Percent	—	—	—	—	—	100.00	—	—
CPUE	—	—	—	—	—	0.05	—	—
June								
Mean length (mm)	—	—	271	346	—	—	—	—
Number	—	—	2	1	—	—	—	—
Percent	—	—	66.67	33.33	—	—	—	—
CPUE	—	—	0.08	0.04	—	—	—	—
July								
Mean length (mm)	—	243	271	327	364	374	397	461
Number	—	5	29	11	11	8	1	1
Percent	—	7.50	45.56	15.77	15.49	12.85	1.41	1.41
CPUE	—	0.27	1.62	0.56	0.55	0.46	0.05	0.05
August								
Mean length (mm)	242	—	332	345	360	453	—	—
Number	1	—	2	2	1	1	—	—
Percent	14.29	—	28.57	28.57	14.29	14.29	—	—
CPUE	0.05	—	0.10	0.10	0.05	0.05	—	—
September								
Mean length (mm)	158	—	281	—	—	—	—	—
Number	1	—	1	—	—	—	—	—
Percent	66.67	—	33.33	—	—	—	—	—
CPUE	0.10	—	0.05	—	—	—	—	—

Appendix 61. Estimate of smallmouth bass age-growth relationship and percentage of age groups in trap-net catches at Station 4, May through December 1984.

	Age								
Month	1	2	3	4	5	6	7	8	10
May									
Mean length (mm)	—	—	—	—	355	377	—	—	—
Number	—	—	—	—	1	2	—	—	—
Percent	—	—	—	—	33.33	66.67	—	—	—
CPUE	—	—	—	—	0.07	0.13	—	—	—
June									
Mean length (mm)	—	—	282	328	—	396	385	—	—
Number	—	—	4	4	—	1	1	—	—
Percent	—	—	56.25	33.75	—	5.00	5.00	—	—
CPUE	—	—	0.66	0.40	—	0.06	0.06	—	—
July									
Mean length (mm)	—	211	277	326	365	412	—	—	—
Number	—	20	41	4	1	1	—	—	—
Percent	—	30.43	60.77	5.89	1.45	1.45	—	—	—
CPUE	—	0.88	1.75	0.17	0.04	0.04	—	—	—
August									
Mean length (mm)	—	211	299	350	—	373	417	—	—
Number	—	10	3	4	—	1	1	—	—
Percent	—	59.09	13.64	18.18	—	4.55	4.55	—	—
CPUE	—	1.18	0.27	0.36	—	0.09	0.09	—	—
September									
Mean length (mm)	179	270	305	343	—	—	404	433	459
Number	1	9	9	2	—	—	1	1	1
Percent	41.7	37.50	37.50	8.33	—	—	4.17	4.17	4.17
CPUE	0.07	0.60	0.60	0.13	—	—	0.07	0.07	0.07
October									
Mean length (mm)	—	—	312	331	—	—	467	—	—
Number	—	—	6	4	—	—	1	—	—
Percent	—	—	54.55	36.36	—	—	9.09	—	—
CPUE	—	—	0.30	0.20	—	—	0.05	—	—

Appendix 61. Continued:

Month	Age 1	2	3	4	5	6	7	8	10
November									
Mean length (mm)	—	—	—	—	—	—	461	—	—
Number	—	—	—	—	—	—	1	—	—
Percent	—	—	—	—	—	—	100.00	—	—
CPUE	—	—	—	—	—	—	0.07	—	—
December									
Mean length (mm)	—	—	290	—	—	—	—	—	—
Number	—	—	1	—	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—	—
CPUE	—	—	0.25	—	—	—	—	—	—

Appendix 62. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 5, April through November 1984.

	Age							
Month	1	2	3	4	5	6	7	8
April								
Mean length (mm)	—	—	275	321	374	345	—	449
Number	—	—	9	2	1	1	—	1
Percent	—	—	64.29	14.29	7.14	7.14	—	7.14
CPUE	—	—	0.23	0.05	0.03	0.03	—	0.03
May								
Mean length (mm)	—	191	265	294	—	365	415	—
Number	—	1	32	18	—	1	1	—
Percent	—	1.79	63.83	30.82	—	2.68	0.89	—
CPUE	—	0.08	2.98	1.44	—	0.13	0.04	—
June								
Mean length (mm)	—	187	248	318	319	—	—	—
Number	—	13	11	3	1	—	—	—
Percent	—	37.72	52.52	7.32	2.44	—	—	—
CPUE	—	0.62	0.86	0.12	0.04	—	—	—
July								
Mean length (mm)	143	193	259	334	—	—	—	—
Number	3	23	11	9	—	—	—	—
Percent	9.46	59.81	18.57	12.16	—	—	—	—
CPUE	0.35	2.21	0.69	0.45	—	—	—	—
August								
Mean length (mm)	168	221	315	342	—	—	—	—
Number	36	15	2	6	—	—	—	—
Percent	61.02	25.42	3.39	10.17	—	—	—	—
CPUE	1.80	0.75	0.10	0.30	—	—	—	—
September								
Mean length (mm)	177	233	314	341	—	—	—	—
Number	8	4	8	3	—	—	—	—
Percent	58.93	14.29	19.64	7.14	—	—	—	—
CPUE	2.36	0.57	0.79	0.29	—	—	—	—

Appendix 62. Continued:

Month	Age 1	2	3	4	5	6	7	8
October								
Mean length (mm)	192	255	302	354	412	—	432	—
Number	19	128	72	12	3	—	3	—
Percent	8.39	57.36	27.78	4.41	1.03	—	1.03	—
CPUE	0.98	6.70	3.25	0.52	0.12	—	0.12	—
November								
Mean length (mm)	—	280	308	—	425	—	—	—
Number	—	7	7	—	1	—	—	—
Percent	—	48.63	49.45	—	1.92	—	—	—
CPUE	—	0.87	0.89	—	0.03	—	—	—

Appendix 63. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 6, May through October 1984.

	Age						
Month	1	2	3	4	5	6	8
May							
Mean length (mm)	—	201	—	—	—	—	—
Number	—	1	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—
CPUE	—	0.07	—	—	—	—	—
June							
Mean length (mm)	—	188	254	303	397	—	—
Number	—	23	11	2	1	—	—
Percent	—	64.21	28.29	5.00	2.50	—	—
CPUE	—	1.28	0.57	0.10	0.05	—	—
July							
Mean length (mm)	146	198	294	340	—	—	433
Number	4	4	7	3	—	—	1
Percent	20.00	20.00	40.00	15.00	—	—	5.00
CPUE	0.20	0.20	0.40	0.15	—	—	0.05
August							
Mean length (mm)	155	179	—	—	—	—	—
Number	3	1	—	—	—	—	—
Percent	75.00	25.00	—	—	—	—	—
CPUE	0.15	0.05	—	—	—	—	—
September							
Mean length (mm)	200	237	309	364	—	423	—
Number	7	1	2	1	—	1	—
Percent	61.54	7.69	15.38	7.69	—	7.69	—
CPUE	0.40	0.05	0.10	0.05	—	0.05	—
October							
Mean length (mm)	206	257	340	—	411	—	—
Number	6	4	2	—	1	—	—
Percent	50.00	28.57	14.29	—	7.14	—	—
CPUE	0.35	0.20	0.10	—	0.05	—	—

Appendix 64. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 7, May through October 1984.

Month	Age 1	Age 2	Age 3
June			
Mean length (mm)	—	191	180
Number	—	5	1
Percent	—	83.33	16.67
CPUE	—	0.25	0.05
June			
Mean length (mm)	—	183	209
Number	—	8	1
Percent	—	88.89	11.11
CPUE	—	0.53	0.07
August			
Mean length (mm)	169	—	344
Number	20	—	2
Percent	91.30	—	8.70
CPUE	1.05	—	0.10
September			
Mean length (mm)	177	—	305
Number	8	—	1
Percent	88.89	—	11.11
CPUE	0.40	—	0.05
October			
Mean length (mm)	197	278	312
Number	8	3	5
Percent	47.06	20.59	32.35
CPUE	0.53	0.23	0.37

Appendix 65. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 8, June through September 1984.

Month	Age 1	2	3	4	5	6
June						
Mean length (mm)	—	—	241	338	—	—
Number	—	—	5	5	—	—
Percent	—	—	50.00	50.00	—	—
CPUE	—	—	0.33	0.33	—	—
July						
Mean length (mm)	—	—	276	—	394	—
Number	—	—	3	—	1	—
Percent	—	—	75.00	—	25.00	—
CPUE	—	—	0.15	—	0.05	—
August						
Mean length (mm)	181	245	327	—	392	—
Number	14	5	8	—	1	—
Percent	51.72	17.24	27.59	—	3.45	—
CPUE	0.75	0.25	0.40	—	0.05	—
September						
Mean length (mm)	201	240	306	—	364	394
Number	13	2	2	—	1	1
Percent	68.42	10.53	10.53	—	5.26	5.26
CPUE	0.65	0.10	0.10	—	0.05	0.05

Appendix 66. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, May 1984 through February 1985.

	Age									
Month	1	2	3	4	5	6	7	8	9	10
May										
Mean length (mm)	—	—	202	210	235	274	282	246	324	—
Number	—	—	3	4	1	1	1	1	1	—
Percent	—	—	23.08	30.77	7.69	15.38	7.69	7.69	7.69	—
CPUE	—	—	0.15	0.20	0.05	0.10	0.05	0.05	0.05	—
June										
Mean length (mm)	—	152	182	218	261	—	300	343	—	—
Number	—	12	5	4	2	—	5	1	—	—
Percent	—	43.13	18.13	13.13	6.88	—	16.25	2.50	—	—
CPUE	—	0.86	0.36	0.26	0.14	—	0.33	0.05	—	—
July										
Mean length (mm)	—	159	193	233	208	271	316	271	—	354
Number	—	1	3	5	2	2	2	1	—	1
Percent	—	22.54	25.12	18.43	9.62	4.93	14.08	2.46	—	2.82
CPUE	—	1.07	1.19	0.87	0.46	0.23	0.67	0.12	—	0.13
August										
Mean length (mm)	—	—	168	267	—	—	334	—	—	—
Number	—	—	2	1	—	—	1	—	—	—
Percent	—	—	82.35	11.76	—	—	5.88	—	—	—
CPUE	—	—	0.70	0.10	—	—	0.05	—	—	—
September										
Mean length (mm)	—	142	186	263	262	257	337	—	—	—
Number	—	1	1	1	2	1	2	—	—	—
Percent	—	15.79	36.84	5.26	26.32	5.26	10.53	—	—	—
CPUE	—	0.20	0.47	0.07	0.33	0.07	0.13	—	—	—
November										
Mean length (mm)	153	192	—	214	—	—	—	—	—	—
Number	1	3	—	2	—	—	—	—	—	—
Percent	23.81	46.83	—	29.37	—	—	—	—	—	—
CPUE	0.17	0.33	—	0.21	—	—	—	—	—	—

Appendix 66. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
February										
Mean length (mm)	—	—	—	—	—	—	264	292	—	—
Number	—	—	—	—	—	—	2	5	—	—
Percent	—	—	—	—	—	—	25.00	75.00	—	—
CPUE	—	—	—	—	—	—	0.50	1.50	—	—

Appendix 67. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 2, May 1984 through February 1985.

Month	Age 1	2	3	4	5	6	7	8	9	10
May										
Mean length (mm)	—	143	180	206	251	—	254	310	—	—
Number	—	11	12	11	8	—	2	1	—	—
Percent	—	22.37	27.85	26.14	15.45	—	4.55	3.64	—	—
CPUE	—	0.62	0.77	0.72	0.43	—	0.13	0.10	—	—
June										
Mean length (mm)	—	143	173	205	222	270	292	310	—	351
Number	—	8	10	7	4	2	4	1	—	1
Percent	—	20.51	19.09	19.09	13.11	11.54	11.54	2.56	—	2.56
CPUE	—	0.80	0.74	0.74	0.51	0.45	0.45	0.10	—	0.10
July										
Mean length (mm)	—	149	190	216	249	276	303	269	318	—
Number	—	11	20	14	3	3	5	2	1	—
Percent	—	13.10	34.10	29.95	6.83	5.00	6.99	3.08	0.96	—
CPUE	—	0.68	1.77	1.56	0.36	0.26	0.36	0.16	0.05	—
August										
Mean length (mm)	—	166	—	—	—	—	—	—	—	—
Number	—	1	—	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—	—
CPUE	—	0.60	—	—	—	—	—	—	—	—
September										
Mean length (mm)	138	151	201	227	256	—	—	—	—	—
Number	1	13	12	1	1	—	—	—	—	—
Percent	6.03	57.76	32.47	2.01	1.72	—	—	—	—	—
CPUE	0.18	1.68	0.94	0.06	0.05	—	—	—	—	—
January										
Mean length (mm)	—	—	—	232	—	—	—	—	—	—
Number	—	—	—	1	—	—	—	—	—	—
Percent	—	—	—	100.00	—	—	—	—	—	—
CPUE	—	—	—	0.25	—	—	—	—	—	—

Appendix 67. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
February										
Mean length (mm)	—	—	—	208	—	—	—	—	—	—
Number	—	—	—	1	—	—	—	—	—	—
Percent	—	—	—	100.00	—	—	—	—	—	—
CPUE	—	—	—	0.25	—	—	—	—	—	—

Appendix 68. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 3, May 1984 through March 1985.

	Age							
Month	2	3	4	5	6	7	8	9
May								
Mean length (mm)	145	195	212	221	264	297	324	293
Number	7	21	14	8	3	6	1	1
Percent	10.74	30.08	22.60	13.01	6.68	11.34	0.69	4.86
CPUE	0.77	2.17	1.63	0.94	0.48	0.82	0.05	0.35
June								
Mean length (mm)	148	172	218	257	269	261	316	—
Number	4	8	10	1	7	13	1	—
Percent	8.44	29.71	29.54	1.95	9.84	19.19	1.33	—
CPUE	1.10	3.86	3.84	0.25	1.28	2.49	0.17	—
August								
Mean length (mm)	150	170	—	—	254	—	328	—
Number	4	2	—	—	1	—	1	—
Percent	73.33	20.22	—	—	3.87	—	2.58	—
CPUE	5.68	1.57	—	—	0.30	—	0.20	—
September								
Mean length (mm)	150	205	238	—	244	286	—	—
Number	10	2	1	—	1	3	—	—
Percent	75.67	10.58	2.92	—	2.92	7.92	—	—
CPUE	2.27	0.32	0.09	—	0.09	0.24	—	—
November								
Mean length (mm)	—	—	—	—	—	—	304	—
Number	—	—	—	—	—	—	1	—
Percent	—	—	—	—	—	—	100.00	—
CPUE	—	—	—	—	—	—	0.13	—
March								
Mean length (mm)	—	154	—	257	—	—	—	—
Number	—	5	—	2	—	—	—	—
Percent	—	62.50	—	37.50	—	—	—	—
CPUE	—	0.63	—	0.38	—	—	—	—

Appendix 69. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 4, May 1984 through March 1985.

	Age								
Month	2	3	4	5	6	7	8	9	10
May									
Mean length (mm)	131	168	190	201	244	271	302	336	333
Number	23	28	30	11	7	27	1	1	1
Percent	26.55	20.40	21.04	7.30	4.25	18.57	0.75	0.56	0.56
CPUE	3.13	2.41	2.48	0.86	0.50	2.19	0.09	0.07	0.07
June									
Mean length (mm)	—	191	201	226	230	239	—	—	—
Number	—	3	11	1	1	3	—	—	—
Percent	—	20.31	49.73	3.23	14.86	11.86	—	—	—
CPUE	—	1.77	4.33	0.28	1.29	1.03	—	—	—
July									
Mean length (mm)	152	210	219	217	262	273	—	—	—
Number	1	1	2	1	2	2	—	—	—
Percent	6.25	8.33	45.83	8.33	15.63	15.63	—	—	—
CPUE	0.04	0.06	0.31	0.06	0.10	0.10	—	—	—
August									
Mean length (mm)	156	194	—	—	266	239	—	—	—
Number	1	1	—	—	1	1	—	—	—
Percent	25.00	25.00	—	—	25.00	25.00	—	—	—
CPUE	0.09	0.09	—	—	0.09	0.09	—	—	—
September									
Mean length (mm)	—	—	—	—	—	267	—	—	—
Number	—	—	—	—	—	1	—	—	—
Percent	—	—	—	—	—	100.00	—	—	—
CPUE	—	—	—	—	—	1.40	—	—	—
October									
Mean length (mm)	163	199	246	235	263	258	—	—	—
Number	4	5	3	1	2	1	—	—	—
Percent	34.51	26.27	18.79	7.19	8.82	4.41	—	—	—
CPUE	0.88	0.67	0.48	0.18	0.23	0.11	—	—	—

Appendix 69. Continued:

Month	Age 2	3	4	5	6	7	8	9	10
November									
Mean length (mm)	152	—	248	248	267	—	—	—	—
Number	6	—	1	3	3	—	—	—	—
Percent	31.71	—	7.32	21.95	39.02	—	—	—	—
CPUE	0.87	—	0.20	0.60	1.07	—	—	—	—
December									
Mean length (mm)	167	187	172	—	300	258	—	—	—
Number	1	3	1	—	1	1	—	—	—
Percent	14.29	42.86	14.29	—	14.29	14.29	—	—	—
CPUE	0.25	0.75	0.25	—	0.25	0.25	—	—	—
March									
Mean length (mm)	—	149	—	—	—	—	—	—	—
Number	—	3	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—
CPUE	—	0.25	—	—	—	—	—	—	—

Appendix 70. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 5, April through November 1984.

	Age						
Month	2	3	4	5	6	7	8
April							
Mean length (mm)	153	161	180	193	231	254	319
Number	2	13	41	9	3	3	1
Percent	2.77	17.15	63.69	11.94	2.24	1.94	0.27
CPUE	0.25	1.58	5.86	1.10	0.21	0.18	0.03
May							
Mean length (mm)	—	196	207	255	—	—	—
Number	—	2	3	2	—	—	—
Percent	—	32.22	54.44	13.33	—	—	—
CPUE	—	0.20	0.34	0.08	—	—	—
June							
Mean length (mm)	147	161	181	217	221	242	284
Number	3	7	9	2	1	3	2
Percent	19.94	34.62	27.38	3.70	1.85	7.64	4.86
CPUE	0.57	1.00	0.79	0.11	0.05	0.22	0.14
July							
Mean length (mm)	—	188	246	226	—	—	—
Number	—	2	1	1	—	—	—
Percent	—	50.00	25.00	25.00	—	—	—
CPUE	—	0.10	0.05	0.05	—	—	—
August							
Mean length (mm)	150	162	220	253	—	—	—
Number	8	2	1	2	—	—	—
Percent	56.19	15.24	11.90	16.67	—	—	—
CPUE	0.59	0.16	0.13	0.18	—	—	—
September							
Mean length (mm)	161	—	229	282	285	—	—
Number	2	—	2	1	2	—	—
Percent	36.36	—	36.36	9.09	18.18	—	—
CPUE	0.29	—	0.29	0.07	0.14	—	—

Appendix 70. Continued:

Month	Age 2	3	4	5	6	7	8
October							
Mean length (mm)	—	214	249	244	300	—	—
Number	—	4	3	3	1	—	—
Percent	—	32.00	31.50	31.50	5.00	—	—
CPUE	—	0.26	0.25	0.25	0.04	—	—
November							
Mean length (mm)	184	—	—	—	—	279	—
Number	1	—	—	—	—	1	—
Percent	66.67	—	—	—	—	33.33	—
CPUE	0.07	—	—	—	—	0.03	—

Appendix 71. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 6, April 1984 through March 1985.

	Age					
Month	2	3	4	5	6	7
April						
Mean length (mm)	142	162	165	188	—	—
Number	2	7	2	1	—	—
Percent	13.09	56.42	24.19	6.30	—	—
CPUE	0.81	3.50	1.50	0.39	—	—
May						
Mean length (mm)	139	169	190	247	—	320
Number	2	5	12	5	—	1
Percent	16.00	25.10	45.57	11.33	—	2.00
CPUE	0.53	0.84	1.52	0.38	—	0.07
June						
Mean length)mm)	136	146	187	217	—	—
Number	2	3	7	3	—	—
Percent	13.07	19.61	58.82	8.50	—	—
CPUE	1.00	1.50	4.50	0.65	—	—
July						
Mean length (mm)	145	196	190	—	305	309
Number	22	8	6	—	1	1
Percent	58.21	20.42	18.63	—	1.37	1.37
CPUE	2.12	0.75	0.68	—	0.05	0.05
August						
Mean length (mm)	146	211	—	—	—	—
Number	10	2	—	—	—	—
Percent	94.44	5.56	—	—	—	—
CPUE	5.10	0.30	—	—	—	—
September						
Mean length (mm)	173	173	—	—	289	281
Number	1	1	—	—	1	1
Percent	46.51	46.51	—	—	3.49	3.49
CPUE	1.00	1.00	—	—	0.08	0.08

Appendix 71. Continued:

Month	Age 2	3	4	5	6	7
October						
Mean length (mm)	155	159	220	—	—	—
Number	5	1	1	—	—	—
Percent	88.67	10.00	1.33	—	—	—
CPUE	3.33	0.38	0.05	—	—	—
March						
Mean length (mm)	—	159	199	—	—	—
Number	—	4	1	—	—	—
Percent	—	80.00	20.00	—	—	—
CPUE	—	1.00	0.25	—	—	—

Appendix 72. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 7, April 1984 through March 1985.

	Age					
Month	2	3	4	5	6	7
April						
Mean length (mm)	147	171	184	185	247	292
Number	2	13	11	4	1	1
Percent	6.35	45.40	31.11	13.97	1.59	1.59
CPUE	0.20	1.43	0.98	0.44	0.05	0.05
May						
Mean length (mm)	—	161	180	217	—	292
Number	—	5	30	7	—	1
Percent	—	11.13	71.30	16.49	—	1.09
CPUE	—	1.02	6.56	1.52	—	0.10
June						
Mean length (mm)	144	157	174	183	—	—
Number	1	12	21	1	—	—
Percent	4.00	41.15	52.99	1.86	—	—
CPUE	0.41	4.20	5.40	0.19	—	—
July						
Mean length (mm)	139	191	183	207	—	—
Number	3	6	3	1	—	—
Percent	32.50	41.17	21.33	5.00	—	—
CPUE	1.73	2.20	1.14	0.27	—	—
August						
Mean length (mm)	155	190	—	—	—	—
Number	17	4	—	—	—	—
Percent	83.57	16.43	—	—	—	—
CPUE	1.46	0.29	—	—	—	—
October						
Mean length (mm)	159	189	—	—	—	—
Number	16	5	—	—	—	—
Percent	87.56	12.44	—	—	—	—
CPUE	7.41	1.05	—	—	—	—

Appendix 72. Continued:

Month	Age 2	3	4	5	6	7
March						
Mean length (mm)	133	—	—	—	—	—
Number	1	—	—	—	—	—
Percent	100.00	—	—	—	—	—
CPUE	0.50	—	—	—	—	—

Appendix 73. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 8, April 1984 through March 1985.

	Age					
Month	2	3	4	5	6	7
<u>April</u>						
Mean length (mm)	138	166	186	193	212	—
Number	7	13	47	8	1	—
Percent	7.53	16.68	63.60	10.81	1.38	—
CPUE	0.70	1.55	5.91	1.01	0.13	—
<u>May</u>						
Mean length (mm)	128	161	178	213	—	223
Number	7	50	38	7	—	2
Percent	6.85	49.61	37.46	5.02	—	1.06
CPUE	1.62	11.71	8.84	1.18	—	0.25
<u>June</u>						
Mean length (mm)	—	158	175	203	—	—
Number	—	3	8	1	—	—
Percent	—	20.67	73.71	5.62	—	—
CPUE	—	1.23	4.37	0.33	—	—
<u>July</u>						
Mean length (mm)	148	155	175	178	—	—
Number	3	6	2	1	—	—
Percent	27.50	50.28	12.04	10.19	—	—
CPUE	1.49	2.72	0.65	0.55	—	—
<u>August</u>						
Mean length (mm)	149	155	193	—	—	—
Number	14	8	2	—	—	—
Percent	52.91	39.68	7.41	—	—	—
CPUE	1.67	1.25	0.23	—	—	—
<u>September</u>						
Mean length (mm)	154	159	164	—	208	—
Number	6	5	5	—	1	—
Percent	36.67	31.56	29.11	—	2.67	—
CPUE	1.38	1.18	1.09	—	0.10	—

Appendix 73. Continued:

Month	Age 2	3	4	5	6	7
October						
Mean length (mm)	157	172	—	—	—	—
Number	8	10	—	—	—	—
Percent	48.80	51.20	—	—	—	—
CPUE	2.81	2.95	—	—	—	—
March						
Mean length (mm)	—	181	207	238	—	—
Number	—	4	3	2	—	—
Percent	—	41.67	38.89	19.44	—	—
CPUE	—	0.63	0.58	0.29	—	—

Appendix 74. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, May through November 1984.

	Age					
Month	1	2	3	4	5	7
May						
Mean length (mm)	—	296	—	453	—	—
Number	—	1	—	1	—	—
Percent	—	50.00	—	50.00	—	—
CPUE	—	0.05	—	0.05	—	—
June						
Mean length (mm)	—	314	365	432	—	—
Number	—	11	3	1	—	—
Percent	—	73.33	20.00	6.67	—	—
CPUE	—	0.55	0.15	0.05	—	—
July						
Mean length (mm)	—	316	—	—	—	—
Number	—	45	—	—	—	—
Percent	—	100.00	—	—	—	—
CPUE	—	5.33	—	—	—	—
August						
Mean length (mm)	—	331	396	461	503	535
Number	—	38	4	3	1	3
Percent	—	73.08	8.65	8.65	1.92	7.69
CPUE	—	1.90	0.23	0.23	0.05	0.20
September						
Mean length (mm)	314	337	396	479	497	—
Number	3	63	2	2	1	—
Percent	4.17	88.89	2.78	2.78	1.39	—
CPUE	0.20	4.27	0.13	0.13	0.07	—
November						
Mean length (mm)	—	373	—	486	485	463
Number	—	15	—	2	1	1
Percent	—	78.95	—	10.53	5.26	5.26
CPUE	—	0.50	—	0.07	0.03	0.03

Appendix 75. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 2, May through September 1984.

	Age						
Month	0	2	3	4	5	6	7
May							
Mean length (mm)	—	335	422	451	—	—	—
Number	—	3	2	2	—	—	—
Percent	—	42.86	28.57	28.57	—	—	—
CPUE	—	0.15	0.10	0.10	—	—	—
June							
Mean length (mm)	—	304	367	437	—	486	525
Number	—	14	1	3	—	1	1
Percent	—	77.78	3.70	11.11	—	3.70	3.70
CPUE	—	1.05	0.05	0.15	—	0.05	0.05
July							
Mean length (mm)	—	308	397	438	516	592	579
Number	—	26	2	2	2	1	2
Percent	—	76.32	5.26	5.26	5.26	2.63	5.26
CPUE	—	1.45	0.10	0.10	0.10	0.05	0.10
August							
Mean length (mm)	—	351	—	—	—	—	—
Number	—	3	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—
CPUE	—	0.15	—	—	—	—	—
September							
Mean length (mm)	173	356	—	500	512	—	—
Number	2	6	—	2	2	—	—
Percent	14.29	57.14	—	14.29	14.29	—	—
CPUE	0.10	0.40	—	0.10	0.10	—	—

Appendix 76. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 3, May through November 1984.

Month	Age 1	2	3	4	5	6	7	8	11
May									
Mean length (mm)	—	310	363	397	—	—	—	—	—
Number	—	23	2	3	—	—	—	—	—
Percent	—	82.14	7.14	10.71	—	—	—	—	—
CPUE	—	1.15	0.10	0.15	—	—	—	—	—
June									
Mean length (mm)	—	299	367	—	498	518	576	545	732
Number	—	101	4	—	4	2	4	1	1
Percent	—	90.58	2.71	—	2.23	1.12	2.23	0.56	0.56
CPUE	—	6.49	0.19	—	0.16	0.08	0.16	0.04	0.04
July									
Mean length (mm)	266	314	427	477	481	—	540	—	—
Number	1	23	3	5	1	—	3	—	—
Percent	2.78	63.89	8.33	13.89	2.78	—	8.33	—	—
CPUE	0.05	1.15	0.15	0.25	0.05	—	0.15	—	—
August									
Mean length (mm)	—	344	—	393	—	—	—	—	—
Number	—	15	—	1	—	—	—	—	—
Percent	—	93.75	—	6.25	—	—	—	—	—
CPUE	—	0.75	—	0.05	—	—	—	—	—
September									
Mean length (mm)	—	360	471	492	549	590	564	704	—
Number	—	23	10	8	5	3	1	1	—
Percent	—	45.10	19.61	15.69	9.80	5.88	1.96	1.96	—
CPUE	—	1.15	0.50	0.40	0.25	0.15	0.05	0.05	—
November									
Mean length (mm)	—	366	—	424	501	—	485	—	—
Number	—	24	—	3	3	—	1	—	—
Percent	—	77.42	—	9.68	9.68	—	3.23	—	—
CPUE	—	1.60	—	0.20	0.20	—	0.07	—	—

Appendix 77. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 4, May 1984 through March 1985.

	Age									
Month	0	1	2	3	4	5	6	7	8	11
<u>May</u>										
Mean length (mm)	—	—	335	352	437	483	470	531	—	633
Number	—	—	2	1	8	3	2	3	—	1
Percent	—	—	10.00	5.00	40.00	15.00	10.00	15.00	—	5.00
CPUE	—	—	0.13	0.07	0.53	0.20	0.13	0.20	—	0.07
<u>June</u>										
Mean length (mm)	—	—	321	400	456	461	536	508	—	—
Number	—	—	19	5	11	3	5	2	—	—
Percent	—	—	76.56	3.91	11.46	2.60	3.91	1.56	—	—
CPUE	—	—	5.76	0.29	0.86	0.20	0.29	0.12	—	—
<u>July</u>										
Mean length (mm)	—	—	305	358	—	445	—	596	—	—
Number	—	—	14	1	—	1	—	1	—	—
Percent	—	—	75.00	5.00	—	15.00	—	5.00	—	—
CPUE	—	—	0.63	0.04	—	0.13	—	0.04	—	—
<u>August</u>										
Mean length (mm)	—	283	301	423	486	472	—	535	—	—
Number	—	1	5	1	2	1	—	1	—	—
Percent	—	16.67	41.67	8.33	16.67	8.33	—	8.33	—	—
CPUE	—	0.18	0.45	0.09	0.18	0.09	—	0.09	—	—
<u>September</u>										
Mean length (mm)	—	—	347	—	—	—	—	—	—	—
Number	—	—	14	—	—	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—	—	—
CPUE	—	—	0.93	—	—	—	—	—	—	—
<u>October</u>										
Mean length (mm)	—	—	373	437	498	515	593	589	585	—
Number	—	—	15	3	3	6	5	3	2	—
Percent	—	—	42.11	7.89	7.89	15.79	13.16	7.89	5.26	—
CPUE	—	—	0.80	0.15	0.15	0.30	0.25	0.15	0.10	—

Appendix 77. Continued:

Month	Age 0	1	2	3	4	5	6	7	8	11
<u>November</u>										
Mean length (mm)	—	—	372	438	—	522	—	—	—	—
Number	—	—	11	2	—	1	—	—	—	—
Percent	—	—	85.42	10.42	—	4.17	—	—	—	—
CPUE	—	—	1.37	0.17	—	0.07	—	—	—	—
<u>December</u>										
Mean length (mm)	213	178	—	—	—	—	—	—	—	—
Number	1	2	—	—	—	—	—	—	—	—
Percent	11.11	88.89	—	—	—	—	—	—	—	—
CPUE	0.25	2.00	—	—	—	—	—	—	—	—
<u>March</u>										
Mean length (mm)	—	—	—	410	—	491	—	—	—	—
Number	—	—	—	1	—	2	—	—	—	—
Percent	—	—	—	40.00	—	60.00	—	—	—	—
CPUE	—	—	—	0.17	—	0.25	—	—	—	—

Appendix 78. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 5, April through November 1984.

	Age							
Month	0	2	3	4	5	6	7	9
April								
Mean length (mm)	—	308	389	443	519	515	672	645
Number	—	159	30	7	2	3	1	1
Percent	—	84.56	10.95	2.24	0.64	0.96	0.32	0.32
CPUE	—	6.60	0.85	0.18	0.05	0.08	0.03	0.03
May								
Mean length (mm)	—	307	378	420	483	—	533	—
Number	—	51	15	7	2	—	1	—
Percent	—	87.00	9.04	3.06	0.60	—	0.30	—
CPUE	—	12.07	1.25	0.42	0.08	—	0.04	—
June								
Mean length (mm)	—	296	376	—	452	—	—	—
Number	—	34	4	—	2	—	—	—
Percent	—	90.77	6.15	—	3.08	—	—	—
CPUE	—	2.36	0.16	—	0.08	—	—	—
July								
Mean length (mm)	—	310	340	—	455	—	—	—
Number	—	31	2	—	1	—	—	—
Percent	—	91.45	5.92	—	2.63	—	—	—
CPUE	—	1.74	0.11	—	0.05	—	—	—
August								
Mean length (mm)	—	323	—	—	—	—	—	—
Number	—	14	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—
CPUE	—	1.00	—	—	—	—	—	—
September								
Mean length (mm)	—	331	—	—	—	—	—	—
Number	—	13	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—
CPUE	—	1.79	—	—	—	—	—	—

Appendix 78. Continued:

	Age							
Month	0	2	3	4	5	6	7	9
October								
Mean length (mm)	171	366	407	—	—	—	—	—
Number	1	18	3	—	—	—	—	—
Percent	4.35	82.61	13.04	—	—	—	—	—
CPUE	0.04	0.76	0.12	—	—	—	—	—
November								
Mean length (mm)	194	—	—	—	—	—	—	—
Number	20	—	—	—	—	—	—	—
Percent	100.00	—	—	—	—	—	—	—
CPUE	0.72	—	—	—	—	—	—	—

Appendix 79. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 6, April through October 1984.

	Age									
Month	0	1	2	3	4	5	6	7	8	9
April										
Mean length (mm)	—	—	305	365	446	—	—	560	592	616
Number	—	—	14	3	1	—	—	1	1	1
Percent	—	—	70.37	12.96	4.17	—	—	4.17	4.17	4.17
CPUE	—	—	0.48	0.09	0.03	—	—	0.03	0.03	0.03
May										
Mean length (mm)	—	—	294	—	441	413	—	547	—	—
Number	—	—	11	—	2	1	—	2	—	—
Percent	—	—	68.75	—	12.50	6.25	—	12.50	—	—
CPUE	—	—	0.73	—	0.13	0.07	—	0.13	—	—
June										
Mean length (mm)	—	—	303	—	—	—	—	530	—	—
Number	—	—	11	—	—	—	—	3	—	—
Percent	—	—	80.00	—	—	—	—	20.00	—	—
CPUE	—	—	0.60	—	—	—	—	0.15	—	—
July										
Mean length (mm)	—	277	331	394	463	483	584	574	—	—
Number	—	6	8	2	1	3	1	1	—	—
Percent	—	27.27	36.36	9.09	4.55	13.64	4.55	4.55	—	—
CPUE	—	0.30	0.40	0.10	0.05	0.15	0.05	0.05	—	—
August										
Mean length (mm)	—	—	327	398	448	—	—	—	—	—
Number	—	—	8	1	1	—	—	—	—	—
Percent	—	—	80.00	10.00	10.00	—	—	—	—	—
CPUE	—	—	0.40	0.05	0.05	—	—	—	—	—
September										
Mean length (mm)	196	—	348	483	—	—	—	587	—	—
Number	1	—	7	1	—	—	—	2	—	—
Percent	14.29	—	64.29	7.14	—	—	—	14.29	—	—
CPUE	0.10	—	0.45	0.05	—	—	—	0.10	—	—

Appendix 79. Continued:

Month	Age 0	1	2	3	4	5	6	7	8	9
October										
Mean length (mm)	192	—	356	420	—	—	—	592	—	—
Number	2	—	4	1	—	—	—	1	—	—
Percent	22.22	—	55.56	11.11	—	—	—	11.11	—	—
CPUE	0.10	—	0.25	0.05	—	—	—	0.05	—	—

Appendix 80. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 7, April through December 1984.

Month	Age 0	1	2	3	4	5	6	7
April								
Mean length (mm)	—	—	312	397	428	461	—	541
Number	—	—	30	4	4	2	—	2
Percent	—	—	80.78	5.97	6.10	3.25	—	3.90
CPUE	—	—	3.11	0.23	0.24	0.13	—	0.15
May								
Mean length (mm)	—	—	308	425	423	505	609	—
Number	—	—	25	3	3	1	1	—
Percent	—	—	90.12	3.70	3.70	1.23	1.23	—
CPUE	—	—	7.30	0.30	0.30	0.10	0.10	—
June								
Mean length (mm)	—	—	294	—	—	553	488	626
Number	—	—	24	—	—	3	1	1
Percent	—	—	87.80	—	—	7.32	2.44	2.44
CPUE	—	—	1.80	—	—	0.15	0.05	0.05
July								
Mean length (mm)	—	—	316	377	477	526	567	556
Number	—	—	28	3	1	4	2	1
Percent	—	—	75.56	6.67	2.22	8.89	4.44	2.22
CPUE	—	—	2.27	0.20	0.07	0.27	0.13	0.07
August								
Mean length (mm)	174	—	334	418	—	671	—	—
Number	1	—	67	2	—	1	—	—
Percent	1.01	—	95.96	2.02	—	1.01	—	—
CPUE	0.05	—	4.75	0.10	—	0.05	—	—
September								
Mean length (mm)	—	314	347	436	482	534	584	—
Number	—	2	106	8	7	2	4	—
Percent	—	271	83.09	5.75	4.55	1.30	2.60	—
CPUE	—	0.21	6.40	0.44	0.35	0.10	0.20	—

Appendix 80. Continued:

Month	Age 0	1	2	3	4	5	6	7
October								
Mean length (mm)	210	—	354	443	—	—	544	—
Number	5	—	26	2	—	—	4	—
Percent	17.39	—	69.57	4.35	—	—	8.70	—
CPUE	0.53	—	2.13	0.13	—	—	0.27	—
December								
Mean length (mm)	207	—	—	—	—	—	—	—
Number	1	—	—	—	—	—	—	—
Percent	100.00	—	—	—	—	—	—	—
CPUE	0.25	—	—	—	—	—	—	—

Appendix 81. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 8, April through October 1984.

	Age							
Month	0	1	2	3	4	5	6	8
April								
Mean length (mm)	—	—	338	384	457	—	—	—
Number	—	—	4	1	1	—	—	—
Percent	—	—	66.67	16.67	16.67	—	—	—
CPUE	—	—	0.20	0.05	0.05	—	—	—
May								
Mean length (mm)	—	—	297	353	—	—	497	—
Number	—	—	3	2	—	—	1	—
Percent	—	—	50.00	33.33	—	—	16.67	—
CPUE	—	—	0.20	0.13	—	—	0.07	—
June								
Mean length (mm)	—	—	302	405	465	—	535	606
Number	—	—	19	4	3	—	3	1
Percent	—	—	83.33	8.53	3.49	—	3.49	1.16
CPUE	—	—	4.78	0.49	0.20	—	0.20	0.07
July								
Mean length (mm)	—	260	291	471	—	—	520	—
Number	—	5	3	3	—	—	2	—
Percent	—	38.46	23.08	23.08	—	—	15.38	—
CPUE	—	0.25	0.15	0.15	—	—	0.10	—
August								
Mean length (mm)	—	231	339	—	497	519	568	—
Number	—	1	27	—	3	2	1	—
Percent	—	2.94	79.41	—	8.82	5.88	2.94	—
CPUE	—	0.05	1.35	—	0.15	0.10	0.05	—
September								
Mean length (mm)	192	269	355	387	427	—	549	—
Number	1	2	18	1	1	—	3	—
Percent	3.70	7.41	70.37	3.70	3.70	—	11.11	—
CPUE	0.05	0.10	0.95	0.05	0.05	—	0.15	—

Appendix 81. Continued:

Month	Age 0	1	2	3	4	5	6	8
October								
Mean length (mm)	206	273	367	448	502	505	—	—
Number	6	3	41	5	3	1	—	—
Percent	10.17	5.08	69.49	8.47	5.08	1.69	—	—
CPUE	0.29	0.14	1.95	0.24	0.14	0.05	—	—

Appendix 82. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 1, 2, and 3, March 1983
through February 1984.

