DEPARTMENT OF NATURAL RESOURCES

Status of the Fisheries in Michigan Waters of Lake Erie and Lake St. Clair, 2012

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MDNR Research Vessel Channel Cat under stormy skies at the Clinton River, August 2012

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FISHERIES DIVISION

Highlights for 2012

The purpose of this report is to provide an update on the status of the fisheries in the Great Lakes and connecting waters of Southeast Michigan. Sources of information used in compiling this report include creel surveys, charter boat reports, an angler diary program, the Master Angler program, and commercial fishery records, as well as fisheries survey results. Some of the highlights described in detail include:

- 2012 non-charter angler harvest rate for Lake Erie yellow perch was above the long-term average, while the walleye harvest rate was just below the long-term average.
- Michigan non-charter anglers on Lake Erie caught 98,296 walleye and harvested 77,448 of those fish. Anglers reported releasing higher numbers of sub-legal size walleye in 2012.
- Charter boat harvest rates for Lake Erie walleye were more than 4 times those estimated for non-charter anglers, while yellow perch charter boat harvest rates were 19% higher than those estimated for non-charter anglers.
- Lake St. Clair continues to be the premier Michigan water for trophy muskellunge and smallmouth bass based on the number of entries recorded in the Master Angler program in 2012.
- 2012 Lake Erie index gill net catch rates for Michigan waters were 142% higher than 2011, but remained below the 1978-2011 average.
- Rock bass, smallmouth bass, and channel catfish were the dominant species in the Lake St. Clair trap net survey in 2012. Over 18% of the channel catfish exceeded Master Angler minimum length.
- Long-term tagging studies on Lake Erie walleye stocks clearly illustrate the important contribution of Lake Erie walleye to the Great Lakes sport fishery of Southeast Michigan, from Port Huron to Toledo.
- Tagging studies of lake sturgeon in the connecting waters since 1997 have demonstrated that lake sturgeon routinely move between Lake St. Clair and the St. Clair River. Longer range movements between the St. Clair system and southern Lake Huron are also frequent.

Fishery Forecast for 2013

Annual variation in reproductive success of walleye and yellow perch can result in substantial year to year changes in their abundance. Harvestable-size yellow perch abundance is forecasted to be lower in 2013 than last year in Lake Erie, with strong contributions from the 2009 and 2010 year classes expected. Lake Erie walleye abundance is also expected to decline in 2013. Michigan anglers will find fewer walleye from the strong 2003 year class as the summer progresses, and the fishery will rely on contributions from the 2011, 2010, and 2007 year classes. The comparatively weak 2008 and 2009 year classes are expected to contribute little to the fishery. Muskellunge and smallmouth bass numbers tend to remain more stable from year to year and both species should continue to provide excellent fishing opportunities in 2013, particularly in Lake St. Clair and the Detroit River. Still, weather conditions can affect sport fishing success as much as fish abundance. Therefore it is difficult to predict fishing success. Water levels in Lake St. Clair, the connecting rivers, and Lake Erie are forecasted to remain below the long term average in 2013. Thus shallow waters may continue to restrict angler access to some fishing areas in the connecting waters.

Sport Fishery Summary

An on-site creel survey conducted by the Michigan Department of Natural Resources (MDNR) produced a total harvest estimate of 424,130 fish (Table 1) for Michigan's 2012 Lake Erie sport fishery (non-charter). In combination, walleye and yellow perch accounted for 89% of the total harvest, reflecting their importance in the sport fishery. Non-charter anglers caught an estimated 98,296 walleye in Michigan waters of Lake Erie, and harvested 77,448 (79%) of those fish. The percentage of walleye released suggests that the 2010 and 2011 year classes will contribute to the harvest in future years. Although few bass are harvested by Michigan's Lake Erie anglers, over 19,000 legal-size largemouth and smallmouth bass were reported caught and released. Estimated angler effort in 2012 increased 27% from the all-time low recorded in 2011 (Figure 1). The walleye harvest rate in 2012 increased 15% from 2011, but remained well below the long-term mean of 0.22 walleye per angler hour (Figure 2). The yellow perch harvest rate decreased 73% in 2012, but remained well above the long-term mean of 0.55 yellow perch per angler hour. Trends in angler effort and harvest rates for walleye and yellow perch since the mid-1980's suggest that the level of angler effort on Lake Erie is affected by many factors in

addition to harvest rates. Other factors, including weather, prey fish abundance, fishing success on other Great Lakes waters, fuel expenses, and regional economic conditions have likely contributed to the comparatively low level of fishing effort since 1991. In 2011 and 2012, the Bolles Harbor Boat Access Site was closed for part of the summer and fall for maintenance. Closure of either the Bolles Harbor Boat Access Site or Sterling State Park boat launch can reduce angler effort by restricting access to Michigan waters of the lake.

Biological data were collected from walleye and yellow perch during the 2012 on-site creel survey. The age composition of harvested walleye was rather evenly distributed across ages 2, 3, 4, and 5 (2010, 2009, 2008, and 2007 year classes), which collectively accounted for 78% of the harvest (Figure 3). The 2003 year class (age 9) remained a strong contributor, with age 9 and older walleye accounting for 10% of the harvest. The average length of walleye harvested in the sport fishery in 2012 was 481 mm (18.9 in.).

Yellow perch harvest was dominated by age 3 fish (2009 year class), which accounted for 47% of the total harvest (Figure 3). Age 2 fish (2010 year class) and age 4 fish (2008 year class) were also important and in combination, accounted for 45% of the total harvest. Average lengths of harvested age 2, 3, and 4 yellow perch were 201 mm (7.9 in.), 220 mm (8.7 in.), and 237 mm (9.3 in.). The overall average length of yellow perch harvested in the sport fishery in 2011 was 223 mm (8.8 in.). Observed mean length-at-age for yellow perch taken in the Michigan sport fishery was relatively stable for age 2, 3, and 4 fish in 2012 (Figure 4).

Since 1989, Michigan charter boat operators have been required to report their charter fishing harvest and effort to the MDNR. In 2012, Michigan charter boat anglers reported a harvest of 30,111 fish from Lake Erie (Table 2). In combination, walleye (43%) and yellow perch (54%) accounted for 97% of the total harvest. The walleye harvest rate in 2012 increased 20% from 2011 and was only slightly below the long-term mean harvest rate of 0.73 walleye per hour (Figure 5). Yellow perch harvest rate increased by 9% from 2011, exceeding the long-term mean of 0.60 yellow perch per hour for the 3rd consecutive year. The charter boat walleye harvest rate (0.67) was about 4.5 times higher than those estimated for non-charter anglers (0.15) in 2012, while the yellow perch charter harvest rate (0.85) was about 19% higher than the rate for non-charter boat anglers (0.69).