	Age									
Month	1	2	3	4	5	6	7	8	9	10
March										
Mean length (mm)	—	98	—	—	—	—	—	—	—	—
Number	—	1	—	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—	—
CPUE	—	0.03	—	—	—	—	—	—	—	—
June										
Mean length (mm)	—	108	142	171	190	199	211	224	229	253
Number	—	4	10	16	11	18	13	6	4	1
Percent	—	3.58	11.14	19.29	12.68	19.62	14.37	10.92	5.20	3.20
CPUE	—	0.30	0.95	1.64	1.08	1.67	1.22	0.93	0.44	0.27
July										
Mean length (mm)	—	127	156	194	207	233	250	279	287	270
Number	—	8	27	15	14	5	1	1	1	1
Percent	—	13.45	39.13	21.40	16.02	6.06	1.40	1.15	0.25	1.15
CPUE	—	1.26	3.66	2.00	1.50	0.57	0.13	0.11	0.02	0.11
August										
Mean length (mm)	—	128	158	184	200	212	242	246	—	—
Number	—	24	24	19	11	7	1	5	—	—
Percent	—	36.78	25.39	17.49	9.82	6.44	0.71	3.36	—	—
CPUE	—	4.80	3.32	2.29	1.28	0.84	0.09	0.44	—	—
September										
Mean length (mm)	103	123	147	194	201	229	238	218	282	—
Number	1	9	10	3	7	1	3	1	1	—
Percent	2.45	25.89	36.91	7.41	19.18	1.17	4.40	2.07	0.52	—
CPUE	0.15	1.59	2.26	0.45	1.18	0.07	0.27	0.13	0.03	—
October										
Mean length (mm)	—	124	170	198	206	248	—	—	—	—
Number	—	5	10	5	5	1	—	—	—	—
Percent	—	24.70	43.34	13.26	15.15	3.56	—	—	—	—
CPUE	—	2.03	3.55	1.09	1.24	0.29	—	—	—	—

Appendix 82. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
November										
Mean length (mm)	—	144	160	191	213	—	—	—	—	—
Number	—	2	9	4	6	—	—	—	—	—
Percent	—	5.76	23.79	26.27	44.18	—	—	—	—	—
CPUE	—	0.19	0.80	0.88	1.49	—	—	—	—	—
February										
Mean length (mm)	—	91	113	149	185	—	—	—	—	—
Number	—	1	3	3	1	—	—	—	—	—
Percent	—	23.08	38.46	30.77	7.69	—	—	—	—	—
CPUE	—	0.30	0.50	0.40	0.10	—	—	—	—	—

Appendix 83. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 1, 2, 3, May through November 1983.

Month	Age 1	2	3	4	5	6	7	8
May								
Mean length (mm)	—	—	—	—	—	352	—	—
Number	—	—	—	—	—	1	—	—
Percent	—	—	—	—	—	100.00	—	—
CPUE	—	—	—	—	—	0.02	—	—
June								
Mean length (mm)	—	—	275	—	—	—	415	—
Number	—	—	1	—	—	—	1	—
Percent	—	—	50.00	—	—	—	50.00	—
CPUE	—	—	0.02	—	—	—	0.02	—
July								
Mean length (mm)	—	229	285	—	380	386	—	—
Number	—	2	3	—	1	1	—	—
Percent	—	28.57	42.86	—	14.29	14.29	—	—
CPUE	—	0.05	0.07	—	0.02	0.02	—	—
August								
Mean length (mm)	—	230	291	322	375	359	—	425
Number	—	28	22	13	4	3	—	2
Percent	—	39.44	30.93	17.63	5.33	4.00	—	2.67
CPUE	—	0.47	0.37	0.21	0.06	0.05	—	0.03
September								
Mean length (mm)	172	265	307	369	377	414	399	—
Number	4	39	29	7	10	3	2	—
Percent	6.25	42.97	29.36	6.25	10.27	2.83	2.08	—
CPUE	0.11	0.76	0.52	0.11	0.18	0.05	0.04	—
October								
Mean length (mm)	—	265	337	373	—	453	—	—
Number	—	6	1	2	—	1	—	—
Percent	—	63.64	9.09	18.18	—	9.09	—	—
CPUE	—	0.12	0.02	0.03	—	0.02	—	—

Appendix 83. Continued:

	Age							
Month	1	2	3	4	5	6	7	8
November								
Mean length (mm)	—	—	373	—	—	—	—	—
Number	—	—	1	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—
CPUE	—	—	0.02	—	—	—	—	—

Appendix 84. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, 2, and 3, March 1983 through March 1984.

	Age									
Month	1	2	3	4	5	6	7	8	9	10
March										
Mean length (mm)	143	130	170	211	208	251	—	275	—	—
Number	1	3	8	1	1	4	—	2	—	—
Percent	4.17	12.50	41.67	6.25	6.25	19.44	—	9.72	—	—
CPUE	0.03	0.10	0.34	0.05	0.05	0.16	—	0.08	—	—
April										
Mean length (mm)	—	146	183	232	245	273	302	293	295	—
Number	—	3	9	13	18	25	2	1	1	—
Percent	—	3.95	12.50	18.16	25.26	34.62	2.71	1.40	1.40	—
CPUE	—	0.04	0.12	0.17	0.23	0.32	0.03	0.01	0.01	—
May										
Mean length (mm)	—	179	181	212	240	280	297	304	357	339
Number	—	1	13	8	21	159	23	5	1	2
Percent	—	0.37	6.06	3.24	9.10	67.98	9.75	2.22	0.43	0.85
CPUE	—	0.03	0.48	0.25	0.72	5.35	0.77	0.17	0.03	0.07
June										
Mean length (mm)	—	149	172	215	239	264	318	249	299	—
Number	—	27	23	2	10	29	1	1	1	—
Percent	—	25.65	30.01	3.75	10.67	27.57	0.62	0.77	0.96	—
CPUE	—	1.05	1.23	0.15	0.44	1.13	0.03	0.03	0.04	—
July										
Mean length (mm)	156	158	191	210	241	274	291	337	—	—
Number	1	88	69	21	12	22	4	1	—	—
Percent	0.48	38.02	37.09	10.78	5.30	7.13	1.04	0.16	—	—
CPUE	0.07	5.65	5.51	1.60	0.79	1.06	0.15	0.02	—	—
August										
Mean length (mm)	—	174	207	206	248	278	282	—	—	—
Number	—	66	37	4	3	9	4	—	—	—
Percent	—	61.09	24.24	3.08	2.98	5.71	2.89	—	—	—
CPUE	—	6.33	2.51	0.32	0.31	0.59	0.30	—	—	—

Appendix 84. Continued.

Month	Age 1	2	3	4	5	6	7	8	9	10
September										
Mean length (mm)	153	199	229	249	281	279	294	—	—	—
Number	3	20	17	3	7	7	2	—	—	—
Percent	6.56	39.41	24.60	4.55	11.38	10.04	3.46	—	—	—
CPUE	0.26	1.59	0.99	0.18	0.46	0.40	0.14	—	—	—
October										
Mean length (mm)	151	169	204	261	247	289	—	—	—	—
Number	3	3	23	3	3	12	—	—	—	—
Percent	5.25	7.57	50.41	7.07	6.33	23.37	—	—	—	—
CPUE	0.23	0.32	2.16	0.30	0.27	1.00	—	—	—	—
November										
Mean length (mm)	—	173	190	245	264	300	—	—	—	—
Number	—	3	7	2	2	2	—	—	—	—
Percent	—	13.75	38.75	17.50	17.50	12.50	—	—	—	—
CPUE	—	0.11	0.32	0.14	0.14	0.10	—	—	—	—
March										
Mean length (mm)	—	136	180	—	303	—	331	—	—	—
Number	—	1	1	—	1	—	1	—	—	—
Percent	—	16.67	16.67	—	33.33	—	33.33	—	—	—
CPUE	—	0.07	0.07	—	0.14	—	0.14	—	—	—

Appendix 85. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, 2, and 3, March through February 1984.

	Age											
Month	1	2	3	4	5	6	7	8	9	10	11	12
<u>March</u>												
Mean length (mm)	—	—	339	—	—	—	—	—	—	—	—	—
Number	—	—	1	—	—	—	—	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—	—	—	—	—
CPUE	—	—	0.03	—	—	—	—	—	—	—	—	—
<u>April</u>												
Mean length (mm)	—	—	366	460	—	508	—	—	—	—	—	—
Number	—	—	4	1	—	1	—	—	—	—	—	—
Percent	—	—	77.78	11.11	—	11.11	—	—	—	—	—	—
CPUE	—	—	0.09	0.01	—	0.01	—	—	—	—	—	—
<u>May</u>												
Mean length (mm)	—	345	379	428	456	491	—	—	—	—	681	648
Number	—	7	17	2	4	7	—	—	—	—	2	1
Percent	—	17.07	41.46	4.88	12.20	17.07	—	—	—	—	4.88	2.44
CPUE	—	0.12	0.29	0.03	0.08	0.12	—	—	—	—	0.03	0.02
<u>June</u>												
Mean length (mm)	—	—	387	466	—	523	—	—	—	—	—	—
Number	—	—	3	3	—	3	—	—	—	—	—	—
Percent	—	—	33.33	33.33	—	33.33	—	—	—	—	—	—
CPUE	—	—	0.05	0.05	—	0.05	—	—	—	—	—	—

Appendix 85. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10	11	12
July												
Mean length (mm)	232	368	390	—	458	452	—	—	—	—	—	—
Number	55	13	9	—	4	1	—	—	—	—	—	—
Percent	67.86	15.54	10.27	—	5.27	1.07	—	—	—	—	—	—
CPUE	1.81	0.41	0.27	—	0.14	0.03	—	—	—	—	—	—
August												
Mean length (mm)	259	354	398	445	461	504	497	557	514	599	—	—
Number	145	11	33	8	10	8	1	3	1	1	—	—
Percent	65.32	5.41	14.86	3.60	4.50	3.60	0.45	1.35	0.45	0.45	—	—
CPUE	2.30	0.19	0.52	0.13	0.16	0.13	0.02	0.05	0.02	0.02	—	—
September												
Mean length (mm)	288	349	417	449	503	524	575	608	—	709	—	—
Number	105	25	36	17	14	8	3	2	—	2	—	—
Percent	66.27	10.04	10.72	4.85	3.98	2.22	0.82	0.55	—	0.55	—	—
CPUE	3.84	0.58	0.62	0.28	0.23	0.13	0.05	0.03	—	0.03	—	—
October												
Mean length (mm)	316	374	439	472	491	518	540	578	—	—	—	—
Number	33	10	38	19	24	19	3	3	—	—	—	—
Percent	30.01	6.48	22.78	11.34	14.30	11.44	1.78	1.87	—	—	—	—
CPUE	0.85	0.18	0.64	0.32	0.40	0.32	0.05	0.05	—	—	—	—

Appendix 85. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10	11	12
November												
Mean length (mm)	323	385	436	459	498	529	—	537	—	—	—	—
Number	44	18	40	17	23	10	—	1	—	—	—	—
December												
Percent	48.72	9.06	18.52	7.91	10.70	4.63	—	0.45	—	—	—	—
CPUE	2.22	0.41	0.84	0.36	0.49	0.21	—	0.02	—	—	—	—
Mean length (mm)	317	—	392	465	495	—	—	—	—	—	—	—
Number	[illegible]	—	3	3	2	—	—	—	—	—	—	—
Percent	60.00	—	15.00	15.00	10.00	—	—	—	—	—	—	—
CPUE	0.67	—	0.17	0.17	0.11	—	—	—	—	—	—	—
February												
Mean length (mm)	—	304	—	382	461	—	—	—	—	—	—	—
Number	—	8	—	1	1	—	—	—	—	—	—	—
Percent	—	80.00	—	10.00	10.00	—	—	—	—	—	—	—
CPUE	—	0.80	—	0.10	0.10	—	—	—	—	—	—	—

Appendix 86. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, 2, and 3, May 1984 through February 1985.

	Age											
Month	1	2	3	4	5	6	7	8	9	10	11	12
May												
Mean length (mm)	—	—	131	164	190	208	212	231	241	—	—	—
Number	—	—	9	18	5	7	6	4	2	—	—	—
Percent	—	—	13.90	38.82	10.38	14.50	12.01	7.07	3.33	—	—	—
CPUE	—	—	0.25	0.71	0.19	0.27	0.22	0.13	0.06	—	—	—
June												
Mean length (mm)	—	—	142	160	182	203	217	238	—	—	—	—
Number	—	—	24	29	22	18	12	2	—	—	—	—
Percent	—	—	19.16	25.72	22.01	18.77	12.15	2.18	—	—	—	—
CPUE	—	—	1.31	1.75	1.50	1.28	0.83	0.15	—	—	—	—
July												
Mean length (mm)	—	—	152	173	211	217	234	246	250	255	284	288
Number	—	—	10	12	9	6	6	2	2	1	1	1
Percent	—	—	25.94	29.96	17.21	10.76	9.02	2.95	2.56	1.19	0.21	0.21
CPUE	—	—	2.25	2.60	1.50	0.94	0.78	0.26	0.22	0.10	0.02	0.02
August												
Mean length (mm)	—	113	153	173	—	208	229	—	—	—	—	—
Number	—	3	17	4	—	3	2	—	—	—	—	—
Percent	—	8.56	47.30	13.06	—	14.41	16.67	—	—	—	—	—
CPUE	—	0.32	1.75	0.48	—	0.53	0.62	—	—	—	—	—

Appendix 86. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10	11	12
September												
Mean length (mm)	93	109	171	189	185	—	256	—	—	—	—	—
Number	1	5	12	8	3	—	1	—	—	—	—	—
Percent	2.82	9.86	41.40	31.39	13.13	—	1.41	—	—	—	—	—
CPUE	0.07	0.25	1.07	0.81	0.34	—	0.04	—	—	—	—	—
November												
Mean length (mm)	—	—	189	192	—	231	—	—	—	—	—	—
Number	—	—	4	1	—	2	—	—	—	—	—	—
Percent	—	—	47.35	11.84	—	40.82	—	—	—	—	—	—
CPUE	—	—	1.03	0.26	—	0.89	—	—	—	—	—	—
February												
Mean length (mm)	—	—	—	181	206	—	—	—	—	—	—	—
Number	—	—	—	2	1	—	—	—	—	—	—	—
Percent	—	—	—	66.67	33.33	—	—	—	—	—	—	—
CPUE	—	—	—	0.25	0.13	—	—	—	—	—	—	—

Appendix 87. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, 2, and 3, May through November 1984.

	Age							
Month	1	2	3	4	5	6	7	8
May								
Mean length (mm)	—	—	—	—	326	350	410	—
Number	—	—	—	—	1	1	1	—
Percent	—	—	—	—	33.33	33.33	33.33	—
CPUE	—	—	—	—	0.02	0.02	0.02	—
June								
Mean length (mm)	—	—	271	346	—	—	—	—
Number	—	—	2	1	—	—	—	—
Percent	—	—	66.67	33.33	—	—	—	—
CPUE	—	—	0.03	0.02	—	—	—	—
July								
Mean length (mm)	—	239	273	321	366	374	399	461
Number	—	6	62	24	13	9	4	1
Percent	—	4.97	52.76	19.63	10.48	8.12	3.23	0.81
CPUE	—	0.11	1.19	0.44	0.24	0.18	0.07	0.02
August								
Mean length (mm)	176	—	285	348	360	393	—	—
Number	3	—	19	8	4	4	—	—
Percent	8.54	—	51.63	20.33	9.76	9.76	—	—
CPUE	0.06	—	0.35	0.14	0.07	0.07	—	—
September								
Mean length (mm)	146	—	294	342	—	414	425	—
Number	2	—	21	4	—	1	1	—
Percent	9.38	—	71.35	13.02	—	3.13	3.13	—
CPUE	0.05	—	0.42	0.08	—	0.02	0.02	—
November								
Mean length (mm)	—	262	305	340	—	417	395	—
Number	—	2	5	3	—	1	1	—
Percent	—	15.38	46.15	23.08	—	7.69	7.69	—
CPUE	—	0.04	0.13	0.07	—	0.02	0.02	—

Appendix 88. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Station 1, 2, and 3, May 1984 through March 1985.

Month	Age 1	2	3	4	5	6	7	8	9	10
May										
Mean length (mm)	—	144	190	209	236	266	285	293	309	—
Number	—	18	36	29	17	4	9	3	2	—
Percent	—	13.18	28.37	23.99	16.20	4.64	9.50	1.97	2.15	—
CPUE	—	0.47	1.00	0.85	0.57	0.16	0.34	0.07	0.08	—
June										
Mean length (mm)	—	148	175	214	238	269	276	323	—	351
Number	—	24	23	21	7	9	22	3	—	1
Percent	—	15.66	22.80	28.22	6.52	7.45	17.23	1.68	—	0.45
CPUE	—	1.07	1.56	1.94	0.45	0.51	1.18	0.12	—	0.03
July										
Mean length (mm)	—	150	191	221	233	274	307	269	318	354
Number	—	12	23	19	5	5	7	3	1	1
Percent	—	13.26	26.76	25.65	7.95	7.72	11.92	4.07	1.72	0.95
CPUE	—	0.63	1.27	1.22	0.38	0.37	0.57	0.19	0.08	0.05
August										
Mean length (mm)	—	153	169	267	—	254	334	328	—	—
Number	—	5	4	1	—	1	1	1	—	—
Percent	—	54.65	38.42	1.95	—	1.95	0.87	2.16	—	—
CPUE	—	2.10	1.48	0.08	—	0.08	0.03	0.08	—	—
September										
Mean length (mm)	138	150	200	243	260	251	306	—	—	—
Number	1	24	15	3	3	2	5	—	—	—
Percent	2.54	54.84	27.15	3.45	3.07	2.25	6.69	—	—	—
CPUE	0.07	1.52	0.75	0.10	0.08	0.06	0.18	—	—	—
November										
Mean length (mm)	153	192	—	214	—	—	—	304	—	—
Number	1	3	—	2	—	—	—	1	—	—
Percent	39.47	28.95	—	18.42	—	—	—	13.16	—	—
CPUE	0.33	0.24	—	0.16	—	—	—	0.11	—	—

Appendix 88. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
January										
Mean length (mm)	—	—	—	232	—	—	—	—	—	—
Number	—	—	—	1	—	—	—	—	—	—
Percent	—	—	—	100.00	—	—	—	—	—	—
CPUE	—	—	—	0.13	—	—	—	—	—	—
February										
Mean length (mm)	—	—	—	208	—	—	264	292	—	—
Number	—	—	—	1	—	—	2	5	—	—
Percent	—	—	—	11.11	—	—	22.22	66.67	—	—
CPUE	—	—	—	0.13	—	—	0.25	0.75	—	—
March										
Mean length (mm)	—	—	154	—	257	—	—	—	—	—
Number	—	—	5	—	2	—	—	—	—	—
Percent	—	—	62.5	—	37.5	—	—	—	—	—
CPUE	—	—	0.42	—	0.25	—	—	—	—	—

Appendix 89. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Stations 1, 2, and 3, May through November 1984.

Month	Age 0	1	2	3	4	5	6	7	8	11
May										
Mean length (mm)	—	—	312	392	424	—	—	—	—	—
Number	—	—	27	4	6	—	—	—	—	—
Percent	—	—	72.97	10.81	16.22	—	—	—	—	—
CPUE	—	—	0.45	0.07	0.10	—	—	—	—	—
June										
Mean length (mm)	—	—	301	366	436	498	507	566	545	732
Number	—	—	126	8	4	4	3	5	1	1
Percent	—	—	87.67	4.19	1.81	1.81	1.36	2.26	0.45	0.45
CPUE	—	—	2.98	0.14	0.06	0.06	0.05	0.08	0.02	0.02
July										
Mean length (mm)	—	266	313	415	466	504	592	555	—	—
Number	—	1	94	5	7	3	1	5	—	—
Percent	—	1.84	85.28	3.07	4.29	1.84	0.61	3.07	—	—
CPUE	—	0.05	2.53	0.09	0.13	0.05	0.02	0.09	—	—
August										
Mean length (mm)	—	—	335	396	444	503	—	535	—	—
Number	—	—	56	4	4	1	—	3	—	—
Percent	—	—	70.37	6.79	9.88	3.09	—	9.88	—	—
CPUE	—	—	0.95	0.09	0.13	0.04	—	0.13	—	—
September										
Mean length (mm)	173	314	344	459	491	534	590	564	704	—
Number	2	3	92	12	12	8	3	1	1	—
Percent	1.46	2.24	69.30	8.76	8.76	5.84	2.19	0.73	0.73	—
CPUE	0.04	0.06	1.73	0.22	0.22	0.15	0.05	0.02	0.02	—
November										
Mean length (mm)	—	—	369	—	449	497	—	474	—	—
Number	—	—	39	—	5	4	—	2	—	—
Percent	—	—	78.00	—	10.00	8.00	—	4.00	—	—
CPUE	—	—	0.87	—	0.11	0.09	—	0.04	—	—

Appendix 90. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, June through November 1983.

Month	Age 2	3	4	5	6	7	8	9
June								
Mean length (mm)	109	152	162	184	178	205	188	223
Number	1	18	11	6	2	1	1	3
Percent	1.85	32.53	24.49	21.00	6.06	1.98	4.44	7.65
CPUE	0.10	1.69	1.27	1.09	0.31	0.10	0.23	0.40
July								
Mean length (mm)	145	154	179	194	202	206	—	—
Number	1	13	7	7	5	1	—	—
Percent	3.68	44.76	19.16	18.32	11.84	2.26	—	—
CPUE	0.17	2.07	0.89	0.85	0.55	0.10	—	—
August								
Mean length (mm)	124	153	177	192	—	—	251	—
Number	26	20	7	5	—	—	1	—
Percent	28.80	37.97	19.09	12.55	—	—	1.59	—
CPUE	2.51	3.31	1.66	1.09	—	—	0.14	—
September								
Mean length (mm)	127	155	174	196	—	—	—	—
Number	9	15	3	3	—	—	—	—
Percent	28.55	50.54	8.69	12.22	—	—	—	—
CPUE	1.71	3.03	0.52	0.73	—	—	—	—
October								
Mean length (mm)	132	160	173	191	203	209	227	236
Number	4	6	5	16	19	7	5	2
Percent	6.30	14.52	9.80	23.56	23.55	8.61	5.81	7.86
CPUE	1.22	2.81	1.90	4.57	4.56	1.67	1.13	1.52
November								
Mean length (mm)	—	146	201	185	197	—	—	—
Number	—	1	1	1	1	—	—	—
Percent	—	11.54	29.49	29.49	29.49	—	—	—
CPUE	—	0.12	0.31	0.31	0.31	—	—	—

Appendix 91. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, May through November 1983.

	Age							
Month	1	2	3	4	5	6	7	9
May								
Mean length (mm)	—	219	267	287	302	372	432	—
Number	—	3	9	1	1	1	1	—
Percent	—	19.61	56.86	5.88	5.88	5.88	5.88	—
CPUE	—	0.11	0.31	0.03	0.03	0.03	0.03	—
June								
Mean length (mm)	—	212	261	269	302	—	—	—
Number	—	6	5	2	1	—	—	—
Percent	—	43.75	37.50	12.50	6.25	—	—	—
CPUE	—	0.27	0.23	0.08	0.04	—	—	—
July								
Mean length (mm)	175	213	284	325	—	383	403	—
Number	3	89	19	6	—	2	1	—
Percent	2.47	74.14	15.32	4.84	—	2.02	1.21	—
CPUE	0.08	2.48	0.51	0.16	—	0.07	0.04	—
August								
Mean length (mm)	159	244	304	359	366	—	—	—
Number	25	45	32	8	7	—	—	—
Percent	21.76	38.75	26.89	6.72	5.88	—	—	—
CPUE	0.72	1.28	0.89	0.22	0.19	—	—	—
September								
Mean length (mm)	186	257	303	348	398	390	451	467
Number	68	57	14	4	3	1	1	2
Percent	49.16	35.39	8.84	2.47	1.78	0.59	0.59	1.18
CPUE	2.77	1.99	0.50	0.14	0.10	0.03	0.03	0.07
October								
Mean length (mm)	209	271	320	354	407	—	—	—
Number	17	224	68	9	3	—	—	—
Percent	5.46	69.84	20.99	2.78	0.93	—	—	—
CPUE	0.52	6.66	2.00	0.26	0.09	—	—	—

Appendix 91. Continued:

Month	Age 1	2	3	4	5	6	7	9
November								
Mean length (mm)	234	271	298	345	361	389	—	—
Number	1	15	14	3	4	1	—	—
Percent	2.63	39.47	36.84	7.89	10.53	2.63	—	—
CPUE	0.04	0.60	0.56	0.12	0.16	0.04	—	—

Appendix 92. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, May through November 1983.

Month	Age 2	3	4	5	6	7	10
<u>May</u>							
Mean length (mm)	—	—	219	—	274	—	—
Number	—	—	2	—	10	—	—
Percent	—	—	15.38	—	84.62	—	—
CPUE	—	—	0.06	—	0.35	—	—
<u>June</u>							
Mean length (mm)	171	181	206	225	233	—	—
Number	3	15	9	10	19	—	—
Percent	2.91	15.43	15.41	21.68	44.57	—	—
CPUE	0.23	1.24	1.24	1.74	3.58	—	—
<u>July</u>							
Mean length (mm)	166	184	200	202	260	—	—
Number	2	5	2	1	7	—	—
Percent	18.28	31.18	22.45	5.51	22.58	—	—
CPUE	0.61	1.05	0.75	0.18	0.76	—	—
<u>August</u>							
Mean length (mm)	161	197	214	233	269	—	—
Number	2	7	3	2	1	—	—
Percent	16.67	39.47	19.51	7.69	16.67	—	—
CPUE	0.36	0.86	0.42	0.17	0.36	—	—
<u>September</u>							
Mean length (mm)	—	196	—	—	224	—	—
Number	—	2	—	—	1	—	—
Percent	—	75.00	—	—	25.00	—	—
CPUE	—	0.20	—	—	0.07	—	—
<u>October</u>							
Mean length (mm)	—	—	189	—	—	—	264
Number	—	—	1	—	—	—	1
Percent	—	—	22.22	—	—	—	77.78
CPUE	—	—	0.18	—	—	—	0.62

Appendix 92. Continued:

	Age						
Month	2	3	4	5	6	7	10
November							
Mean length (mm)	—	—	—	—	279	317	—
Number	—	—	—	—	1	1	—
Percent	—	—	—	—	93.75	6.25	—
CPUE	—	—	—	—	0.60	0.04	—

Appendix 93. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, May through November 1983.

	Age									
Month	1	2	3	4	5	6	7	8	9	10
May										
Mean length (mm)	262	336	391	427	478	473	—	—	—	—
Number	1	17	18	7	2	4	—	—	—	—
Percent	1.72	33.62	35.56	14.66	4.81	9.63	—	—	—	—
CPUE	0.03	0.63	0.67	0.27	0.09	0.18	—	—	—	—
June										
Mean length (mm)	251	341	364	410	439	467	538	—	—	523
Number	2	69	110	9	6	4	3	—	—	1
Percent	1.21	34.10	53.58	4.35	2.90	1.93	1.45	—	—	0.48
CPUE	0.10	2.71	4.27	0.35	0.23	0.15	0.12	—	—	0.04
July										
Mean length (mm)	249	355	391	454	456	500	—	—	—	602
Number	122	87	77	9	15	8	—	—	—	3
Percent	37.66	27.50	24.03	2.78	4.63	2.47	—	—	—	0.93
CPUE	3.30	2.41	2.10	0.24	0.41	0.22	—	—	—	0.08
August										
Mean length (mm)	249	345	410	464	505	528	509	—	577	605
Number	107	21	18	3	3	2	2	—	3	1
Percent	80.87	8.88	5.89	0.93	0.93	0.62	0.62	—	0.93	0.31
CPUE	7.21	0.79	0.53	0.08	0.08	0.06	0.06	—	0.08	0.03
September										
Mean length (mm)	282	—	412	—	—	516	—	—	—	—
Number	31	—	3	—	—	1	—	—	—	—
Percent	94.59	—	4.05	—	—	1.35	—	—	—	—
CPUE	2.33	—	0.10	—	—	0.03	—	—	—	—
October										
Mean length (mm)	306	377	418	434	501	531	534	604	657	645
Number	53	18	27	5	8	17	3	4	1	3
Percent	38.13	12.95	19.42	3.60	5.76	12.23	2.16	2.88	0.72	2.16
CPUE	1.56	0.53	0.79	0.15	0.24	0.50	0.09	0.12	0.03	0.09

Appendix 93. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
November										
Mean length (mm)	313	370	424	445	485	521	578	—	—	—
Number	67	9	19	9	8	5	2	—	—	—
Percent	56.17	7.46	15.70	7.44	7.11	4.46	1.65	—	—	—
CPUE	2.72	0.36	0.76	0.36	0.34	0.22	0.08	—	—	—

Appendix 94. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, April through December 1984.

	Age									
Month	2	3	4	5	6	7	8	9	10	11
April										
Mean length (mm)	—	142	163	194	204	199	215	—	—	—
Number	—	2	4	5	5	2	1	—	—	—
Percent	—	17.65	32.35	20.83	18.38	7.60	3.19	—	—	—
CPUE	—	0.30	0.55	0.35	0.31	0.13	0.05	—	—	—
May										
Mean length (mm)	96	130	158	179	206	231	232	230	261	272
Number	1	11	24	15	12	7	5	2	1	1
Percent	0.26	21.17	39.34	19.32	10.71	4.24	3.20	1.24	0.26	0.26
CPUE	0.03	2.10	3.90	1.92	1.06	0.42	0.32	0.12	0.03	0.03
June										
Mean length (mm)	100	126	157	189	196	211	—	—	—	—
Number	2	13	18	5	7	2	—	—	—	—
Percent	1.19	25.92	45.37	8.95	12.25	6.32	—	—	—	—
CPUE	0.07	1.56	2.73	0.54	0.74	0.38	—	—	—	—
July										
Mean length (mm)	115	136	165	208	214	223	243	—	—	—
Number	3	10	13	6	8	5	2	—	—	—
Percent	7.59	26.93	27.08	13.22	17.58	6.33	1.27	—	—	—
CPUE	0.37	1.30	1.31	0.64	0.85	0.31	0.06	—	—	—
August										
Mean length (mm)	110	144	170	204	217	—	—	—	—	—
Number	5	8	6	4	1	—	—	—	—	—
Percent	16.43	35.25	26.61	17.83	3.88	—	—	—	—	—
CPUE	0.68	1.47	1.11	0.74	0.16	—	—	—	—	—
September										
Mean length (mm)	124	151	177	199	—	—	—	—	—	—
Number	2	2	3	1	—	—	—	—	—	—
Percent	25.79	32.63	33.86	7.72	—	—	—	—	—	—
CPUE	0.82	1.03	1.07	0.24	—	—	—	—	—	—

Appendix 94. Continued:

Month	Age 2	3	4	5	6	7	8	9	10	11
October										
Mean length (mm)	112	145	181	—	222	—	—	—	—	—
Number	2	10	2	—	2	—	—	—	—	—
Percent	2.19	53.63	25.82	—	18.36	—	—	—	—	—
CPUE	0.18	4.35	2.09	—	1.49	—	—	—	—	—
November										
Mean length (mm)	—	—	202	208	—	215	—	—	—	—
Number	—	—	1	1	—	1	—	—	—	—
Percent	—	—	68.18	15.91	—	15.91	—	—	—	—
CPUE	—	—	1.36	0.32	—	0.32	—	—	—	—
December										
Mean length (mm)	—	135	—	—	—	—	—	—	—	—
Number	—	1	—	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—	—
CPUE	—	0.50	—	—	—	—	—	—	—	—

Appendix 95. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, April through December 1984.

	Age								
Month	1	2	3	4	5	6	7	8	10
April									
Mean length (mm)	—	—	275	321	374	345	—	449	—
Number	—	—	9	2	1	1	—	1	—
Percent	—	—	64.29	14.29	7.14	7.14	—	7.14	—
CPUE	—	—	0.23	0.05	0.03	0.03	—	0.03	—
May									
Mean length (mm)	—	191	265	294	355	373	415	—	—
Number	—	1	32	18	1	3	1	—	—
Percent	—	1.74	62.16	30.01	0.87	4.35	0.87	—	—
CPUE	—	0.05	1.83	0.89	0.03	0.13	0.03	—	—
June									
Mean length (mm)	—	187	257	323	319	396	385	—	—
Number	—	13	15	7	1	1	1	—	—
Percent	—	25.55	56.08	13.13	2.38	1.43	1.43	—	—
CPUE	—	0.43	0.93	0.22	0.04	0.02	0.02	—	—
July									
Mean length (mm)	143	202	273	331	365	412	—	—	—
Number	3	43	52	13	1	1	—	—	—
Percent	4.90	45.57	38.96	9.18	0.70	0.70	—	—	—
CPUE	0.16	1.48	1.27	0.30	0.02	0.02	—	—	—
August									
Mean length (mm)	168	217	305	345	—	373	417	—	—
Number	36	25	5	10	—	1	1	—	—
Percent	44.44	34.57	6.17	12.35	—	1.23	1.23	—	—
CPUE	1.16	0.90	0.16	0.32	—	0.03	0.03	—	—
September									
Mean length (mm)	177	258	309	341	—	—	404	433	459
Number	9	13	17	5	—	—	1	1	1
Percent	42.68	22.49	23.54	7.62	—	—	1.22	1.22	1.22
CPUE	1.17	0.61	0.64	0.21	—	—	0.03	0.03	0.03

Appendix 95. Continued:

Month	Age 1	2	3	4	5	6	7	8	10
October									
Mean length (mm)	192	255	303	348	412	—	441	—	—
Number	19	128	78	16	3	—	4	—	—
Percent	8.06	55.01	28.66	5.72	1.07	—	1.48	—	—
CPUE	0.54	3.72	1.94	0.39	0.07	—	0.10	—	—
November									
Mean length (mm)	—	280	308	—	425	—	461	—	—
Number	—	7	7	—	1	—	1	—	—
Percent	—	47.01	47.53	—	1.82	—	3.64	—	—
CPUE	—	0.59	0.59	—	0.02	—	0.05	—	—
December									
Mean length (mm)	—	—	290	—	—	—	—	—	—
Number	—	—	1	—	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—	—
CPUE	—	—	0.25	—	—	—	—	—	—

Appendix 96. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, April 1984 through March 1985.

Month	Age 2	3	4	5	6	7	8	9	10
April									
Mean length (mm)	153	161	180	193	231	254	319	—	—
Number	2	13	41	9	3	3	1	—	—
Percent	2.77	17.15	63.69	11.94	2.24	1.94	0.27	—	—
CPUE	0.25	1.58	5.86	1.10	0.21	0.18	0.03	—	—
May									
Mean length (mm)	131	170	192	209	244	271	302	336	333
Number	23	30	33	13	7	27	1	1	1
Percent	24.10	21.27	22.80	8.80	4.39	16.92	0.68	0.51	0.51
CPUE	1.21	1.06	1.14	0.44	0.22	0.85	0.03	0.03	0.03
June									
Mean length (mm)	147	170	192	220	226	241	284	—	—
Number	3	10	20	3	2	6	2	—	—
Percent	7.42	21.67	40.44	5.25	11.57	10.60	3.05	—	—
CPUE	0.40	1.16	2.16	0.28	0.62	0.57	0.16	—	—
July									
Mean length (mm)	152	195	228	222	262	273	—	—	—
Number	1	3	3	2	2	2	—	—	—
Percent	4.35	27.17	35.87	10.87	10.87	10.87	—	—	—
CPUE	0.02	0.14	0.19	0.06	0.06	0.06	—	—	—
August									
Mean length (mm)	151	172	220	253	266	239	—	—	—
Number	9	3	1	2	1	1	—	—	—
Percent	48.15	18.52	9.26	12.96	3.70	7.41	—	—	—
CPUE	0.42	0.16	0.08	0.11	0.03	0.06	—	—	—
September									
Mean length (mm)	161	—	229	282	285	267	—	—	—
Number	2	—	2	1	2	1	—	—	—
Percent	13.16	—	40.79	8.55	23.03	14.47	—	—	—
CPUE	0.33	—	1.03	0.22	0.58	0.37	—	—	—

Appendix 96. Continued:

Month	Age 2	3	4	5	6	7	8	9	10
October									
Mean length (mm)	163	206	248	242	275	258	—	—	—
Number	4	9	6	4	3	1	—	—	—
Percent	26.30	28.84	19.63	12.90	8.68	3.65	—	—	—
CPUE	0.43	0.47	0.32	0.21	0.14	0.06	—	—	—
November									
Mean length (mm)	156	—	248	248	267	279	—	—	—
Number	7	—	1	3	3	1	—	—	—
Percent	34.78	—	6.52	19.57	31.52	7.61	—	—	—
CPUE	0.36	—	0.07	0.20	0.33	0.08	—	—	—
December									
Mean length (mm)	167	187	172	—	300	258	—	—	—
Number	1	3	1	—	1	1	—	—	—
Percent	14.29	42.86	14.29	—	14.29	14.29	—	—	—
CPUE	0.25	0.75	0.25	—	0.25	0.25	—	—	—
March									
Mean length (mm)	—	149	—	—	—	—	—	—	—
Number	—	3	—	—	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—	—	—
CPUE	—	0.25	—	—	—	—	—	—	—

Appendix 97. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Stations 4 and 5, April 1984 through March 1985.

	Age										
Month	0	1	2	3	4	5	6	7	8	9	11
April											
Mean length (mm)	—	—	308	389	443	519	515	672	—	645	—
Number	—	—	159	30	7	2	3	1	—	1	—
Percent	—	—	84.56	10.95	2.24	0.64	0.96	0.32	—	0.32	—
CPUE	—	—	6.60	0.85	0.18	0.05	0.08	0.03	—	0.03	—
May											
Mean length (mm)	—	—	308	376	429	483	470	531	—	—	633
Number	—	—	53	16	15	5	2	4	—	—	1
Percent	—	—	82.51	8.73	5.36	1.42	0.57	1.13	—	—	0.28
CPUE	—	—	7.47	0.79	0.49	0.13	0.05	0.10	—	—	0.03
June											
Mean length (mm)	—	—	305	389	456	457	536	508	—	—	—
Number	—	—	53	9	11	5	5	2	—	—	—
Percent	—	—	82.74	5.83	5.86	2.43	2.24	0.90	—	—	—
CPUE	—	—	4.39	0.31	0.31	0.13	0.12	0.05	—	—	—
July											
Mean length (mm)	—	—	308	346	—	450	—	596	—	—	—
Number	—	—	45	3	—	2	—	1	—	—	—
Percent	—	—	85.86	5.52	—	6.90	—	1.72	—	—	—
CPUE	—	—	1.13	0.07	—	0.09	—	0.02	—	—	—
August											
Mean length (mm)	—	283	317	423	486	472	—	535	—	—	—
Number	—	1	19	1	2	1	—	1	—	—	—
Percent	—	6.06	75.76	6.06	6.06	3.03	—	3.03	—	—	—
CPUE	—	0.06	0.81	0.06	0.06	0.03	—	0.03	—	—	—
September											
Mean length (mm)	—	—	339	—	—	—	—	—	—	—	—
Number	—	—	27	—	—	—	—	—	—	—	—
Percent	—	—	100.00	—	—	—	—	—	—	—	—
CPUE	—	—	1.33	—	—	—	—	—	—	—	—

Appendix 97. Continued:

Month	Age 0	1	2	3	4	5	6	7	8	9	11
October											
Mean length (mm)	171	—	369	422	498	515	593	589	585	—	—
Number	1	—	33	6	3	6	5	3	2	—	—
Percent	1.64	—	57.38	9.84	4.92	9.84	8.20	4.92	3.28	—	—
CPUE	0.02	—	0.78	0.13	0.07	0.13	0.11	0.07	0.04	—	—
November											
Mean length (mm)	194	—	372	438	—	522	—	—	—	—	—
Number	20	—	11	2	—	1	—	—	—	—	—
Percent	40.38	—	52.88	4.81	—	1.92	—	—	—	—	—
CPUE	0.48	—	0.63	0.06	—	0.02	—	—	—	—	—
December											
Mean length (mm)	213	178	—	—	—	—	—	—	—	—	—
Number	1	2	—	—	—	—	—	—	—	—	—
Percent	11.11	88.89	—	—	—	—	—	—	—	—	—
CPUE	0.25	2.00	—	—	—	—	—	—	—	—	—
March											
Mean length (mm)	—	—	—	410	—	491	—	—	—	—	—
Number	—	—	—	1	—	2	—	—	—	—	—
Percent	—	—	—	40.00	—	60.00	—	—	—	—	—
CPUE	—	—	—	0.17	—	0.25	—	—	—	—	—

Appendix 98. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8, June 1983 through February 1984.

	Age									
Month	1	2	3	4	5	6	7	8	9	10
June										
Mean length (mm)	—	99	133	160	178	196	215	216	213	240
Number	—	5	25	31	18	19	5	2	1	2
Percent	—	1.95	17.68	26.09	19.75	22.57	5.61	2.05	1.02	3.28
CPUE	—	0.30	2.70	3.98	3.01	3.44	0.86	0.31	0.16	0.50
July										
Mean length (mm)	—	119	138	161	186	211	—	—	—	—
Number	—	4	8	6	5	6	—	—	—	—
Percent	—	17.36	30.21	21.69	13.24	17.50	—	—	—	—
CPUE	—	2.01	3.50	2.51	1.53	2.02	—	—	—	—
August										
Mean length (mm)	—	107	145	178	194	206	—	213	—	—
Number	—	39	24	20	12	3	—	1	—	—
Percent	—	36.34	26.56	21.00	11.41	4.03	—	0.67	—	—
CPUE	—	1.50	1.10	0.87	0.47	0.17	—	0.03	—	—
September										
Mean length (mm)	90	120	150	170	198	—	—	261	—	—
Number	2	18	15	9	7	—	—	1	—	—
Percent	2.78	47.60	23.86	12.68	12.47	—	—	0.41	—	—
CPUE	0.10	1.67	0.84	0.45	0.44	—	—	0.01	—	—
October										
Mean length (mm)	—	131	159	175	212	—	205	—	—	—
Number	—	4	4	2	1	—	1	—	—	—
Percent	—	50.01	29.67	13.14	3.60	—	3.60	—	—	—
CPUE	—	2.51	1.49	0.66	0.18	—	0.18	—	—	—
November										
Mean length (mm)	—	122	146	135	—	207	—	—	—	—
Number	—	3	1	1	—	3	—	—	—	—
Percent	—	26.50	8.55	8.55	—	56.41	—	—	—	—
CPUE	—	0.23	0.07	0.07	—	0.49	—	—	—	—

Appendix 98. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10
February										
Mean length (mm)	—	—	—	137	—	197	233	—	—	—
Number	—	—	—	1	—	1	2	—	—	—
Percent	—	—	—	25.00	—	25.00	50.00	—	—	—
CPUE	—	—	—	0.25	—	0.25	0.50	—	—	—

Appendix 99. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8, May through November 1983.

	Age					
Month	0	1	2	3	4	5
May						
Mean length (mm)	—	—	—	273	—	340
Number	—	—	—	1	—	1
Percent	—	—	—	50.00	—	50.00
CPUE	—	—	—	0.02	—	0.02
June						
Mean length (mm)	—	—	182	265	282	316
Number	—	—	16	1	1	3
Percent	—	—	76.19	4.76	4.76	14.29
CPUE	—	—	0.28	0.02	0.02	0.05
July						
Mean length (mm)	—	150	204	288	321	—
Number	—	15	37	4	1	—
Percent	—	26.87	65.57	6.08	1.49	—
CPUE	—	0.35	0.86	0.08	0.02	—
August						
Mean length (mm)	—	159	226	303	351	363
Number	—	34	38	9	4	1
Percent	—	55.21	33.12	7.50	3.33	0.83
CPUE	—	1.05	0.63	0.14	0.06	0.02
September						
Mean length (mm)	129	177	259	322	—	393
Number	1	39	18	2	—	2
Percent	1.56	62.50	29.69	3.13	—	3.13
CPUE	0.01	0.57	0.27	0.03	—	0.03
October						
Mean length (mm)	130	200	259	304	332	385
Number	1	11	14	5	2	2
Percent	2.54	38.08	50.73	6.84	2.12	1.69
CPUE	0.06	0.85	1.20	0.16	0.05	0.04

Appendix 99. Continued:

Month	Age 0	1	2	3	4	5
November						
Mean length (mm)	125	—	—	—	351	—
Number	1	—	—	—	1	—
Percent	50.00	—	—	—	50.00	—
CPUE	0.02	—	—	—	0.02	—

Appendix 100. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8, March 1983 through March 1984.

Month	Age 0	1	2	3	4	5	6	7
March								
Mean length (mm)	—	95	—	169	187	246	205	—
Number	—	1	—	4	2	1	1	—
Percent	—	6.25	—	53.13	18.75	12.50	9.38	—
CPUE	—	0.03	—	0.29	0.10	0.07	0.05	—
April								
Mean length (mm)	—	—	157	172	190	205	218	—
Number	—	—	1	20	16	4	2	—
Percent	—	—	2.50	50.60	37.48	7.11	2.31	—
CPUE	—	—	0.13	2.56	1.90	0.36	0.12	—
May								
Mean length (mm)	—	—	141	174	185	204	220	253
Number	—	—	2	20	17	7	8	3
Percent	—	—	2.70	33.21	28.25	12.69	14.00	9.14
CPUE	—	—	0.04	0.50	0.43	0.19	0.21	0.14
June								
Mean length (mm)	—	—	142	158	173	211	217	—
Number	—	—	8	177	51	4	4	—
Percent	—	—	3.44	74.91	19.88	0.82	0.95	—
CPUE	—	—	0.52	11.34	3.01	0.12	0.14	—
July								
Mean length (mm)	—	138	150	159	188	—	—	—
Number	—	1	10	21	5	—	—	—
Percent	—	2.89	27.93	57.14	12.03	—	—	—
CPUE	—	0.26	2.51	5.14	1.08	—	—	—
August								
Mean length (mm)	—	—	155	163	212	231	259	—
Number	—	—	21	32	5	2	3	—
Percent	—	—	36.28	54.64	5.32	1.71	2.05	—
CPUE	—	—	0.84	1.27	0.12	0.04	0.05	—

Appendix 100. Continued:

Month	Age 0	1	2	3	4	5	6	7
September								
Mean length (mm)	—	137	161	173	198	—	—	—
Number	—	4	6	7	3	—	—	—
Percent	—	23.81	32.99	31.41	11.79	—	—	—
CPUE	—	0.29	0.40	0.38	0.14	—	—	—
October								
Mean length (mm)	—	—	—	156	157	—	233	—
Number	—	—	—	6	1	—	1	—
Percent	—	—	—	74.07	16.67	—	9.26	—
CPUE	—	—	—	0.80	0.18	—	0.10	—
November								
Mean length (mm)	79	139	144	172	185	230	—	—
Number	1	1	2	6	2	3	—	—
Percent	2.00	9.00	18.00	42.50	14.50	14.00	—	—
CPUE	0.02	0.10	0.20	0.47	0.16	0.16	—	—
February								
Mean length (mm)	—	—	128	137	187	—	—	—
Number	—	—	7	3	2	—	—	—
Percent	—	—	58.33	25.00	16.67	—	—	—
CPUE	—	—	1.75	0.75	0.50	—	—	—
March								
Mean length (mm)	—	—	124	—	192	—	—	—
Number	—	—	1	—	2	—	—	—
Percent	—	—	33.33	—	66.67	—	—	—
CPUE	—	—	0.33	—	0.67	—	—	—

Appendix 101. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8 April 1983 through March 1984.

	Age								
Month	1	2	3	4	5	6	7	8	9
April									
Mean length (mm)	—	394	—	459	467	591	—	—	—
Number	—	1	—	2	1	1	—	—	—
Percent	—	33.33	—	33.33	16.67	16.67	—	—	—
CPUE	—	0.03	—	0.03	0.02	0.02	—	—	—
May									
Mean length (mm)	—	334	383	485	495	516	—	—	—
Number	—	10	11	3	7	9	—	—	—
Percent	—	23.81	27.38	8.33	18.25	22.22	—	—	—
CPUE	—	0.20	0.23	0.07	0.16	0.19	—	—	—
June									
Mean length (mm)	222	341	409	429	497	518	541	—	—
Number	78	12	13	4	7	9	1	—	—
Percent	61.31	10.24	10.56	3.16	5.96	7.85	0.91	—	—
CPUE	1.45	0.24	0.25	0.07	0.14	0.19	0.02	—	—
July									
Mean length (mm)	230	350	422	486	510	—	583	642	—
Number	59	13	6	1	2	—	1	1	—
Percent	71.91	15.17	7.30	1.12	2.25	—	1.12	1.12	—
CPUE	1.25	0.26	0.13	0.02	0.04	—	0.02	0.02	—
August									
Mean length (mm)	253	363	448	—	537	—	—	677	—
Number	109	12	11	—	6	—	—	1	—
Percent	81.44	7.19	6.89	—	3.89	—	—	0.60	—
CPUE	2.16	0.19	0.18	—	0.10	—	—	0.02	—
September									
Mean length (mm)	279	379	424	510	581	496	565	646	626
Number	83	13	6	2	1	2	2	1	1
Percent	81.82	8.44	3.90	1.30	0.65	1.30	1.30	0.65	0.65
CPUE	1.80	0.19	0.09	0.03	0.01	0.03	0.03	0.01	0.01

Appendix 101. Continued:

Month	Age 1	2	3	4	5	6	7	8	9
October									
Mean length (mm)	313	396	449	457	561	589	583	629	—
Number	27	13	11	3	3	6	1	1	—
Percent	74.85	8.34	8.10	1.96	1.84	3.68	0.61	0.61	—
CPUE	2.44	0.27	0.26	0.06	0.06	0.12	0.02	0.02	—
November									
Mean length (mm)	322	408	471	—	—	543	—	—	—
Number	39	4	3	—	—	4	—	—	—
Percent	80.70	7.02	5.26	—	—	7.02	—	—	—
CPUE	1.02	0.09	0.07	—	—	0.04	—	—	—
December									
Mean length (mm)	306	—	—	—	—	—	—	—	—
Number	2	—	—	—	—	—	—	—	—
Percent	100.00	—	—	—	—	—	—	—	—
CPUE	0.11	—	—	—	—	—	—	—	—
March									
Mean length (mm)	—	—	—	462	—	—	—	—	—
Number	—	—	—	1	—	—	—	—	—
Percent	—	—	—	100.00	—	—	—	—	—
CPUE	—	—	—	0.33	—	—	—	—	—

Appendix 102. Estimate of rock bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8, April 1984 through March 1985.

Month	Age 1	2	3	4	5	6	7	8	9	10	11
April											
Mean length (mm)	—	—	117	134	178	192	205	217	244	—	242
Number	—	—	12	5	12	3	9	1	1	—	1
Percent	—	—	24.30	11.29	25.56	8.44	23.64	2.26	2.26	—	2.26
CPUE	—	—	0.43	0.20	0.45	0.15	0.42	0.04	0.04	—	0.04
May											
Mean length (mm)	77	89	123	155	178	209	211	232	252	—	—
Number	1	5	33	34	22	8	7	2	1	—	—
Percent	0.66	3.31	25.10	29.50	21.47	8.35	8.04	2.38	1.19	—	—
CPUE	0.04	0.21	1.58	1.86	1.35	0.53	0.51	0.15	0.08	—	—
June											
Mean length (mm)	—	91	127	151	178	197	202	235	222	250	245
Number	—	2	42	24	33	30	16	7	1	1	1
Percent	—	0.76	28.95	16.42	22.73	17.41	9.63	2.84	0.59	0.33	0.33
CPUE	—	0.16	5.97	3.39	4.69	3.59	1.98	0.59	0.12	0.07	0.07
July											
Mean length (mm)	—	109	133	161	180	205	208	237	—	—	—
Number	—	4	15	8	8	6	2	2	—	—	—
Percent	—	10.29	40.87	18.79	14.79	9.55	3.40	2.31	—	—	—
CPUE	—	0.69	2.73	1.26	0.99	0.64	0.23	0.15	—	—	—
August											
Mean length (mm)	92	120	143	175	198	244	185	—	—	—	—
Number	1	4	9	3	2	2	1	—	—	—	—
Percent	7.04	15.21	43.94	11.27	16.20	2.82	3.52	—	—	—	—
CPUE	0.17	0.36	1.04	0.27	0.38	0.07	0.08	—	—	—	—
September											
Mean length (mm)	—	142	141	185	184	218	202	—	—	—	—
Number	—	3	5	3	3	2	1	—	—	—	—
Percent	—	24.94	39.18	10.07	12.73	9.72	3.36	—	—	—	—
CPUE	—	0.60	0.94	0.24	0.31	0.23	0.08	—	—	—	—

Appendix 102. Continued:

Month	Age 1	2	3	4	5	6	7	8	9	10	11
October											
Mean length (mm)	102	122	142	168	196	222	210	—	265	—	—
Number	3	4	8	6	1	1	1	—	1	—	—
Percent	14.10	14.57	35.59	25.00	3.29	3.29	3.29	—	0.88	—	—
CPUE	0.57	0.59	1.45	1.02	0.13	0.13	0.13	—	0.04	—	—
March											
Mean length (mm)	—	—	—	—	—	207	—	216	—	—	—
Number	—	—	—	—	—	1	—	1	—	—	—
Percent	—	—	—	—	—	50.00	—	50.00	—	—	—
CPUE	—	—	—	—	—	0.06	—	0.06	—	—	—

Appendix 103. Estimate of smallmouth bass age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8, May through October 1984.

Month	Age 1	2	3	4	5	6	8
May							
Mean length (mm)	—	201	—	—	—	—	—
Number	—	1	—	—	—	—	—
Percent	—	100.00	—	—	—	—	—
CPUE	—	0.03	—	—	—	—	—
June							
Mean length (mm)	—	189	246	328	397	—	—
Number	—	28	17	7	1	—	—
Percent	—	54.72	30.99	12.50	1.79	—	—
CPUE	—	0.56	0.32	0.13	0.02	—	—
July							
Mean length (mm)	146	188	281	340	394	—	433
Number	4	12	11	3	1	—	1
Percent	12.12	36.36	36.36	9.09	3.03	—	3.03
CPUE	0.07	0.22	0.22	0.05	0.02	—	0.02
August							
Mean length (mm)	172	234	330	—	392	—	—
Number	37	6	10	—	1	—	—
Percent	69.52	10.84	17.86	—	1.79	—	—
CPUE	0.65	0.10	0.17	—	0.02	—	—
September							
Mean length (mm)	194	239	307	364	364	409	—
Number	28	3	5	1	1	2	—
Percent	70.73	7.32	12.20	2.44	2.44	4.88	--
CPUE	0.48	0.05	0.08	0.02	0.02	0.03	—
October							
Mean length (mm)	200	259	320	—	411	—	—
Number	13	8	7	—	1	—	—
Percent	45.16	28.23	23.39	—	3.23	—	—
CPUE	0.25	0.16	0.13	—	0.02	—	—

Appendix 104. Estimate of yellow perch age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8, April 1984 through March 1985.

Month	Age 2	3	4	5	6	7
April						
Mean length (mm)	140	167	185	190	230	292
Number	11	33	60	13	2	1
Percent	12.12	31.21	46.56	8.81	1.09	0.21
CPUE	0.76	1.97	2.94	0.56	0.07	0.01
May						
Mean length (mm)	131	162	180	223	—	265
Number	9	60	80	19	—	4
Percent	6.60	37.69	46.89	7.61	—	1.20
CPUE	0.82	4.70	5.85	0.95	—	0.15
June						
Mean length (mm)	139	156	177	208	—	—
Number	3	18	36	5	—	—
Percent	5.41	33.97	55.72	4.90	—	—
CPUE	0.44	2.79	4.58	0.40	—	—
July						
Mean length (mm)	145	182	185	193	305	309
Number	28	20	11	2	1	1
Percent	49.51	30.08	17.53	2.12	0.38	0.38
CPUE	2.36	1.43	0.84	0.10	0.02	0.02
August						
Mean length (mm)	151	173	193	—	—	—
Number	41	14	2	—	—	—
Percent	75.62	21.28	3.10	—	—	—
CPUE	2.65	0.74	0.11	—	—	—
September						
Mean length (mm)	157	161	164	—	249	281
Number	7	6	5	—	2	1
Percent	40.34	28.58	27.65	—	2.86	0.57
CPUE	1.76	1.25	1.21	—	0.13	0.03

Appendix 104. Continued:

Month	Age 2	3	4	5	6	7
October						
Mean length (mm)	158	177	220	—	—	—
Number	29	16	1	—	—	—
Percent	71.55	27.74	0.71	—	—	—
CPUE	4.19	1.62	0.04	—	—	—
March						
Mean length (mm)	133	170	205	238	—	—
Number	1	8	4	2	—	—
Percent	10.87	50.36	28.62	10.14	—	—
CPUE	0.16	0.72	0.41	0.15	—	—

Appendix 105. Estimate of walleye age-growth relationship and percentage composition of age groups in trap-net catches at Stations 6, 7, and 8, April through December 1984.

Month	Age 0	1	2	3	4	5	6	7	8	9
April										
Mean length (mm)	—	—	312	383	436	461	—	547	592	616
Number	—	—	48	8	6	2	—	3	1	1
Percent	—	—	77.22	8.63	6.21	2.34	—	3.74	0.93	0.93
CPUE	—	—	1.10	0.12	0.09	0.03	—	0.05	0.01	0.01
May										
Mean length (mm)	—	—	303	396	430	459	553	547	—	—
Number	—	—	39	5	5	2	2	2	—	—
Percent	—	—	83.66	5.66	4.85	1.94	1.94	1.94	—	—
CPUE	—	—	2.15	0.15	0.13	0.05	0.05	0.05	—	—
June										
Mean length (mm)	—	—	299	405	465	553	523	554	606	—
Number	—	—	54	4	3	3	4	4	1	—
Percent	—	—	84.44	5.07	2.10	2.10	2.80	2.80	0.70	—
CPUE	—	—	2.20	0.13	0.05	0.05	0.07	0.07	0.02	—
July										
Mean length (mm)	—	269	317	416	470	508	551	565	—	—
Number	—	11	39	8	2	7	5	2	—	—
Percent	—	15.36	53.77	11.11	2.47	8.64	6.17	2.47	—	—
CPUE	—	0.23	0.79	0.16	0.04	0.13	0.09	0.04	—	—
August										
Mean length (mm)	174	231	334	411	485	569	568	—	—	—
Number	1	1	102	3	4	3	1	—	—	—
Percent	0.70	0.70	90.73	2.27	2.80	2.10	0.70	—	—	—
CPUE	0.02	0.02	2.16	0.05	0.07	0.05	0.02	—	—	—
September										
Mean length (mm)	194	291	348	436	475	534	569	587	—	—
Number	2	4	131	10	8	2	7	2	—	—
Percent	1.53	3.16	79.63	5.79	4.29	1.02	3.57	1.02	—	—
CPUE	0.05	0.10	2.60	0.19	0.14	0.03	0.12	0.03	—	—

Appendix 105. Continued:

Month	Age 0	1	2	3	4	5	6	7	8	9
October										
Mean length (mm)	206	273	362	443	502	505	544	592	—	—
Number	13	3	71	8	3	1	4	1	—	—
Percent	13.91	2.61	67.83	7.83	2.61	0.87	3.48	0.87	—	—
CPUE	0.29	0.05	1.39	0.16	0.05	0.02	0.07	0.02	—	—
December										
Mean length (mm)	207	—	—	—	—	—	—	—	—	—
Number	1	—	—	—	—	—	—	—	—	—
Percent	100.00	—	—	—	—	—	—	—	—	—
CPUE	0.13	—	—	—	—	—	—	—	—	—

Appendix 106. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch in the St. Clair River during 1983. (Sample size in parentheses.)

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Weighted mean
White bass	—	318	206	287	249	251	229	—	253
	—	(2)	(4)	(25)	(39)	(16)	(25)	—	(111)
Freshwater drum	292	333	411	432	371	414	409	—	413
	(2)	(4)	(467)	(599)	(245)	(132)	(39)	—	(1,488)
Chinook salmon	752	716	683	—	859	815	780	—	784
	(11)	(10)	(6)	—	(3)	(49)	(25)	—	(104)
Coho salmon	544	620	676	—	737	739	—	—	611
	(8)	(3)	(2)	—	(2)	(1)	—	—	(16)
Brown trout	737	559	686	—	277	351	442	—	443
	(2)	(2)	(1)	—	(2)	(8)	(4)	—	(19)
Common carp	—	577	493	533	508	569	617	—	522
	—	(7)	(30)	(9)	(1)	(4)	(2)	—	(53)
White sucker	457	470	437	427	401	409	310	—	432
	(2)	(26)	(50)	(15)	(7)	(22)	(4)	—	(126)
Redhorse	417	472	452	427	429	445	445	406	446
	(3)	(95)	(196)	(132)	(60)	(89)	(48)	(5)	(628)
Yellow perch	188	224	226	198	196	198	191	211	200
	(6)	(73)	(63)	(305)	(669)	(37)	(42)	(69)	(1,264)
Walleye	—	503	472	411	404	419	429	419	413
	—	(7)	(45)	(882)	(1,059)	(676)	(290)	(19)	(2,978)

Appendix 107. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch in the St. Clair River during 1984–85. (Sample size in parentheses.)

Species	Month										Weighted mean
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Feb	Mar	
Channel catfish	—	—	490 (6)	429 (22)	458 (6)	622 (1)	—	—	—	—	450 (35)
White bass	259 (1)	239 (81)	257 (16)	213 (54)	193 (20)	312 (3)	—	—	—	—	229 (175)
Freshwater drum	518 (2)	384 (87)	353 (108)	302 (188)	332 (44)	311 (21)	—	—	—	—	334 (450)
Chinook salmon	—	—	—	768 (3)	794 (37)	759 (31)	678 (3)	—	—	711 (4)	770 (78)
Coho salmon	531 (11)	—	—	—	734 (7)	645 (9)	—	—	—	483 (1)	617 (28)
Rainbow trout	490 (7)	—	—	—	592 (9)	566 (11)	572 (1)	516 (2)	—	—	553 (30)
Brown trout	495 (3)	—	343 (2)	—	502 (2)	455 (3)	—	439 (2)	401 (3)	429 (3)	439 (18)
Redhorse	472 (2)	696 (7)	361 (13)	363 (26)	378 (20)	387 (13)	366 (3)	—	—	—	400 (84)
Rock bass	203 (7)	208 (30)	208 (24)	183 (13)	221 (1)	—	—	—	—	—	203 (75)
Smallmouth bass	241 (3)	338 (29)	348 (26)	326 (12)	315 (1)	—	—	—	—	—	335 (71)
Yellow perch	229 (9)	231 (43)	196 (44)	201 (38)	184 (8)	193 (12)	—	188 (1)	—	—	208 (155)

Appendix 107. Continued:

Species	Month										Weighted mean
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Feb	Mar	
Walleye	511 (26)	386 (317)	391 (1,366)	391 (941)	378 (1,103)	390 (333)	455 (6)	— —	— —	371 (1)	388 (4,093)

Appendix 108. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch near Harsens Island during 1983–84. (Sample size in parentheses.)

Species	Month					Weighted mean
	Aug	Sep	Oct	Jan	Feb	
White bass	279 (5)	— —	— —	— —	— —	279 (5)
Rock bass	208 (10)	211 (8)	— —	— —	210 (213)	210 (231)
Pumpkinseed	178 (5)	— —	— —	— —	— —	178 (5)
Bluegill	201 (4)	188 (3)	— —	— —	— —	195 (7)
Smallmouth bass	333 (3)	290 (1)	— —	— —	— —	322 (4)
Largemouth bass	— —	302 (1)	419 (4)	— —	— —	396 (5)
Crappie	— —	— —	— —	— —	210 (213)	210 (213)
Yellow perch	216 (18)	211 (21)	221 (3)	200 (7)	190 (28)	204 (77)
Walleye	399 (12)	427 (17)	394 (3)	— —	— —	413 (32)

Appendix 109. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch near Harsens Island during 1984. (Sample size in parentheses.)

Species	Month					Weighted mean
	Jun	Jul	Aug	Sep	Oct	
Northern pike	—	717	572	—	—	630
	—	(2)	(3)	—	—	(5)
Rock bass	—	189	197	239	—	204
	—	(2)	(6)	(2)	—	(10)
Smallmouth bass	—	416	378	378	—	389
	—	(4)	(8)	(2)	—	(14)
Largemouth bass	—	420	442	—	—	436
	—	(2)	(5)	—	—	(7)
Yellow perch	—	—	274	200	156	199
	—	—	(2)	(42)	(4)	(48)
Walleye	351	397	388	375	408	388
	(6)	(53)	(51)	(39)	(16)	(165)

Appendix 110. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch in Lake St. Clair during 1983-84. (Sample size in parentheses.)

Species	Month										Weighted mean
	May	Jun	Jul	Aug	Sep	Oct	Nov	Jan	Feb	Mar	
Northern pike	—	645 (12)	592 (3)	577 (4)	630 (9)	—	—	597 (9)	621 (26)	—	619 (63)
Channel catfish	—	483 (1)	442 (11)	544 (3)	587 (3)	498 (2)	—	—	—	—	487 (20)
White perch	—	196 (1)	145 (23)	185 (2)	193 (17)	259 (1)	—	—	—	—	169 (44)
White bass	—	269 (24)	290 (29)	231 (7)	—	—	—	—	—	—	275 (60)
Freshwater drum	254 (1)	254 (30)	300 (52)	330 (27)	279 (20)	460 (1)	—	—	—	—	293 (131)
Rock bass	196 (13)	211 (61)	180 (53)	191 (41)	188 (22)	—	—	—	—	180 (21)	193 (211)
Pumpkinseed	170 (11)	183 (23)	150 (15)	180 (8)	160 (4)	206 (6)	—	—	210 (36)	203 (2)	187 (105)
Bluegill	152 (1)	—	178 (3)	183 (10)	165 (5)	173 (1)	—	185 (5)	218 (81)	—	208 (106)
Smallmouth bass	—	358 (20)	323 (18)	330 (28)	353 (36)	358 (8)	—	—	—	—	344 (110)
Largemouth bass	335 (7)	—	351 (1)	442 (1)	—	—	—	—	—	—	349 (9)
Crappie	—	284 (1)	249 (6)	185 (1)	—	—	—	—	210 (60)	167 (5)	211 (73)

Appendix 110. Continued:

Species	Month										Weighted mean
	May	Jun	Jul	Aug	Sep	Oct	Nov	Jan	Feb	Mar	
Yellow perch	193 (23)	196 (160)	201 (556)	198 (427)	203 (371)	206 (313)	218 (31)	198 (161)	213 (723)	217 (417)	206 (3,182)
Walleye	401 (2)	394 (219)	384 (216)	419 (322)	429 (57)	432 (60)	351 (3)	305 (2)	400 (4)	356 (1)	405 (886)

Appendix 111. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch in Lake St. Clair during 1984–85. (Sample size in parentheses.)

Species	Month												Weighted mean
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Northern pike	—	630 (5)	703 (9)	650 (6)	787 (2)	754 (2)	—	—	—	617 (19)	691 (12)	—	663 (55)
Muskellunge	—	—	1,181 (1)	1,099 (2)	—	—	—	—	—	—	—	—	1,126 (3)
Channel catfish	—	571 (3)	499 (6)	533 (1)	635 (1)	—	—	—	—	—	—	—	534 (11)
White perch	—	—	—	—	—	—	—	—	—	—	241 (1)	—	241 (1)
White bass	—	341 (3)	305 (13)	171 (3)	—	295 (4)	—	140 (3)	—	—	—	—	273 (26)
Freshwater drum	—	389 (4)	285 (3)	381 (1)	—	—	—	371 (1)	—	—	—	—	351 (9)
Rock bass	204 (4)	191 (2)	188 (19)	171 (12)	—	—	226 (2)	198 (3)	—	178 (1)	163 (3)	—	186 (46)
Pumpkinseed	—	—	175 (2)	—	180 (2)	—	—	—	—	198 (1)	165 (17)	173 (1)	169 (23)
Bluegill	187 (6)	183 (8)	—	186 (4)	147 (4)	126 (6)	—	—	—	—	201 (8)	163 (3)	174 (39)
Smallmouth bass	—	320 (1)	299 (18)	361 (40)	368 (7)	363 (8)	325 (4)	345 (3)	—	—	—	—	345 (81)
Crappie	210 (10)	221 (2)	—	—	—	—	—	—	—	—	218 (7)	211 (2)	214 (21)

Appendix 111. Continued:

Species	Month												Weighted mean
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Yellow perch	215 (24)	213 (28)	223 (29)	182 (67)	187 (29)	193 (67)	188 (46)	234 (12)	— —	185 (55)	183 (196)	188 (142)	190 (695)
Walleye	424 (10)	366 (195)	376 (204)	387 (190)	432 (40)	406 (77)	434 (49)	429 (34)	498 (15)	452 (13)	315 (1)	— —	391 (828)

Appendix 112. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch in the Detroit River during 1983–84. (Sample size in parentheses.)

Species	Month										Weighted mean
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Feb	Mar	
Gizzard shad	251 (16)	— —	— —	— —	— —	— —	— —	— —	— —	— —	251 (16)
Mooneye	— —	— —	343 (6)	— —	284 (26)	282 (7)	173 (3)	— —	— —	— —	284 (42)
Northern pike	— —	— —	— —	— —	— —	— —	— —	— —	628 (5)	— —	628 (5)
Bullhead	251 (5)	229 (57)	229 (14)	246 (11)	216 (6)	234 (11)	307 (1)	— —	— —	— —	232 (105)
Channel catfish	— —	254 (3)	302 (6)	371 (21)	378 (54)	340 (15)	249 (15)	— —	— —	— —	347 (114)
White perch	— —	— —	185 (37)	168 (242)	147 (123)	152 (73)	163 (22)	— —	— —	— —	151 (497)
White bass	277 (25)	297 (1,160)	284 (2,095)	272 (269)	257 (85)	254 (22)	272 (13)	— —	— —	— —	286 (3,669)
Freshwater drum	361 (2)	284 (262)	284 (335)	284 (469)	257 (337)	267 (112)	269 (46)	328 (1)	— —	— —	277 (1,564)
Common carp	417 (4)	544 (12)	503 (12)	480 (35)	429 (23)	526 (24)	508 (17)	460 (3)	— —	— —	489 (130)
White sucker	— —	399 (11)	467 (4)	330 (10)	254 (5)	302 (5)	483 (3)	— —	— —	— —	363 (38)
Redhorse	— —	429 (2)	328 (5)	373 (23)	389 (17)	419 (52)	373 (48)	516 (1)	— —	— —	391 (148)

Appendix 112. Continued:

Species	Month										Weighted mean
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Feb	Mar	
Rock bass	160 (15)	180 (384)	175 (209)	157 (240)	157 (148)	165 (54)	155 (95)	124 (13)	— —	— —	168 (1,158)
Pumpkinseed	185 (2)	140 (1)	— —	135 (26)	127 (6)	— —	130 (6)	— —	— —	— —	136 (41)
Bluegill	— —	185 (6)	163 (7)	114 (11)	150 (11)	109 (5)	— —	— —	— —	— —	143 (40)
Smallmouth bass	— —	312 (1)	206 (9)	206 (51)	241 (44)	218 (43)	213 (53)	183 (4)	— —	— —	218 (205)
Crappie	— —	185 (13)	262 (6)	269 (2)	— —	— —	— —	— —	— —	— —	215 (21)
Yellow perch	163 (990)	170 (1,218)	168 (565)	163 (337)	157 (64)	175 (63)	145 (142)	155 (76)	157 (52)	152 (10)	165 (3,517)
Walleye	445 (7)	396 (31)	384 (173)	378 (474)	384 (254)	384 (61)	396 (81)	455 (17)	— —	— —	384 (1,098)

Appendix 113. Mean total length (in millimeters) by month and the overall weighted mean length for selected species from the angler catch in the Detroit River during 1984–85. (Sample size in parentheses.)

Species	Month												Weighted mean
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Bowfin	—	—	—	—	—	—	—	—	—	—	—	442	442
	—	—	—	—	—	—	—	—	—	—	—	(1)	(1)
Northern pike	599	611	505	—	—	—	—	—	—	724	678	—	622
	(1)	(5)	(2)	—	—	—	—	—	—	(2)	(2)	—	(12)
Bullhead	244	267	276	233	198	195	207	—	—	—	—	226	237
	(12)	(19)	(4)	(55)	(2)	(8)	(4)	—	—	—	—	(6)	(110)
Channel catfish	—	495	387	359	369	412	284	—	—	—	—	—	382
	—	(4)	(3)	(11)	(30)	(10)	(1)	—	—	—	—	—	(59)
White perch	173	228	177	168	174	189	175	—	—	—	—	—	180
	(1)	(22)	(149)	(76)	(76)	(79)	(4)	—	—	—	—	—	(407)
White bass	—	303	280	275	285	262	307	—	—	—	—	—	285
	—	(268)	(841)	(44)	(67)	(13)	(1)	—	—	—	—	—	(1,234)
Freshwater drum	—	310	302	275	252	274	277	—	—	—	—	—	283
	—	(68)	(265)	(228)	(132)	(77)	(31)	—	—	—	—	—	(801)
Chinook salmon	—	—	340	—	—	—	635	—	—	—	—	—	488
	—	—	(1)	—	—	—	(1)	—	—	—	—	—	(2)
Coho salmon	—	213	—	—	—	608	579	597	—	—	—	—	558
	—	(1)	—	—	—	(2)	(8)	(2)	—	—	—	—	(13)
Rainbow trout	—	203	—	—	—	—	650	—	—	—	—	—	586
	—	(1)	—	—	—	—	(6)	—	—	—	—	—	(7)
Common carp	676	457	450	499	509	469	519	—	—	—	—	—	495
	(1)	(6)	(5)	(11)	(20)	(10)	(9)	—	—	—	—	—	(62)

Appendix 113. Continued:

Species	Month												Weighted mean
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
White sucker	—	462	392	396	356	276	396	—	—	—	—	—	347
	—	(2)	(2)	(2)	(3)	(7)	(1)	—	—	—	—	—	(17)
Redhorse	425	407	376	384	364	362	374	396	—	—	—	—	371
	(2)	(8)	(5)	(24)	(25)	(71)	(23)	(2)	—	—	—	—	(160)
Rock bass	162	180	165	170	170	168	164	127	—	—	—	—	169
	(7)	(78)	(191)	(113)	(59)	(35)	(21)	(1)	—	—	—	—	(505)
Pumpkinseed	—	144	152	133	122	—	135	170	—	—	—	—	131
	—	(5)	(1)	(18)	(19)	—	(3)	(1)	—	—	—	—	(47)
Smallmouth bass	—	—	237	249	271	203	244	—	—	—	—	—	240
	—	—	(14)	(17)	(12)	(15)	(11)	—	—	—	—	—	(69)
Largemouth bass	—	—	381	455	—	—	—	—	—	—	—	—	411
	—	—	(3)	(2)	—	—	—	—	—	—	—	—	(5)
Yellow perch	177	179	176	181	170	187	171	163	160	—	175	173	176
	(128)	(150)	(129)	(70)	(38)	(30)	(68)	(53)	(9)	—	(40)	(17)	(732)
Walleye	390	391	368	383	383	368	403	434	411	—	—	511	383
	(21)	(495)	(579)	(341)	(86)	(129)	(176)	(43)	(14)	—	—	(2)	(1,886)

Appendix 114. Estimated number of fish harvested by boat anglers in the St. Clair River for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	Total
White bass	40 (74)	— —	925 (1,285)	614 (1,279)	496 (1,006)	1,117 (2,263)	3,192 (3,070)
Freshwater drum	761 (1,238)	484 (652)	201 (167)	118 (170)	53 (80)	928 (1,162)	2,545 (1,836)
Redhorse	— —	146 (276)	36 (75)	21 (41)	99 (179)	45 (66)	347 (346)
Rock bass	35 (73)	7 (13)	11 (22)	136 (145)	109 (155)	126 (201)	424 (303)
Smallmouth bass	9 (19)	28 (59)	— —	201 (254)	30 (63)	212 (393)	480 (476)
Yellow perch	146 (186)	700 (838)	331 (567)	548 (678)	818 (924)	93 (195)	2,636 (1,552)
Walleye	9,966 (4,162)	24,904 (7,854)	9,237 (2,917)	8,603 (3,236)	12,476 (4,800)	8,575 (3,350)	73,761 (11,500)
Other	251 (127)	571 (278)	208 (80)	346 (230)	210 (172)	422 (522)	2,008 (674)
Total	11,208 (4,349)	26,840 (7,935)	10,949 (3,244)	10,587 (3,569)	14,291 (5,000)	11,518 (4,267)	85,393 (12,180)

Appendix 115. Estimated number of fish harvested by boat anglers in the St. Clair River for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	Grid 2	Grid 3	Grid 4	Grid 5	Grid 6	Total
White bass	63	—	192	—	252	3,326	3,833
	(106)	—	(368)	—	(355)	(6,804)	(6,824)
Freshwater drum	51	106	228	180	767	103	1,435
	(108)	(134)	(413)	(224)	(912)	(208)	(1,061)
Redhorse	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Rock bass	8	26	49	70	107	178	438
	(17)	(52)	(74)	(143)	(197)	(281)	(383)
Smallmouth bass	20	232	—	—	111	114	477
	(41)	(279)	—	—	(228)	(168)	(399)
Yellow perch	—	102	19	—	38	179	338
	—	(128)	(39)	—	(78)	(337)	(371)
Walleye	10,541	23,957	14,891	15,864	24,077	18,390	107,720
	(2,690)	(4,462)	(3,706)	(5,927)	(6,328)	(6,749)	(12,713)
Other	10	94	283	309	38	192	926
	(21)	(113)	(116)	(278)	(78)	(314)	(457)
Total	10,693	24,517	15,662	16,423	25,390	22,482	115,167
	(2,695)	(4,476)	(3,750)	(5,939)	(6,411)	(9,602)	(14,490)

Appendix 116. Estimated catch per hour for fish harvested by boat anglers in the St. Clair River for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	Total
White bass	0.0011	—	0.0196	0.0109	0.0076	0.0192	0.0089
	(0.0020)	—	(0.0275)	(0.0228)	(0.0155)	(0.0390)	(0.0086)
Freshwater drum	0.0207	0.0050	0.0042	0.0021	0.0008	0.0159	0.0071
	(0.0340)	(0.0068)	(0.0036)	(0.0031)	(0.0012)	(0.0201)	(0.0051)
Redhorse	—	0.0015	0.0008	0.0004	0.0015	0.0008	0.0010
	—	(0.0029)	(0.0016)	(0.0007)	(0.0028)	(0.0011)	(0.0010)
Rock bass	0.0010	0.0001	0.0002	0.0024	0.0017	0.0022	0.0012
	(0.0020)	(0.0001)	(0.0005)	(0.0026)	(0.0024)	(0.0035)	(0.0008)
Smallmouth bass	0.0002	0.0003	—	0.0036	0.0005	0.0036	0.0013
	(0.0005)	(0.0006)	—	(0.0046)	(0.0010)	(0.0068)	(0.0013)
Yellow perch	0.0040	0.0073	0.0070	0.0097	0.0125	0.0016	0.0073
	(0.0051)	(0.0088)	(0.0121)	(0.0122)	(0.0144)	(0.0034)	(0.0044)
Walleye	0.2709	0.2585	0.1953	0.1526	0.1907	0.1473	0.2046
	(0.1292)	(0.0961)	(0.0748)	(0.0668)	(0.0834)	(0.0629)	(0.0365)
Other	0.0068	0.0059	0.0044	0.0061	0.0032	0.0072	0.0056
	(0.0038)	(0.0031)	(0.0019)	(0.0043)	(0.0027)	(0.0091)	(0.0019)
Total	0.3047	0.2786	0.2315	0.1878	0.2185	0.1978	0.2370
	(0.1338)	(0.0968)	(0.0807)	(0.0720)	(0.0862)	(0.0777)	(0.0382)

Appendix 117. Estimated catch per hour for fish harvested by boat anglers in the St. Clair River for 1984-85, all months combined. (Two standard errors in parentheses.)