Beginning in 2012, Michigan charter boat operators were also required to report catch-and-release fishing activity as well as harvest. For Lake Erie, charter operators reported releasing 6,297 fish. About 61% of the released fish were from the "other species" category, which generally is composed largely of white perch, white bass, freshwater drum, and channel catfish.

For the St. Clair-Detroit River system, charter boat anglers reported a harvest of 7,839 fish (Table 3). Yellow perch (26%), walleye (52%), and smallmouth bass (18%), made up the bulk of the harvest. In 2012, charter boat harvest rates for walleye increased by 68% from 2011, and was slightly higher than the long-term mean walleye harvest rate of 0.20 walleye per hour (Figure 6). Yellow perch harvest rate declined 45% in 2012 to the lowest level recorded since the Charter Boat reporting system was established in 1990.

Charter operators on the St. Clair-Detroit River system reported releasing 13,837 fish (Table 3). Smallmouth bass (70%) and muskellunge (8%) accounted for the majority of the fish caught-and-released. For smallmouth bass, charter operators released 87% of the 11,134 smallmouth bass caught in 2012. Of the 1,159 muskellunge reported caught, only 2 were harvested, for a release rate of 99.8%.

Over the last 10 years, the walleye charter harvest rate for Lake Erie has generally been about 2 to 3 times higher than the St. Clair-Detroit River system rate. In 2012, the Lake Erie walleye charter harvest rate was 3 times higher than the Lake St. Clair charter harvest rate for walleye. Overall, the lower harvest rate typical for the St. Clair system is a result of lower walleye densities. Both the decline of the Thames River walleye population and lower numbers of walleye migrating from Lake Erie spawning sites through the St. Clair-Detroit River system have been contributing factors in lower walleye abundance in St. Clair-Detroit River system since 1990.

The number of reported Michigan charter excursions on Lake Erie increased 16% in 2012, but remained well below the levels reported prior to 2004 (Figure 7). In 2012, charter boat excursions on the St. Clair-Detroit River system increased 1% from 2011. We suspect much of

the increase in reported St. Clair system charter excursions since 2010 has been the result of the new reporting requirement for catch-and-release fishing activity. For many years, much of the charter fishing activity on the St. Clair-Detroit River system has been catch-and-release oriented, and was largely unreported.

Muskellunge catch rates derived from the Sport Fishery Diary Program on Lake St. Clair improved through the late 1980's and early 1990's, but were more variable in the 2000's. In 2012, the catch rate increased to the highest point observed since the diary program was founded in the early 1980's (Figure 8). The large increase in muskie catch rates for 2012 continues a pattern of increased variability in catch rates over the past 12 years. We suspect this increased variability may be more reflective of the lower number of muskellunge anglers involved in the diary program, than of actual changes in the muskellunge population.

For years, the quality of the Lake St. Clair muskellunge fishery was reflected in the MDNR's Master Angler Program. Lake St. Clair continued to dominate the statewide Master Angler entries for muskellunge in 2012, with 24 of the 40 total entries originating from the St. Clair system. However, the number of Lake St. Clair muskellunge Master Angler entries has generally declined since 2000 (Figure 9). We suspect this is largely a reflection of waning interest in submitting Master Angler entries for muskellunge less than 50" in length, which has become a local benchmark for "trophy" status for muskellunge from the St. Clair-Detroit River system. By all accounts, the muskellunge population continues to provide excellent fishing opportunities. We expect that the following factors will continue to contribute to a strong muskellunge population and fishery in Lake St. Clair and the connecting waters: 1) a 44" minimum size limit (MSL) for Ontario waters and a 42" MSL for Michigan waters of the St. Clair system; 2) physical and biological changes in the lake such as clearer water and increased aquatic plant growth resulting in improved habitat for muskellunge; and, 3) extensive voluntary practice of catch and release fishing for muskellunge in Lake St. Clair by both sport and charter anglers.

Statistics from the Master Angler program indicate that Lake St. Clair is one of the premier waterbodies in the state for trophy smallmouth bass. Lake St. Clair accounted for 39% of all smallmouth bass entries statewide in 2012 (catch/keep and catch/release programs combined). Since the early 1990's, both catch/keep and catch/release Master Angler smallmouth bass entries from Lake St. Clair have exhibited an increasing trend (Figure 10). Catch/release entries have outnumbered catch/keep entries for the last 13 years. The strong representation of Lake St. Clair smallmouth bass in the statewide Master Angler Program is likely a reflection of an abundance of trophy-size smallmouth bass in the lake, a high degree of angler effort targeting the species, and widespread practice of catch-and-release among smallmouth bass anglers.

Commercial Fishery Summary

In 2012, three Michigan commercial fishing licenses were active on Lake Erie. Since 1979, the commercial fishery in Michigan waters of Lake Erie has harvested rough fish species using seines in the shallow embayments along the shoreline. However, since 2006 a small-mesh trap net license has been active. The 2012 commercial harvest included 13 types of fish for a total of 1,424,323 pounds (Table 4). In combination, common carp (36%), buffalo (16%), freshwater drum (10%), and channel catfish (9%) accounted for 71% of the total harvest by weight. The major species in the trap net harvest included white bass, freshwater drum, quillback, and buffalo. The primary species in the seine harvest included common carp, buffalo, and gizzard shad. The 2012 harvest of buffalo was the highest reported since 1981 (Table 4). The harvest of channel catfish and white bass in 2012 was also near record harvests observed for those species since 1981. The total value of the 2012 Lake Erie commercial harvest from Michigan waters was estimated at $530,115 (Table 5).

Summary of Netting Surveys

Since 1978, the MDNR has fished variable mesh multi-filament gill nets at two locations in western Lake Erie each fall, as part of the interagency walleye assessment program. During October 2012, four net lifts caught a total of 404 walleye. The total walleye catch-per-effort (CPE) for the index sites (101.0) increased by 142% from 2011 (Table 6). Yearling walleye (2011 year class) accounted for 22% of the catch, with the yearling walleye CPE of 21.8 similar to the CPE recorded for the 2010 year class. The 2010 year class (age 2) was the most abundant cohort in the survey,

accounting for 39% of the catch. Combined, the 2010 and 2011 year classes will be the largest component of the Michigan Lake Erie walleye fishery in 2012. However, some of the 2011 year class fish may be sub-legal size with the 15 inch MSL for Michigan waters.

In 2012, the MDNR surveyed adult fish populations in Lake St. Clair with trap nets. Four trap nets were fished from April 25 to May 14 at index net sites in Anchor Bay. A total of 4,262 fish representing 22 species were captured during the survey. Rock bass were numerically dominant, accounting for 73% of the total (Figure 11). Other common species in the nets included smallmouth bass (8%), channel catfish (5%), and white bass (3%). For the first time since the current survey period started in 2002, no muskellunge were caught in the index trap nets.

Ages were estimated for walleye (n=83) and smallmouth bass (n=399) based on interpretation of dorsal spine samples. The dominant walleye cohort was the 2010 year class (Age 2), accounting for 29% of the total catch (Figure 12). The 2009 year class (Age 3) was also a major component of the walleye catch, accounting for 25% of the total. For smallmouth bass, the 2005 (15%), 2006 (16%), 2007 (24%), and 2008 (22%) year classes accounted for 77% of the total trap net catch. A total of 337 smallmouth bass were tagged and released at the Anchor Bay trap net site in 2012.

The trap net survey documented an abundant population of channel catfish in Anchor Bay with many trophy size individuals. The average weight of channel catfish captured during the 2012 trap net survey was 5.9 pounds. Over 18% of the channel catfish exceeded the minimum size requirement (27 inch total length) for the MDNR Master Angler program. Lake St. Clair anglers are discouraged from keeping large channel catfish for food due to consumption advisories as a result of PCB contamination. However, catch-and-release trophy channel catfish angling opportunities are clearly available in Anchor Bay during the spring. The high abundance of large channel catfish suggests that this population is currently experiencing low exploitation.

Over the 11 years of the trap net survey in Anchor Bay since 2002, rock bass have dominated the catch (Table 7). Smallmouth bass CPE has varied considerably, while walleye CPE has been fairly steady. We suspect smallmouth bass catch rates in the trap nets are related to spawning movements during the survey period and are likely affected by annual variations in the warming of the waters of Anchor Bay. Sturgeon catch rates are low, but a few are captured in the trap nets each year.

The forage fish community of Lake St. Clair has been surveyed with bottom trawls each year since 1996 by the MDNR. A total of 14 trawl tows were conducted at the Anchor Bay index trawling site in 2012. The spring samples were dominated by spottail shiner and yellow perch (Table 8). The species with highest mean densities in the fall samples were sand shiner, logperch, and spottail shiner (Table 9). Alewife catches have been low since 2003, likely a result of the alewife population crash in Lake Huron. Yellow perch age-specific catch rates from the trawl survey indicate highly variable recruitment in Lake St. Clair (Table 10; Figure 13). Yellow perch recruitment in 1998, 2003, 2007, and 2008 was strong, with total CPE values for those year classes all over 1,300 fish. Anglers will find the strength of the 2007 and 2008 year classes clearly illustrated by the number of yellow perch in the 7 to 9 inch size range in 2013.

September trawling in Anchor Bay provides early indications of spawning success for yellow perch and smallmouth bass. Catch rates for young-of-year yellow perch from September trawls indicate the 2012 year class was very low in abundance, similar to the weak year class in 2011 (Figure 14). However, the 2010 year class was the most abundant year class recorded since the survey began in 1996. In combination with the strong 2007 and 2008 year classes, the 2010 year class will result in continued strong contributions of yellow perch to the Lake St. Clair fishery over the next 5 years.

Smallmouth bass recruitment patterns are variable based on September trawl catch rates of young-of-year (Figure 15). The 2012 year class densities were below average, and much less abundant than the record high densities recorded for the 2010 year class. Population studies have suggested that mean length of young-of-year smallmouth bass in the fall can be more important than abundance in determining year class strength. The mean length of young-of-year smallmouth bass caught in 2012 were near the long-term mean length recorded since 1996, suggesting the 2012 year class is not likely to be a major contributor to the fishery in the future.

A total of 189 lake sturgeon were collected during assessment surveys on Lake St. Clair and the St. Clair River in 2012. Sturgeon captured averaged 1,153 mm (45.4 in.) in total length, with a range from 262 mm (10.3 in.) to 1,778 mm (70.0 in.) Since 1997, pectoral fin ray sections have been used to estimate the ages for 2,393 lake sturgeon captured in MDNR assessment surveys in Lake St. Clair and the St. Clair River. Recent examination of pectoral fin rays collected from individual lake sturgeon recaptured after 6 or more years-at-large suggests that age estimates from lake sturgeon over 40 inches in total length may be unreliable. Therefore, we have elected to use ages from lake sturgeon under 40 inches total length to evaluate year class strength. Combined age samples for sub-40 inch lake sturgeon from 1997-2012 suggest recruitment has been fairly stable since the early 90's with strongest cohorts produced in 1993, 2000, 2001, and 2003 (Figure 16). Survey setlines were modified in 2003 to include small hooks, providing a less biased sample of the sturgeon population.

Fish Tagging Studies

In 2012, Michigan tagged a total of 337 smallmouth bass with non-reward jaw tags in Anchor Bay of Lake St. Clair. Walleye captured during the spring trap net survey were not tagged. A total of 32 non-reward tags placed on smallmouth bass in 2012 were recovered by fisherman for a single season reporting rate of 9.5%, nearly two percentage points higher than the 7.6% reporting rate observed in 2011 and triple the reporting rate of 3.1% observed in 2010. Ten walleyes that were tagged in previous years were reported in 2012.

Since 2002, a total of 1,349 legal size walleye and 4,295 smallmouth bass captured in survey trap nets in Anchor Bay have been tagged and released. Maps showing the geographical distribution of walleye and smallmouth bass tag recoveries since 2003 for fish tagged in Anchor Bay through 2012 are presented in Figure 17. The migratory nature of walleye is illustrated by the wide dispersal of tag recoveries from Anchor Bay, with recoveries northward to Port Huron, and southward as far as the Bass Islands in Ohio waters of Lake Erie. In comparison, smallmouth bass movements are rather localized, with nearly all the smallmouth bass recoveries reported from the Michigan waters of Lake St. Clair. The northernmost smallmouth bass tag recovery has been from the Marysville area of the St. Clair River, and the southernmost recovery came from the Detroit River near the Ambassador Bridge. On average, recaptured walleyes tagged during 2002-2010 had traveled 26.5 km (16.5 mi) from the Anchor Bay tag site, while smallmouth bass tagged during 2002-2012 had traveled 8.6 km (5.3 mi). Walleye tagged at the Anchor Bay site are not typically recovered on known spawning grounds in subsequent years, so their natal spawning site is still a matter of conjecture. We continue to think that the individual walleye tagged in Anchor Bay originate from Lake Erie spawning stocks and that they repeat individual movement patterns from year to year.

One smallmouth bass tagged in Anchor Bay was recovered from Whitmore Lake in Washtenaw County in 2011 (Figure 17). As there is no connection between the two water bodies this fish was illegally transported from Lake St. Clair to Whitmore Lake and released, where it was subsequently recaptured and reported. Anglers are reminded that the unauthorized transfer of fish from one water body to another poses significant risks, particularly for introduction of diseases such as viral hemorrhagic septicemia (VHS; the illness responsible for large fish die-offs in the Great Lakes region during the early 2000s).