	Grid						
Species	1	2	3	4	5	6	Total
White bass	0.0016 (0.0027)	— —	0.0043 (0.0082)	— —	0.0037 (0.0053)	0.0465 (0.0954)	0.0104 (0.0185)
Freshwater drum	0.0013 (0.0028)	0.0013 (0.0017)	0.0051 (0.0092)	0.0027 (0.0034)	0.0113 (0.0136)	0.0014 (0.0029)	0.0039 (0.0029)
Redhorse	— —	— —	— —	— —	— —	— —	— —
Rock bass	0.0002 (0.0004)	0.0003 (0.0007)	0.0011 (0.0016)	0.0011 (0.0022)	0.0016 (0.0029)	0.0025 (0.0039)	0.0012 (0.0010)
Smallmouth bass	0.0005 (0.0010)	0.0029 (0.0035)	— —	— —	0.0016 (0.0034)	0.0016 (0.0024)	0.0013 (0.0011)
Yellow perch	— —	0.0013 (0.0016)	0.0004 (0.0009)	— —	0.0006 (0.0012)	0.0025 (0.0047)	0.0009 (0.0010)
Walleye	0.2687 (0.0863)	0.2993 (0.0666)	0.3299 (0.0943)	0.2394 (0.0959)	0.3560 (0.1087)	0.2571 (0.1033)	0.2913 (0.0389)
Other	0.0003 (0.0005)	0.0012 (0.0014)	0.0063 (0.0027)	0.0047 (0.0042)	0.0006 (0.0012)	0.0027 (0.0044)	0.0025 (0.0012)
Total	0.2726 (0.0864)	0.3063 (0.0668)	0.3471 (0.0952)	0.2479 (0.0961)	0.3754 (0.1098)	0.3143 (0.1409)	0.3115 (0.0432)

Appendix 118. Estimated number of fish harvested by boat anglers in the St. Clair River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	4 (7)	35 (56)	2 (5)	96 (82)	3 (6)	30 (53)	170 (113)
May	1 (2)	49 (73)	— —	133 (174)	57 (78)	17 (36)	257 (207)
Jun	251 (234)	728 (540)	147 (166)	218 (169)	141 (215)	727 (1,151)	2,212 (1,331)
Jul	7,250 (4,151)	14,434 (6,921)	4,290 (2,559)	3,369 (2,240)	4,836 (3,422)	4,426 (2,434)	38,605 (9,713)
Aug	2,268 (1,141)	7,030 (3,312)	4,076 (1,701)	5,051 (2,610)	7,493 (3,522)	4,509 (3,140)	30,427 (6,651)
Sep	1,114 (521)	3,794 (1,902)	1,721 (956)	1,017 (609)	1,192 (632)	927 (588)	9,765 (2,433)
Oct	319 (240)	470 (351)	713 (365)	614 (665)	450 (605)	872 (865)	3,438 (1,368)
Nov	1 (3)	300 (237)	— —	89 (179)	119 (248)	10 (21)	519 (387)
Dec	— —	— —	— —	— —	— —	— —	— —
Jan	— —	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —	— —	— —
Total	11,208 (4,349)	26,840 (7,935)	10,949 (3,244)	10,587 (3,569)	14,291 (5,000)	11,518 (4,267)	85,393 (12,180)

Appendix 119. Estimated number of fish harvested by boat anglers in the St. Clair River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
May	299	30	254	502	1,279	1,035	3,399
	(609)	(60)	(102)	(467)	(2,654)	(1,703)	(3,248)
Jun	1,527	2,547	378	1,453	3,248	3,492	12,645
	(1,494)	(1,460)	(506)	(1,606)	(2,139)	(6,812)	(7,628)
Jul	4,451	9,901	4,805	6,633	9,534	5,306	40,630
	(1,717)	(2,572)	(2,326)	(3,772)	(3,878)	(2,910)	(7,260)
Aug	2,179	3,218	1,694	2,233	4,016	3,794	17,134
	(832)	(1,180)	(838)	(1,366)	(1,996)	(2,068)	(3,593)
Sep	2,081	7,429	7,750	5,189	4,984	4,938	32,371
	(999)	(3,041)	(2,730)	(4,019)	(2,857)	(4,678)	(7,993)
Oct	156	1,392	781	413	2,189	3,917	8,848
	(152)	(806)	(480)	(491)	(1,501)	(2,876)	(3,416)
Nov	—	—	—	—	140	—	140
	—	—	—	—	(221)	—	(221)
Dec	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Jan	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Feb	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Mar	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Total	10,693	24,517	15,662	16,423	25,390	22,482	115,167
	(2,695)	(4,476)	(3,750)	(5,939)	(6,411)	(9,602)	(14,490)

Appendix 120. Estimated catch per hour for fish harvested by boat anglers in the St. Clair River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	0.0028 (0.0059)	0.0250 (0.0456)	0.0031 (0.0084)	0.0200 (0.0215)	0.0016 (0.0034)	0.0254 (0.0482)	0.0150 (0.0114)
May	0.0011 (0.0022)	0.0253 (0.0414)	— —	0.0390 (0.0523)	0.0272 (0.0381)	0.0050 (0.0107)	0.0197 (0.0160)
Jun	0.0626 (0.0640)	0.1028 (0.0809)	0.0432 (0.0513)	0.0411 (0.0330)	0.0227 (0.0359)	0.1784 (0.2888)	0.0737 (0.0450)
Jul	0.4726 (0.3237)	0.3364 (0.1970)	0.2335 (0.1616)	0.1796 (0.1503)	0.1900 (0.1497)	0.2208 (0.1398)	0.2739 (0.0811)
Aug	0.2261 (0.1420)	0.2414 (0.1387)	0.2712 (0.1432)	0.3302 (0.1968)	0.3666 (0.2138)	0.2529 (0.1859)	0.2822 (0.0722)
Sep	0.3013 (0.1731)	0.4044 (0.2365)	0.3078 (0.2095)	0.1872 (0.1264)	0.1910 (0.1231)	0.1300 (0.0917)	0.2605 (0.0746)
Oct	0.2508 (0.2101)	0.1130 (0.0916)	0.2493 (0.1569)	0.1983 (0.2387)	0.1566 (0.2209)	0.2113 (0.2201)	0.1870 (0.0801)
Nov	0.0172 (0.0558)	1.4423 (1.4835)	— —	0.3771 (0.8158)	0.5509 (1.2121)	0.0265 (0.0576)	0.4106 (0.3296)
Dec	— —	— —	— —	— —	— —	— —	— —
Jan	— —	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —	— —	— —
Total	0.3047 (0.1338)	0.2786 (0.0968)	0.2315 (0.0807)	0.1878 (0.0720)	0.2185 (0.0862)	0.1978 (0.0777)	0.2370 (0.0382)

Appendix 121. Estimated catch per hour for fish harvested by boat anglers in the St. Clair River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	— —	— —	— —	— —	— —	— —	— —
May	0.0980 (0.2023)	0.0092 (0.0187)	0.1060 (0.0532)	0.0418 (0.0401)	0.2405 (0.5082)	0.1215 (0.2103)	0.0984 (0.0955)
Jun	0.2315 (0.2815)	0.2098 (0.1458)	0.0657 (0.0898)	0.1372 (0.1586)	0.2628 (0.1937)	0.2481 (0.4964)	0.2056 (0.1271)
Jul	0.2582 (0.1248)	0.2821 (0.0899)	0.3102 (0.1713)	0.3054 (0.1956)	0.4047 (0.2021)	0.2889 (0.1806)	0.3090 (0.0646)
Aug	0.2984 (0.1424)	0.2291 (0.1022)	0.2604 (0.1494)	0.2130 (0.1466)	0.3047 (0.1802)	0.3983 (0.2383)	0.2806 (0.0680)
Sep	0.5276 (0.3175)	0.6634 (0.3307)	0.6834 (0.3083)	0.5867 (0.4876)	0.5368 (0.3525)	0.3813 (0.3864)	0.5625 (0.1580)
Oct	0.2332 (0.2621)	0.3390 (0.2339)	0.2240 (0.1646)	0.1952 (0.2489)	0.6055 (0.4917)	0.5211 (0.4277)	0.4114 (0.1760)
Nov	— —	— —	— —	— —	0.5405 (0.9650)	— —	0.0910 (0.1469)
Dec	— —	— —	— —	— —	— —	— —	— —
Jan	— —	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —	— —	— —
Total	0.2726 (0.0864)	0.3063 (0.0668)	0.3471 (0.0952)	0.2479 (0.0961)	0.3754 (0.1098)	0.3143 (0.1409)	0.3115 (0.0432)

Appendix 122. Estimated number of fish harvested by shore anglers in the St. Clair River for 1983–84, all months combined. (Two standard errors in parentheses.)

	Grid						
Species	1	2	3	4	5	6	Total
White bass	435 (290)	86 (127)	119 (193)	12 (25)	— —	285 (197)	937 (421)
Freshwater drum	4,131 (1,797)	1,708 (717)	1,907 (999)	696 (420)	593 (371)	4,672 (1,211)	13,707 (2,553)
Redhorse	2,427 (695)	905 (331)	414 (231)	192 (130)	184 (200)	538 (196)	4,660 (861)
Rock bass	185 (148)	190 (117)	256 (181)	290 (228)	227 (249)	777 (332)	1,925 (541)
Smallmouth bass	325 (353)	15 (23)	24 (36)	13 (18)	— —	93 (61)	470 (361)
Yellow perch	4,958 (1,782)	2,430 (934)	628 (553)	586 (363)	940 (1,048)	2,487 (765)	12,029 (2,484)
Walleye	5,605 (1,734)	191 (110)	591 (288)	178 (159)	416 (358)	370 (216)	7,351 (1,817)
Other	2,147 (398)	370 (156)	269 (159)	77 (44)	11 (16)	568 (258)	3,442 (526)
Total	20,213 (3,207)	5,895 (1,250)	4,208 (1,240)	2,044 (637)	2,371 (1,211)	9,790 (1,535)	44,521 (4,196)

Appendix 123. Estimated number of fish harvested by shore anglers in the St. Clair River for 1984–85, all months combined. (Two standard errors in parentheses.)

	Grid						
Species	1	2	3	4	5	6	Total
White bass	673 (467)	399 (318)	— —	49 (79)	— —	1,133 (817)	2,254 (996)
Freshwater drum	1,631 (804)	599 (402)	120 (91)	297 (215)	5 (10)	3,040 (1,007)	5,692 (1,370)
Redhorse	727 (441)	128 (88)	32 (44)	15 (22)	13 (29)	322 (192)	1,237 (492)
Rock bass	151 (184)	41 (57)	— —	100 (95)	— —	161 (107)	453 (240)
Smallmouth bass	462 (256)	58 (72)	12 (25)	193 (155)	4 (8)	80 (65)	809 (316)
Yellow perch	814 (578)	379 (250)	12 (19)	515 (426)	71 (99)	409 (193)	2,200 (791)
Walleye	14,532 (2,899)	1,208 (429)	789 (279)	663 (445)	90 (168)	941 (394)	18,223 (3,008)
Other	1,744 (429)	48 (69)	34 (51)	58 (65)	27 (34)	164 (93)	2,075 (453)
Total	20,734 (3,175)	2,860 (728)	999 (303)	1,890 (685)	210 (200)	6,250 (1,391)	32,943 (3,626)

Appendix 124. Estimated catch per hour for fish harvested by shore anglers in the St. Clair River for 1983-84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	Total
White bass	0.0054 (0.0036)	0.0054 (0.0080)	0.0066 (0.0107)	0.0010 (0.0022)	— —	0.0084 (0.0059)	0.0055 (0.0025)
Freshwater drum	0.0508 (0.0231)	0.1065 (0.0493)	0.1050 (0.0585)	0.0585 (0.0551)	0.0656 (0.0438)	0.1372 (0.0401)	0.0804 (0.0166)
Redhorse	0.0299 (0.0094)	0.0564 (0.0234)	0.0228 (0.0134)	0.0161 (0.0160)	0.0204 (0.0226)	0.0158 (0.0061)	0.0273 (0.0056)
Rock bass	0.0023 (0.0018)	0.0118 (0.0077)	0.0141 (0.0103)	0.0244 (0.0260)	0.0251 (0.0282)	0.0228 (0.0102)	0.0113 (0.0033)
Smallmouth bass	0.0040 (0.0044)	0.0009 (0.0014)	0.0013 (0.0020)	0.0011 (0.0017)	— —	0.0027 (0.0018)	0.0028 (0.0021)
Yellow perch	0.0610 (0.0233)	0.1515 (0.0653)	0.0346 (0.0311)	0.0493 (0.0469)	0.1040 (0.1184)	0.0730 (0.0245)	0.0706 (0.0159)
Walleye	0.0690 (0.0231)	0.0119 (0.0072)	0.0325 (0.0170)	0.0150 (0.0172)	0.0460 (0.0410)	0.0109 (0.0065)	0.0431 (0.0113)
Other	0.0264 (0.0060)	0.0231 (0.0107)	0.0148 (0.0092)	0.0065 (0.0060)	0.0012 (0.0018)	0.0167 (0.0079)	0.0202 (0.0036)
Total	0.2488 (0.0421)	0.3675 (0.0868)	0.2317 (0.0719)	0.1719 (0.0807)	0.2623 (0.1376)	0.2875 (0.0499)	0.2612 (0.0269)

Appendix 125. Estimated catch per hour for fish harvested by shore anglers in the St. Clair River for 1984–85, all months combined. (Two standard errors in parentheses.)

	Grid						
Species	1	2	3	4	5	6	Total
White bass	0.0059 (0.0042)	0.0221 (0.0181)	— —	0.0035 (0.0056)	— —	0.0273 (0.0201)	0.0111 (0.0050)
Freshwater drum	0.0144 (0.0073)	0.0332 (0.0231)	0.0127 (0.0099)	0.0211 (0.0157)	0.0008 (0.0017)	0.0734 (0.0263)	0.0281 (0.0071)
Redhorse	0.0064 (0.0040)	0.0071 (0.0051)	0.0034 (0.0047)	0.0011 (0.0016)	0.0022 (0.0049)	0.0078 (0.0048)	0.0061 (0.0025)
Rock bass	0.0013 (0.0016)	0.0023 (0.0032)	— —	0.0071 (0.0069)	— —	0.0039 (0.0026)	0.0022 (0.0012)
Smallmouth bass	0.0041 (0.0023)	0.0032 (0.0040)	0.0013 (0.0027)	0.0137 (0.0113)	0.0007 (0.0014)	0.0019 (0.0016)	0.0040 (0.0016)
Yellow perch	0.0072 (0.0052)	0.0210 (0.0144)	0.0013 (0.0020)	0.0366 (0.0309)	0.0120 (0.0171)	0.0099 (0.0049)	0.0109 (0.0040)
Walleye	0.1282 (0.0294)	0.0669 (0.0269)	0.0837 (0.0325)	0.0471 (0.0326)	0.0152 (0.0287)	0.0227 (0.0100)	0.0901 (0.0163)
Other	0.0154 (0.0042)	0.0027 (0.0039)	0.0036 (0.0054)	0.0041 (0.0047)	0.0046 (0.0059)	0.0040 (0.0023)	0.0103 (0.0024)
Total	0.1829 (0.0317)	0.1585 (0.0431)	0.1060 (0.0349)	0.1343 (0.0500)	0.0355 (0.0343)	0.1509 (0.0355)	0.1628 (0.0193)

Appendix 126. Estimated number of fish harvested by shore anglers in the St. Clair River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	44 (44)	— —	— —	3 (8)	1 (2)	46 (68)	94 (81)
May	758 (324)	253 (171)	240 (488)	54 (47)	11 (17)	166 (113)	1,482 (623)
Jun	2,799 (846)	1,314 (683)	893 (716)	532 (348)	246 (168)	2,433 (821)	8,217 (1,587)
Jul	7,069 (2,189)	2,118 (740)	1,189 (569)	409 (280)	1,073 (1,039)	3,312 (1,034)	15,170 (2,809)
Aug	7,374 (2,125)	1,924 (715)	1,382 (605)	869 (433)	888 (585)	2,853 (721)	15,290 (2,538)
Sep	1,028 (257)	171 (70)	231 (160)	149 (122)	135 (124)	714 (250)	2,428 (436)
Oct	639 (201)	85 (43)	255 (265)	21 (23)	17 (28)	251 (107)	1,268 (354)
Nov	83 (59)	28 (29)	18 (33)	7 (9)	— —	15 (34)	151 (82)
Dec	10 (15)	— —	— —	— —	— —	— —	10 (15)
Jan	228 (167)	— —	— —	— —	— —	— —	228 (167)
Feb	171 (132)	2 (3)	— —	— —	— —	— —	173 (132)
Mar	10 (12)	— —	— —	— —	— —	— —	10 (12)
Total	20,213 (3,207)	5,895 (1,250)	4,208 (1,240)	2,044 (637)	2,371 (1,211)	9,790 (1,535)	44,521 (4,196)

Appendix 127. Estimated number of fish harvested by shore anglers in the St. Clair River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	Grid 2	Grid 3	Grid 4	Grid 5	Grid 6	Total
Apr	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
May	457	—	—	—	3	62	522
	(273)	—	—	—	(7)	(64)	(281)
Jun	4,875	1,422	128	427	—	2,542	9,394
	(2,118)	(599)	(104)	(399)	—	(1,124)	(2,505)
Jul	7,673	846	355	610	38	1,912	11,434
	(1,871)	(350)	(193)	(420)	(44)	(663)	(2,069)
Aug	4,770	194	194	445	85	1,019	6,707
	(1,283)	(100)	(138)	(271)	(99)	(411)	(1,389)
Sep	2,323	350	261	320	13	420	3,687
	(569)	(196)	(137)	(206)	(29)	(190)	(678)
Oct	483	48	61	88	71	295	1,046
	(188)	(30)	(77)	(135)	(166)	(147)	(331)
Nov	64	—	—	—	—	—	64
	(90)	—	—	—	—	—	(90)
Dec	27	—	—	—	—	—	27
	(35)	—	—	—	—	—	(35)
Jan	2	—	—	—	—	—	2
	(14)	—	—	—	—	—	(14)
Feb	60	—	—	—	—	—	60
	(72)	—	—	—	—	—	(72)
Mar	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Total	20,734	2,860	999	1,890	210	6,250	32,943
	(3,175)	(728)	(303)	(685)	(200)	(1,391)	(3,626)

Appendix 128. Estimated catch per hour for fish harvested by shore anglers in the St. Clair River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	0.0174	—	—	0.0238	0.0037	0.0639	0.0232
	(0.0187)	—	—	(1.5468)	(0.0080)	(0.1029)	(0.0389)
May	0.1206	0.2285	0.1878	0.0699	0.0369	0.0799	0.1253
	(0.0564)	(0.1725)	(0.3956)	(0.0705)	(0.0628)	(0.0597)	(0.0552)
Jun	0.2141	0.2858	0.2290	0.1537	0.1804	0.3007	0.2383
	(0.0754)	(0.1733)	(0.1961)	(0.1100)	(0.1400)	(0.1195)	(0.0529)
Jul	0.3588	0.5418	0.2321	0.1366	0.4118	0.3653	0.3495
	(0.1331)	(0.2178)	(0.1317)	(0.1056)	(0.4266)	(0.1428)	(0.0749)
Aug	0.3537	0.4471	0.2716	0.2610	0.2805	0.3040	0.3315
	(0.1080)	(0.1860)	(0.1243)	(0.1448)	(0.1919)	(0.0822)	(0.0581)
Sep	0.1217	0.1690	0.1397	0.1788	0.1651	0.2572	0.1562
	(0.0342)	(0.0821)	(0.1005)	(0.1582)	(0.1663)	(0.0966)	(0.0298)
Oct	0.1259	0.1546	0.3069	0.0933	0.0383	0.1447	0.1430
	(0.0470)	(0.0858)	(0.3606)	(0.1169)	(0.0669)	(0.0693)	(0.0428)
Nov	0.0728	0.1697	0.4090	0.1186	—	0.2308	0.1002
	(0.0564)	(0.1920)	(0.8201)	(0.1746)	—	(0.5675)	(0.0572)
Dec	0.0361	—	—	—	—	—	0.0310
	(0.0590)	—	—	—	—	—	(0.0503)
Jan	0.3089	—	—	—	—	—	0.3089
	(0.2678)	—	—	—	—	—	(0.2678)
Feb	0.0731	0.0400	—	—	—	—	0.0667
	(0.0590)	(0.0694)	—	—	—	—	(0.0529)
Mar	0.0120	—	—	—	—	—	0.0099
	(0.0150)	—	—	—	—	—	(0.0123)
Total	0.2488	0.3675	0.2317	0.1719	0.2623	0.2875	0.2612
	(0.0421)	(0.0868)	(0.0719)	(0.0807)	(0.1376)	(0.0499)	(0.0269)

Appendix 129. Estimated catch per hour for fish harvested by shore anglers in the St. Clair River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid						
Month	1	2	3	4	5	6	Total
Apr	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
May	0.0482	—	—	—	0.0093	0.0236	0.0320
	(0.0299)	—	—	—	(0.0226)	(0.0256)	(0.0176)
Jun	0.2390	0.3064	0.0950	0.1446	—	0.3030	0.2430
	(0.1214)	(0.1437)	(0.0794)	(0.1388)	—	(0.1453)	(0.0714)
Jul	0.2479	0.1345	0.1187	0.1311	0.0326	0.1185	0.1839
	(0.0740)	(0.0632)	(0.0742)	(0.0949)	(0.0404)	(0.0459)	(0.0375)
Aug	0.2377	0.0719	0.1368	0.2133	0.0464	0.1433	0.1905
	(0.0795)	(0.0403)	(0.1102)	(0.1393)	(0.0571)	(0.0604)	(0.0445)
Sep	0.1359	0.1599	0.1477	0.1904	0.0124	0.0884	0.1292
	(0.0380)	(0.1010)	(0.0901)	(0.1294)	(0.0282)	(0.0412)	(0.0262)
Oct	0.0555	0.0641	0.0931	0.1214	0.1406	0.1371	0.0775
	(0.0234)	(0.0431)	(0.1284)	(0.1912)	(0.3376)	(0.0714)	(0.0253)
Nov	0.0394	—	—	—	—	—	0.0292
	(0.0581)	—	—	—	—	—	(0.0423)
Dec	0.0399	—	—	—	—	—	0.0353
	(0.0573)	—	—	—	—	—	(0.0498)
Jan	0.0182	—	—	—	—	—	0.0130
	(0.1290)	—	—	—	—	—	(0.0918)
Feb	0.0733	—	—	—	—	—	0.0733
	(0.0886)	—	—	—	—	—	(0.0886)
Mar	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
Total	0.1829	0.1585	0.1060	0.1343	0.0355	0.1509	0.1628
	(0.0317)	(0.0431)	(0.0349)	(0.0500)	(0.0343)	(0.0355)	(0.0193)

Appendix 130. Estimated number of fish harvested and catch per hour by boat anglers in the north, middle, and south channels of Harsens Island for 1983-84 and 1984-85, all months combined. (Two standard errors in parentheses.)

	1983-84		1984-85	
Species	Catch	Catch per hour	Catch	Catch per hour
Northern pike	188 (157)	0.0011 (0.0009)	542 (319)	0.0017 (0.0010)
White perch	— —	— —	133 (278)	0.0004 (0.0009)
White bass	— —	— —	372 (541)	0.0012 (0.0017)
Freshwater drum	— —	— —	908 (1,047)	0.0029 (0.0033)
Coho salmon	— —	— —	665 (525)	0.0021 (0.0017)
Rainbow trout	188 (157)	0.0011 (0.0009)	— —	— —
Redhorse	— —	— —	550 (815)	0.0018 (0.0026)
Rock bass	— —	— —	4,522 (4,608)	0.0144 (0.0147)
Pumpkinseed	— —	— —	570 (239)	0.0018 (0.0008)
Bluegill	— —	— —	1,485 (2,736)	0.0047 (0.0087)
Smallmouth bass	— —	— —	4,151 (1,219)	0.0132 (0.0040)
Largemouth bass	470 (185)	0.0027 (0.0011)	2,870 (774)	0.0091 (0.0026)
Crappie	— —	— —	608 (1,341)	0.0019 (0.0043)
Yellow perch	18,721 (15,439)	0.1069 (0.0888)	5,735 (3,521)	0.0183 (0.0113)
Walleye	3,185 (2,046)	0.0182 (0.0118)	58,045 (11,236)	0.1849 (0.0388)
Total	22,752 (15,577)	0.1300 (0.0896)	81,156 (13,184)	0.2584 (0.0446)

Appendix 131. Estimated number of fish harvested and catch per hour by boat anglers in the north, middle, and south channels of Harsens Island for 1983–84 and 1984–85, all species combined. (Two standard errors in parentheses.)

Month	1983–84 Catch	1983–84 Catch per hour	1984–85 Catch	1984–85 Catch per hour
Apr	— —	— —	— —	— —
May	— —	— —	4,803 (1,710)	0.1472 (0.0570)
Jun	— —	— —	18,225 (8,655)	0.2673 (0.1392)
Jul	— —	— —	20,781 (3,821)	0.2044 (0.0466)
Aug	— —	— —	16,002 (3,834)	0.2981 (0.0761)
Sep	— —	— —	15,121 (6,507)	0.4421 (0.1942)
Oct	22,752 (15,577)	1.6297 (1.1381)	6,224 (4,934)	0.3176 (0.2554)
Nov	— —	— —	— —	— —
Dec	— —	— —	— —	— —
Jan	— —	— —	— —	— —
Feb	— —	— —	— —	— —
Mar	— —	— —	— —	— —
Total	22,752 (15,577)	0.1300 (0.0896)	81,156 (13,184)	0.2584 (0.0446)

Appendix 132. Estimated number of fish harvested and catch per hour by open, shanty, and all ice anglers in the north, middle, and south channels of Harsens Island for 1984, all months combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Open	Shanty	Combined	Open	Shanty	Combined
Bluegill	50	—	50	0.0126	—	0.0054
	(108)	—	(108)	(0.0277)	—	(0.0118)
Yellow perch	1,341	1,214	2,555	0.3377	0.2322	0.2777
	(1,731)	(907)	(1,954)	(0.4568)	(0.1840)	(0.2218)
Total	1,391	1,214	2,605	0.3503	0.2322	0.2831
	(1,734)	(907)	(1,957)	(0.4576)	(0.1840)	(0.2221)

Appendix 133. Estimated number of fish harvested and catch per hour by open, shanty, and all ice anglers in the north, middle, and south channels of Harsens Island for 1984, all species combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Month	Open	Shanty	Combined	Open	Shanty	Combined
Jan	—	1,214	1,214	—	0.2893	0.1978
	—	(907)	(907)	—	(0.2350)	(0.1571)
Feb	1,391	—	1,391	1.0783	—	0.6605
	(1,734)	—	(1,734)	(1.6183)	—	(0.8950)
Mar	—	—	—	—	—	—
	—	—	—	—	—	—
Total	1,391	1,214	2,605	0.3503	0.2322	0.2831
	(1,734)	(907)	(1,957)	(0.4576)	(0.1840)	(0.2221)

Appendix 134. Estimated number of fish harvested by boat anglers in Lake St. Clair for 1983-84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
White perch	—	—	—	45	701	129	73	—	527	39	125	1,639
	—	—	—	(68)	(703)	(268)	(107)	—	(817)	(59)	(265)	(1,150)
White bass	1,279	166	385	375	1,327	215	503	570	765	19,317	2,375	27,277
	(2,516)	(338)	(799)	(762)	(1,499)	(316)	(1,036)	(1,064)	(1,219)	(26,600)	(5,036)	(27,324)
Freshwater drum	1,551	1,229	6,397	1,175	1,518	3,252	665	1,497	223	2,788	589	20,884
	(1,433)	(2,547)	(2,998)	(1,344)	(1,557)	(3,302)	(761)	(1,451)	(283)	(2,931)	(916)	(6,698)
Rock bass	6,835	12,966	30,147	1,758	1,383	3,207	531	1,530	1,181	581	1,594	61,713
	(5,124)	(14,004)	(13,742)	(1,234)	(1,047)	(3,356)	(729)	(1,209)	(984)	(584)	(2,495)	(20,847)
Pumpkinseed	2,486	623	13,257	811	333	1,877	103	492	127	—	—	20,109
	(1,731)	(828)	(7,277)	(818)	(635)	(2,167)	(208)	(999)	(268)	—	—	(7,970)
Smallmouth bass	13,163	1,390	4,195	612	861	1,752	98	963	931	—	108	24,073
	(13,220)	(1,388)	(2,148)	(565)	(844)	(2,094)	(145)	(901)	(997)	—	(226)	(13,733)
Yellow perch	35,458	75,879	112,848	22,670	40,406	37,896	37,181	52,221	90,678	10,141	5,432	520,810
	(13,344)	(28,636)	(38,137)	(9,318)	(26,497)	(14,460)	(30,694)	(29,551)	(34,634)	(10,091)	(9,149)	(81,554)
Walleye	15,188	3,254	24,102	3,665	20,128	5,477	5,239	13,926	10,470	21,428	8,652	131,529
	(7,682)	(3,301)	(10,730)	(1,914)	(14,108)	(3,409)	(6,744)	(6,318)	(5,617)	(12,689)	(6,486)	(26,822)
Other	2,346	4,836	5,773	545	1,090	4,661	425	27	1,595	307	74	21,679
	(2,158)	(7,811)	(2,812)	(561)	(879)	(4,161)	(532)	(56)	(2,251)	(385)	(160)	(9,875)
Total	78,306	100,343	197,104	31,656	67,747	58,466	44,818	71,226	106,497	54,601	18,949	829,713
	(21,310)	(33,125)	(42,819)	(9,783)	(30,154)	(16,415)	(31,467)	(30,326)	(35,219)	(31,297)	(12,584)	(94,591)

Appendix 135. Estimated number of fish harvested by boat anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
White perch	63 (128)	— —	292 (350)	— —	797 (1,276)	— —	151 (311)	71 (148)	567 (1,080)	— —	— —	1,941 (1,747)
White bass	985 (1,245)	666 (828)	1,000 (957)	149 (184)	764 (1,026)	— —	150 (228)	111 (227)	135 (172)	68,976 (113,500)	1,041 (1,774)	73,977 (113,533)
Freshwater drum	2,666 (1,760)	1,948 (1,475)	2,188 (1,251)	268 (260)	1,553 (2,260)	2,780 (4,600)	1,013 (1,305)	779 (1,019)	2,200 (3,787)	23 (34)	380 (502)	15,798 (7,107)
Rock bass	5,611 (3,032)	2,854 (1,958)	11,996 (5,409)	1,170 (981)	1,919 (1,856)	4,515 (4,996)	1,173 (941)	4,037 (2,256)	2,004 (2,150)	734 (904)	97 (207)	36,110 (9,116)
Pumpkinseed	1,919 (1,967)	1,735 (2,308)	5,690 (7,687)	397 (418)	384 (559)	455 (729)	527 (311)	526 (765)	— —	— —	— —	11,633 (8,366)
Smallmouth bass	1,062 (944)	1,425 (1,470)	5,048 (2,459)	669 (627)	2,547 (2,494)	263 (335)	717 (640)	3,581 (1,796)	314 (292)	276 (567)	134 (203)	16,036 (4,462)
Yellow perch	37,751 (23,777)	35,670 (33,998)	50,705 (18,754)	33,942 (11,102)	12,096 (12,757)	29,977 (16,051)	33,109 (23,204)	55,721 (56,984)	42,466 (19,336)	12,023 (12,874)	752 (687)	344,212 (83,320)
Walleye	15,059 (5,596)	13,581 (5,815)	11,015 (4,175)	7,248 (4,903)	28,911 (10,046)	6,487 (3,992)	3,121 (1,777)	11,647 (6,126)	9,809 (4,955)	14,690 (7,433)	10,653 (7,112)	132,221 (19,863)
Other	1,190 (897)	2,897 (1,848)	1,984 (1,205)	2,059 (2,517)	2,269 (1,121)	565 (911)	3,231 (2,728)	148 (298)	101 (105)	45 (56)	33 (75)	14,522 (4,653)
Total	66,306 (24,821)	60,776 (34,746)	89,918 (21,624)	45,902 (12,460)	51,240 (16,813)	45,042 (17,921)	43,192 (23,500)	76,621 (57,400)	57,596 (20,462)	96,767 (114,474)	13,090 (7,385)	646,450 (143,090)

Appendix 136. Estimated catch per hour for fish harvested by boat anglers in Lake St. Clair for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
White perch	— —	— —	— —	0.0005 (0.0008)	0.0042 (0.0043)	0.0011 (0.0023)	0.0013 (0.0019)	— —	0.0060 (0.0094)	0.0005 (0.0007)	0.0038 (0.0081)	0.0011 (0.0008)
White bass	0.0069 (0.0136)	0.0008 (0.0017)	0.0010 (0.0022)	0.0042 (0.0085)	0.0079 (0.0091)	0.0018 (0.0027)	0.0087 (0.0181)	0.0042 (0.0078)	0.0088 (0.0141)	0.2413 (0.3354)	0.0716 (0.1531)	0.0179 (0.0180)
Freshwater drum	0.0084 (0.0079)	0.0062 (0.0130)	0.0172 (0.0086)	0.0131 (0.0152)	0.0090 (0.0095)	0.0277 (0.0286)	0.0115 (0.0134)	0.0110 (0.0108)	0.0026 (0.0033)	0.0348 (0.0372)	0.0178 (0.0281)	0.0137 (0.0045)
Rock bass	0.0368 (0.0285)	0.0656 (0.0724)	0.0813 (0.0396)	0.0196 (0.0143)	0.0082 (0.0065)	0.0273 (0.0290)	0.0092 (0.0128)	0.0112 (0.0091)	0.0135 (0.0116)	0.0073 (0.0074)	0.0480 (0.0764)	0.0405 (0.0140)
Pumpkinseed	0.0134 (0.0097)	0.0032 (0.0043)	0.0357 (0.0206)	0.0090 (0.0093)	0.0020 (0.0038)	0.0160 (0.0187)	0.0018 (0.0036)	0.0036 (0.0074)	0.0015 (0.0031)	— —	— —	0.0132 (0.0053)
Smallmouth bass	0.0709 (0.0725)	0.0070 (0.0072)	0.0113 (0.0061)	0.0068 (0.0064)	0.0051 (0.0051)	0.0149 (0.0181)	0.0017 (0.0025)	0.0071 (0.0067)	0.0107 (0.0116)	— —	0.0033 (0.0069)	0.0158 (0.0091)
Yellow perch	0.1911 (0.0803)	0.3841 (0.1693)	0.3042 (0.1155)	0.2528 (0.1155)	0.2396 (0.1667)	0.3228 (0.1371)	0.6451 (0.5490)	0.3832 (0.2273)	1.0401 (0.4491)	0.1267 (0.1283)	0.1637 (0.2796)	0.3417 (0.0585)
Walleye	0.0819 (0.0441)	0.0165 (0.0171)	0.0650 (0.0310)	0.0409 (0.0229)	0.1193 (0.0881)	0.0467 (0.0303)	0.0909 (0.1185)	0.1022 (0.0498)	0.1201 (0.0688)	0.2677 (0.1664)	0.2608 (0.2090)	0.0863 (0.0186)
Other	0.0126 (0.0119)	0.0245 (0.0399)	0.0156 (0.0080)	0.0061 (0.0064)	0.0065 (0.0054)	0.0397 (0.0362)	0.0074 (0.0094)	0.0002 (0.0004)	0.0183 (0.0261)	0.0038 (0.0049)	0.0022 (0.0049)	0.0142 (0.0066)
Total	0.4220 (0.1222)	0.5079 (0.1898)	0.5313 (0.1284)	0.3530 (0.1206)	0.4018 (0.1894)	0.4980 (0.1529)	0.7776 (0.5623)	0.5227 (0.2335)	1.2216 (0.4557)	0.6821 (0.3976)	0.5712 (0.3899)	0.5444 (0.0668)

Appendix 137. Estimated catch per hour for fish harvested by boat anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

	Grid											
Species	1	2	3	4	5	6	7	8	9	10	11	Total
White perch	0.0004	—	0.0011	—	0.0040	—	0.0024	0.0005	0.0069	—	—	0.0013
	(0.0007)	—	(0.0013)	—	(0.0065)	—	(0.0050)	(0.0010)	(0.0131)	—	—	(0.0012)
White bass	0.0056	0.0033	0.0037	0.0016	0.0039	—	0.0024	0.0008	0.0016	0.7450	0.0408	0.0511
	(0.0071)	(0.0041)	(0.0035)	(0.0020)	(0.0052)	—	(0.0037)	(0.0016)	(0.0021)	(1.2309)	(0.0700)	(0.0785)
Freshwater drum	0.0150	0.0097	0.0080	0.0029	0.0079	0.0289	0.0162	0.0054	0.0266	0.0002	0.0149	0.0109
	(0.0101)	(0.0074)	(0.0046)	(0.0028)	(0.0115)	(0.0481)	(0.0210)	(0.0071)	(0.0461)	(0.0004)	(0.0199)	(0.0049)
Rock bass	0.0316	0.0142	0.0438	0.0126	0.0097	0.0470	0.0187	0.0278	0.0243	0.0079	0.0038	0.0250
	(0.0175)	(0.0099)	(0.0203)	(0.0106)	(0.0095)	(0.0525)	(0.0152)	(0.0161)	(0.0264)	(0.0098)	(0.0081)	(0.0064)
Pumpkinseed	0.0108	0.0086	0.0208	0.0043	0.0020	0.0047	0.0084	0.0036	—	—	—	0.0080
	(0.0112)	(0.0115)	(0.0282)	(0.0045)	(0.0029)	(0.0076)	(0.0051)	(0.0053)	—	—	—	(0.0058)
Smallmouth bass	0.0060	0.0071	0.0184	0.0072	0.0129	0.0027	0.0115	0.0246	0.0038	0.0030	0.0053	0.0111
	(0.0054)	(0.0073)	(0.0092)	(0.0068)	(0.0128)	(0.0035)	(0.0103)	(0.0129)	(0.0036)	(0.0061)	(0.0080)	(0.0031)
Yellow perch	0.2129	0.1772	0.1853	0.3643	0.0614	0.3117	0.5289	0.3835	0.5140	0.1299	0.0295	0.2379
	(0.1366)	(0.1701)	(0.0713)	(0.1243)	(0.0653)	(0.1745)	(0.3776)	(0.3962)	(0.2500)	(0.1404)	(0.0276)	(0.0585)
Walleye	0.0849	0.0675	0.0402	0.0778	0.1469	0.0675	0.0499	0.0802	0.1187	0.1587	0.4174	0.0914
	(0.0333)	(0.0299)	(0.0158)	(0.0532)	(0.0545)	(0.0429)	(0.0292)	(0.0438)	(0.0633)	(0.0837)	(0.2913)	(0.0143)
Other	0.0067	0.0144	0.0072	0.0221	0.0115	0.0059	0.0516	0.0010	0.0012	0.0005	0.0013	0.0100
	(0.0051)	(0.0093)	(0.0045)	(0.0271)	(0.0059)	(0.0095)	(0.0441)	(0.0021)	(0.0013)	(0.0006)	(0.0030)	(0.0032)
Total	0.3739	0.3020	0.3285	0.4928	0.2602	0.4684	0.6900	0.5274	0.6971	1.0452	0.5130	0.4467
	(0.1429)	(0.1740)	(0.0817)	(0.1386)	(0.0879)	(0.1937)	(0.3824)	(0.3993)	(0.2637)	(1.2418)	(0.3017)	(0.0995)