Walleye tagging by Michigan in Lake Erie was put on indefinite hold in 2011. The distribution of tag recoveries to date from walleye tagged in the Huron River at Flat Rock prior to 2011 show that these fish tend to be captured along the south and western shores of Lake Erie, in the Detroit and St. Clair rivers, and on Michigan's side of Lake St. Clair (Figure 18). Recoveries of tagged Lake Erie walleye continue to provide evidence of substantial movement from spawning locations in Lake Erie through the St. Clair connecting waters. However, it is obvious from tag recovery patterns that some individuals from the Lake Erie spawning stocks migrate within that lake, never venturing into the Detroit River and Lake St. Clair.

A total of 2,577 lake sturgeon have been tagged and released in the St. Clair River and Lake St. Clair since 1996. To date, 430 tagged lake sturgeon have been recaptured with survey gear or reported by fishermen. A total of 288 tagged sturgeon have been recovered with survey setlines in the North Channel. One was recovered in a survey trap net in Anchor Bay, while 11 have been recaptured in assessment trawls on Lake

St. Clair. Sport anglers have reported 103 recoveries, nearly all from the St. Clair River North Channel, except for one reported from Lake Erie, near Huron, Ohio. Twenty-one recoveries have been reported from the Ontario commercial trap net fishery in southern Lake Huron, approximately 70 km (43.5 mi) from the tag site. All other recaptures have occurred within 10 km (6.2 mi) of the tag sites. Trawling has accounted for the capture of 36% of the sturgeon tagged and released during this study, but only 31 recoveries (7%) have been fish originally caught in a trawl on Lake St. Clair. We view this as an indication that fish residing year-around in the St. Clair River, or moving into Lake Huron, experience a higher level of exploitation than fish residing all year in Lake St. Clair.

Water Levels

Since 2000, anglers and boaters have experienced below- or near-average water levels in the connecting waters and Lake Erie. Water levels in the connecting waters are expected to be below the long-term average again in 2013. The effect of lower water levels on fish populations remains unclear. For example, northern pike spawning may be negatively impacted because coastal wetlands are dewatered. Alternatively, surveys suggest that largemouth bass spawning has improved in the shallower conditions present in the canals and marshes around Lake St. Clair since 2000. In Lake St. Clair, recovery of beds of emergent bulrush and wild rice has been apparent during this period of lower water levels. Unfortunately, invasive common reed (*Phragmites australis)* has also expanded its distribution in the St. Clair Flats area during this period. When above average water levels return, increased coastal wetland habitat is expected to positively impact many of the fish species in the connecting waters.

Sport Fishing Regulations

Walleye in Lake Erie are managed cooperatively with other jurisdictions under a harvest quota system. Beginning in 2011, the walleye daily bag limit for anglers in Michigan waters of Lake Erie will be directly related to the Total Allowable Catch (TAC) for walleye determined by the Great Lakes Fishery Commission Lake Erie Committee (LEC) in late March. The table below provides the quota thresholds used to determine the daily bag limit under this new regulation. The walleye daily bag limit regulation will be effective from May 1 through the end of April in the following year. For 2012, the LEC agreed upon a TAC of 3.5 million walleye, with a Michigan quota of 203,000 walleye. This quota sets the Michigan walleye daily possession limit at 6 fish from May 1, 2012 to April 30, 2013. The 2013 daily possession limit for walleye fishing in Michigan waters of Lake Erie will be announced in April. The Michigan walleye minimum size limit (15 inches) and season (open all year) for Lake Erie waters remain unchanged for 2013.

MI walleye quota	Daily bag limit
more than 108,364 fish	6
96,958 to 108,364 fish	5
85,551 to 96,957 fish	4
74,144 to 85,550 fish	3
62,737 to 74,143 fish	2
less than 62,737 fish	1

In 2006, Michigan bass fishing seasons were changed to include a statewide early catch-and-immediate-release (CIR) season. The CIR season opens statewide the last Saturday in April (April 27, 2013) and extends to the opening day for the harvest season. The harvest season for smallmouth and largemouth bass fishing in the Michigan portion of the connecting waters is the third Saturday in June (June 15, 2013) to December 31. The harvest season for the Michigan waters of Lake Erie opens on the Saturday before Memorial Day (May 25 in 2013).

Effective April 1, 2013, the statewide daily possession limit for muskellunge in Michigan has been changed to 1 harvested fish per angler per year. This statewide regulation covers the Great Lakes and connecting waters of Southeast Michigan and has implications for catch-and-release format tournaments where fish are possessed. A non-transferable muskellunge harvest tag is required to harvest any muskellunge. The tag is free and is available at all license vendors. A harvested muskellunge shall be immediately tagged with a validated muskellunge harvest tag.

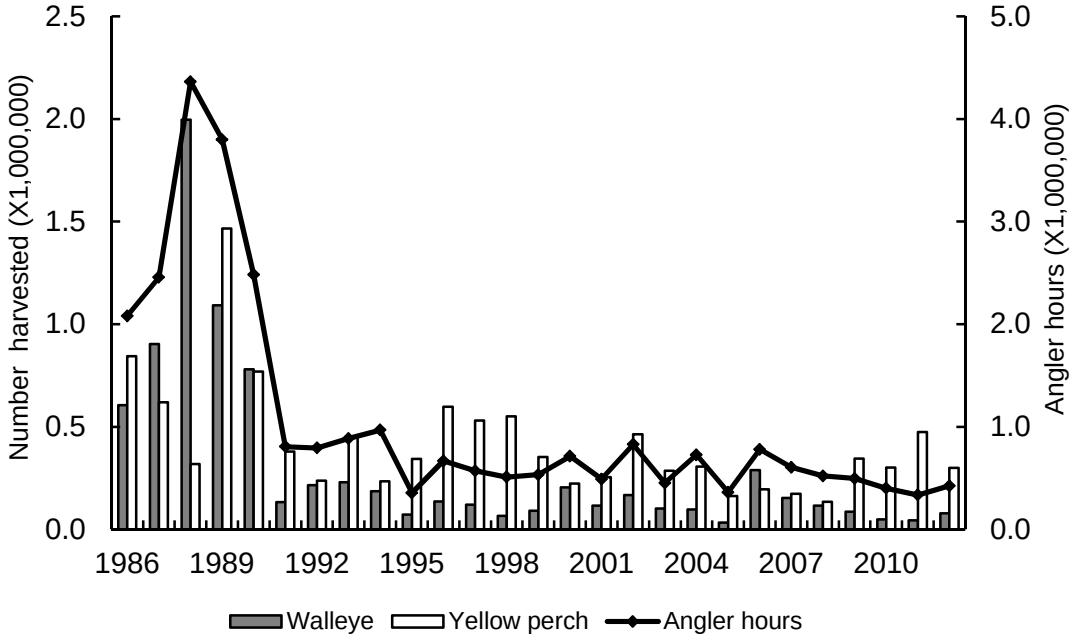

Figure 1.—Estimated harvest and effort for Michigan's Lake Erie sport fishery, 1986-2012.

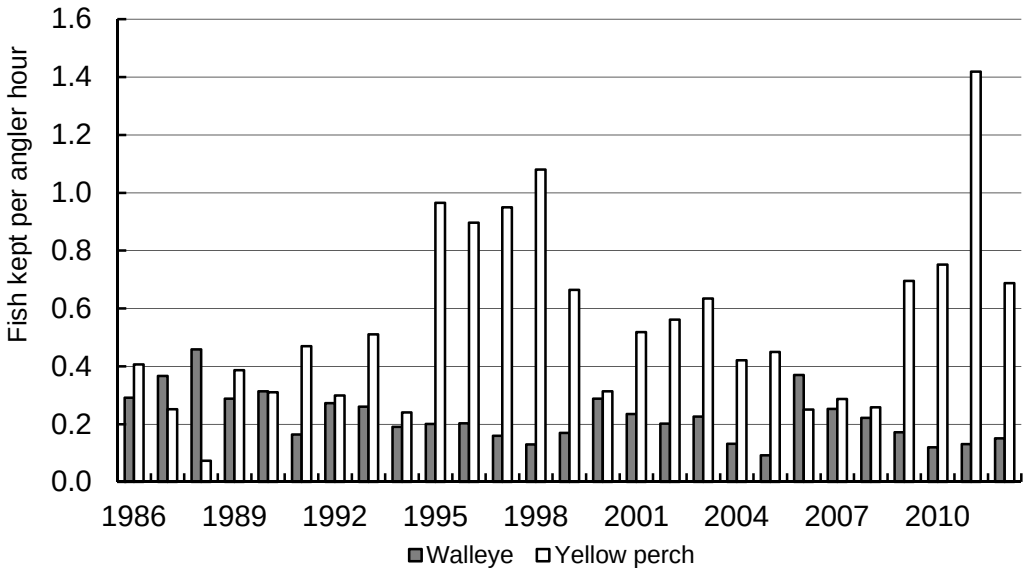

Figure 2.—Walleye and yellow perch harvest rates for Michigan's Lake Erie sport fishery, 1986-2012.

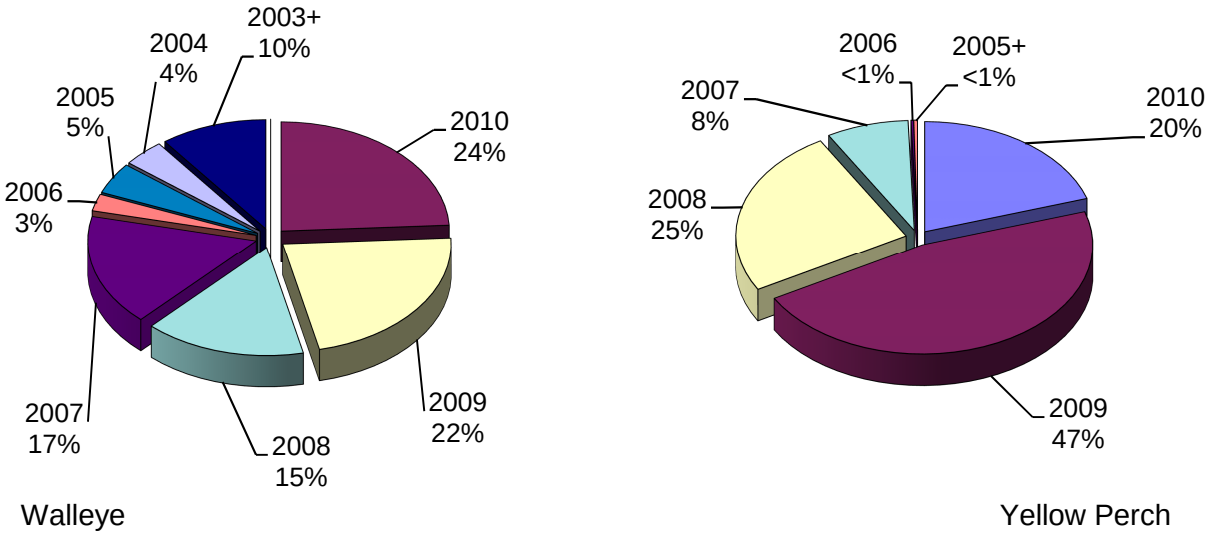

Figure 3.—Year class contribution to Michigan sport harvest for walleye and yellow perch from Lake Erie in 2012.

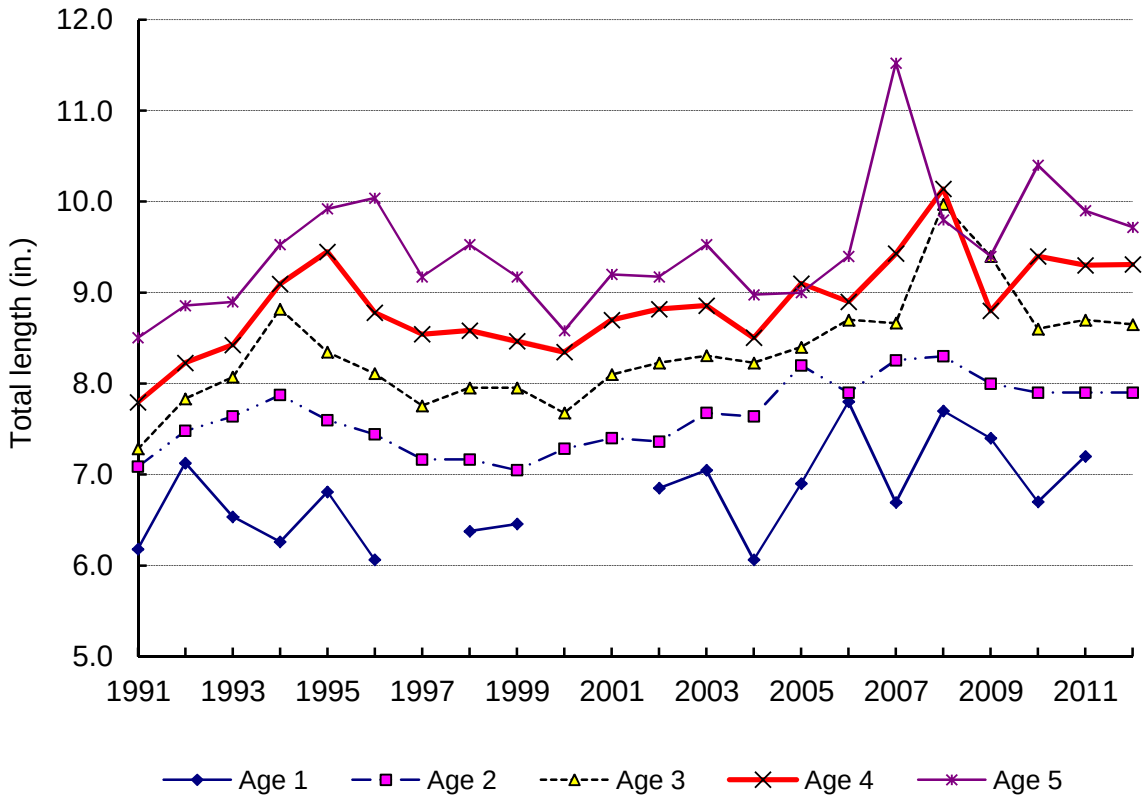

Figure 4.—Mean length at age for sport-harvested yellow perch from Michigan's waters of Lake Erie, 1991-2012.