Appendix 138. Estimated number of fish harvested by boat anglers in Lake St. Clair from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Apr	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
May	390	—	8,782	—	1,245	—	—	327	—	—	—	10,744
	(606)	—	(6,249)	—	(2,038)	—	—	(725)	—	—	—	(6,641)
Jun	25,023	5,560	61,076	1,533	24,138	6,096	70	3,580	3,476	18,378	10,774	159,704
	(15,686)	(6,719)	(22,571)	(2,149)	(15,958)	(4,911)	(146)	(3,542)	(3,606)	(15,902)	(11,697)	(38,722)
Jul	19,758	27,628	36,771	7,437	8,570	8,777	29,904	18,783	56,545	26,184	2,971	243,328
	(8,819)	(21,860)	(14,055)	(4,375)	(7,475)	(6,478)	(30,939)	(10,830)	(29,883)	(26,270)	(2,159)	(59,434)
Aug	17,471	24,859	46,338	10,165	6,823	20,274	7,218	32,797	30,441	5,712	4,666	206,764
	(6,385)	(15,218)	(27,613)	(6,064)	(4,084)	(9,775)	(4,431)	(24,385)	(13,477)	(3,503)	(4,063)	(44,816)
Sep	8,001	21,442	26,449	6,327	8,526	18,717	690	8,883	14,653	3,635	—	117,323
	(5,589)	(14,989)	(14,712)	(5,096)	(11,429)	(9,975)	(684)	(10,797)	(12,274)	(4,870)	—	(31,936)
Oct	7,645	20,673	14,953	4,271	16,767	4,370	6,826	6,741	1,382	100	420	84,148
	(7,611)	(10,854)	(9,692)	(1,728)	(21,090)	(2,861)	(3,580)	(8,836)	(1,453)	(126)	(555)	(28,617)
Nov	—	—	2,727	1,198	1,678	232	110	103	—	567	93	6,708
	—	—	(3,829)	(2,267)	(1,575)	(386)	(125)	(222)	—	(702)	(149)	(4,797)
Dec	—	10	8	—	—	—	—	12	—	—	—	30
	—	(15)	(16)	—	—	—	—	(21)	—	—	—	(30)
Jan	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Feb	—	171	—	725	—	—	—	—	—	—	—	896
	—	(433)	—	(1,044)	—	—	—	—	—	—	—	(1,130)

Appendix 138. Continued:

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Mar	18 (53)	— —	— —	— —	— —	— —	— —	— —	— —	25 (70)	25 (70)	68 (112)
Total	78,306 (21,310)	100,343 (33,125)	197,104 (42,819)	31,656 (9,783)	67,747 (30,154)	58,466 (16,415)	44,818 (31,467)	71,226 (30,326)	106,497 (35,219)	54,601 (31,297)	18,949 (12,584)	829,713 (94,591)

Appendix 139. Estimated number of fish harvested by boat anglers in Lake St. Clair from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Apr	39	14	505	48	1,092	135	—	—	—	—	482	2,315
	(85)	(29)	(503)	(54)	(699)	(230)	—	—	—	—	(548)	(1,051)
May	—	422	3,043	312	17,276	1,183	41	963	—	1,307	676	25,223
	—	(613)	(2,078)	(288)	(12,706)	(1,776)	(89)	(1,400)	—	(1,479)	(405)	(13,179)
Jun	14,199	8,723	23,961	3,240	21,130	10,647	6,303	6,622	13,717	74,260	6,523	189,325
	(4,681)	(3,962)	(10,268)	(2,282)	(9,310)	(8,409)	(3,934)	(4,750)	(8,895)	(113,667)	(6,954)	(115,722)
Jul	17,180	20,168	18,910	8,119	5,846	5,456	15,323	9,732	17,280	10,231	2,155	130,400
	(6,894)	(9,865)	(6,190)	(3,534)	(3,851)	(3,692)	(21,684)	(5,154)	(7,592)	(12,108)	(1,111)	(30,436)
Aug	17,378	4,831	11,982	6,575	1,081	7,440	1,805	7,756	4,602	2,920	264	66,634
	(15,597)	(6,718)	(6,151)	(3,656)	(1,216)	(6,219)	(1,056)	(4,581)	(2,832)	(1,874)	(100)	(20,332)
Sep	2,523	4,675	14,541	8,421	3,344	13,028	13,513	21,853	17,718	4,553	966	105,135
	(1,671)	(2,878)	(10,589)	(5,125)	(3,613)	(13,045)	(4,945)	(17,890)	(15,989)	(5,353)	(635)	(31,016)
Oct	14,684	21,198	16,440	17,987	1,033	6,600	5,929	29,315	4,212	1,408	1,224	120,030
	(17,326)	(32,246)	(12,990)	(9,740)	(2,131)	(4,918)	(6,372)	(53,875)	(4,273)	(641)	(1,874)	(67,807)
Nov	303	589	529	1,139	438	553	268	380	67	1,200	785	6,251
	(641)	(764)	(762)	(1,720)	(428)	(753)	(634)	(340)	(114)	(1,397)	(753)	(2,886)
Dec	—	32	7	11	—	—	10	—	—	230	15	305
	—	(71)	(18)	(27)	—	—	(16)	—	—	(222)	(20)	(237)
Jan	—	—	—	50	—	—	—	—	—	658	—	708
	—	—	—	(100)	—	—	—	—	—	(862)	—	(868)
Feb	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—

Appendix 139. Continued:

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Mar	— —	124 (260)	— —	— —	— —	— —	— —	— —	— —	— —	— —	124 (260)
Total	66,306 (24,821)	60,776 (34,746)	89,918 (21,624)	45,902 (12,460)	51,240 (16,813)	45,042 (17,921)	43,192 (23,500)	76,621 (57,400)	57,596 (20,462)	96,767 (114,474)	13,090 (7,385)	646,450 (143,090)

Appendix 140. Estimated catch per hour for fish harvested by boat anglers in Lake St. Clair from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Apr	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
May	0.1294 (0.2139)	— —	1.0274 (0.7976)	— —	0.1000 (0.1727)	— —	— —	0.0602 (0.1406)	— —	— —	— —	0.2444 (0.1560)
Jun	0.2931 (0.1912)	0.1175 (0.1503)	0.4613 (0.1876)	0.0557 (0.0809)	0.2400 (0.1679)	0.1811 (0.1504)	0.0064 (0.0135)	0.1195 (0.1217)	0.5757 (0.6538)	0.7917 (0.7160)	0.9507 (1.0785)	0.3142 (0.0793)
Jul	0.3867 (0.1949)	0.4381 (0.3598)	0.3377 (0.1505)	0.3306 (0.2064)	0.3878 (0.3558)	0.2984 (0.2300)	1.6370 (1.8005)	0.6203 (0.3840)	1.6457 (1.0644)	0.9153 (0.9368)	0.2961 (0.2428)	0.5814 (0.1507)
Aug	0.6400 (0.2488)	0.5720 (0.3702)	0.6379 (0.3993)	0.6115 (0.3794)	0.4048 (0.2551)	0.8085 (0.4161)	0.3892 (0.2574)	0.9745 (0.7562)	0.9707 (0.4633)	0.4645 (0.3043)	0.6009 (0.5684)	0.6766 (0.1533)
Sep	0.7023 (0.5731)	0.9905 (0.7605)	0.9978 (0.6560)	0.5335 (0.4593)	0.8688 (1.2016)	0.9899 (0.6194)	0.1297 (0.1407)	0.3552 (0.4698)	1.2581 (1.2026)	0.6081 (0.8453)	— —	0.7837 (0.2392)
Oct	1.1646 (1.2567)	1.2752 (0.7707)	0.7628 (0.5454)	0.5635 (0.2651)	2.8010 (3.8766)	0.5375 (0.4259)	2.2149 (1.5186)	0.6091 (0.8770)	0.4172 (0.4853)	0.0257 (0.0328)	0.3630 (0.5378)	0.9720 (0.3574)
Nov	— —	— —	1.1913 (1.7421)	1.1281 (2.2136)	1.8896 (2.1332)	1.6811 (3.3167)	0.2588 (0.3495)	0.1280 (0.2916)	— —	0.4554 (0.6631)	0.4115 (0.8908)	0.6805 (0.5044)
Dec	— —	0.0372 (0.0610)	0.1667 (0.4714)	— —	— —	— —	— —	0.1905 (0.3885)	— —	— —	— —	0.0789 (0.0906)
Jan	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
Feb	— —	1.9000 (5.6354)	— —	1.2330 (2.3529)	— —	— —	— —	— —	— —	— —	— —	1.3216 (2.2590)

Appendix 140. Continued:

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Mar	0.1782 (0.6394)	— —	— —	— —	— —	— —	— —	— —	— —	0.1852 (0.6412)	0.1852 (0.6412)	0.1833 (0.3723)
Total	0.4220 (0.1222)	0.5079 (0.1898)	0.5313 (0.1284)	0.3530 (0.1206)	0.4018 (0.1894)	0.4980 (0.1529)	0.7776 (0.5623)	0.5227 (0.2335)	1.2216 (0.4557)	0.6821 (0.3976)	0.5712 (0.3899)	0.5444 (0.0668)

Appendix 141. Estimated catch per hour for fish harvested by boat anglers in Lake St. Clair from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Apr	0.0406	0.0138	0.1166	0.1111	0.2475	0.0829	—	—	—	—	0.3255	0.1320
	(0.0921)	(0.0293)	(0.1279)	(0.1416)	(0.2002)	(0.1556)	—	—	—	—	(0.4226)	(0.0627)
May	—	0.0366	0.0869	0.0657	0.3566	0.1269	0.0178	0.0669	—	0.2567	0.3152	0.1710
	—	(0.0540)	(0.0619)	(0.0636)	(0.2731)	(0.1942)	(0.0392)	(0.0996)	—	(0.3044)	(0.2163)	(0.0908)
Jun	0.2329	0.2000	0.2770	0.1758	0.2534	0.3824	0.3644	0.1328	0.6196	2.4170	1.1202	0.4238
	(0.0832)	(0.0943)	(0.1217)	(0.1263)	(0.1183)	(0.3140)	(0.2369)	(0.1019)	(0.4376)	(3.7583)	(1.3372)	(0.2598)
Jul	0.3053	0.2985	0.2546	0.3480	0.1827	0.1889	0.9068	0.3124	0.5556	0.4134	0.2701	0.3308
	(0.1290)	(0.1510)	(0.0887)	(0.1575)	(0.1225)	(0.1317)	(1.3005)	(0.1701)	(0.2655)	(0.4996)	(0.1547)	(0.0789)
Aug	0.6825	0.1317	0.3802	0.4312	0.0852	0.6444	0.1924	0.3628	0.3159	0.3155	0.1130	0.3504
	(0.6210)	(0.1869)	(0.2013)	(0.2453)	(0.1005)	(0.5696)	(0.1168)	(0.2225)	(0.2054)	(0.2112)	(0.0546)	(0.1094)
Sep	0.2716	0.2821	0.6666	0.5081	0.4431	1.3754	1.5395	1.3377	2.2459	1.1524	0.8944	0.8813
	(0.1875)	(0.1767)	(0.5086)	(0.3302)	(0.4871)	(1.4379)	(0.7007)	(1.2362)	(2.3004)	(1.3984)	(0.7213)	(0.2728)
Oct	1.2621	1.0053	0.9449	1.4232	0.1308	0.9533	0.7791	2.8234	1.0444	0.1481	0.3488	1.0658
	(1.5588)	(1.5497)	(0.7924)	(0.8354)	(0.2749)	(0.7660)	(0.8612)	(5.3548)	(1.1595)	(0.0822)	(0.5713)	(0.6114)
Nov	0.3642	0.1978	0.1910	0.7173	1.0023	1.0185	0.9606	0.6271	0.4136	0.2724	0.8387	0.4022
	(0.7858)	(0.2696)	(0.2787)	(1.1424)	(1.0787)	(1.5351)	(2.5209)	(0.6729)	(0.7379)	(0.3429)	(0.8549)	(0.1933)
Dec	—	0.1649	0.1628	0.0780	—	—	0.2439	—	—	0.0990	0.2459	0.1088
	—	(0.3948)	(0.4799)	(0.2161)	—	—	(0.5209)	—	—	(0.1094)	(0.4300)	(0.0981)
Jan	—	—	—	1.1111	—	—	—	—	—	1.3374	—	1.3184
	—	—	—	(2.4419)	—	—	—	—	—	(2.0634)	—	(1.8952)
Feb	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—

Appendix 141. Continued:

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Mar	—	2.1017	—	—	—	—	—	—	—	—	—	0.4697
	—	(6.0655)	—	—	—	—	—	—	—	—	—	(1.1906)
Total	0.3739	0.3020	0.3285	0.4928	0.2602	0.4684	0.6900	0.5274	0.6971	1.0452	0.5130	0.4467
	(0.1429)	(0.1740)	(0.0817)	(0.1386)	(0.0879)	(0.1937)	(0.3824)	(0.3993)	(0.2637)	(1.2418)	(0.3017)	(0.0995)

Appendix 142. Estimated number of fishing hours by all ice anglers in Lake St. Clair from December 1983 to March 1984 in each fishing grid. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	5,016	25,128	4,716	—	—	—	—	—	—	2,016	126	37,002
	(2,817)	(17,407)	(2,345)	—	—	—	—	—	—	(1,638)	(184)	(17,865)
Jan	67,682	148,161	37,836	53,305	2,048	227	2,365	1,802	—	2,156	—	315,582
	(11,140)	(18,064)	(5,733)	(7,683)	(507)	(146)	(1,153)	(766)	—	(422)	—	(23,338)
Feb	43,561	80,068	41,698	32,465	1,961	186	2,103	829	—	1,054	—	203,925
	(15,932)	(24,090)	(9,808)	(7,736)	(638)	(266)	(1,363)	(433)	—	(406)	—	(31,510)
Mar	32,290	7,875	40,598	1,309	3,049	51	112	1,067	—	88	—	86,439
	(12,275)	(2,372)	(12,018)	(1,202)	(681)	(62)	(144)	(1,471)	—	(21)	—	(17,459)
Total	148,549	261,232	124,848	87,079	7,058	464	4,580	3,698	—	5,314	126	642,948
	(23,163)	(34,861)	(16,703)	(10,969)	(1,062)	(310)	(1,791)	(1,714)	—	(1,740)	(184)	(46,492)

Appendix 143. Estimated number of fishing hours by all ice anglers in Lake St. Clair from December 1984 to March 1985 in each fishing grid. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	15,604	66,662	22,159	19,407	1,149	36	3,598	157	—	1,027	—	129,799
	(5,075)	(19,515)	(6,639)	(7,774)	(651)	(74)	(1,742)	(121)	—	(773)	—	(22,698)
Feb	28,675	61,457	41,813	20,570	4,885	182	1,720	1,270	—	886	—	161,458
	(4,638)	(10,726)	(8,179)	(2,772)	(1,676)	(199)	(1,009)	(544)	—	(309)	—	(14,676)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	44,279	128,119	63,972	39,977	6,034	218	5,318	1,427	—	1,913	—	291,257
	(6,875)	(22,268)	(10,534)	(8,253)	(1,798)	(212)	(2,013)	(557)	—	(832)	—	(27,029)

Appendix 144. Estimated number of fish harvested by all ice anglers in Lake St. Clair from December 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Dec	Jan	Feb	Mar	Total
	Month				
Northern pike	—	2,941	1,193	—	4,134
	—	(1,619)	(839)	—	(1,824)
Rock bass	—	127	2,076	1,248	3,451
	—	(219)	(2,397)	(1,058)	(2,629)
Pumpkinseed	—	118	1,738	5,474	7,330
	—	(225)	(1,925)	(4,331)	(4,745)
Bluegill	—	461	2,059	345	2,865
	—	(668)	(1,098)	(325)	(1,326)
Crappie	—	—	1,225	4,697	5,922
	—	—	(1,181)	(6,859)	(6,960)
Yellow perch	32,950	123,559	213,098	245,084	614,691
	(20,374)	(31,938)	(70,266)	(74,273)	(109,037)
Walleye	—	103	662	293	1,058
	—	(212)	(867)	(338)	(954)
Other	—	—	159	—	159
	—	—	(297)	—	(297)
Total	32,950	127,309	222,210	257,141	639,610
	(20,374)	(31,988)	(70,363)	(74,724)	(109,421)

Appendix 145. Estimated number of fish harvested by all ice anglers in Lake St. Clair from December 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month				Total
	Dec	Jan	Feb	Mar	
Northern pike	—	1,933	1,297	—	3,230
	—	(1,071)	(653)	—	(1,254)
Rock bass	—	1,696	1,097	—	2,793
	—	(1,929)	(785)	—	(2,082)
Pumpkinseed	—	6,531	4,411	—	10,942
	—	(3,819)	(2,916)	—	(4,805)
Bluegill	—	166	630	—	796
	—	(230)	(850)	—	(880)
Crappie	—	2,636	793	—	3,429
	—	(4,380)	(747)	—	(4,443)
Yellow perch	—	100,405	157,534	—	257,939
	—	(34,048)	(50,103)	—	(60,577)
Walleye	—	—	100	—	100
	—	—	(143)	—	(143)
Other	—	29	168	—	197
	—	(60)	(306)	—	(312)
Total	—	113,396	166,030	—	279,426
	—	(34,612)	(50,212)	—	(60,985)

Appendix 146. Estimated catch per hour for fish harvested by all ice anglers in Lake St. Clair from December 1983 to March 1984, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month				Total
	Dec	Jan	Feb	Mar	
Northern pike	—	0.0093	0.0059	—	0.0064
	—	(0.0052)	(0.0042)	—	(0.0029)
Rock bass	—	0.0004	0.0102	0.0144	0.0054
	—	(0.0007)	(0.0119)	(0.0126)	(0.0041)
Pumpkinseed	—	0.0004	0.0085	0.0633	0.0114
	—	(0.0007)	(0.0095)	(0.0517)	(0.0074)
Bluegill	—	0.0015	0.0101	0.0040	0.0045
	—	(0.0021)	(0.0056)	(0.0038)	(0.0021)
Crappie	—	—	0.0060	0.0543	0.0092
	—	—	(0.0059)	(0.0801)	(0.0108)
Yellow perch	0.8905	0.3915	1.0450	2.8353	0.9561
	(0.6986)	(0.1053)	(0.3805)	(1.0326)	(0.1831)
Walleye	—	0.0003	0.0032	0.0034	0.0016
	—	(0.0007)	(0.0043)	(0.0040)	(0.0015)
Other	—	—	0.0008	—	0.0002
	—	—	(0.0015)	—	(0.0005)
Total	0.8905	0.4034	1.0897	2.9747	0.9948
	(0.6986)	(0.1055)	(0.3809)	(1.0371)	(0.1837)

Appendix 147. Estimated catch per hour for fish harvested by all ice anglers in Lake St. Clair from December 1984 to March 1985, all fishing grids combined. (Two standard errors in parentheses.)

Species	Month				Total
	Dec	Jan	Feb	Mar	
Northern pike	—	0.0149	0.0080	—	0.0111
	—	(0.0087)	(0.0041)	—	(0.0044)
Rock bass	—	0.0131	0.0068	—	0.0096
	—	(0.0150)	(0.0049)	—	(0.0072)
Pumpkinseed	—	0.0503	0.0273	—	0.0376
	—	(0.0307)	(0.0182)	—	(0.0169)
Bluegill	—	0.0013	0.0039	—	0.0027
	—	(0.0018)	(0.0053)	—	(0.0030)
Crappie	—	0.0203	0.0049	—	0.0118
	—	(0.0339)	(0.0046)	—	(0.0153)
Yellow perch	—	0.7735	0.9757	—	0.8856
	—	(0.2951)	(0.3227)	—	(0.2236)
Walleye	—	—	0.0006	—	0.0003
	—	—	(0.0009)	—	(0.0005)
Other	—	0.0002	0.0010	—	0.0007
	—	(0.0005)	(0.0019)	—	(0.0011)
Total	—	0.8736	1.0282	—	0.9594
	—	(0.2991)	(0.3234)	—	(0.2249)

Appendix 148. Estimated number of fish harvested by open ice anglers in Lake St. Clair for 1983–84, all months combined. (Two standard errors in parentheses.)

	Grid											
Species	1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	—	—	—	10	—	—	1	—	—	—	—	11
	—	—	—	(19)	—	—	(2)	—	—	—	—	(19)
Rock bass	527	2,188	399	43	269	—	2	—	—	—	—	3,428
	(843)	(2,410)	(319)	(77)	(533)	—	(5)	—	—	—	—	(2,629)
Pumpkinseed	29	31	5,373	226	274	9	174	136	—	11	—	6,263
	(61)	(44)	(4,379)	(325)	(296)	(12)	(219)	(237)	—	(12)	—	(4,414)
Bluegill	—	172	1,198	847	26	6	419	7	—	1	—	2,676
	—	(354)	(748)	(810)	(23)	(11)	(608)	(13)	—	(1)	—	(1,308)
Crappie	—	1,047	3,663	455	277	4	316	139	—	12	—	5,913
	—	(1,212)	(6,798)	(384)	(554)	(9)	(438)	(338)	—	(23)	—	(6,960)
Yellow perch	152,101	75,764	173,074	9,198	6,874	533	1,320	2,822	—	233	—	421,919
	(53,519)	(24,847)	(48,263)	(3,766)	(2,690)	(772)	(1,284)	(4,039)	—	(105)	—	(76,491)
Walleye	205	467	348	28	5	2	2	1	—	—	—	1,058
	(243)	(717)	(576)	(68)	(9)	(6)	(4)	(2)	—	—	—	(954)
Other	—	—	—	15	—	—	—	—	—	—	—	15
	—	—	—	(32)	—	—	—	—	—	—	—	(32)
Total	152,862	79,669	184,055	10,822	7,725	554	2,234	3,105	—	257	—	441,283
	(53,526)	(25,006)	(48,946)	(3,886)	(2,813)	(772)	(1,503)	(4,060)	—	(108)	—	(76,996)

Appendix 149. Estimated number of fish harvested by open ice anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	—	60	26	187	11	2	3	4	—	—	—	293
	—	(122)	(54)	(111)	(19)	(4)	(8)	(8)	—	—	—	(175)
Rock bass	90	203	1,579	—	11	—	33	5	—	4	—	1,925
	(134)	(413)	(1,757)	—	(18)	—	(55)	(9)	—	(8)	—	(1,811)
Pumpkinseed	169	648	6,096	—	49	—	361	25	—	2	—	7,350
	(293)	(661)	(3,648)	—	(101)	—	(513)	(38)	—	(3)	—	(3,756)
Bluegill	—	—	42	93	26	—	553	—	—	—	—	714
	—	—	(88)	(204)	(59)	—	(841)	—	—	—	—	(872)
Crappie	18	2,624	563	—	15	—	56	22	—	5	—	3,303
	(28)	(4,378)	(723)	—	(25)	—	(107)	(34)	—	(10)	—	(4,439)
Yellow perch	41,351	63,112	55,562	2,725	1,656	21	598	1,251	—	439	—	166,715
	(24,400)	(35,610)	(25,842)	(3,392)	(1,748)	(37)	(677)	(1,034)	—	(704)	—	(50,476)
Walleye	36	60	—	—	—	—	—	4	—	—	—	100
	(74)	(122)	—	—	—	—	—	(8)	—	—	—	(143)
Other	—	150	—	—	—	—	—	—	—	—	—	150
	—	(304)	—	—	—	—	—	—	—	—	—	(304)
Total	41,664	66,857	63,868	3,005	1,768	23	1,604	1,311	—	450	—	180,550
	(24,402)	(35,888)	(26,167)	(3,400)	(1,752)	(37)	(1,201)	(1,035)	—	(704)	—	(50,851)

Appendix 150. Estimated number of fish harvested by shanty ice anglers in Lake St. Clair for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	369	324	—	3,345	—	—	85	—	—	—	—	4,123
	(746)	(476)	—	(1,585)	—	—	(179)	—	—	—	—	(1,824)
Rock bass	—	—	—	—	—	—	23	—	—	—	—	23
	—	—	—	—	—	—	(49)	—	—	—	—	(49)
Pumpkinseed	—	—	949	—	116	2	—	—	—	—	—	1,067
	—	—	(1,727)	—	(226)	(7)	—	—	—	—	—	(1,742)
Bluegill	—	—	—	180	—	—	9	—	—	—	—	189
	—	—	—	(215)	—	—	(19)	—	—	—	—	(215)
Crappie	—	—	—	—	—	—	9	—	—	—	—	9
	—	—	—	—	—	—	(19)	—	—	—	—	(19)
Yellow perch	48,570	76,895	45,285	14,604	4,144	91	999	—	—	2,184	—	192,772
	(36,736)	(43,664)	(51,903)	(6,831)	(5,602)	(134)	(1,144)	—	—	(2,946)	—	(77,705)
Walleye	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Other	—	—	—	144	—	—	—	—	—	—	—	144
	—	—	—	(295)	—	—	—	—	—	—	—	(295)
Total	48,939	77,219	46,234	18,273	4,260	93	1,125	—	—	2,184	—	198,327
	(36,744)	(43,667)	(51,932)	(7,022)	(5,607)	(134)	(1,159)	—	—	(2,946)	—	(77,747)

Appendix 151. Estimated number of fish harvested by shanty ice anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	29	1,122	26	1,351	112	4	272	4	—	17	—	2,937
	(43)	(905)	(52)	(811)	(84)	(7)	(227)	(6)	—	(39)	—	(1,242)
Rock bass	19	—	849	—	—	—	—	—	—	—	—	868
	(39)	—	(1,027)	—	—	—	—	—	—	—	—	(1,028)
Pumpkinseed	41	247	3,178	—	—	—	—	85	—	41	—	3,592
	(59)	(511)	(2,945)	—	—	—	—	(178)	—	(84)	—	(2,996)
Bluegill	—	—	82	—	—	—	—	—	—	—	—	82
	—	—	(121)	—	—	—	—	—	—	—	—	(121)
Crappie	—	—	—	—	—	—	—	85	—	41	—	126
	—	—	—	—	—	—	—	(178)	—	(84)	—	(197)
Yellow perch	12,643	61,860	12,422	3,622	481	9	184	3	—	—	—	91,224
	(5,998)	(32,007)	(7,036)	(3,396)	(570)	(17)	(205)	(5)	—	—	—	(33,494)
Walleye	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Other	—	—	47	—	—	—	—	—	—	—	—	47
	—	—	(70)	—	—	—	—	—	—	—	—	(70)
Total	12,732	63,229	16,604	4,973	593	13	456	177	—	99	—	98,876
	(5,999)	(32,024)	(7,698)	(3,491)	(576)	(18)	(306)	(252)	—	(125)	—	(33,667)

Appendix 152. Estimated number of fish harvested by all ice anglers in Lake St. Clair for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	369	324	—	3,355	—	—	86	—	—	—	—	4,134
	(746)	(476)	—	(1,585)	—	—	(179)	—	—	—	—	(1,824)
Rock bass	527	2,188	399	43	269	—	25	—	—	—	—	3,451
	(843)	(2,410)	(319)	(77)	(533)	—	(49)	—	—	—	—	(2,629)
Pumpkinseed	29	31	6,322	226	390	11	174	136	—	11	—	7,330
	(61)	(44)	(4,708)	(325)	(373)	(14)	(219)	(237)	—	(12)	—	(4,745)
Bluegill	—	172	1,198	1,027	26	6	428	7	—	1	—	2,865
	—	(354)	(748)	(838)	(23)	(11)	(608)	(13)	—	(1)	—	(1,326)
Crappie	—	1,047	3,663	455	277	4	325	139	—	12	—	5,922
	—	(1,212)	(6,798)	(384)	(554)	(9)	(438)	(338)	—	(23)	—	(6,960)
Yellow perch	200,671	152,659	218,359	23,802	11,018	624	2,319	2,822	—	2,417	—	614,691
	(64,914)	(50,238)	(70,875)	(7,800)	(6,215)	(784)	(1,720)	(4,039)	—	(2,948)	—	(109,037)
Walleye	205	467	348	28	5	2	2	1	—	—	—	1,058
	(243)	(717)	(576)	(68)	(9)	(6)	(4)	(2)	—	—	—	(954)
Other	—	—	—	159	—	—	—	—	—	—	—	159
	—	—	—	(297)	—	—	—	—	—	—	—	(297)
Total	201,801	156,888	230,289	29,095	11,985	647	3,359	3,105	—	2,441	—	639,610
	(64,924)	(50,319)	(71,363)	(8,025)	(6,274)	(784)	(1,898)	(4,060)	—	(2,948)	—	(109,421)

Appendix 153. Estimated number of fish harvested by all ice anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	29	1,182	52	1,538	123	6	275	8	—	17	—	3,230
	(43)	(913)	(75)	(819)	(86)	(8)	(227)	(10)	—	(39)	—	(1,254)
Rock bass	109	203	2,428	—	11	—	33	5	—	4	—	2,793
	(140)	(413)	(2,035)	—	(18)	—	(55)	(9)	—	(8)	—	(2,082)
Pumpkinseed	210	895	9,274	—	49	—	361	110	—	43	—	10,942
	(299)	(836)	(4,689)	—	(101)	—	(513)	(182)	—	(84)	—	(4,805)
Bluegill	—	—	124	93	26	—	553	—	—	—	—	796
	—	—	(150)	(204)	(59)	—	(841)	—	—	—	—	(880)
Crappie	18	2,624	563	—	15	—	56	107	—	46	—	3,429
	(28)	(4,378)	(723)	—	(25)	—	(107)	(181)	—	(85)	—	(4,443)
Yellow perch	53,994	124,972	67,984	6,347	2,137	30	782	1,254	—	439	—	257,939
	(25,126)	(47,880)	(26,782)	(4,800)	(1,838)	(40)	(707)	(1,034)	—	(704)	—	(60,577)
Walleye	36	60	—	—	—	—	—	4	—	—	—	100
	(74)	(122)	—	—	—	—	—	(8)	—	—	—	(143)
Other	—	150	47	—	—	—	—	—	—	—	—	197
	—	(304)	(70)	—	—	—	—	—	—	—	—	(312)
Total	54,396	130,086	80,472	7,978	2,361	36	2,060	1,488	—	549	—	279,426
	(25,128)	(48,099)	(27,276)	(4,874)	(1,844)	(41)	(1,239)	(1,065)	—	(715)	—	(60,985)

Appendix 154. Estimated catch per hour for fish harvested by open ice anglers in Lake St. Clair for 1983-84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	—	—	—	0.0008	—	—	0.0007	—	—	—	—	0.0000
	—	—	—	(0.0016)	—	—	(0.0015)	—	—	—	—	(0.0001)
Rock bass	0.0076	0.0275	0.0048	0.0035	0.0658	—	0.0014	—	—	—	—	0.0137
	(0.0123)	(0.0309)	(0.0040)	(0.0064)	(0.1309)	—	(0.0036)	—	—	—	—	(0.0106)
Pumpkinseed	0.0004	0.0004	0.0652	0.0185	0.0670	0.0346	0.1180	0.1150	—	0.0873	—	0.0250
	(0.0009)	(0.0006)	(0.0545)	(0.0271)	(0.0734)	(0.0587)	(0.1797)	(0.2463)	—	(0.1095)	—	(0.0178)
Bluegill	—	0.0022	0.0145	0.0694	0.0064	0.0231	0.2843	0.0059	—	0.0079	—	0.0107
	—	(0.0045)	(0.0095)	(0.0691)	(0.0057)	(0.0488)	(0.4789)	(0.0132)	—	(0.0093)	—	(0.0054)
Crappie	—	0.0131	0.0445	0.0373	0.0677	0.0154	0.2144	0.1175	—	0.0952	—	0.0236
	—	(0.0155)	(0.0829)	(0.0331)	(0.1360)	(0.0382)	(0.3493)	(0.3211)	—	(0.1918)	—	(0.0279)
Yellow perch	2.1941	0.9510	2.1009	0.7537	1.6811	2.0500	0.8955	2.3855	—	1.8492	—	1.6821
	(0.9263)	(0.3806)	(0.6985)	(0.3737)	(0.7238)	(3.6674)	(1.1605)	(4.5280)	—	(1.4159)	—	(0.3613)
Walleye	0.0030	0.0059	0.0042	0.0023	0.0012	0.0077	0.0014	0.0008	—	—	—	0.0042
	(0.0036)	(0.0091)	(0.0070)	(0.0056)	(0.0022)	(0.0244)	(0.0030)	(0.0020)	—	—	—	(0.0038)
Other	—	—	—	0.0012	—	—	—	—	—	—	—	0.0001
	—	—	—	(0.0026)	—	—	—	—	—	—	—	(0.0001)
Total	2.2051	1.0001	2.2341	0.8867	1.8892	2.1308	1.5157	2.6247	—	2.0396	—	1.7594
	(0.9264)	(0.3823)	(0.7056)	(0.3825)	(0.7516)	(3.6685)	(1.3155)	(4.5461)	—	(1.4331)	—	(0.3630)

Appendix 155. Estimated catch per hour for fish harvested by open ice anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	—	0.0013	0.0007	0.0347	0.0068	0.0139	0.0017	0.0045	—	—	—	0.0025
	—	(0.0027)	(0.0014)	(0.0250)	(0.0127)	(0.0330)	(0.0047)	(0.0093)	—	—	—	(0.0015)
Rock bass	0.0040	0.0044	0.0396	—	0.0068	—	0.0189	0.0056	—	0.0062	—	0.0162
	(0.0060)	(0.0090)	(0.0451)	—	(0.0121)	—	(0.0334)	(0.0106)	—	(0.0132)	—	(0.0154)
Pumpkinseed	0.0075	0.0140	0.1529	—	0.0305	—	0.2065	0.0280	—	0.0031	—	0.0618
	(0.0132)	(0.0147)	(0.0987)	—	(0.0660)	—	(0.3186)	(0.0454)	—	(0.0051)	—	(0.0326)
Bluegill	—	—	0.0011	0.0173	0.0162	—	0.3164	—	—	—	—	0.0060
	—	—	(0.0022)	(0.0385)	(0.0382)	—	(0.5172)	—	—	—	—	(0.0074)
Crappie	0.0008	0.0568	0.0141	—	0.0093	—	0.0320	0.0246	—	0.0078	—	0.0278
	(0.0013)	(0.0958)	(0.0185)	—	(0.0167)	—	(0.0642)	(0.0405)	—	(0.0164)	—	(0.0375)
Yellow perch	1.8386	1.3670	1.3935	0.5055	1.0311	0.1458	0.3421	1.4009	—	0.6827	—	1.4015
	(1.1711)	(0.8396)	(0.7306)	(0.6623)	(1.2823)	(0.3174)	(0.4383)	(1.4021)	—	(1.1916)	—	(0.4642)
Walleye	0.0016	0.0013	—	—	—	—	—	0.0045	—	—	—	0.0008
	(0.0033)	(0.0027)	—	—	—	—	—	(0.0093)	—	—	—	(0.0012)
Other	—	0.0032	—	—	—	—	—	—	—	—	—	0.0013
	—	(0.0066)	—	—	—	—	—	—	—	—	—	(0.0026)
Total	1.8525	1.4480	1.6019	0.5575	1.1007	0.1597	0.9176	1.4681	—	0.6998	—	1.5179
	(1.1712)	(0.8453)	(0.7389)	(0.6639)	(1.2848)	(0.3191)	(0.7526)	(1.4035)	—	(1.1918)	—	(0.4672)

Appendix 156. Estimated catch per hour for fish harvested by shanty ice anglers in Lake St. Clair for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	0.0047	0.0018	—	0.0447	—	—	0.0274	—	—	—	—	0.0105
	(0.0095)	(0.0026)	—	(0.0221)	—	—	(0.0587)	—	—	—	—	(0.0048)
Rock bass	—	—	—	—	—	—	0.0074	—	—	—	—	0.0001
	—	—	—	—	—	—	(0.0161)	—	—	—	—	(0.0001)
Pumpkinseed	—	—	0.0223	—	0.0391	0.0098	—	—	—	—	—	0.0027
	—	—	(0.0409)	—	(0.0768)	(0.0350)	—	—	—	—	—	(0.0044)
Bluegill	—	—	—	0.0024	—	—	0.0029	—	—	—	—	0.0005
	—	—	—	(0.0029)	—	—	(0.0062)	—	—	—	—	(0.0006)
Crappie	—	—	—	—	—	—	0.0029	—	—	—	—	0.0000
	—	—	—	—	—	—	(0.0062)	—	—	—	—	(0.0000)
Yellow perch	0.6131	0.4235	1.0663	0.1950	1.3958	0.4461	0.3216	—	—	0.4210	—	0.4916
	(0.4811)	(0.2503)	(1.2367)	(0.0952)	(1.9211)	(0.7303)	(0.3911)	—	—	(0.5851)	—	(0.2034)
Walleye	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Other	—	—	—	0.0019	—	—	—	—	—	—	—	0.0004
	—	—	—	(0.0039)	—	—	—	—	—	—	—	(0.0008)
Total	0.6178	0.4253	1.0886	0.2440	1.4349	0.4559	0.3622	—	—	0.4210	—	0.5058
	(0.4812)	(0.2503)	(1.2374)	(0.0979)	(1.9226)	(0.7311)	(0.3959)	—	—	(0.5851)	—	(0.2035)

Appendix 157. Estimated catch per hour for fish harvested by shanty ice anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	0.0013	0.0137	0.0011	0.0391	0.0253	0.0541	0.0762	0.0075	—	0.0134	—	0.0170
	(0.0020)	(0.0115)	(0.0022)	(0.0251)	(0.0207)	(0.1227)	(0.0734)	(0.0117)	—	(0.0316)	—	(0.0075)
Rock bass	0.0009	—	0.0352	—	—	—	—	—	—	—	—	0.0050
	(0.0018)	—	(0.0431)	—	—	—	—	—	—	—	—	(0.0060)
Pumpkinseed	0.0019	0.0030	0.1319	—	—	—	—	0.1592	—	0.0323	—	0.0208
	(0.0027)	(0.0063)	(0.1244)	—	—	—	—	(0.3409)	—	(0.0685)	—	(0.0176)
Bluegill	—	—	0.0034	—	—	—	—	—	—	—	—	0.0005
	—	—	(0.0051)	—	—	—	—	—	—	—	—	(0.0007)
Crappie	—	—	—	—	—	—	—	0.1592	—	0.0323	—	0.0007
	—	—	—	—	—	—	—	(0.3409)	—	(0.0685)	—	(0.0011)
Yellow perch	0.5802	0.7548	0.5154	0.1047	0.1086	0.1216	0.0515	0.0056	—	—	—	0.5294
	(0.2978)	(0.4289)	(0.3056)	(0.1011)	(0.1336)	(0.2893)	(0.0626)	(0.0097)	—	—	—	(0.2056)
Walleye	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Other	—	—	0.0020	—	—	—	—	—	—	—	—	0.0003
	—	—	(0.0029)	—	—	—	—	—	—	—	—	(0.0004)
Total	0.5843	0.7715	0.6890	0.1438	0.1339	0.1757	0.1277	0.3315	—	0.0780	—	0.5737
	(0.2978)	(0.4291)	(0.3328)	(0.1042)	(0.1352)	(0.3142)	(0.0965)	(0.4823)	—	(0.1019)	—	(0.2066)

Appendix 158. Estimated catch per hour for fish harvested by all ice anglers in Lake St. Clair for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	0.0025	0.0012	—	0.0385	—	—	0.0188	—	—	—	—	0.0064
	(0.0050)	(0.0018)	—	(0.0188)	—	—	(0.0398)	—	—	—	—	(0.0029)
Rock bass	0.0035	0.0084	0.0032	0.0005	0.0381	—	0.0055	—	—	—	—	0.0054
	(0.0057)	(0.0093)	(0.0026)	(0.0009)	(0.0757)	—	(0.0109)	—	—	—	—	(0.0041)
Pumpkinseed	0.0002	0.0001	0.0506	0.0026	0.0553	0.0237	0.0380	0.0368	—	0.0021	—	0.0114
	(0.0004)	(0.0002)	(0.0383)	(0.0037)	(0.0535)	(0.0341)	(0.0501)	(0.0663)	—	(0.0024)	—	(0.0074)
Bluegill	—	0.0007	0.0096	0.0118	0.0037	0.0129	0.0934	0.0019	—	0.0002	—	0.0045
	—	(0.0014)	(0.0061)	(0.0097)	(0.0033)	(0.0252)	(0.1377)	(0.0036)	—	(0.0002)	—	(0.0021)
Crappie	—	0.0040	0.0293	0.0052	0.0392	0.0086	0.0710	0.0376	—	0.0023	—	0.0092
	—	(0.0047)	(0.0546)	(0.0045)	(0.0787)	(0.0202)	(0.0996)	(0.0930)	—	(0.0044)	—	(0.0108)
Yellow perch	1.3509	0.5844	1.7490	0.2733	1.5611	1.3448	0.5063	0.7631	—	0.4548	—	0.9561
	(0.4851)	(0.2075)	(0.6140)	(0.0960)	(0.9114)	(1.9137)	(0.4245)	(1.1481)	—	(0.5744)	—	(0.1831)
Walleye	0.0014	0.0018	0.0028	0.0003	0.0007	0.0043	0.0004	0.0003	—	—	—	0.0016
	(0.0016)	(0.0028)	(0.0046)	(0.0008)	(0.0013)	(0.0132)	(0.0009)	(0.0006)	—	—	—	(0.0015)
Other	—	—	—	0.0018	—	—	—	—	—	—	—	0.0002
	—	—	—	(0.0034)	—	—	—	—	—	—	—	(0.0005)
Total	1.3585	0.6006	1.8445	0.3340	1.6981	1.3943	0.7334	0.8397	—	0.4594	—	0.9948
	(0.4852)	(0.2078)	(0.6177)	(0.0985)	(0.9195)	(1.9143)	(0.4618)	(1.1538)	—	(0.5744)	—	(0.1837)

Appendix 159. Estimated catch per hour for fish harvested by all ice anglers in Lake St. Clair for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Northern pike	0.0007	0.0092	0.0008	0.0385	0.0204	0.0275	0.0517	0.0056	—	0.0089	—	0.0111
	(0.0010)	(0.0073)	(0.0012)	(0.0220)	(0.0155)	(0.0454)	(0.0470)	(0.0073)	—	(0.0207)	—	(0.0044)
Rock bass	0.0025	0.0016	0.0380	—	0.0018	—	0.0062	0.0035	—	0.0021	—	0.0096
	(0.0032)	(0.0032)	(0.0324)	—	(0.0030)	—	(0.0106)	(0.0065)	—	(0.0043)	—	(0.0072)
Pumpkinseed	0.0047	0.0070	0.1450	—	0.0081	—	0.0679	0.0771	—	0.0225	—	0.0376
	(0.0068)	(0.0066)	(0.0771)	—	(0.0169)	—	(0.0998)	(0.1310)	—	(0.0450)	—	(0.0169)
Bluegill	—	—	0.0019	0.0023	0.0043	—	0.1040	—	—	—	—	0.0027
	—	—	(0.0024)	(0.0051)	(0.0099)	—	(0.1630)	—	—	—	—	(0.0030)
Crappie	0.0004	0.0205	0.0088	—	0.0025	—	0.0105	0.0750	—	0.0240	—	0.0118
	(0.0006)	(0.0344)	(0.0114)	—	(0.0042)	—	(0.0205)	(0.1302)	—	(0.0456)	—	(0.0153)
Yellow perch	1.2194	0.9754	1.0627	0.1588	0.3542	0.1376	0.1470	0.8788	—	0.2295	—	0.8856
	(0.5982)	(0.4104)	(0.4538)	(0.1245)	(0.3224)	(0.2271)	(0.1441)	(0.8017)	—	(0.3813)	—	(0.2236)
Walleye	0.0008	0.0005	—	—	—	—	—	0.0028	—	—	—	0.0003
	(0.0017)	(0.0010)	—	—	—	—	—	(0.0057)	—	—	—	(0.0005)
Other	—	0.0012	0.0007	—	—	—	—	—	—	—	—	0.0007
	—	(0.0024)	(0.0011)	—	—	—	—	—	—	—	—	(0.0011)
Total	1.2285	1.0154	1.2579	0.1996	0.3913	0.1651	0.3873	1.0428	—	0.2870	—	0.9594
	(0.5983)	(0.4120)	(0.4616)	(0.1265)	(0.3234)	(0.2316)	(0.2450)	(0.8228)	—	(0.3872)	—	(0.2249)

Appendix 160. Estimated number of fish harvested by open ice anglers in Lake St. Clair from December 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	15,026	910	—	—	—	—	—	—	—	—	15,936
	—	(16,969)	(908)	—	—	—	—	—	—	—	—	(16,993)
Jan	10,630	19,012	4,757	4,099	298	33	79	—	—	—	—	38,908
	(4,460)	(7,862)	(3,403)	(2,113)	(240)	(45)	(100)	—	—	—	—	(9,891)
Feb	47,685	36,011	71,644	4,554	1,072	386	1,971	—	—	—	—	163,323
	(30,477)	(16,125)	(27,937)	(2,637)	(702)	(755)	(1,479)	—	—	—	—	(44,492)
Mar	94,547	9,620	106,744	2,169	6,355	135	184	3,105	—	257	—	223,116
	(43,775)	(3,937)	(40,035)	(1,919)	(2,714)	(157)	(244)	(4,060)	—	(108)	—	(59,684)
Total	152,862	79,669	184,055	10,822	7,725	554	2,234	3,105	—	257	—	441,283
	(53,526)	(25,006)	(48,946)	(3,886)	(2,813)	(772)	(1,503)	(4,060)	—	(108)	—	(76,996)

Appendix 161. Estimated number of fish harvested by open ice anglers in Lake St. Clair from December 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	11,117	27,866	28,953	2,609	830	—	1,056	41	—	—	—	72,472
	(6,140)	(14,527)	(22,474)	(3,386)	(1,082)	—	(858)	(58)	—	—	—	(27,699)
Feb	30,547	38,991	34,915	396	938	23	548	1,270	—	450	—	108,078
	(23,617)	(32,816)	(13,403)	(302)	(1,378)	(37)	(841)	(1,034)	—	(704)	—	(42,644)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	41,664	66,857	63,868	3,005	1,768	23	1,604	1,311	—	450	—	180,550
	(24,402)	(35,888)	(26,167)	(3,400)	(1,752)	(37)	(1,201)	(1,035)	—	(704)	—	(50,851)

Appendix 162. Estimated number of fish harvested by shanty ice anglers in Lake St. Clair from December 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Dec	7,236	5,982	1,612	—	—	—	—	—	—	2,184	—	17,014
	(4,209)	(9,699)	(2,421)	—	—	—	—	—	—	(2,946)	—	(11,240)
Jan	16,276	48,773	8,124	14,259	285	36	648	—	—	—	—	88,401
	(8,890)	(27,441)	(6,960)	(6,624)	(343)	(40)	(985)	—	—	—	—	(30,421)
Feb	16,007	18,119	18,483	3,524	2,355	57	342	—	—	—	—	58,887
	(30,443)	(31,822)	(31,775)	(2,134)	(4,182)	(128)	(479)	—	—	—	—	(54,511)
Mar	9,420	4,345	18,015	490	1,620	—	135	—	—	—	—	34,025
	(18,071)	(6,856)	(40,410)	(935)	(3,719)	—	(382)	—	—	—	—	(44,960)
Total	48,939	77,219	46,234	18,273	4,260	93	1,125	—	—	2,184	—	198,327
	(36,744)	(43,667)	(51,932)	(7,022)	(5,607)	(134)	(1,159)	—	—	(2,946)	—	(77,747)

Appendix 163. Estimated number of fish harvested by shanty ice anglers in Lake St. Clair from December 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	6,434	23,097	8,930	1,953	81	5	400	7	—	17	—	40,924
	(4,755)	(19,177)	(6,225)	(1,246)	(57)	(9)	(294)	(8)	—	(39)	—	(20,755)
Feb	6,298	40,132	7,674	3,020	512	8	56	170	—	82	—	57,952
	(3,657)	(25,647)	(4,528)	(3,262)	(573)	(16)	(86)	(252)	—	(119)	—	(26,508)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	12,732	63,229	16,604	4,973	593	13	456	177	—	99	—	98,876
	(5,999)	(32,024)	(7,698)	(3,491)	(576)	(18)	(306)	(252)	—	(125)	—	(33,667)

Appendix 164. Estimated number of fish harvested by all ice anglers in Lake St. Clair from December 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Dec	7,236 (4,209)	21,008 (19,545)	2,522 (2,586)	— —	— —	— —	— —	— —	— —	2,184 (2,946)	— —	32,950 (20,374)
Jan	26,906 (9,946)	67,785 (28,545)	12,881 (7,747)	18,358 (6,953)	583 (419)	69 (60)	727 (990)	— —	— —	— —	— —	127,309 (31,988)
Feb	63,692 (43,077)	54,130 (35,675)	90,127 (42,310)	8,078 (3,392)	3,427 (4,241)	443 (766)	2,313 (1,555)	— —	— —	— —	— —	222,210 (70,363)
Mar	103,967 (47,359)	13,965 (7,906)	124,759 (56,884)	2,659 (2,135)	7,975 (4,604)	135 (157)	319 (453)	3,105 (4,060)	— —	257 (108)	— —	257,141 (74,724)
Total	201,801 (64,924)	156,888 (50,319)	230,289 (71,363)	29,095 (8,025)	11,985 (6,274)	647 (784)	3,359 (1,898)	3,105 (4,060)	— —	2,441 (2,948)	— —	639,610 (109,421)

Appendix 165. Estimated number of fish harvested by all ice anglers in Lake St. Clair from December 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	17,551	50,963	37,883	4,562	911	5	1,456	48	—	17	—	113,396
	(7,766)	(24,058)	(23,320)	(3,608)	(1,083)	(9)	(907)	(58)	—	(39)	—	(34,612)
Feb	36,845	79,123	42,589	3,416	1,450	31	604	1,440	—	532	—	166,030
	(23,898)	(41,649)	(14,147)	(3,276)	(1,492)	(40)	(845)	(1,064)	—	(714)	—	(50,212)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	54,396	130,086	80,472	7,978	2,361	36	2,060	1,488	—	549	—	279,426
	(25,128)	(48,099)	(27,276)	(4,874)	(1,844)	(41)	(1,239)	(1,065)	—	(715)	—	(60,985)

Appendix 166. Estimated catch per hour for fish harvested by open ice anglers in Lake St. Clair from December 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	1.0543	0.2819	—	—	—	—	—	—	—	—	0.8954
	—	(1.4684)	(0.3202)	—	—	—	—	—	—	—	—	(1.1230)
Jan	0.5166	0.6074	0.3797	0.8573	0.3796	0.3976	0.4938	—	—	—	—	0.5530
	(0.2746)	(0.3166)	(0.2936)	(0.5015)	(0.3557)	(0.6809)	(0.8080)	—	—	—	—	(0.1715)
Feb	2.7499	1.3357	2.5717	0.7363	2.5708	3.0635	1.6209	—	—	—	—	2.0389
	(2.1923)	(0.7464)	(1.2767)	(0.5105)	(2.3232)	(8.4474)	(1.5922)	—	—	—	—	(0.6770)
Mar	3.0288	1.3446	2.7538	1.7520	2.2012	2.6470	1.8776	2.9101	—	2.9205	—	2.7024
	(1.8261)	(0.6475)	(1.2696)	(2.0755)	(1.0142)	(4.2939)	(3.2651)	(5.2760)	—	(1.3828)	—	(0.8913)
Total	2.2051	1.0001	2.2341	0.8867	1.8892	2.1308	1.5157	2.6247	—	2.0396	—	1.7594
	(0.9264)	(0.3823)	(0.7056)	(0.3825)	(0.7516)	(3.6685)	(1.3155)	(4.5461)	—	(1.4331)	—	(0.3630)

Appendix 167. Estimated catch per hour for fish harvested by open ice anglers in Lake St. Clair from December 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	1.3235	1.0677	2.0075	0.8207	1.7078	—	0.8224	0.6508	—	—	—	1.3396
	(0.9228)	(0.6576)	(1.7040)	(1.1759)	(2.7478)	—	(0.7929)	(1.1002)	—	—	—	(0.5750)
Feb	2.1679	1.9429	1.3721	0.1790	0.8375	0.1597	1.1810	1.5300	—	0.9415	—	1.6664
	(1.7829)	(1.7329)	(0.6452)	(0.1465)	(1.4018)	(0.3191)	(1.9728)	(1.5279)	—	(1.5784)	—	(0.7071)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	1.8525	1.4480	1.6019	0.5575	1.1007	0.1597	0.9176	1.4681	—	0.6998	—	1.5179
	(1.1712)	(0.8453)	(0.7389)	(0.6639)	(1.2848)	(0.3191)	(0.7526)	(1.4035)	—	(1.1918)	—	(0.4672)

Appendix 168. Estimated catch per hour for fish harvested by shanty ice anglers in Lake St. Clair from December 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Dec	1.5000	0.5500	1.0833	—	—	—	—	—	—	1.0833	—	0.8860
	(1.2339)	(1.1068)	(1.9834)	—	—	—	—	—	—	(1.7059)	—	(0.8532)
Jan	0.3455	0.4173	0.3210	0.2939	0.2257	0.2500	0.2938	—	—	—	—	0.3604
	(0.1991)	(0.2408)	(0.2804)	(0.1419)	(0.2782)	(0.3452)	(0.4647)	—	—	—	—	(0.1271)
Feb	0.6105	0.3411	1.3356	0.1341	1.5252	0.9500	0.3855	—	—	—	—	0.4756
	(1.2036)	(0.6153)	(2.3301)	(0.0852)	(2.7631)	(2.5087)	(0.5867)	—	—	—	—	(0.4516)
Mar	8.7709	6.0264	9.8174	6.9014	1.0000	—	9.6429	—	—	—	—	8.7761
	(22.7339)	(14.1644)	(30.8681)	(18.3862)	(32.4702)	—	(37.8095)	—	—	—	—	(15.6552)
Total	0.6178	0.4253	1.0886	0.2440	1.4349	0.4559	0.3622	—	—	0.4210	—	0.5058
	(0.4812)	(0.2503)	(1.2374)	(0.0979)	(1.9226)	(0.7311)	(0.3959)	—	—	(0.5851)	—	(0.2035)

Appendix 169. Estimated catch per hour for fish harvested by shanty ice anglers in Lake St. Clair from December 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	0.8929	0.5694	1.1543	0.1204	0.1221	0.1389	0.1729	0.0745	—	0.0197	—	0.5407
	(0.7893)	(0.5264)	(0.8760)	(0.0863)	(0.1008)	(0.3285)	(0.1481)	(0.0951)	—	(0.0480)	—	(0.3004)
Feb	0.4318	0.9696	0.4690	0.1645	0.1360	0.2105	0.0446	0.3864	—	0.2010	—	0.5999
	(0.2606)	(0.6523)	(0.2845)	(0.1789)	(0.1585)	(0.5677)	(0.0729)	(0.5887)	—	(0.2930)	—	(0.2808)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.5843	0.7715	0.6890	0.1438	0.1339	0.1757	0.1277	0.3315	—	0.0780	—	0.5737
	(0.2978)	(0.4291)	(0.3328)	(0.1042)	(0.1352)	(0.3142)	(0.0965)	(0.4823)	—	(0.1019)	—	(0.2066)

Appendix 170. Estimated catch per hour for fish harvested by all ice anglers in Lake St. Clair from December 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid											
Month	1	2	3	4	5	6	7	8	9	10	11	Total
Dec	1.4426 (1.1664)	0.8360 (0.9698)	0.5348 (0.6094)	— —	— —	— —	— —	— —	— —	1.0833 (1.7059)	— —	0.8905 (0.6986)
Jan	0.3976 (0.1604)	0.4575 (0.2005)	0.3405 (0.2111)	0.3444 (0.1372)	0.2846 (0.2163)	0.3040 (0.3288)	0.3074 (0.4378)	— —	— —	— —	— —	0.4034 (0.1055)
Feb	1.4622 (1.1240)	0.6760 (0.4853)	2.1614 (1.1277)	0.2488 (0.1137)	1.7475 (2.2305)	2.3818 (5.2823)	1.0999 (0.8759)	— —	— —	— —	— —	1.0897 (0.3809)
Mar	3.2198 (1.9059)	1.7733 (1.1206)	3.0730 (1.6366)	2.0313 (2.2726)	2.6155 (1.5988)	2.6470 (4.2939)	2.8483 (5.1647)	2.9101 (5.2760)	— —	2.9205 (1.3828)	— —	2.9747 (1.0371)
Total	1.3585 (0.4852)	0.6006 (0.2078)	1.8445 (0.6177)	0.3340 (0.0985)	1.6981 (0.9195)	1.3943 (1.9143)	0.7334 (0.4618)	0.8397 (1.1538)	— —	0.4594 (0.5744)	— —	0.9948 (0.1837)

Appendix 171. Estimated catch per hour for fish harvested by all ice anglers in Lake St. Clair from December 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5	6	7	8	9	10	11	Total
Dec	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Jan	1.1248	0.7645	1.7097	0.2351	0.7929	0.1389	0.4047	0.3057	—	0.0166	—	0.8736
	(0.6139)	(0.4171)	(1.1330)	(0.2004)	(1.0198)	(0.3285)	(0.2784)	(0.3973)	—	(0.0400)	—	(0.2991)
Feb	1.2850	1.2874	1.0185	0.1661	0.2968	0.1703	0.3511	1.1337	—	0.6004	—	1.0282
	(0.8588)	(0.7125)	(0.3815)	(0.1603)	(0.3199)	(0.2783)	(0.5261)	(0.9359)	—	(0.8247)	—	(0.3234)
Mar	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Total	1.2285	1.0154	1.2579	0.1996	0.3913	0.1651	0.3873	1.0428	—	0.2870	—	0.9594
	(0.5983)	(0.4120)	(0.4616)	(0.1265)	(0.3234)	(0.2316)	(0.2450)	(0.8228)	—	(0.3872)	—	(0.2249)

Appendix 172. Estimated number of fish harvested by boat anglers in the north section of the Detroit River for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	Grid 2	Grid 3	Grid 4	Grid 5–7	Total
White perch	—	—	—	—	131	131
	—	—	—	—	(277)	(277)
White bass	9,596	29,438	24,308	6,646	6,578	76,566
	(13,302)	(21,342)	(13,685)	(6,115)	(6,237)	(29,933)
Freshwater drum	1,655	3,244	499	111	—	5,509
	(1,154)	(4,378)	(511)	(210)	—	(4,561)
Redhorse	10	549	54	—	50	663
	(21)	(1,157)	(93)	—	(100)	(1,165)
Rock bass	641	1,287	—	20	532	2,480
	(854)	(2,023)	—	(42)	(762)	(2,325)
Smallmouth bass	15	161	26	—	22	224
	(32)	(174)	(53)	—	(46)	(190)
Yellow perch	94	17,444	1,527	9	415	19,489
	(124)	(30,930)	(2,852)	(21)	(744)	(31,070)
Walleye	17,340	18,375	5,685	2,324	5,387	49,111
	(6,302)	(5,801)	(3,147)	(1,523)	(6,733)	(11,442)
Other	464	73	45	—	60	642
	(478)	(112)	(96)	—	(75)	(506)
Total	29,815	70,571	32,144	9,110	13,175	154,815
	(14,797)	(38,346)	(14,339)	(6,305)	(9,245)	(44,946)

Appendix 173. Estimated number of fish harvested by boat anglers in the north section of the Detroit River for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5–7	Total
White perch	—	254	—	—	482	736
	—	(114)	—	—	(234)	(260)
White bass	209	4,908	1,827	1,539	1,014	9,497
	(364)	(1,217)	(957)	(738)	(745)	(1,905)
Freshwater drum	404	2,587	209	—	84	3,284
	(440)	(718)	(337)	—	(113)	(914)
Redhorse	—	153	11	—	—	164
	—	(329)	(23)	—	—	(330)
Rock bass	94	120	11	64	—	289
	(102)	(264)	(23)	(26)	—	(285)
Smallmouth bass	—	—	12	11	38	61
	—	—	(25)	(12)	(70)	(75)
Yellow perch	1,113	45	776	9	109	2,052
	(2,247)	(78)	(1,501)	(26)	(131)	(2,706)
Walleye	13,598	33,477	13,322	8,939	10,503	79,839
	(8,072)	(10,761)	(4,741)	(3,281)	(4,625)	(15,349)
Other	625	212	61	—	41	939
	(689)	(414)	(128)	—	(70)	(817)
Total	16,043	41,756	16,229	10,562	12,271	96,861
	(8,427)	(10,870)	(5,077)	(3,363)	(4,695)	(15,758)

Appendix 174. Estimated catch per hour for fish harvested by boat anglers in the north section of the Detroit River for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid					Total
	1	2	3	4	5–7	
White perch	—	—	—	—	0.0080	0.0007
	—	—	—	—	(0.0171)	(0.0014)
White bass	0.1643	0.3718	0.7919	0.3978	0.4033	0.3803
	(0.2298)	(0.2840)	(0.5016)	(0.4045)	(0.3970)	(0.1561)
Freshwater drum	0.0283	0.0410	0.0163	0.0066	—	0.0274
	(0.0205)	(0.0562)	(0.0173)	(0.0129)	—	(0.0229)
Redhorse	0.0002	0.0069	0.0018	—	0.0031	0.0033
	(0.0004)	(0.0147)	(0.0031)	—	(0.0062)	(0.0058)
Rock bass	0.0110	0.0163	—	0.0012	0.0326	0.0123
	(0.0148)	(0.0258)	—	(0.0026)	(0.0475)	(0.0117)
Smallmouth bass	0.0003	0.0020	0.0008	—	0.0013	0.0011
	(0.0005)	(0.0023)	(0.0017)	—	(0.0028)	(0.0010)
Yellow perch	0.0016	0.2203	0.0497	0.0005	0.0254	0.0968
	(0.0021)	(0.3942)	(0.0940)	(0.0013)	(0.0461)	(0.1548)
Walleye	0.2968	0.2320	0.1852	0.1391	0.3303	0.2440
	(0.1214)	(0.0922)	(0.1158)	(0.1092)	(0.4220)	(0.0645)
Other	0.0079	0.0009	0.0015	—	0.0037	0.0032
	(0.0083)	(0.0014)	(0.0032)	—	(0.0047)	(0.0025)
Total	0.5104	0.8912	1.0472	0.5452	0.8077	0.7691
	(0.2613)	(0.4986)	(0.5236)	(0.4192)	(0.5835)	(0.2306)

Appendix 175. Estimated catch per hour for fish harvested by boat anglers in the north section of the Detroit River for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	Grid 2	Grid 3	Grid 4	Grid 5–7	Total
White perch	—	0.0038	—	—	0.0275	0.0045
	—	(0.0019)	—	—	(0.0142)	(0.0016)
White bass	0.0056	0.0730	0.0640	0.1054	0.0578	0.0575
	(0.0098)	(0.0235)	(0.0357)	(0.0562)	(0.0436)	(0.0130)
Freshwater drum	0.0108	0.0385	0.0073	—	0.0048	0.0199
	(0.0120)	(0.0133)	(0.0119)	—	(0.0065)	(0.0059)
Redhorse	—	0.0023	0.0004	—	—	0.0010
	—	(0.0049)	(0.0008)	—	—	(0.0020)
Rock bass	0.0025	0.0018	0.0004	0.0044	—	0.0017
	(0.0028)	(0.0039)	(0.0008)	(0.0021)	—	(0.0017)
Smallmouth bass	—	—	0.0004	0.0008	0.0022	0.0004
	—	—	(0.0009)	(0.0008)	(0.0040)	(0.0005)
Yellow perch	0.0299	0.0007	0.0272	0.0006	0.0062	0.0124
	(0.0606)	(0.0012)	(0.0529)	(0.0018)	(0.0075)	(0.0164)
Walleye	0.3649	0.4977	0.4670	0.6125	0.5985	0.4833
	(0.2296)	(0.1897)	(0.1888)	(0.2661)	(0.2834)	(0.1059)
Other	0.0168	0.0032	0.0021	—	0.0023	0.0057
	(0.0188)	(0.0062)	(0.0045)	—	(0.0040)	(0.0050)
Total	0.4305	0.6210	0.5688	0.7237	0.6993	0.5864
	(0.2387)	(0.1918)	(0.1997)	(0.2720)	(0.2873)	(0.1083)

Appendix 176. Estimated number of fish harvested by boat anglers in the north section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	466	1,820	35	—	—	2,321
	(733)	(3,887)	(89)	—	—	(3,957)
May	8,070	30,378	14,043	4,784	—	57,275
	(13,544)	(35,069)	(11,299)	(5,641)	—	(39,658)
Jun	5,642	25,693	13,687	2,875	7,973	55,870
	(3,278)	(14,447)	(8,596)	(2,543)	(6,742)	(18,582)
Jul	6,153	9,307	3,152	957	4,184	23,753
	(2,912)	(3,530)	(1,494)	(551)	(6,293)	(7,943)
Aug	5,418	2,960	985	476	641	10,480
	(3,034)	(2,024)	(1,319)	(1,080)	(526)	(4,060)
Sep	793	328	202	—	162	1,485
	(525)	(420)	(239)	—	(289)	(770)
Oct	2,944	85	40	18	155	3,242
	(2,497)	(183)	(86)	(22)	(170)	(2,511)
Nov	329	—	—	—	60	389
	(197)	—	—	—	(74)	(210)
Dec	—	—	—	—	—	—
	—	—	—	—	—	—
Jan	—	—	—	—	—	—
	—	—	—	—	—	—
Feb	—	—	—	—	—	—
	—	—	—	—	—	—
Mar	—	—	—	—	—	—
	—	—	—	—	—	—
Total	29,815	70,571	32,144	9,110	13,175	154,815
	(14,797)	(38,346)	(14,339)	(6,305)	(9,245)	(44,946)

Appendix 177. Estimated number of fish harvested by boat anglers in the north section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5–7	Total
Apr	258 (229)	315 (346)	101 (117)	69 (60)	116 (93)	859 (445)
May	1,786 (1,521)	7,474 (3,726)	3,057 (2,422)	2,501 (1,561)	4,037 (2,971)	18,855 (5,773)
Jun	5,822 (7,609)	22,807 (9,520)	6,078 (2,938)	6,725 (2,935)	5,306 (2,736)	46,738 (13,163)
Jul	1,881 (873)	2,490 (2,048)	3,502 (2,520)	850 (462)	1,614 (2,342)	10,337 (4,123)
Aug	726 (656)	1,646 (640)	125 (194)	142 (49)	548 (312)	3,187 (989)
Sep	1,160 (1,111)	597 (647)	578 (625)	132 (119)	414 (206)	2,881 (1,449)
Oct	2,891 (1,631)	6,135 (2,911)	2,636 (2,114)	136 (154)	233 (307)	12,031 (3,965)
Nov	1,247 (2,295)	247 (170)	138 (113)	7 (13)	3 (8)	1,642 (2,304)
Dec	37 (74)	45 (78)	14 (34)	— —	— —	96 (113)
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —
Mar	235 (622)	— —	— —	— —	— —	235 (622)
Total	16,043 (8,427)	41,756 (10,870)	16,229 (5,077)	10,562 (3,363)	12,271 (4,695)	96,861 (15,758)

Appendix 178. Estimated catch per hour for fish harvested by boat anglers in the north section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	0.1978 (0.3294)	0.6269 (1.4113)	0.2349 (0.6290)	— —	— —	0.4209 (0.7369)
May	0.9432 (1.6504)	1.1043 (1.3451)	1.1586 (1.1147)	0.6266 (0.8815)	— —	1.0038 (0.7342)
Jun	0.5576 (0.3576)	1.2259 (0.7607)	1.6203 (1.1290)	0.4723 (0.4746)	1.2515 (1.1587)	1.0746 (0.3934)
Jul	0.3932 (0.2166)	0.6538 (0.2954)	0.5705 (0.3306)	0.6954 (0.4640)	0.9137 (1.4280)	0.5743 (0.2117)
Aug	0.5598 (0.4055)	0.3424 (0.2626)	0.3965 (0.5530)	0.4644 (1.1459)	0.2859 (0.2682)	0.4352 (0.1937)
Sep	0.1661 (0.1262)	0.0981 (0.1391)	0.1833 (0.2253)	— —	0.1430 (0.2671)	0.1395 (0.0791)
Oct	0.6019 (0.5890)	0.0535 (0.1226)	0.0462 (0.1033)	0.0942 (0.1600)	0.2492 (0.2991)	0.3974 (0.3339)
Nov	0.2117 (0.1666)	— —	— —	— —	0.7059 (1.1395)	0.2374 (0.1642)
Dec	— —	— —	— —	— —	— —	— —
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —	— —
Total	0.5104 (0.2613)	0.8912 (0.4986)	1.0472 (0.5236)	0.5452 (0.4192)	0.8077 (0.5835)	0.7691 (0.2306)

Appendix 179. Estimated catch per hour for fish harvested by boat anglers in the north section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	0.1337 (0.1343)	0.1360 (0.1622)	0.1475 (0.1974)	0.1561 (0.1865)	0.1418 (0.1324)	0.1388 (0.0799)
May	0.1647 (0.1513)	0.5970 (0.3723)	0.4468 (0.3937)	0.6132 (0.4363)	1.2418 (1.0235)	0.5023 (0.1786)
Jun	0.7503 (1.0987)	0.8512 (0.4325)	0.6688 (0.3807)	0.9487 (0.5165)	0.7726 (0.4254)	0.8114 (0.2682)
Jul	0.3172 (0.1617)	0.1735 (0.1622)	0.8069 (0.6921)	0.4235 (0.3223)	0.4419 (0.6804)	0.3413 (0.1575)
Aug	0.3965 (0.4035)	0.7023 (0.3984)	0.0966 (0.1561)	0.3142 (0.1486)	0.3713 (0.2624)	0.4308 (0.1487)
Sep	0.3895 (0.4853)	0.2386 (0.2900)	0.2999 (0.3644)	0.4835 (0.5634)	0.4236 (0.2431)	0.3329 (0.1969)
Oct	0.6321 (0.4354)	1.2025 (0.7653)	0.7428 (0.6551)	0.6154 (0.8280)	0.5000 (0.7536)	0.8648 (0.3443)
Nov	1.0853 (2.1589)	0.2111 (0.2052)	0.1922 (0.2218)	0.2121 (0.5789)	0.0698 (0.2131)	0.5275 (0.7623)
Dec	1.2759 (3.6087)	0.2866 (0.6697)	0.1628 (0.4647)	— —	— —	0.3529 (0.5553)
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —
Mar	1.0000 (3.1654)	— —	— —	— —	— —	1.0000 (3.1654)
Total	0.4305 (0.2387)	0.6210 (0.1918)	0.5688 (0.1997)	0.7237 (0.2720)	0.6993 (0.2873)	0.5864 (0.1083)

Appendix 180. Estimated number of fish harvested by shore anglers in the north section of the Detroit River for 1983-84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	Grid 2	Grid 3	Grid 4	Grid 5-7	Total
White perch	364 (288)	1,278 (859)	1,961 (1,201)	463 (448)	8,189 (3,248)	12,255 (3,607)
White bass	7,672 (4,191)	15,502 (9,877)	7,894 (6,119)	5,349 (4,168)	51,365 (14,802)	87,782 (19,724)
Freshwater drum	1,924 (804)	12,960 (4,765)	10,343 (4,091)	3,841 (3,429)	34,199 (9,967)	63,267 (12,296)
Redhorse	471 (302)	743 (477)	646 (493)	50 (74)	2,107 (1,385)	4,017 (1,577)
Rock bass	469 (294)	2,214 (1,315)	5,223 (3,174)	176 (163)	25,578 (7,139)	33,660 (7,930)
Smallmouth bass	574 (624)	396 (251)	484 (485)	640 (580)	3,580 (1,923)	5,674 (2,172)
Yellow perch	1,738 (1,015)	9,318 (4,075)	19,715 (5,895)	1,891 (2,625)	80,227 (21,750)	112,889 (23,072)
Walleye	148 (161)	510 (455)	764 (539)	66 (85)	3,797 (1,543)	5,285 (1,706)
Other	872 (733)	1,672 (871)	1,133 (736)	653 (656)	2,873 (1,373)	7,203 (2,038)
Total	14,232 (4,523)	44,593 (11,857)	48,163 (10,087)	13,129 (6,085)	211,915 (29,375)	332,032 (34,099)

Appendix 181. Estimated number of fish harvested by shore anglers in the north section of the Detroit River for 1984-85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5-7	Total
White perch	70 (92)	457 (519)	1,928 (1,663)	916 (1,329)	3,719 (1,588)	7,090 (2,708)
White bass	736 (659)	19,365 (18,658)	22,834 (17,591)	12,499 (11,494)	81,210 (37,437)	136,644 (46,815)
Freshwater drum	1,036 (913)	22,982 (13,136)	13,882 (5,814)	3,526 (2,443)	8,115 (2,619)	49,541 (14,833)
Redhorse	400 (352)	1,480 (1,396)	2,879 (1,891)	264 (221)	1,054 (585)	6,077 (2,458)
Rock bass	1,834 (3,430)	1,148 (775)	4,573 (2,085)	1,099 (1,488)	11,582 (4,948)	20,236 (6,589)
Smallmouth bass	144 (185)	379 (348)	195 (322)	233 (268)	1,582 (1,405)	2,533 (1,518)
Yellow perch	104 (151)	2,830 (1,757)	13,057 (9,280)	4,769 (3,925)	15,884 (6,688)	36,644 (12,222)
Walleye	107 (139)	10,836 (6,566)	5,792 (3,305)	3,221 (2,528)	10,294 (4,000)	30,250 (8,743)
Other	135 (200)	3,171 (1,353)	1,701 (1,105)	759 (1,308)	1,077 (749)	6,843 (2,316)
Total	4,566 (3,644)	62,648 (23,909)	66,841 (21,267)	27,286 (12,872)	134,517 (38,717)	295,858 (51,980)

Appendix 182. Estimated catch per hour for fish harvested by shore anglers in the north section of the Detroit River for 1983-84, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5-7	Total
White perch	0.0135 (0.0109)	0.0200 (0.0137)	0.0157 (0.0098)	0.0273 (0.0271)	0.0336 (0.0139)	0.0257 (0.0078)
White bass	0.2840 (0.1618)	0.2420 (0.1574)	0.0632 (0.0496)	0.3157 (0.2548)	0.2106 (0.0660)	0.1841 (0.0435)
Freshwater drum	0.0712 (0.0319)	0.2023 (0.0790)	0.0829 (0.0343)	0.2267 (0.2079)	0.1402 (0.0443)	0.1327 (0.0276)
Redhorse	0.0174 (0.0115)	0.0116 (0.0076)	0.0052 (0.0040)	0.0030 (0.0044)	0.0086 (0.0058)	0.0084 (0.0034)
Rock bass	0.0174 (0.0112)	0.0346 (0.0210)	0.0418 (0.0259)	0.0104 (0.0099)	0.1049 (0.0320)	0.0706 (0.0174)
Smallmouth bass	0.0212 (0.0234)	0.0062 (0.0040)	0.0039 (0.0039)	0.0378 (0.0351)	0.0147 (0.0081)	0.0119 (0.0046)
Yellow perch	0.0643 (0.0390)	0.1455 (0.0664)	0.1580 (0.0509)	0.1116 (0.1567)	0.3289 (0.0979)	0.2368 (0.0514)
Walleye	0.0055 (0.0060)	0.0080 (0.0072)	0.0061 (0.0044)	0.0039 (0.0051)	0.0156 (0.0066)	0.0111 (0.0037)
Other	0.0323 (0.0276)	0.0261 (0.0140)	0.0091 (0.0060)	0.0385 (0.0396)	0.0118 (0.0058)	0.0151 (0.0044)
Total	0.5268 (0.1745)	0.6963 (0.1907)	0.3859 (0.0841)	0.7749 (0.3693)	0.8689 (0.1315)	0.6964 (0.0757)

Appendix 183. Estimated catch per hour for fish harvested by shore anglers in the north section of the Detroit River for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 1	2	3	4	5–7	Total
White perch	0.0022 (0.0029)	0.0062 (0.0071)	0.0150 (0.0131)	0.0229 (0.0334)	0.0210 (0.0092)	0.0157 (0.0061)
White bass	0.0228 (0.0209)	0.2608 (0.2546)	0.1773 (0.1386)	0.3125 (0.2916)	0.4585 (0.2168)	0.3021 (0.1053)
Freshwater drum	0.0321 (0.0290)	0.3096 (0.1834)	0.1078 (0.0474)	0.0881 (0.0627)	0.0458 (0.0156)	0.1095 (0.0335)
Redhorse	0.0124 (0.0112)	0.0199 (0.0191)	0.0224 (0.0150)	0.0066 (0.0056)	0.0060 (0.0034)	0.0134 (0.0055)
Rock bass	0.0569 (0.1069)	0.0155 (0.0107)	0.0355 (0.0169)	0.0275 (0.0375)	0.0654 (0.0288)	0.0447 (0.0149)
Smallmouth bass	0.0045 (0.0058)	0.0051 (0.0048)	0.0015 (0.0025)	0.0058 (0.0068)	0.0089 (0.0080)	0.0056 (0.0034)
Yellow perch	0.0032 (0.0047)	0.0381 (0.0244)	0.1014 (0.0733)	0.1192 (0.1000)	0.0897 (0.0389)	0.0810 (0.0275)
Walleye	0.0033 (0.0044)	0.1460 (0.0913)	0.0450 (0.0264)	0.0805 (0.0645)	0.0581 (0.0234)	0.0669 (0.0198)
Other	0.0042 (0.0063)	0.0427 (0.0194)	0.0132 (0.0088)	0.0190 (0.0328)	0.0061 (0.0043)	0.0151 (0.0052)
Total	0.1416 (0.1138)	0.8439 (0.3291)	0.5191 (0.1682)	0.6821 (0.3268)	0.7595 (0.2243)	0.6540 (0.1170)

Appendix 184. Estimated number of fish harvested by shore anglers in the north section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	197	969	1,864	—	11,930	14,960
	(351)	(1,290)	(1,157)	—	(6,051)	(6,304)
May	974	4,047	6,931	—	42,056	54,008
	(698)	(2,204)	(2,596)	—	(16,928)	(17,281)
Jun	9,589	23,136	18,993	8,631	76,133	136,482
	(4,287)	(10,718)	(8,062)	(5,362)	(17,887)	(23,387)
Jul	2,020	7,265	8,863	2,499	58,335	78,982
	(810)	(2,614)	(3,301)	(2,727)	(14,263)	(15,141)
Aug	1,130	5,518	2,913	1,200	16,594	27,355
	(870)	(2,442)	(1,552)	(742)	(3,565)	(4,731)
Sep	277	913	2,227	389	4,258	8,064
	(219)	(423)	(1,002)	(233)	(1,349)	(1,762)
Oct	45	662	2,387	220	1,347	4,661
	(75)	(455)	(1,342)	(291)	(439)	(1,513)
Nov	—	1,991	2,606	190	988	5,775
	—	(2,438)	(2,801)	(380)	(1,273)	(3,943)
Dec	—	—	—	—	—	—
	—	—	—	—	—	—
Jan	—	—	—	—	—	—
	—	—	—	—	—	—
Feb	—	92	1,192	—	274	1,558
	—	(250)	(2,150)	—	(191)	(2,173)
Mar	—	—	187	—	—	187
	—	—	(303)	—	—	(303)
Total	14,232	44,593	48,163	13,129	211,915	332,032
	(4,523)	(11,857)	(10,087)	(6,085)	(29,375)	(34,099)

Appendix 185. Estimated number of fish harvested by shore anglers in the north section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	147 (257)	— —	7,171 (8,780)	1,922 (2,072)	4,950 (4,312)	14,190 (10,002)
May	546 (441)	4,814 (2,535)	5,575 (3,603)	4,915 (3,836)	19,238 (5,407)	35,088 (7,973)
Jun	2,597 (3,575)	47,797 (23,655)	29,997 (18,305)	14,989 (11,776)	84,642 (37,734)	180,022 (49,699)
Jul	531 (337)	3,969 (1,596)	11,013 (3,936)	3,464 (2,410)	15,085 (4,367)	34,062 (6,559)
Aug	409 (291)	3,328 (1,355)	6,109 (2,523)	1,154 (1,432)	6,559 (2,700)	17,559 (4,198)
Sep	247 (184)	2,242 (1,065)	4,930 (2,070)	342 (278)	2,948 (816)	10,709 (2,489)
Oct	89 (96)	470 (334)	1,469 (646)	450 (227)	1,037 (545)	3,515 (942)
Nov	— —	28 (63)	539 (770)	50 (69)	— —	617 (775)
Dec	— —	— —	38 (91)	— —	— —	38 (91)
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	58 (141)	58 (141)
Total	4,566 (3,644)	62,648 (23,909)	66,841 (21,267)	27,286 (12,872)	134,517 (38,717)	295,858 (51,980)

Appendix 186. Estimated catch per hour for fish harvested by shore anglers in the north section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid					
Month	1	2	3	4	5–7	Total
Apr	0.2613 (0.5728)	0.4069 (0.6000)	0.4206 (0.3622)	— —	1.1325 (0.7324)	0.8265 (0.4246)
May	0.2520 (0.2017)	0.4779 (0.2961)	0.4424 (0.1893)	— —	1.0439 (0.4752)	0.7908 (0.2764)
Jun	0.9409 (0.4768)	1.2070 (0.6023)	0.5921 (0.2654)	0.9746 (0.6491)	1.1681 (0.3286)	1.0075 (0.1959)
Jul	0.3886 (0.1707)	0.5035 (0.1945)	0.3166 (0.1272)	0.7417 (0.8324)	1.0478 (0.2901)	0.7405 (0.1537)
Aug	0.2892 (0.2275)	0.4753 (0.2183)	0.1233 (0.0673)	0.4119 (0.2655)	0.3791 (0.0897)	0.3188 (0.0582)
Sep	0.1217 (0.0986)	0.1717 (0.0819)	0.1802 (0.0837)	0.3124 (0.1969)	0.2173 (0.0706)	0.1976 (0.0441)
Oct	0.0695 (0.1227)	0.3178 (0.2329)	0.4100 (0.2432)	0.4988 (0.7355)	0.2000 (0.0689)	0.2962 (0.0995)
Nov	— —	3.8963 (5.1107)	2.3669 (2.6891)	2.5333 (5.4493)	0.7936 (1.0845)	1.9193 (1.3867)
Dec	— —	— —	— —	— —	— —	— —
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	1.4603 (4.9272)	1.2776 (2.4963)	— —	0.8616 (1.0481)	1.1857 (1.7973)
Mar	— —	— —	0.2808 (0.4864)	— —	— —	0.1529 (0.2577)
Total	0.5268 (0.1745)	0.6963 (0.1907)	0.3859 (0.0841)	0.7749 (0.3693)	0.8689 (0.1315)	0.6964 (0.0757)

Appendix 187. Estimated catch per hour for fish harvested by shore anglers in the north section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5–7	Total
Apr	0.0463 (0.0911)	— —	0.5742 (0.8950)	1.4248 (2.2153)	0.5076 (0.6358)	0.4228 (0.3666)
May	0.1392 (0.1185)	0.4536 (0.2549)	0.4267 (0.2815)	1.0268 (0.8205)	0.7422 (0.2275)	0.6018 (0.1423)
Jun	0.2184 (0.3059)	2.0496 (1.0657)	0.9249 (0.5784)	1.0439 (0.8712)	1.3067 (0.6211)	1.2264 (0.3530)
Jul	0.0762 (0.0491)	0.2934 (0.1219)	0.3831 (0.1419)	0.3819 (0.2706)	0.3936 (0.1163)	0.3523 (0.0693)
Aug	0.1265 (0.0934)	0.3066 (0.1328)	0.3247 (0.1414)	0.2208 (0.2807)	0.3238 (0.1387)	0.3006 (0.0739)
Sep	0.1385 (0.1058)	0.3564 (0.1733)	0.4635 (0.1985)	0.1041 (0.0859)	0.2681 (0.0764)	0.3246 (0.0764)
Oct	0.0801 (0.0877)	0.2105 (0.1554)	0.1426 (0.0648)	0.2617 (0.1338)	0.1812 (0.0980)	0.1667 (0.0457)
Nov	— —	0.1029 (0.2530)	0.5113 (0.7576)	0.4274 (0.7878)	— —	0.3365 (0.4332)
Dec	— —	— —	0.0704 (0.1710)	— —	— —	0.0461 (0.1115)
Jan	— —	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	0.0611 (0.1525)	0.0302 (0.0741)
Total	0.1416 (0.1138)	0.8439 (0.3291)	0.5191 (0.1682)	0.6821 (0.3268)	0.7595 (0.2243)	0.6540 (0.1170)

Appendix 188. Estimated number of fish harvested by boat anglers in the south section of the Detroit River for 1983-84, all months combined. (Two standard errors in parentheses.)