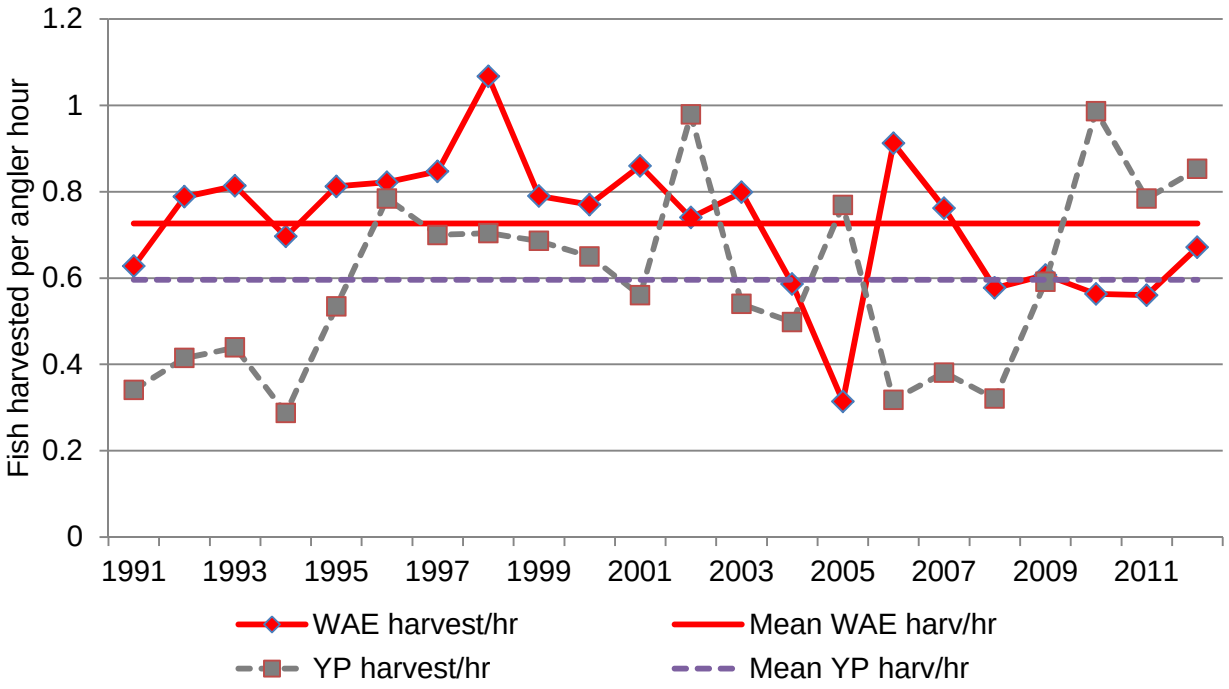

Figure 5.—Michigan Lake Erie charter boat harvest rates for walleye and yellow perch, 1991-2012.

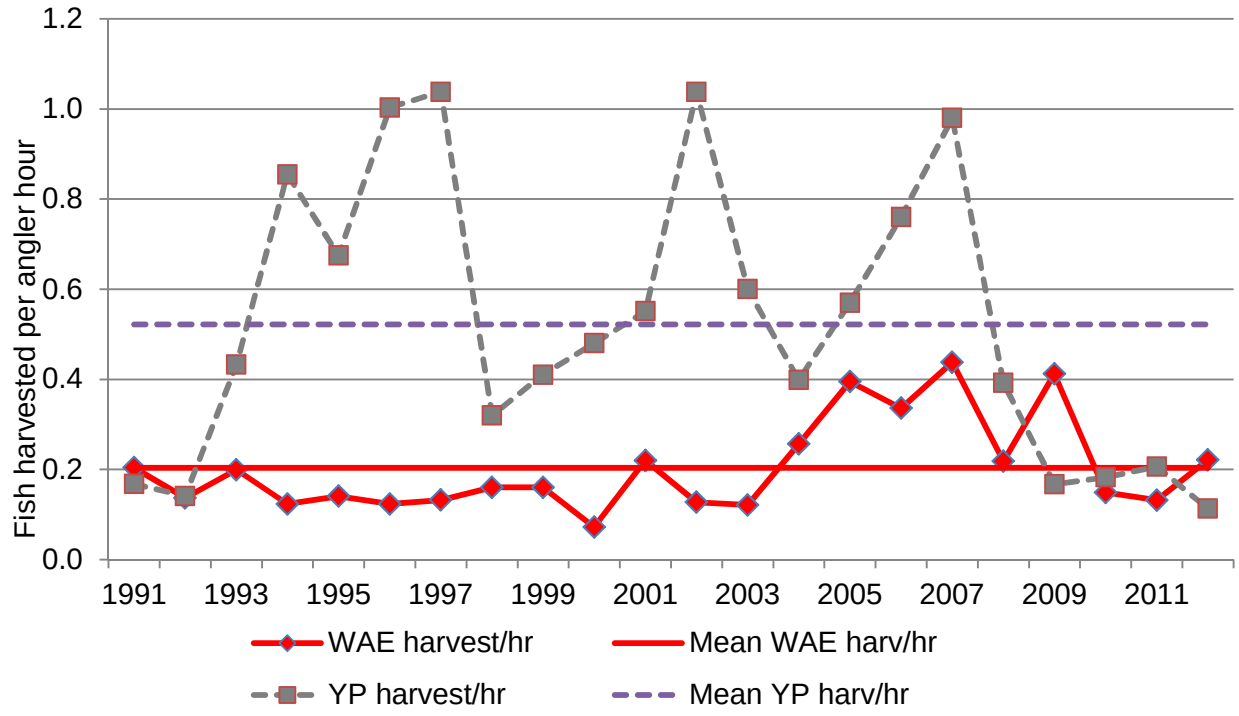

Figure 6.—Michigan St. Clair-Detroit River system charter boat harvest rates walleye and yellow perch, 1991-2012.