Species	Grid				Total
	8	9-10	11-12	13-15	
White perch	—	147	1,808	10,974	12,929
	—	(300)	(2,187)	(13,833)	(14,008)
White bass	29,951	115,149	93,055	649,309	887,464
	(24,115)	(40,944)	(43,723)	(182,967)	(194,027)
Freshwater drum	89	911	3,447	12,508	16,955
	(138)	(1,089)	(4,112)	(5,547)	(6,992)
Redhorse	42	143	34	295	514
	(94)	(301)	(70)	(449)	(553)
Rock bass	294	2,787	3,381	22,835	29,297
	(391)	(2,534)	(3,117)	(12,645)	(13,273)
Smallmouth bass	—	155	92	459	706
	—	(324)	(207)	(504)	(634)
Yellow perch	2,779	4,674	2,792	29,822	40,067
	(5,207)	(3,575)	(2,015)	(13,970)	(15,463)
Walleye	3,148	8,039	7,014	43,933	62,134
	(2,925)	(5,796)	(3,698)	(12,318)	(14,407)
Other	10	334	843	7,772	8,959
	(23)	(208)	(1,165)	(6,526)	(6,632)
Total	36,313	132,339	112,466	777,907	1,059,025
	(24,847)	(41,602)	(44,297)	(185,065)	(196,365)

Appendix 189. Estimated number of fish harvested by boat anglers in the south section of the Detroit River for 1984–85, all months combined. (Two standard errors in parentheses.)

	Grid				
Species	8	9–10	11–12	13–15	Total
White perch	33 (70)	— —	348 (294)	6,485 (4,477)	6,866 (4,487)
White bass	854 (1,321)	5,770 (8,721)	25,373 (17,084)	337,408 (160,210)	369,405 (161,360)
Freshwater drum	— —	1,015 (490)	3,153 (3,190)	14,195 (9,289)	18,363 (9,834)
Redhorse	— —	61 (130)	95 (161)	1,001 (1,255)	1,157 (1,272)
Rock bass	66 (139)	661 (512)	1,671 (1,072)	11,026 (6,738)	13,424 (6,843)
Smallmouth bass	— —	200 (388)	123 (252)	2,874 (3,060)	3,197 (3,095)
Yellow perch	10 (21)	997 (1,006)	454 (307)	6,589 (4,660)	8,050 (4,778)
Walleye	11,752 (5,965)	14,661 (6,779)	18,181 (6,556)	48,813 (19,769)	93,407 (22,701)
Other	— —	61 (88)	325 (322)	5,342 (2,540)	5,728 (2,562)
Total	12,715 (6,112)	23,426 (11,122)	49,723 (18,616)	433,733 (162,015)	519,597 (163,575)

Appendix 190. Estimated catch per hour of fish harvested by boat anglers in the south section of the Detroit River for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 8	Grid 9–10	Grid 11–12	Grid 13–15	Total
White perch	—	0.0018	0.0220	0.0277	0.0218
	—	(0.0036)	(0.0267)	(0.0351)	(0.0237)
White bass	1.0165	1.3805	1.1298	1.6361	1.4989
	(0.8400)	(0.5259)	(0.5525)	(0.5118)	(0.3575)
Freshwater drum	0.0030	0.0109	0.0419	0.0315	0.0286
	(0.0047)	(0.0131)	(0.0502)	(0.0146)	(0.0121)
Redhorse	0.0014	0.0017	0.0004	0.0007	0.0009
	(0.0032)	(0.0036)	(0.0009)	(0.0011)	(0.0009)
Rock bass	0.0100	0.0334	0.0411	0.0575	0.0495
	(0.0134)	(0.0307)	(0.0383)	(0.0328)	(0.0229)
Smallmouth bass	—	0.0019	0.0011	0.0012	0.0012
	—	(0.0039)	(0.0025)	(0.0013)	(0.0011)
Yellow perch	0.0943	0.0560	0.0339	0.0751	0.0677
	(0.1776)	(0.0435)	(0.0249)	(0.0367)	(0.0269)
Walleye	0.1068	0.0964	0.0852	0.1107	0.1049
	(0.1012)	(0.0707)	(0.0464)	(0.0345)	(0.0263)
Other	0.0003	0.0040	0.0102	0.0196	0.0151
	(0.0008)	(0.0026)	(0.0142)	(0.0167)	(0.0113)
Total	1.2323	1.5866	1.3656	1.9601	1.7886
	(0.8646)	(0.5335)	(0.5594)	(0.5170)	(0.3614)

Appendix 191. Estimated catch per hour of fish harvested by boat anglers in the south section of the Detroit River for 1984–85, all months combined. (Two standard errors in parentheses.)

	Grid				
Species	8	9–10	11–12	13–15	Total
White perch	0.0012 (0.0026)	— —	0.0060 (0.0052)	0.0245 (0.0171)	0.0169 (0.0111)
White bass	0.0321 (0.0500)	0.0996 (0.1510)	0.4394 (0.3013)	1.2744 (0.6222)	0.9076 (0.4029)
Freshwater drum	— —	0.0175 (0.0087)	0.0546 (0.0557)	0.0536 (0.0356)	0.0451 (0.0244)
Redhorse	— —	0.0011 (0.0022)	0.0016 (0.0028)	0.0038 (0.0048)	0.0028 (0.0031)
Rock bass	0.0025 (0.0052)	0.0114 (0.0089)	0.0289 (0.0189)	0.0416 (0.0259)	0.0330 (0.0170)
Smallmouth bass	— —	0.0035 (0.0067)	0.0021 (0.0044)	0.0109 (0.0116)	0.0079 (0.0076)
Yellow perch	0.0004 (0.0008)	0.0172 (0.0175)	0.0079 (0.0054)	0.0249 (0.0178)	0.0198 (0.0118)
Walleye	0.4412 (0.2423)	0.2532 (0.1206)	0.3149 (0.1206)	0.1844 (0.0775)	0.2295 (0.0586)
Other	— —	0.0011 (0.0015)	0.0056 (0.0056)	0.0202 (0.0099)	0.0141 (0.0064)
Total	0.4774 (0.2475)	0.4046 (0.1946)	0.8610 (0.3300)	1.6383 (0.6292)	1.2767 (0.4087)

Appendix 192. Estimated number of fish harvested by boat anglers in the south section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	—	281	1,010	7,834	9,125
	—	(642)	(1,179)	(8,627)	(8,731)
May	874	67,157	38,105	186,206	292,342
	(1,087)	(33,779)	(25,522)	(75,330)	(86,419)
Jun	21,103	44,164	47,229	475,560	588,056
	(20,431)	(21,033)	(33,627)	(166,120)	(172,007)
Jul	14,075	16,245	21,597	83,299	135,216
	(14,096)	(11,701)	(13,187)	(29,049)	(36,788)
Aug	—	1,737	2,686	21,188	25,611
	—	(1,144)	(1,952)	(7,657)	(7,985)
Sep	150	2,000	939	1,556	4,645
	(194)	(2,921)	(912)	(1,084)	(3,252)
Oct	111	491	797	2,264	3,663
	(128)	(358)	(390)	(600)	(811)
Nov	—	264	103	—	367
	—	(106)	(67)	—	(125)
Dec	—	—	—	—	—
	—	—	—	—	—
Jan	—	—	—	—	—
	—	—	—	—	—
Feb	—	—	—	—	—
	—	—	—	—	—
Mar	—	—	—	—	—
	—	—	—	—	—
Total	36,313	132,339	112,466	777,907	1,059,025
	(24,847)	(41,602)	(44,297)	(185,065)	(196,365)

Appendix 193. Estimated number of fish harvested by boat anglers in the south section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	61 (78)	216 (180)	381 (299)	1,738 (1,254)	2,396 (1,304)
May	5,528 (3,984)	3,161 (1,300)	9,123 (6,204)	50,659 (20,203)	68,471 (21,546)
Jun	5,839 (4,556)	12,195 (10,867)	30,441 (17,118)	322,848 (160,047)	371,323 (161,391)
Jul	999 (764)	5,673 (1,543)	4,888 (3,415)	22,421 (9,048)	33,981 (9,822)
Aug	— —	202 (298)	3,710 (1,699)	23,599 (10,935)	27,511 (11,070)
Sep	— —	572 (514)	940 (575)	9,140 (4,599)	10,652 (4,663)
Oct	285 (364)	1,052 (901)	233 (230)	3,188 (1,213)	4,758 (1,571)
Nov	3 (8)	— —	— —	61 (40)	64 (41)
Dec	— —	355 (583)	7 (20)	79 (110)	441 (593)
Jan	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —
Total	12,715 (6,112)	23,426 (11,122)	49,723 (18,616)	433,733 (162,015)	519,597 (163,575)

Appendix 194. Estimated catch per hour of fish harvested by boat anglers in the south section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	—	0.5521	0.9872	1.3952	1.2511
	—	(1.3630)	(1.2096)	(1.7411)	(1.3095)
May	0.2593	5.5538	2.6895	2.4952	2.8041
	(0.3339)	(3.6024)	(2.1273)	(1.3134)	(1.0974)
Jun	1.9404	1.3162	1.7466	3.3499	2.7552
	(1.9404)	(0.6751)	(1.2973)	(1.4489)	(0.9371)
Jul	1.5045	0.7587	1.1783	0.8943	0.9504
	(1.6023)	(0.5627)	(0.7485)	(0.3304)	(0.2737)
Aug	—	0.1913	0.2016	0.4033	0.3254
	—	(0.1346)	(0.1539)	(0.1524)	(0.1052)
Sep	0.1006	0.4992	0.1586	0.0681	0.1357
	(0.1380)	(0.7468)	(0.1577)	(0.0488)	(0.0965)
Oct	0.2472	0.2323	0.3307	0.3678	0.3291
	(0.3014)	(0.1785)	(0.2097)	(0.1406)	(0.0927)
Nov	—	0.7272	0.7357	—	0.7296
	—	(0.3692)	(0.5993)	—	(0.3138)
Dec	—	—	—	—	—
	—	—	—	—	—
Jan	—	—	—	—	—
	—	—	—	—	—
Feb	—	—	—	—	—
	—	—	—	—	—
Mar	—	—	—	—	—
	—	—	—	—	—
Total	1.2323	1.5866	1.3656	1.9601	1.7886
	(0.8646)	(0.5335)	(0.5594)	(0.5170)	(0.3614)

Appendix 195. Estimated catch per hour of fish harvested by boat anglers in the south section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	0.1380 (0.2017)	0.1146 (0.1019)	0.1951 (0.1673)	0.1762 (0.1379)	0.1694 (0.0989)
May	0.8687 (0.7923)	0.3284 (0.1710)	1.2903 (0.9199)	0.9860 (0.4513)	0.9198 (0.3218)
Jun	0.5984 (0.4983)	0.6441 (0.5807)	1.5452 (0.9117)	3.2691 (1.7463)	2.5234 (1.1475)
Jul	0.1770 (0.1530)	0.3359 (0.1055)	0.3906 (0.2877)	0.4387 (0.1824)	0.3943 (0.1178)
Aug	— —	0.0366 (0.0544)	0.4527 (0.2132)	0.8964 (0.4214)	0.6441 (0.2615)
Sep	— —	0.2376 (0.2183)	0.2918 (0.1838)	0.5407 (0.2820)	0.4474 (0.2006)
Oct	0.5828 (0.8187)	0.4978 (0.4502)	0.0512 (0.0590)	0.4372 (0.1817)	0.3294 (0.1215)
Nov	0.1154 (0.3927)	— —	— —	0.0237 (0.0179)	0.0188 (0.0133)
Dec	— —	1.6435 (3.7481)	0.1628 (0.5788)	0.2118 (0.3537)	0.6978 (1.0389)
Jan	— —	— —	— —	— —	— —
Feb	— —	— —	— —	— —	— —
Mar	— —	— —	— —	— —	— —
Total	0.4774 (0.2475)	0.4046 (0.1946)	0.8610 (0.3300)	1.6383 (0.6292)	1.2767 (0.4087)

Appendix 196. Estimated number of fish harvested by shore anglers in the south section of the Detroit River for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 8	Grid 9–10	Grid 11–12	Grid 13–15	Total
White perch	—	6,532	1,645	2,118	10,295
	—	(2,217)	(826)	(1,378)	(2,738)
White bass	—	73,476	66,405	439	140,320
	—	(15,915)	(16,455)	(353)	(22,895)
Freshwater drum	—	13,568	3,750	1,662	18,980
	—	(2,690)	(1,279)	(926)	(3,119)
Redhorse	—	517	101	—	618
	—	(231)	(87)	—	(247)
Rock bass	—	7,414	5,282	475	13,171
	—	(1,638)	(2,362)	(584)	(2,933)
Smallmouth bass	—	108	37	—	145
	—	(141)	(63)	—	(154)
Yellow perch	—	29,910	2,721	5,520	38,151
	—	(7,887)	(1,316)	(4,290)	(9,074)
Walleye	—	831	1,016	150	1,997
	—	(474)	(547)	(218)	(756)
Other	—	2,644	832	9,777	13,253
	—	(846)	(502)	(3,961)	(4,081)
Total	—	135,000	81,789	20,141	236,930
	—	(18,203)	(16,762)	(6,113)	(25,488)

Appendix 197. Estimated number of fish harvested by shore anglers in the south section of the Detroit River for 1984-85, all months combined. (Two standard errors in parentheses.)

Species	Grid 8	9-10	11-12	13-15	Total
White perch	—	5,266	1,242	3,547	10,055
	—	(1,956)	(691)	(1,671)	(2,664)
White bass	—	24,271	41,858	4,978	71,107
	—	(11,311)	(12,323)	(3,802)	(17,154)
Freshwater drum	—	9,763	4,983	1,575	16,321
	—	(2,923)	(1,905)	(912)	(3,606)
Redhorse	—	1,144	178	—	1,322
	—	(424)	(153)	—	(451)
Rock bass	—	10,063	4,162	346	14,571
	—	(3,872)	(2,990)	(359)	(4,905)
Smallmouth bass	—	171	131	—	302
	—	(186)	(208)	—	(279)
Yellow perch	—	10,324	1,056	1,020	12,400
	—	(3,949)	(895)	(713)	(4,112)
Walleye	—	2,972	2,373	288	5,633
	—	(1,397)	(1,311)	(429)	(1,963)
Other	—	1,881	719	6,249	8,849
	—	(944)	(673)	(2,235)	(2,518)
Total	—	65,855	56,702	18,003	140,560
	—	(13,189)	(12,959)	(4,888)	(19,126)

Appendix 198. Estimated catch per hour of fish harvested by shore anglers in the south section of the Detroit River for 1983–84, all months combined. (Two standard errors in parentheses.)

Species	Grid 8	Grid 9–10	Grid 11–12	Grid 13–15	Total
White perch	—	0.0397	0.0208	0.0462	0.0356
	—	(0.0140)	(0.0110)	(0.0311)	(0.0098)
White bass	—	0.4464	0.8408	0.0096	0.4848
	—	(0.1063)	(0.2492)	(0.0079)	(0.0875)
Freshwater drum	—	0.0824	0.0475	0.0362	0.0656
	—	(0.0183)	(0.0179)	(0.0212)	(0.0119)
Redhorse	—	0.0031	0.0013	—	0.0021
	—	(0.0014)	(0.0011)	—	(0.0009)
Rock bass	—	0.0450	0.0669	0.0104	0.0455
	—	(0.0109)	(0.0318)	(0.0129)	(0.0107)
Smallmouth bass	—	0.0007	0.0005	—	0.0005
	—	(0.0009)	(0.0008)	—	(0.0005)
Yellow Perch	—	0.1817	0.0345	0.1203	0.1318
	—	(0.0512)	(0.0176)	(0.0959)	(0.0330)
Walleye	—	0.0050	0.0129	0.0033	0.0069
	—	(0.0029)	(0.0072)	(0.0048)	(0.0027)
Other	—	0.0161	0.0105	0.2132	0.0458
	—	(0.0054)	(0.0066)	(0.0943)	(0.0145)
Total	—	0.8201	1.0357	0.4392	0.8186
	—	(0.1209)	(0.2529)	(0.1406)	(0.0965)

Appendix 199. Estimated catch per hour of fish harvested by shore anglers in the south section of the Detroit River for 1984–85, all months combined. (Two standard errors in parentheses.)

Species	Grid 8	9–10	11–12	13–15	Total
White perch	—	0.0389	0.0210	0.1485	0.0460
	—	(0.0148)	(0.0120)	(0.0739)	(0.0125)
White bass	—	0.1793	0.7074	0.2085	0.3255
	—	(0.0848)	(0.2255)	(0.1627)	(0.0812)
Freshwater drum	—	0.0721	0.0842	0.0660	0.0747
	—	(0.0224)	(0.0338)	(0.0396)	(0.0172)
Redhorse	—	0.0084	0.0030	—	0.0061
	—	(0.0032)	(0.0026)	—	(0.0021)
Rock bass	—	0.0743	0.0703	0.0145	0.0667
	—	(0.0292)	(0.0513)	(0.0152)	(0.0228)
Smallmouth bass	—	0.0013	0.0022	—	0.0014
	—	(0.0014)	(0.0035)	—	(0.0013)
Yellow perch	—	0.0763	0.0178	0.0427	0.0568
	—	(0.0298)	(0.0153)	(0.0306)	(0.0192)
Walleye	—	0.0220	0.0401	0.0121	0.0258
	—	(0.0105)	(0.0227)	(0.0181)	(0.0091)
Other	—	0.0139	0.0122	0.2617	0.0405
	—	(0.0071)	(0.0115)	(0.1026)	(0.0118)
Total	—	0.4865	0.9582	0.7540	0.6435
	—	(0.0991)	(0.2359)	(0.2134)	(0.0903)

Appendix 200. Estimated number of fish harvested by shore anglers in the south section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	—	3,521	—	252	3,773
	—	(3,778)	—	(503)	(3,812)
May	—	55,477	22,421	4,164	82,062
	—	(14,573)	(11,294)	(3,602)	(18,786)
Jun	—	47,531	43,107	2,205	92,843
	—	(9,280)	(11,757)	(1,128)	(15,020)
Jul	—	16,276	11,851	8,399	36,526
	—	(3,693)	(3,726)	(4,332)	(6,804)
Aug	—	8,337	3,928	4,288	16,553
	—	(1,963)	(1,121)	(1,969)	(2,998)
Sep	—	1,952	338	584	2,874
	—	(588)	(149)	(404)	(729)
Oct	—	1,576	116	147	1,839
	—	(836)	(106)	(115)	(850)
Nov	—	330	28	101	459
	—	(252)	(27)	(200)	(324)
Dec	—	—	—	—	—
	—	—	—	—	—
Jan	—	—	—	—	—
	—	—	—	—	—
Feb	—	—	—	—	—
	—	—	—	—	—
Mar	—	—	—	1	1
	—	—	—	(2)	(2)
Total	—	135,000	81,789	20,141	236,930
	—	(18,203)	(16,762)	(6,113)	(25,488)

Appendix 201. Estimated number of fish harvested by shore anglers in the south section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

Month	Grid: 8	9–10	11–12	13–15	Total
Apr	—	3,149	6	904	4,059
	—	(2,719)	(17)	(1,116)	(2,939)
May	—	10,057	6,503	2,688	19,248
	—	(3,639)	(3,947)	(1,118)	(5,483)
Jun	—	32,753	41,948	6,460	81,161
	—	(11,951)	(12,177)	(3,943)	(17,512)
Jul	—	7,758	3,754	3,579	15,091
	—	(2,047)	(1,388)	(2,060)	(3,218)
Aug	—	6,166	2,945	2,555	11,666
	—	(1,705)	(1,269)	(1,026)	(2,360)
Sep	—	2,852	1,281	1,213	5,346
	—	(1,244)	(610)	(676)	(1,541)
Oct	—	1,518	263	555	2,336
	—	(540)	(429)	(309)	(756)
Nov	—	1,031	2	—	1,033
	—	(951)	(6)	—	(951)
Dec	—	321	—	—	321
	—	(576)	—	—	(576)
Jan	—	—	—	—	—
	—	—	—	—	—
Feb	—	—	—	—	—
	—	—	—	—	—
Mar	—	250	—	49	299
	—	(571)	—	(67)	(575)
Total	—	65,855	56,702	18,003	140,560
	—	(13,189)	(12,959)	(4,888)	(19,126)

Appendix 202. Estimated catch per hour of fish harvested by shore anglers in the south section of the Detroit River from April 1983 to March 1984, all species combined. (Two standard errors in parentheses.)

Month	Grid				Total
	8	9–10	11–12	13–15	
Apr	—	0.8567	—	0.1090	0.5654
	—	(1.0471)	—	(0.2437)	(0.6616)
May	—	1.5298	1.1815	0.7310	1.3465
	—	(0.5100)	(0.7999)	(0.6761)	(0.3846)
Jun	—	0.8831	1.2223	0.2739	0.9556
	—	(0.2022)	(0.4188)	(0.1497)	(0.1827)
Jul	—	0.5374	0.8002	0.6098	0.6205
	—	(0.1326)	(0.2745)	(0.3395)	(0.1217)
Aug	—	0.3258	0.5943	0.3498	0.3723
	—	(0.0831)	(0.1807)	(0.1721)	(0.0716)
Sep	—	0.1992	0.1331	0.1786	0.1843
	—	(0.0657)	(0.0613)	(0.1336)	(0.0497)
Oct	—	0.4585	0.3382	0.4773	0.4496
	—	(0.2574)	(0.3264)	(0.4309)	(0.2185)
Nov	—	0.3013	0.6830	0.5771	0.3501
	—	(0.2484)	(0.9382)	(1.2005)	(0.2645)
Dec	—	—	—	—	—
	—	—	—	—	—
Jan	—	—	—	—	—
	—	—	—	—	—
Feb	—	—	—	—	—
	—	—	—	—	—
Mar	—	—	—	0.0714	0.0087
	—	—	—	(0.1985)	(0.0200)
Total	—	0.8201	1.0357	0.4392	0.8186
	—	(0.1209)	(0.2529)	(0.1406)	(0.0965)

Appendix 203. Estimated catch per hour of fish harvested by shore anglers in the south section of the Detroit River from April 1984 to March 1985, all species combined. (Two standard errors in parentheses.)

	Grid				
Month	8	9–10	11–12	13–15	Total
Apr	—	0.3984	0.0042	0.6213	0.3767
	—	(0.3907)	(0.0121)	(0.9007)	(0.2940)
May	—	0.4688	0.5422	0.8871	0.5277
	—	(0.1800)	(0.3561)	(0.4452)	(0.1588)
Jun	—	0.7527	1.4437	0.9448	1.0221
	—	(0.2867)	(0.4716)	(0.6129)	(0.2378)
Jul	—	0.3217	0.4542	0.6349	0.3970
	—	(0.0870)	(0.1745)	(0.3829)	(0.0864)
Aug	—	0.3075	0.5499	0.6012	0.3932
	—	(0.0880)	(0.2490)	(0.2741)	(0.0829)
Sep	—	0.2648	0.6179	0.7410	0.3693
	—	(0.1180)	(0.3089)	(0.4450)	(0.1096)
Oct	—	0.2629	0.3034	0.6229	0.3100
	—	(0.0990)	(0.5036)	(0.4175)	(0.1042)
Nov	—	1.0300	0.1053	—	1.0128
	—	(1.0430)	(0.3795)	—	(1.0212)
Dec	—	1.0422	—	—	1.0422
	—	(2.0179)	—	—	(2.0179)
Jan	—	—	—	—	—
	—	—	—	—	—
Feb	—	—	—	—	—
	—	—	—	—	—
Mar	—	0.5133	—	0.3451	0.3966
	—	(1.2136)	—	(0.6809)	(0.7809)
Total	—	0.4865	0.9582	0.7540	0.6435
	—	(0.0991)	(0.2359)	(0.2134)	(0.0903)

Appendix 204. Estimated number of fishing hours by all ice anglers in the north section of the Detroit River for January-February 1984 and January-February 1985 in each fishing grid. (Two standard errors in parentheses.)

Month	Grid 1	2	3	4	5–7	1984 Total	Grid 1	2	3	4	5–7	1985 Total
Jan	—	38	—	—	—	38	—	390	—	—	—	390
	—	(75)	—	—	—	(75)	—	(671)	—	—	—	(671)
Feb	—	—	—	—	—	—	—	396	—	—	—	396
	—	—	—	—	—	—	—	(266)	—	—	—	(266)
Total	—	38	—	—	—	38	—	786	—	—	—	786
	—	(75)	—	—	—	(75)	—	(722)	—	—	—	(722)

Appendix 205. Estimated number of fish harvested and catch per hour by all ice anglers in the north section of the Detroit River for January-February 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Month	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	96	96	—	0.2424	0.1221
	—	(206)	(206)	—	(0.5451)	(0.2851)
Yellow perch	—	1,599	1,599	—	4.0379	2.0344
	—	(1,742)	(1,742)	—	(5.1680)	(2.8990)
Total	—	1,695	1,695	—	4.2803	2.1565
	—	(1,754)	(1,754)	—	(5.1967)	(2.9130)

Appendix 206. Estimated number of fish harvested and catch per hour by open ice anglers in the north section of the Detroit River for 1985, all months combined. (Two standard errors in parentheses.)

	Catch						Catch per hour					
Species	1	2	3	4	5–7	Total	1	2	3	4	5–7	Total
Northern pike	—	96	—	—	—	96	—	0.1356	—	—	—	0.1356
	—	(206)	—	—	—	(206)	—	(0.3206)	—	—	—	(0.3206)
Yellow perch	—	1,540	—	—	—	1,540	—	2.1751	—	—	—	2.1751
	—	(1,734)	—	—	—	(1,734)	—	(3.2654)	—	—	—	(3.2654)
Total	—	1,636	—	—	—	1,636	—	2.3107	—	—	—	2.3107
	—	(1,746)	—	—	—	(1,746)	—	(3.2811)	—	—	—	(3.2811)

Appendix 207. Estimated number of fish harvested and catch per hour by shanty ice anglers in the north section of the Detroit River for 1985, all months combined. (Two standard errors in parentheses.)

	Catch						Catch per hour					
Species	1	2	3	4	5–7	Total	1	2	3	4	5–7	Total
Northern pike	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Yellow perch	—	59	—	—	—	59	—	0.7564	—	—	—	0.7564
	—	(170)	—	—	—	(170)	—	(2.7038)	—	—	—	(2.7038)
Total	—	59	—	—	—	59	—	0.7564	—	—	—	0.7564
	—	(170)	—	—	—	(170)	—	(2.7038)	—	—	—	(2.7038)

Appendix 208. Estimated number of fish harvested and catch per hour by all ice anglers in the north section of the Detroit River for 1985, all months combined. (Two standard errors in parentheses.)

	Catch						Catch per hour					
Species	1	2	3	4	5–7	Total	1	2	3	4	5–7	Total
Northern pike	—	96	—	—	—	96	—	0.1221	—	—	—	0.1221
	—	(206)	—	—	—	(206)	—	(0.2851)	—	—	—	(0.2851)
Yellow perch	—	1,599	—	—	—	1,599	—	2.0344	—	—	—	2.0344
	—	(1,742)	—	—	—	(1,742)	—	(2.8990)	—	—	—	(2.8990)
Total	—	1,695	—	—	—	1,695	—	2.1565	—	—	—	2.1565
	—	(1,754)	—	—	—	(1,754)	—	(2.9130)	—	—	—	(2.9130)

Appendix 209. Estimated number of fish harvested and catch per hour by open ice anglers in the north section of the Detroit River for January-February 1985, all species combined. (Two standard errors in parentheses.)

	Catch						Catch per hour					
Month	1	2	3	4	5–7	Total	1	2	3	4	5–7	Total
Jan	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Feb	—	1,636	—	—	—	1,636	—	5.1447	—	—	—	5.1447
	—	(1,746)	—	—	—	(1,746)	—	(6.3500)	—	—	—	(6.3500)
Total	—	1,636	—	—	—	1,636	—	2.3107	—	—	—	2.3107
	—	(1,746)	—	—	—	(1,746)	—	(3.2811)	—	—	—	(3.2811)

Appendix 210. Estimated number of fish harvested and catch per hour by shanty ice anglers in the north section of the Detroit River for January-February 1985, all species combined. (Two standard errors in parentheses.)

	Catch						Catch per hour					
Month	1	2	3	4	5–7	Total	1	2	3	4	5–7	Total
Jan	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Feb	—	59	—	—	—	59	—	0.7564	—	—	—	0.7564
	—	(170)	—	—	—	(170)	—	(2.7038)	—	—	—	(2.7038)
Total	—	59	—	—	—	59	—	0.7564	—	—	—	0.7564
	—	(170)	—	—	—	(170)	—	(2.7038)	—	—	—	(2.7038)

Appendix 211. Estimated number of fish harvested and catch per hour by all ice anglers in the north section of the Detroit River for January-February 1985, all species combined. (Two standard errors in parentheses.)

	Catch						Catch per hour					
Month	1	2	3	4	5–7	Total	1	2	3	4	5–7	Total
Jan	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
Feb	—	1,695	—	—	—	1,695	—	4.2803	—	—	—	4.2803
	—	(1,754)	—	—	—	(1,754)	—	(5.1967)	—	—	—	(5.1967)
Total	—	1,695	—	—	—	1,695	—	2.1565	—	—	—	2.1565
	—	(1,754)	—	—	—	(1,754)	—	(2.9130)	—	—	—	(2.9130)

Appendix 212. Estimated number of fishing hours by all ice anglers in the south section of the Detroit River for January-February 1984 and January-February 1985 in each fishing grid. (Two standard errors in parentheses.)

Month	Grid				1984	Grid				1985
	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Jan	—	—	236	38	274	—	—	2,315	439	2,754
	—	—	(169)	(75)	(185)	—	—	(2,861)	(776)	(2,964)
Feb	—	—	384	96	480	—	—	6,839	4,578	11,417
	—	—	(371)	(192)	(418)	—	—	(3,681)	(1,940)	(4,161)
Total	—	—	620	134	754	—	—	9,154	5,017	14,171
	—	—	(408)	(206)	(457)	—	—	(4,662)	(2,089)	(5,109)

Appendix 213. Estimated number of fish harvested and catch per hour by all ice anglers in the south section of the Detroit River for January-February 1984, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	25	25	—	0.0521	0.0332
	—	(42)	(42)	—	(0.0986)	(0.0592)
Yellow perch	—	2,463	2,463	—	5.1313	3.2666
	—	(3,159)	(3,159)	—	(7.9549)	(4.6339)
Total	—	2,488	2,488	—	5.1834	3.2998
	—	(3,159)	(3,159)	—	(7.9555)	(4.6343)

Appendix 214. Estimated number of fish harvested and catch per hour by all ice anglers in the south section of the Detroit River for January-February 1985, all fishing grids combined. (Two standard errors in parentheses.)

	Catch			Catch per hour		
Species	Jan	Feb	Total	Jan	Feb	Total
Northern pike	—	72	72	—	0.0063	0.0051
	—	(71)	(71)	—	(0.0066)	(0.0053)
Yellow perch	—	1,815	1,815	—	0.1590	0.1281
	—	(1,802)	(1,802)	—	(0.1681)	(0.1353)
Total	—	1,887	1,887	—	0.1653	0.1332
	—	(1,803)	(1,803)	—	(0.1682)	(0.1354)

Appendix 215. Estimated number of fish harvested and catch per hour by open ice anglers in the south section of the Detroit River for 1984, all months combined. (Two standard errors in parentheses.)

Species	Catch					Catch per hour				
	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Northern pike	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Yellow perch	—	—	1,296	864	2,160	—	—	4.5795	6.4478	5.1799
	—	—	(2,592)	(1,728)	(3,115)	—	—	(10.8547)	(16.2649)	(9.0761)
Total	—	—	1,296	864	2,160	—	—	4.5795	6.4478	5.1799
	—	—	(2,592)	(1,728)	(3,115)	—	—	(10.8547)	(16.2649)	(9.0761)

Appendix 216. Estimated number of fish harvested and catch per hour by shanty ice anglers in the south section of the Detroit River for 1984, all months combined. (Two standard errors in parentheses.)

Species	Catch					Catch per hour				
	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Northern pike	—	—	25	—	25	—	—	0.0742	—	0.0742
	—	—	(42)	—	(42)	—	—	(0.1315)	—	(0.1315)
Yellow perch	—	—	303	—	303	—	—	0.8991	—	0.8991
	—	—	(527)	—	(527)	—	—	(1.6447)	—	(1.6447)
Total	—	—	328	—	328	—	—	0.9733	—	0.9733
	—	—	(529)	—	(529)	—	—	(1.6499)	—	(1.6499)

Appendix 217. Estimated number of fish harvested and catch per hour by all ice anglers in the south section of the Detroit River for 1984, all months combined. (Two standard errors in parentheses.)

	Catch					Catch per hour				
Species	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Northern pike	—	—	25	—	25	—	—	0.0403	—	0.0332
	—	—	(42)	—	(42)	—	—	(0.0728)	—	(0.0592)
Yellow perch	—	—	1,599	864	2,463	—	—	2.5790	6.4478	3.2666
	—	—	(2,645)	(1,728)	(3,159)	—	—	(4.5913)	(16.2649)	(4.6339)
Total	—	—	1,624	864	2,488	—	—	2.6193	6.4478	3.2998
	—	—	(2,645)	(1,728)	(3,159)	—	—	(4.5919)	(16.2649)	(4.6343)

Appendix 218. Estimated number of fish harvested and catch per hour by open ice anglers in the south section of the Detroit River for 1985, all months combined. (Two standard errors in parentheses.)

Species	Catch					Catch per hour				
	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Northern pike	—	—	12	—	12	—	—	0.0218	—	0.0218
	—	—	(34)	—	(34)	—	—	(0.0727)	—	(0.0727)
Yellow perch	—	—	69	—	69	—	—	0.1255	—	0.1255
	—	—	(156)	—	(156)	—	—	(0.3592)	—	(0.3592)
Total	—	—	81	—	81	—	—	0.1473	—	0.1473
	—	—	(160)	—	(160)	—	—	(0.3665)	—	(0.3665)

Appendix 219. Estimated number of fish harvested and catch per hour by shanty ice anglers in the south section of the Detroit River for 1985, all months combined. (Two standard errors in parentheses.)