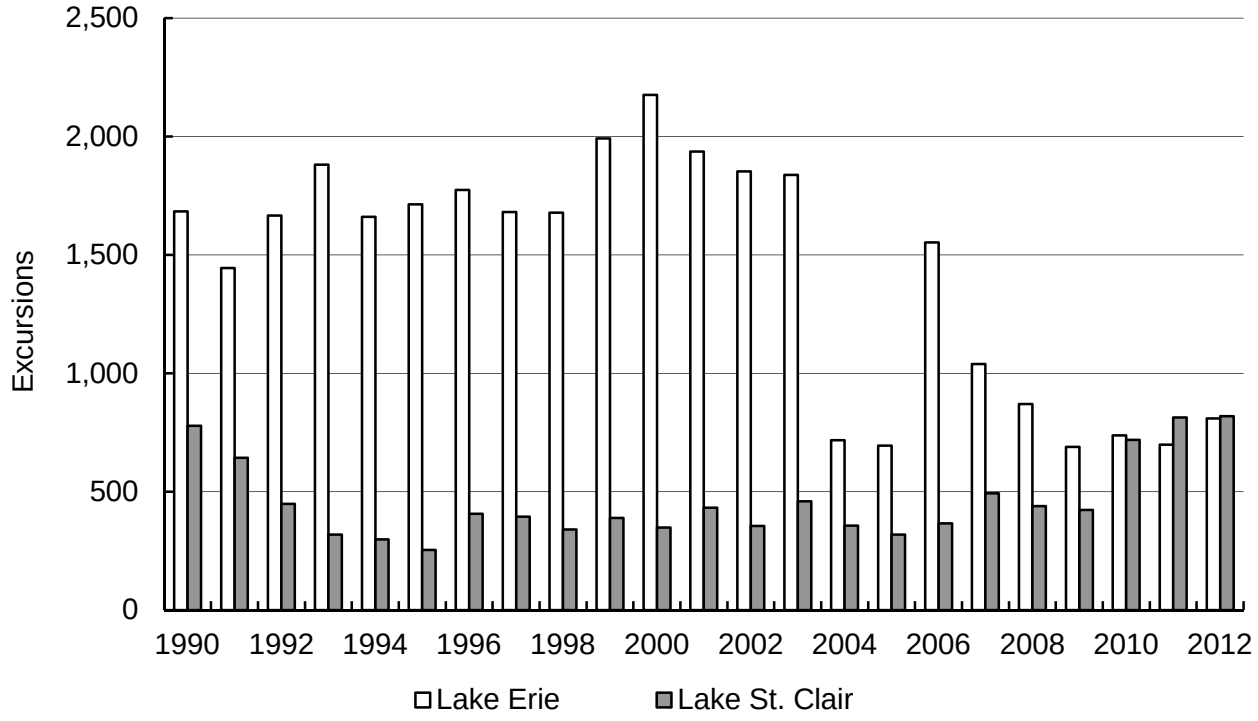

Figure 7.—Reported charter boat excursions on Lake Erie and the St. Clair-Detroit River system, 1990-2012.

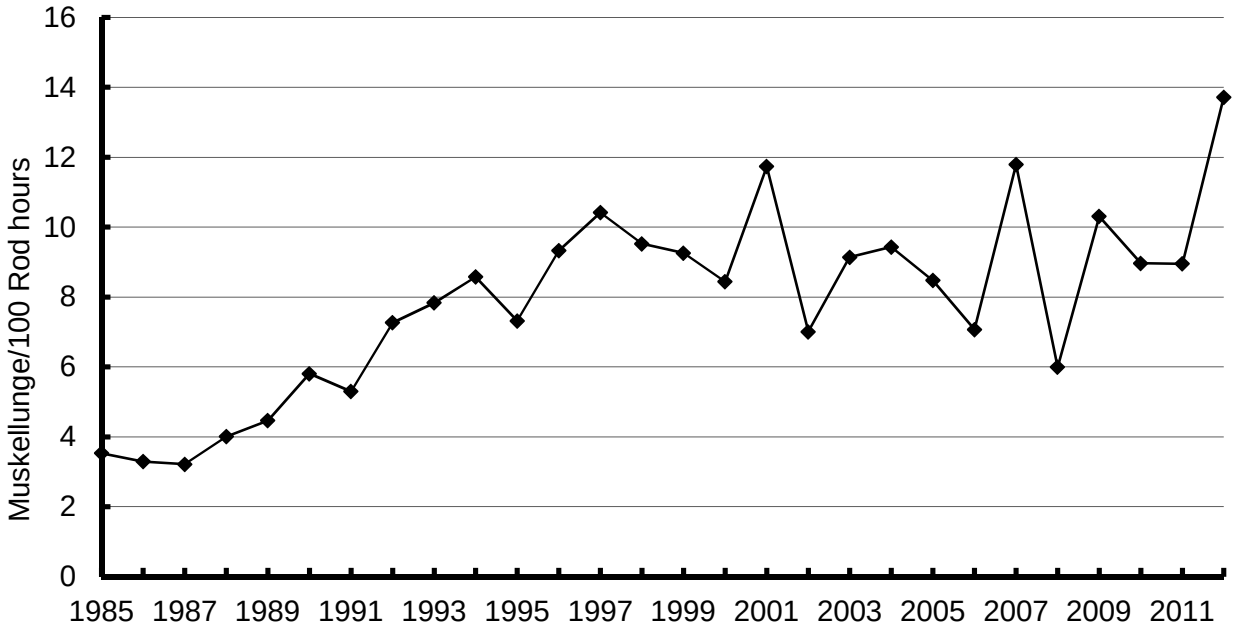

Figure 8.—Lake St. Clair muskellunge catch rate from Angler Diary Program, 1985-2012.