Species	Catch					Catch per hour				
	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Northern pike	—	—	34	26	60	—	—	0.0040	0.0052	0.0044
	—	—	(55)	(28)	(62)	—	—	(0.0067)	(0.0060)	(0.0048)
Yellow perch	—	—	991	755	1,746	—	—	0.1152	0.1505	0.1282
	—	—	(1,594)	(826)	(1,795)	—	—	(0.1951)	(0.1762)	(0.1400)
Total	—	—	1,025	781	1,806	—	—	0.1192	0.1557	0.1326
	—	—	(1,595)	(826)	(1,796)	—	—	(0.1952)	(0.1763)	(0.1401)

Appendix 220. Estimated number of fish harvested and catch per hour by all ice anglers in the south section of the Detroit River for 1985, all months combined. (Two standard errors in parentheses.)

Species	Catch					Catch per hour				
	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Northern pike	—	—	46	26	72	—	—	0.0050	0.0052	0.0051
	—	—	(65)	(28)	(71)	—	—	(0.0075)	(0.0060)	(0.0053)
Yellow perch	—	—	1,060	755	1,815	—	—	0.1158	0.1505	0.1281
	—	—	(1,602)	(826)	(1,802)	—	—	(0.1847)	(0.1762)	(0.1353)
Total	—	—	1,106	781	1,887	—	—	0.1208	0.1557	0.1332
	—	—	(1,603)	(826)	(1,803)	—	—	(0.1849)	(0.1763)	(0.1354)

Appendix 221. Estimated number of fish harvested and catch per hour by open ice anglers in the south section of the Detroit River for January-February 1984, all species combined. (Two standard errors in parentheses.)

	Catch					Catch per hour				
Month	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Jan	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Feb	—	—	1,296	864	2,160	—	—	5.2898	9.0000	6.3343
	—	—	(2,592)	(1,728)	(3,115)	—	—	(13.0264)	(25.4558)	(11.7869)
Total	—	—	1,296	864	2,160	—	—	4.5795	6.4478	5.1799
	—	—	(2,592)	(1,728)	(3,115)	—	—	(10.8547)	(16.2649)	(9.0761)

Appendix 222. Estimated number of fish harvested and catch per hour by shanty ice anglers in the south section of the Detroit River for January-February 1984, all species combined. (Two standard errors in parentheses.)

	Catch					Catch per hour				
Month	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Jan	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Feb	—	—	328	—	328	—	—	2.3598	—	2.3598
	—	—	(529)	—	(529)	—	—	(4.2255)	—	(4.2255)
Total	—	—	328	—	328	—	—	0.9733	—	0.9733
	—	—	(529)	—	(529)	—	—	(1.6499)	—	(1.6499)

Appendix 223. Estimated number of fish harvested and catch per hour by all ice anglers in south section of the Detroit River for January-February 1984, all species combined. (Two standard errors in parentheses.)

	Catch					Catch per hour				
Month	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Jan	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Feb	—	—	1,624	864	2,488	—	—	4.2292	9.0000	5.1834
	—	—	(2,645)	(1,728)	(3,159)	—	—	(7.9778)	(25.4558)	(7.9555)
Total	—	—	1,624	864	2,488	—	—	2.6193	6.4478	3.2998
	—	—	(2,645)	(1,728)	(3,159)	—	—	(4.5919)	(16.2649)	(4.6343)

Appendix 224. Estimated number of fish harvested and catch per hour by open ice anglers in the south section of the Detroit River for January-February 1985, all species combined. (Two standard errors in parentheses.)

	Catch					Catch per hour				
Month	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Jan	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Feb	—	—	81	—	81	—	—	1.1571	—	1.1571
	—	—	(160)	—	(160)	—	—	(2.7225)	—	(2.7225)
Total	—	—	81	—	81	—	—	0.1473	—	0.1473
	—	—	(160)	—	(160)	—	—	(0.3665)	—	(0.3665)

Appendix 225. Estimated number of fish harvested and catch per hour by shanty ice anglers in the south section of the Detroit River for January-February 1985, all species combined. (Two standard errors in parentheses.)

	Catch					Catch per hour				
Month	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Jan	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Feb	—	—	1,025	781	1,806	—	—	0.1514	0.1706	0.1592
	—	—	(1,595)	(826)	(1,796)	—	—	(0.2487)	(0.1936)	(0.1680)
Total	—	—	1,025	781	1,806	—	—	0.1192	0.1557	0.1326
	—	—	(1,595)	(826)	(1,796)	—	—	(0.1952)	(0.1763)	(0.1401)

Appendix 226. Estimated number of fish harvested and catch per hour by combined ice anglers in the south section of the Detroit River for January-February 1985, all species combined. (Two standard errors in parentheses.)

	Catch					Catch per hour				
Month	8	9–10	11–12	13–15	Total	8	9–10	11–12	13–15	Total
Jan	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —
Feb	— —	— —	1,106 (1,603)	781 (826)	1,887 (1,803)	— —	— —	0.1617 (0.2489)	0.1706 (0.1936)	0.1653 (0.1682)
Total	— —	— —	1,106 (1,603)	781 (826)	1,887 (1,803)	— —	— —	0.1208 (0.1849)	0.1557 (0.1763)	0.1332 (0.1354)

Appendix 227. Total number of fish tagged by trap net station and year.

	Station and year[1]							
	1		2		3		4	
Species	Yr 1	Yr 2	Yr 1	Yr 2	Yr 1	Yr 2	Yr 1	Yr 2
Lake sturgeon	—	—	—	—	2	1	6	—
Longnose gar	—	—	2	—	—	—	—	2
Bowfin	—	—	1	1	30	12	—	6
Gizzard shad	1	—	—	—	7	—	—	—
Mooneye	—	—	1	—	—	—	1	—
Northern pike	18	3	21	12	130	43	13	12
Muskellunge	2	1	—	—	1	—	3	—
Black bullhead	—	—	1	—	5	3	—	—
Yellow bullhead	1	—	—	—	4	—	—	—
Brown bullhead	—	—	1	1	49	31	1	—
Channel catfish	9	3	66	28	78	93	290	128
Stonecat	—	7	1	3	—	8	—	—
Burbot	—	2	2	—	—	3	—	1
White perch	—	2	4	1	3	29	9	39
White bass	4	2	104	—	42	12	42	13
Freshwater drum	13	22	33	31	70	148	229	52
Chinook salmon	—	1	1	—	—	—	—	1
Coho salmon	—	—	—	—	—	—	—	—
Rainbow trout	—	1	—	—	1	—	1	—
Brown trout	—	1	—	2	—	1	—	—
Lake trout	—	—	—	—	—	1	—	—
Goldfish	—	—	—	—	—	1	—	—
Common carp	21	1	15	16	144	56	18	18
Quillback	—	—	1	—	1—	12	56	22
White sucker	161	191	102	97	116	86	54	17
Hog sucker	11	21	1	4	5	2	—	—
Bigmouth buffalo	—	—	1	—	—	—	—	—
Spotted sucker	7	1	—	—	1	1 —	—	
Redhorse, unident.	55	4	46	3	86	2	329	1
Silver redhorse	—	8	—	27	—	12	—	16
Golden redhorse	—	9	—	1	—	1	—	1

Appendix 227. Continued:

	Station and year[1]							
	1		2		3		4	
Species	Yr 1	Yr 2	Yr 1	Yr 2	Yr 1	Yr 2	Yr 1	Yr 2
Shorthead redhorse	—	52	—	21	—	46	—	91
River redhorse	—	5	—	—	—	1	—	—
Rock bass	93	253	317	209	979	573	534	383
Pumpkinseed	1	—	2	5	49	57	3	4
Bluegill	—	1	5	—	14	6	—	—
Smallmouth bass	84	72	47	59	73	79	209	151
Largemouth bass	—	—	4	—	27	4	—	1
White crappie	—	—	—	—	4	1	—	—
Black crappie	2	1	14	2	194	84	2	1
Yellow perch	286	195	540	186	901	523	319	380
Sauger	2	—	1	—	—	—	—	—
Walleye	370	314	306	120	441	368	804	270
Total tagged	1,141	1,173	1,640	829	3,466	2,299	2,923	1,611
Number tagged per net lift	6.6	7.4	9.2	6.4	17.2	15.1	27.3	12.3

Appendix 227. Continued:

Species	Station and year[1]								
	5		6		7		8		
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 1	Yr 2	Yr 1	Yr 2	Total
Lake sturgeon	—	—	—	—	—	—	—	—	9
Longnose gar	—	—	—	2	1	—	1	1	9
Bowfin	—	—	—	1	—	7	3	5	66
Gizzard shad	—	—	1	—	—	—	—	—	9
Mooneye	—	—	—	—	—	—	—	—	2
Northern pike	1	3	32	19	15	12	38	73	445
Muskellunge	—	1	2	1	8	3	1	2	25
Black bullhead	—	1	—	—	3	—	7	—	20
Yellow bullhead	—	—	—	—	6	—	—	1	12
Brown bullhead	—	2	10	19	141	91	56	287	689
Channel catfish	88	90	29	30	75	76	62	92	1,237
Stonecat	11	72	28	39	12	14	27	26	248
Burbot	1	12	—	—	—	—	—	—	21
White perch	5	16	22	21	19	59	24	37	290
White bass	109	16	27	5	173	68	36	82	735
Freshwater drum	87	125	49	39	63	12	28	87	1,088
Chinook salmon	—	—	—	2	—	—	—	—	5
Coho salmon	—	—	—	14	—	—	—	1	15
Rainbow trout	1	2	—	5	—	2	—	—	13
Brown trout	—	1	—	—	—	—	—	—	5
Lake trout	—	—	—	—	—	—	—	—	1
Goldfish	—	1	1	2	25	13	—	18	61
Common carp	17	11	62	46	116	152	97	277	1,067
Quillback	7	11	12	7	27	43	13	17	238
White sucker	12	52	22	31	98	38	29	41	1,147
Hog sucker	—	1	—	—	—	—	—	2	47
Bigmouth buffalo	1	—	—	—	1	—	—	—	3
Spotted sucker	—	—	—	—	—	—	—	2	12
Redhorse, unident.	186	107	48	5	87	9	9	13	990
Silver redhorse	—	4	—	6	—	33	—	13	119

Appendix 227. Continued:

Species	Station and year[1] 5 Yr 1	5 Yr 2	6 Yr 1	6 Yr 2	7 Yr 1	7 Yr 2	8 Yr 1	8 Yr 2	Total
Golden redhorse	—	1	—	—	—	4	—	2	19
Shorthead redhorse	—	59	—	26	—	34	—	13	342
River redhorse	—	—	—	1	—	—	—	—	7
Rock bass	328	317	300	425	435	318	243	205	5,912
Pumpkinseed	—	5	10	3	4	3	4	5	155
Bluegill	—	3	7	5	1	—	—	—	42
Smallmouth bass	497	616	196	78	55	46	20	56	2,338
Largemouth bass	—	1	—	4	3	—	—	5	49
White crappie	—	1	—	3	3	—	2	—	14
Black crappie	4	34	28	34	43	68	34	54	599
Yellow perch	52	336	140	244	321	259	100	452	5,234
Sauger	—	—	—	—	—	—	—	—	3
Walleye	391	824	175	116	405	536	142	244	5,826
Total tagged	1,798	2,725	1,201	1,233	2,140	1,900	976	2,113	29,168
Number tagged per net lift	16.1	13.6	6.7	7.5	11.0	14.8	7.2	13.0	11.6

[1]Yr 1 = March 1, 1983 to March 31, 1984. Yr 2 = April 1, 1984 to March 31, 1984.

Appendix 228. Number of fish tagged each month at St. Clair (Station 1) during the entire survey.

Species	Month												
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Lake sturgeon	—	—	—	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	—	—	—	—	—	—	—	—	—	—	—	—
Bowfin	—	—	—	—	—	—	—	—	—	—	—	—	—
Gizzard shad	1	—	—	—	—	—	—	—	—	—	—	—	1
Mooneye	—	—	—	—	—	—	—	—	—	—	—	—	—
Northern pike	14	2	—	2	1	1	1	—	—	—	—	—	21
Muskellunge	—	2	—	—	1	—	—	—	—	—	—	—	3
Black bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Yellow bullhead	—	1	—	—	—	—	—	—	—	—	—	—	1
Brown bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Channel catfish	—	1	—	—	9	2	—	—	—	—	—	—	12
Stonecat	—	—	1	1	—	—	2	3	—	—	—	—	7
Burbot	—	1	—	—	—	—	—	—	—	—	1	—	2
White perch	—	—	—	1	1	—	—	—	—	—	—	—	2
White bass	—	2	—	—	2	1	—	1	—	—	—	—	6
Freshwater drum	—	—	1	10	7	14	2	1	—	—	—	—	35
Chinook salmon	—	1	—	—	—	—	—	—	—	—	—	—	1
Coho salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Rainbow trout	—	—	—	—	1	—	—	—	—	—	—	—	1
Brown trout	—	—	—	—	—	1	—	—	—	—	—	—	1
Lake trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Goldfish	—	—	—	—	—	—	—	—	—	—	—	—	—
Common carp	10	5	6	1	—	—	—	—	—	—	—	—	22
Quillback	—	—	—	—	—	—	—	—	—	—	—	—	—
White sucker	18	25	8	16	35	44	80	93	8	8	3	14	352
Hog sucker	1	3	1	—	2	7	11	5	—	1	—	1	32
Bigmouth buffalo	—	—	—	—	—	—	—	—	—	—	—	—	—
Spotted sucker	—	4	1	1	—	—	—	2	—	—	—	—	8
Redhorse, unident.	6	10	10	7	22	28	21	27	2	—	—	—	133
Silver redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—

Appendix 228. Continued:

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
Golden redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
Shorthead redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
River redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
Rock bass	6	14	29	36	53	49	83	72	1	—	2	1	346
Pumpkinseed	—	—	—	—	—	1	—	—	—	—	—	—	1
Bluegill	—	—	—	—	1	—	—	—	—	—	—	—	1
Smallmouth bass	—	2	—	4	32	88	18	12	—	—	—	—	156
Largemouth bass	—	—	—	—	—	—	—	—	—	—	—	—	—
White crappie	—	—	—	—	—	—	—	—	—	—	—	—	—
Black crappie	—	1	—	—	—	1	1	—	—	—	—	—	3
Yellow perch	15	82	34	68	36	87	116	31	—	—	6	6	481
Sauger	—	—	—	—	—	—	—	2	—	—	—	—	2
Walleye	—	2	17	70	134	241	130	88	2	—	—	—	684
Total tagged	71	158	108	217	337	565	465	337	13	9	12	22	2,313
Number net lifts	39	40	34	23	35	34	50	50	4	4	4	16	333
Number tagged per net lift	1.82	3.95	3.18	9.43	9.63	16.62	9.30	6.74	3.25	2.25	3.00	1.38	6.95

Appendix 229. Number of fish tagged each month at Marine City (Station 2) during the entire survey.

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
Lake sturgeon	—	—	—	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	2	—	—	—	—	—	—	—	—	—	—	2
Bowfin	—	—	—	2	—	—	—	—	—	—	—	—	2
Gizzard shad	—	—	—	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	—	—	—	—	1	—	1
Northern pike	8	7	—	1	1	5	7	1	2	—	—	1	33
Muskellunge	—	—	—	—	—	—	—	—	—	—	—	—	—
Black bullhead	—	—	—	1	—	—	—	—	—	—	—	—	1
Yellow bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Brown bullhead	—	1	—	—	—	1	—	—	—	—	—	—	2
Channel catfish	—	10	—	10	32	31	2	—	—	—	9	—	94
Stonecat	—	—	1	—	2	1	—	—	—	—	—	—	4
Burbot	—	2	—	—	—	—	—	—	—	—	—	—	2
White perch	—	—	1	1	3	—	—	—	—	—	—	—	5
White bass	2	95	—	1	1	4	—	—	—	—	1	—	104
Freshwater drum	—	4	—	16	17	9	17	1	—	—	—	—	64
Chinook salmon	—	—	1	—	—	—	—	—	—	—	—	—	1
Coho salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Rainbow trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Brown trout	—	—	1	1	—	—	—	—	—	—	—	—	2
Lake trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Goldfish	—	—	—	—	—	—	—	—	—	—	—	—	—
Common carp	2	7	1	9	1	1	10	—	—	—	—	—	31
Quillback	1	—	—	—	—	—	—	—	—	—	—	—	1
White sucker	24	28	27	16	25	13	40	1	5	17	3	—	199
Hog sucker	—	—	—	—	—	3	1	—	—	—	1	—	5
Bigmouth buffalo	1	—	—	—	—	—	—	—	—	—	—	—	1
Spotted sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Redhorse, unident.	12	10	2	6	6	2	5	1	5	—	—	—	49
Silver redhorse	—	—	—	1	8	3	15	—	—	—	—	—	27

Appendix 229. Continued:

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
Golden redhorse	—	—	—	—	10	4	7	—	—	—	—	—	21
Shorthead redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
River redhorse	—	—	—	—	—	—	1	—	—	—	—	—	1
Rock bass	28	33	43	126	107	61	105	6	17	—	—	—	526
Pumpkinseed	—	—	—	3	4	—	—	—	—	—	—	—	7
Bluegill	—	1	3	1	—	—	—	—	—	—	—	—	5
Smallmouth bass	—	—	1	49	26	20	10	—	—	—	—	—	106
Largemouth bass	—	—	—	—	—	4	—	—	—	—	—	—	4
White crappie	—	—	—	—	—	—	—	—	—	—	—	—	—
Black crappie	2	7	—	—	1	2	3	—	—	—	1	—	16
Yellow perch	18	110	63	160	165	83	107	10	9	1	—	—	726
Sauger	—	—	—	—	—	—	—	1	—	—	—	—	1
Walleye	8	38	27	67	54	60	94	52	18	—	7	1	426
Total tagged	106	355	171	471	463	307	424	73	56	18	23	2	2,469
Number net lifts	25	40	40	38	40	34	40	9	14	4	10	15	309
Number tagged per net lift	4.24	8.88	4.28	12.39	11.57	9.03	10.60	8.11	4.00	4:50	2.30	0.13	7.99

Appendix 230. Number of fish tagged each month at Algonac (Station 3) during the entire survey.

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Lake sturgeon	—	—	—	—	—	—	—	3	—	—	—	—	3
Longnose gar	—	—	—	—	—	—	—	—	—	—	—	—	—
Bowfin	8	7	12	9	2	4	—	—	—	—	—	—	42
Gizzard shad	7	—	—	—	—	—	—	—	—	—	—	—	7
Mooneye	—	—	—	—	—	—	—	—	—	—	—	—	—
Northern pike	26	64	20	8	9	13	12	6	1	—	2	12	173
Muskellunge	—	—	1	—	—	—	—	—	—	—	—	—	1
Black bullhead	4	—	1	3	—	—	—	—	—	—	—	—	8
Yellow bullhead	1	3	—	—	—	—	—	—	—	—	—	—	4
Brown bullhead	2	18	13	16	1	4	12	14	—	—	—	—	80
Channel catfish	—	10	7	3	47	49	19	36	—	—	—	—	171
Stonecat	—	1	3	—	4	—	—	—	—	—	—	—	8
Burbot	—	—	—	—	—	—	—	2	—	—	—	1	3
White perch	—	1	24	2	1	4	—	—	—	—	—	—	32
White bass	—	4	12	1	17	15	—	5	—	—	—	—	54
Freshwater drum	1	3	16	70	15	24	25	60	—	—	1	3	218
Chinook salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Coho salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Rainbow trout	—	—	1	—	—	—	—	—	—	—	—	—	1
Brown trout	—	—	1	—	—	—	—	—	—	—	—	—	1
Lake trout	—	1	—	—	—	—	—	—	—	—	—	—	1
Goldfish	—	—	1	—	—	—	—	—	—	—	—	—	1
Common carp	27	11	100	21	7	19	5	8	2	—	—	—	200
Quillback	—	—	1	—	8	11	1	1	—	—	—	—	22
White sucker	41	21	35	8	9	15	16	47	2	—	1	7	202
Hog sucker	—	1	1	—	1	2	1	1	—	—	—	—	7
Bigmouth buffalo	—	—	—	—	—	—	—	—	—	—	—	—	—
Spotted sucker	—	—	1	—	—	—	—	1	—	—	—	—	2
Redhorse, unident.	13	2	27	4	9	24	—	8	—	—	1	—	88
Silver redhorse	—	—	—	—	7	2	—	3	—	—	—	—	12

Appendix 230. Continued:

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Golden redhorse	—	—	—	—	—	—	—	1	—	—	—	—	1
Shorthead redhorse	—	—	2	4	10	9	4	15	—	—	—	2	46
River redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
Rock bass	8	117	478	287	209	100	220	128	3	—	2	—	1,552
Pumpkinseed	4	8	23	24	29	6	12	—	—	—	—	—	106
Bluegill	—	2	4	5	5	4	—	—	—	—	—	—	20
Smallmouth bass	—	2	4	68	44	28	5	1	—	—	—	—	152
Largemouth bass	—	3	3	2	8	11	4	—	—	—	—	—	31
White crappie	4	—	—	—	1	—	—	—	—	—	—	—	5
Black crappie	8	42	33	26	28	46	91	4	—	—	—	—	278
Yellow perch	31	348	363	237	275	70	66	21	9	—	—	3	1,424
Sauger	—	—	—	—	—	—	—	—	—	—	—	—	—
Walleye	—	35	183	57	96	206	88	139	—	—	3	2	809
Total tagged	185	704	1,371	855	842	666	581	504	17	—	10	30	5,765
Number net lifts	18	39	56	36	48	49	40	35	4	—	4	24	353
Number tagged per net lift	10.28	18.05	24.48	23.75	17.54	13.59	14.53	14.40	4.25	—	2.50	1.25	16.33

Appendix 231. Number of fish tagged each month at St. Clair Cutoff (Station 4) during the entire survey.

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Lake sturgeon	—	—	1	—	—	1	4	—	—	—	—	—	6
Longnose gar	—	—	—	2	—	—	—	—	—	—	—	—	2
Bowfin	—	—	4	1	1	—	—	—	—	—	—	—	6
Gizzard shad	—	—	—	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	1	—	—	—	—	—	1
Northern pike	—	2	2	2	2	1	8	7	—	—	—	1	25
Muskellunge	—	—	—	—	—	—	1	2	—	—	—	—	3
Black bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Yellow bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Brown bullhead	—	—	—	1	—	—	—	—	—	—	—	—	1
Channel catfish	—	2	14	60	68	18	215	38	—	—	—	3	418
Stonecat	—	—	—	—	—	—	—	—	—	—	—	—	—
Burbot	—	—	—	—	—	—	—	1	—	—	—	—	1
White perch	—	—	21	13	5	—	8	1	—	—	—	—	48
White bass	—	3	8	15	5	—	18	6	—	—	—	—	55
Freshwater drum	—	2	16	18	7	23	206	9	—	—	—	—	281
Chinook salmon	—	1	—	—	—	—	—	—	—	—	—	—	1
Coho salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Rainbow trout	—	—	—	—	—	—	—	1	—	—	—	—	1
Brown trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Lake trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Goldfish	—	—	—	—	—	—	—	—	—	—	—	—	—
Common carp	—	2	9	4	10	—	2	8	—	—	—	1	36
Quillback	—	1	2	14	7	—	49	4	—	—	—	1	78
White sucker	—	6	32	5	—	1	9	16	—	—	—	1	70
Hog sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Bigmouth buffalo	—	—	—	—	—	—	—	—	—	—	—	—	—
Spotted sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Redhorse, unident.	—	20	85	13	16	8	67	121	—	—	—	—	330
Silver redhorse	—	—	—	12	1	—	1	2	—	—	—	—	16

Appendix 231. Continued:

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Golden redhorse	—	—	—	—	—	—	1	—	—	—	—	—	1
Shorthead redhorse	—	—	27	15	6	1	16	19	1	—	—	6	91
River redhorse	—	—	1	—	—	—	—	—	—	—	—	—	1
Rock bass	—	34	91	104	100	69	490	28	—	—	—	1	917
Pumpkinseed	—	2	—	—	4	1	—	—	—	—	—	—	7
Bluegill	—	—	—	—	—	—	—	—	—	—	—	—	—
Smallmouth bass	—	4	31	81	81	106	53	3	1	—	—	—	360
Largemouth bass	—	—	—	—	—	—	—	1	—	—	—	—	1
White crappie	—	—	—	—	—	—	—	—	—	—	—	—	—
Black crappie	—	—	2	—	—	—	1	—	—	—	—	—	3
Yellow perch	—	116	236	94	49	63	78	55	4	—	—	4	699
Sauger	—	—	—	—	—	—	—	—	—	—	—	—	—
Yellow perch	—	40	345	142	285	60	68	131	1	—	—	2	1,074
Total tagged	—	235	927	596	647	352	1,296	453	7	—	—	20	4,533
Number net lifts	—	28	27	41	34	30	34	30	2	—	—	12	238
Number tagged per net lift	—	8.39	34.33	14.54	19.03	11.73	38.12	15.10	3.50	—	—	1.67	19.05

Appendix 232. Number of fish tagged each month at Dumping Grounds (Station 5) during the entire survey.

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Lake sturgeon	—	—	—	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	—	—	—	—	—	—	—	—	—	—	—	—
Bowfin	—	—	—	—	—	—	—	—	—	—	—	—	—
Gizzard shad	—	—	—	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	—	—	—	—	—	—	—
Northern pike	1	—	—	—	—	—	2	—	1	—	—	—	4
Muskellunge	—	—	—	—	1	—	—	—	—	—	—	—	1
Black bullhead	—	1	—	—	—	—	—	—	—	—	—	—	1
Yellow bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Brown bullhead	—	—	—	—	1	1	—	—	—	—	—	—	2
Channel catfish	14	12	6	12	22	58	30	24	—	—	—	—	178
Stonecat	19	7	10	9	7	8	19	4	—	—	—	—	83
Burbot	5	1	2	—	—	—	3	2	—	—	—	—	13
White perch	3	3	2	3	3	4	3	—	—	—	—	—	21
White bass	11	10	1	86	5	3	9	—	—	—	—	—	125
Freshwater drum	38	39	5	73	14	9	22	12	—	—	—	—	212
Chinook salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Coho salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Rainbow trout	1	—	—	1	1	—	—	—	—	—	—	—	3
Brown trout	—	1	—	—	—	—	—	—	—	—	—	—	1
Lake trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Goldfish	—	—	1	—	—	—	—	—	—	—	—	—	1
Common carp	2	4	3	11	3	3	1	1	—	—	—	—	28
Quillback	5	—	1	11	—	—	1	—	—	—	—	—	18
White sucker	28	4	4	9	2	5	7	5	—	—	—	—	64
Hog sucker	—	—	—	—	1	—	—	—	—	—	—	—	1
Bigmouth buffalo	—	—	—	—	—	1	—	—	—	—	—	—	1
Spotted sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Redhorse, unident.	83	28	7	147	6	8	11	3	—	—	—	—	293
Silver redhorse	—	—	—	—	2	2	—	—	—	—	—	—	4

Appendix 232. Continued:

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
Golden redhorse	—	—	—	—	1	—	—	—	—	—	—	—	1
Shorthead redhorse	—	—	6	8	6	12	12	15	—	—	—	—	59
River redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
Rock bass	45	135	58	66	33	20	236	52	—	—	—	—	645
Pumpkinseed	1	1	2	—	—	—	1	—	—	—	—	—	5
Bluegill	—	—	—	—	2	1	—	—	—	—	—	—	3
Smallmouth bass	14	120	50	107	72	118	536	96	—	—	—	—	1,113
Largemouth bass	—	—	—	—	—	—	—	1	—	—	—	—	1
White crappie	—	—	—	—	1	—	—	—	—	—	—	—	1
Black crappie	1	—	—	—	1	15	19	2	—	—	—	—	38
Yellow perch	241	17	43	23	26	6	23	7	2	—	—	—	388
Sauger	—	—	—	—	—	—	—	—	—	—	—	—	—
Walleye	311	359	79	201	62	55	102	39	7	—	—	—	1,215
Total tagged	823	742	280	767	272	329	1,037	263	10	—	—	—	4,523
Number net lifts	40	42	41	40	33	30	45	39	2	—	—	—	312
Number tagged per net lift	20.57	17.67	6.83	19.18	8.24	10.97	23.04	6.74	5.00	—	—	—	14.50

Appendix 233. Number of fish tagged each month at Belle Isle (Station 6) during the entire survey.

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Lake sturgeon	—	—	—	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	1	—	—	—	1	—	—	—	—	—	—	2
Bowfin	—	—	—	1	—	—	—	—	—	—	—	—	1
Gizzard shad	—	—	—	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	—	—	—	—	—	—	—
Northern pike	17	25	2	6	—	—	1	—	—	—	—	—	51
Muskellunge	—	1	—	1	—	—	—	—	1	—	—	—	3
Black bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Yellow bullhead	—	—	—	—	—	—	—	—	—	—	—	—	—
Brown bullhead	2	6	3	3	4	2	9	—	—	—	—	—	29
Channel catfish	1	—	1	2	17	16	19	3	—	—	—	—	59
Stonecat	4	—	6	7	13	11	16	10	—	—	—	—	67
Burbot	—	—	—	—	—	—	—	—	—	—	—	—	—
White perch	5	—	15	20	1	2	—	—	—	—	—	—	43
White bass	3	—	1	6	5	7	1	9	—	—	—	—	32
Freshwater drum	3	1	5	31	26	13	6	3	—	—	—	—	88
Chinook salmon	—	—	—	—	—	2	—	—	—	—	—	—	2
Coho salmon	—	—	—	—	—	7	7	—	—	—	—	—	14
Rainbow trout	2	1	—	—	—	2	—	—	—	—	—	—	5
Brown trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Lake trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Goldfish	1	1	—	—	—	1	—	—	—	—	—	—	3
Common carp	30	11	16	20	14	9	7	1	—	—	—	—	108
Quillback	5	6	8	—	—	—	—	—	—	—	—	—	19
White sucker	6	9	—	6	4	9	6	12	—	—	—	1	53
Hog sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Bigmouth buffalo	—	—	—	—	—	—	—	—	—	—	—	—	—
Spotted sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Redhorse, unident.	4	—	5	13	12	8	6	5	—	—	—	—	53
Silver redhorse	—	—	—	4	2	—	—	—	—	—	—	—	6

Appendix 233. Continued:

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Golden redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
Shorthead redhorse	—	—	8	7	6	1	2	2	—	—	—	—	26
River redhorse	—	—	—	—	—	1	—	—	—	—	—	—	1
Rock bass	29	58	415	97	56	29	32	12	—	—	—	—	728
Pumpkinseed	1	6	3	—	1	—	2	—	—	—	—	—	13
Bluegill	—	1	3	3	3	2	—	—	—	—	—	—	12
Smallmouth bass	—	1	35	21	50	44	123	—	—	—	—	—	274
Largemouth bass	—	—	—	1	—	2	1	—	—	—	—	—	4
White crappie	—	—	1	2	—	—	—	—	—	—	—	—	3
Black crappie	18	4	5	5	3	13	12	1	1	—	—	—	62
Yellow perch	70	67	84	56	32	27	20	19	7	—	—	2	384
Sauger	—	—	—	—	—	—	—	—	—	—	—	—	—
Walleye	30	20	23	27	46	72	31	42	—	—	—	—	291
Total tagged	231	219	639	339	295	282	301	119	9	—	—	3	2,437
Number net lifts	60	31	35	32	46	50	40	30	4	—	—	14	342
Number tagged per net lift	3.85	7.06	18.26	10.59	6.41	5.64	7.53	3.97	2.25	—	—	0.21	7.13

Appendix 234. Number of fish tagged each month at Wyandotte (Station 7) during the entire survey.

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Lake sturgeon	—	—	—	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	—	1	—	—	—	—	—	—	—	—	—	1
Bowfin	—	—	4	1	1	1	—	—	—	—	—	—	7
Gizzard shad	—	—	—	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	—	—	—	—	—	—	—
Northern pike	6	2	11	3	3	—	—	—	1	—	—	1	27
Muskellunge	3	—	1	—	—	—	1	1	4	—	—	1	11
Black bullhead	1	—	—	1	1	—	—	—	—	—	—	—	3
Yellow bullhead	—	1	—	—	3	—	—	1	1	—	—	—	6
Brown bullhead	37	61	46	21	34	18	6	5	1	—	—	—	229
Channel catfish	—	—	6	52	50	35	7	—	—	—	—	—	150
Stonecat	—	—	5	9	5	1	4	2	—	—	—	—	26
Burbot	—	—	—	—	—	—	—	—	—	—	—	—	—
White perch	—	2	28	10	26	11	—	—	1	—	—	—	78
White bass	—	1	94	38	43	31	5	—	—	—	—	—	212
Freshwater drum	—	6	27	9	6	8	8	2	—	—	—	—	66
Chinook salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Coho salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Rainbow trout	1	—	—	—	—	1	—	—	—	—	—	—	2
Brown trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Lake trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Goldfish	—	12	7	5	2	2	—	2	4	—	—	4	38
Common carp	30	38	15	34	45	73	23	4	5	—	—	1	268
Quillback	9	—	4	6	16	14	21	—	—	—	—	—	70
White sucker	16	17	3	3	6	17	37	25	9	—	2	1	136
Hog sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Bigmouth buffalo	—	—	—	—	—	1	—	—	—	—	—	—	1
Spotted sucker	—	—	—	—	—	—	—	—	—	—	—	—	—
Redhorse, unident.	5	15	4	—	3	7	47	9	2	—	1	3	96
Silver redhorse	—	—	—	—	12	17	4	—	—	—	—	—	33

Appendix 234. Continued:

Species	Month												Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Golden redhorse	—	—	—	—	—	4	—	—	—	—	—	—	4
Shorthead redhorse	—	—	2	4	10	4	14	—	—	—	—	—	34
River redhorse	—	—	—	—	—	—	—	—	—	—	—	—	—
Rock bass	7	91	262	200	44	45	44	10	15	—	3	1	722
Pumpkinseed	—	1	1	2	1	—	2	—	—	—	—	—	7
Bluegill	—	—	—	1	—	—	—	—	—	—	—	—	1
Smallmouth bass	—	—	8	46	18	12	17	—	—	—	—	—	101
Largemouth bass	—	—	—	—	—	1	2	—	—	—	—	—	3
White crappie	—	—	—	—	—	1	2	—	—	—	—	—	3
Black crappie	8	2	18	3	10	27	36	2	4	—	—	1	111
Yellow perch	170	71	142	95	16	9	42	3	14	—	2	4	568
Sauger	—	—	—	—	—	—	—	—	—	—	—	—	—
Walleye	78	106	78	102	169	195	178	22	4	—	—	1	933
Total tagged	371	426	767	645	524	535	500	88	65	—	8	18	3,947
Number net lifts	57	25	47	39	40	40	35	10	18	—	4	7	322
Number tagged per net lift	6.51	17.04	16.32	16.54	13.10	13.38	14.29	8.80	3.61	—	2.00	2.57	12.26

Appendix 235. Number of fish tagged each month at Grosse Ile (Station 8) during the entire survey.

Species	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
	Month												
Lake sturgeon	—	—	—	—	—	—	—	—	—	—	—	—	—
Longnose gar	—	—	—	1	1	—	—	—	—	—	—	—	2
Bowfin	—	—	1	2	—	3	2	—	—	—	—	—	8
Gizzard shad	—	—	—	—	—	—	—	—	—	—	—	—	—
Mooneye	—	—	—	—	—	—	—	—	—	—	—	—	—
Northern pike	31	31	11	3	3	3	10	11	1	—	—	7	111
Muskellunge	1	—	1	—	—	—	—	1	—	—	—	—	3
Black bullhead	—	1	—	4	—	—	2	—	—	—	—	—	7
Yellow bullhead	1	—	—	—	—	—	—	—	—	—	—	—	1
Brown bullhead	47	10	7	14	67	127	26	37	—	—	—	8	343
Channel catfish	1	—	6	19	94	26	7	1	—	—	—	—	154
Stonecat	2	1	18	5	4	4	17	2	—	—	—	—	53
Burbot	—	—	—	—	—	—	—	—	—	—	—	—	—
White perch	—	7	16	2	28	6	1	—	—	—	—	—	60
White bass	—	8	95	5	3	1	2	—	—	—	—	—	114
Freshwater drum	4	6	26	30	30	10	3	6	—	—	—	—	115
Chinook salmon	—	—	—	—	—	—	—	—	—	—	—	—	—
Coho salmon	—	—	—	—	—	1	—	—	—	—	—	—	1
Rainbow trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Brown trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Lake trout	—	—	—	—	—	—	—	—	—	—	—	—	—
Goldfish	2	—	—	1	1	1	6	6	1	—	—	—	18
Common carp	77	32	28	50	71	54	25	31	—	—	—	6	374
Quillback	1	3	5	2	7	9	1	2	—	—	—	—	30
White sucker	13	19	2	5	6	10	2	10	2	—	—	1	70
Hog sucker	—	—	2	—	—	—	—	—	—	—	—	—	2
Bigmouth buffalo	—	—	—	—	—	—	—	—	—	—	—	—	—
Spotted sucker	1	—	—	—	—	—	—	1	—	—	—	—	2
Redhorse, unident.	2	—	13	4	1	—	—	2	—	—	—	—	22
Silver redhorse	—	—	—	—	1	1	7	4	—	—	—	—	13

Appendix 236. Distance in kilometers from net stations to tag recovery grids.

Recovery grid	Trap net stations							
	1	2	3	4	5	6	7	8
O	19.3	36.9	49.1	77.9	98.7	107.7	126.4	140.1
A	1.4	19.0	31.2	53.8	75.3	83.6	102.4	116.1
D	23.7	6.3	6.0	22.5	44.1	52.5	71.2	84.8
B	42.7	25.3	13.2	15.6	35.7	44.8	63.4	77.1
E	48.5	31.1	19.0	12.2	29.9	39.0	57.8	71.5
I	43.8	26.4	22.9	2.9	24.0	33.2	51.8	65.5
H	51.8	34.5	30.9	5.6	15.1	24.3	43.0	56.7
F	59.6	42.2	38.5	12.4	8.4	17.5	36.2	49.9
L	59.1	41.7	38.2	18.2	28.7	37.8	56.5	70.2
C	72.1	54.7	51.0	31.2	38.0	47.0	65.7	79.4
G	66.5	43.1	39.4	19.5	13.7	22.7	41.5	44.0
M	88.6	65.2	61.5	35.4	14.7	5.6	13.2	26.9
J	120.9	97.6	85.3	59.2	38.5	29.5	10.6	3.1
Y	129.8	106.4	102.9	76.8	72.8	46.9	28.2	14.3
P	151.5	128.2	115.9	106.7	86.0	60.1	41.2	27.5
Q	170.0	146.7	134.4	125.1	104.3	78.6	59.7	46.0
W	172.8	149.4	137.2	108.4	87.6	78.6	59.7	46.0
U	184.8	161.5	149.2	123.2	102.4	93.4	74.5	60.9
R	172.8	149.4	137.2	108.4	87.6	78.6	59.7	46.0
T	184.7	161.3	149.1	120.3	116.2	90.3	71.6	57.8
V	220.6	197.2	185.0	156.2	135.4	126.4	107.5	93.9
S	206.7	183.4	171.1	142.3	121.6	112.5	93.9	80.2
X	229.3	205.9	193.7	165.0	144.1	135.1	116.4	102.7

Appendix 237. Distance in kilometers from net stations to tag recovery grids.

Recovery grid	Trap net station		
	A-marker	North channel	Monroe
O	71.3	65.0	144.9
A	51.5	45.2	125.1
D	25.8	19.5	99.3
B	7.2	0.2	88.7
E	0.2	7.2	86.5
I	15.0	17.7	61.5
H	14.7	16.6	72.3
F	22.1	24.6	64.1
L	31.1	32.2	82.8
C	43.3	44.8	89.7
G	28.0	29.3	68.1
M	45.9	48.8	39.9
J	69.7	72.6	16.1
Y	75.7	78.6	13.0
P	85.8	88.7	0.2
Q	101.9	104.7	18.4
W	105.3	108.2	37.8
U	120.6	123.5	49.7
R	105.6	108.5	20.3
T	118.8	121.7	37.7
V	155.4	158.3	76.0
S	142.2	145.1	40.9
X	155.5	158.4	77.9