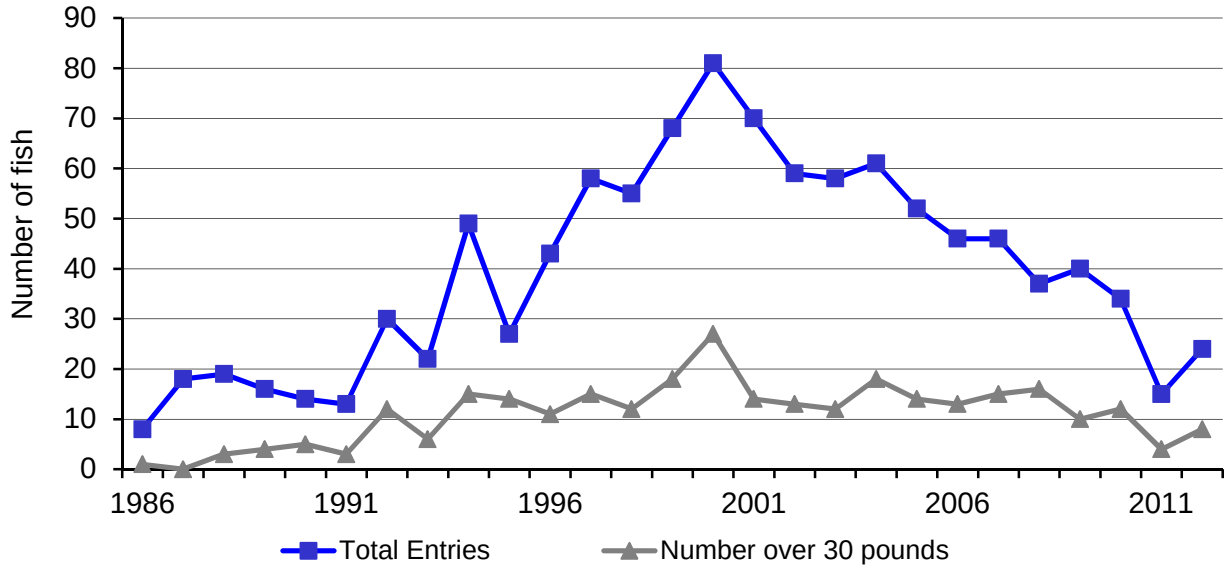

Figure 9.—Lake St. Clair muskellunge entered in the Michigan DNR Master Angler Program, 1986-2012. Values for 1992-2012 represent combined regular and catch-and-release Master Angler categories.

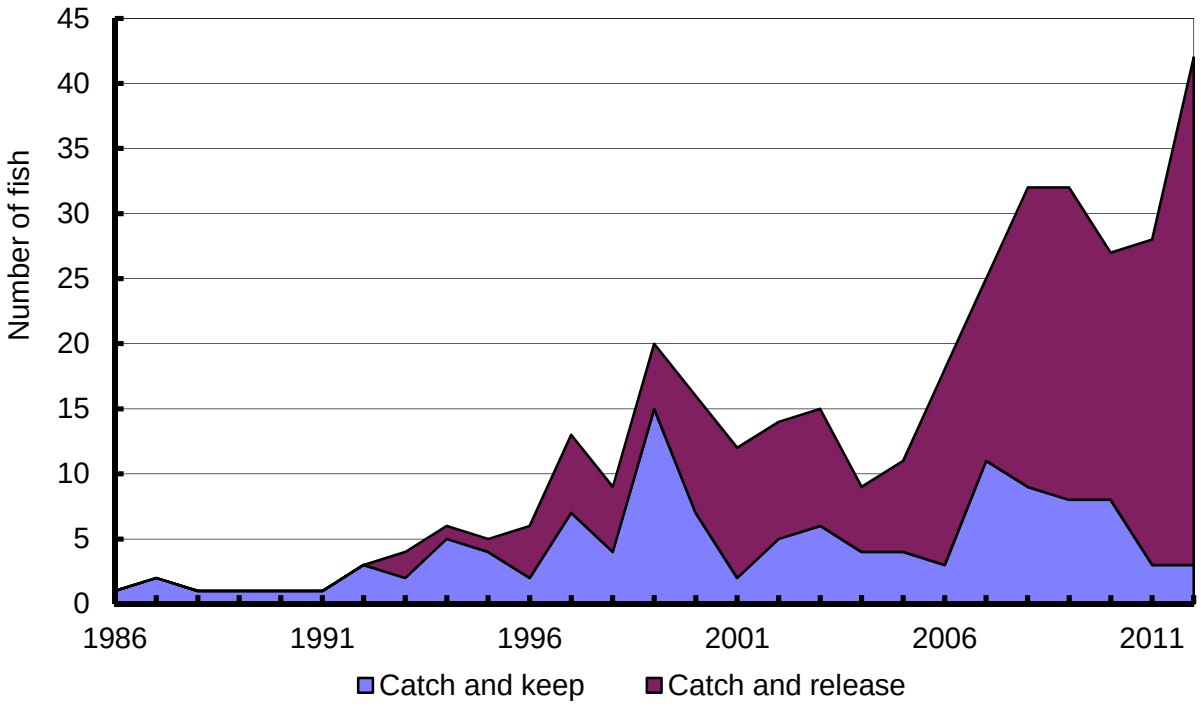

Figure 10.—Lake St. Clair smallmouth bass entered in the Michigan DNR Master Angler Program, 1986-2012.

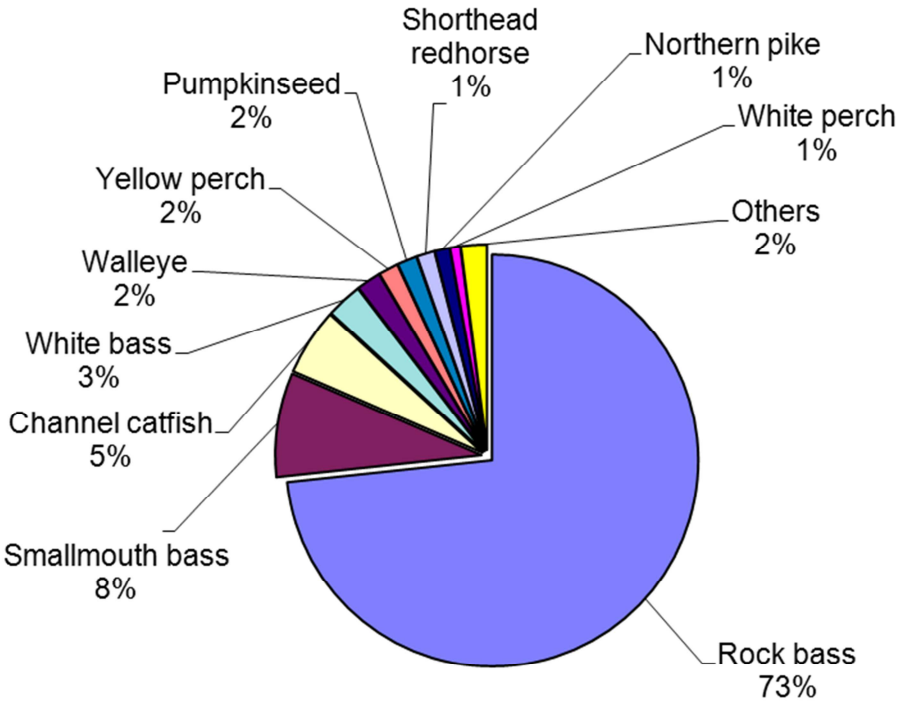

Figure 11.—Catch composition for trap nets fished in Lake St. Clair during May 2012.

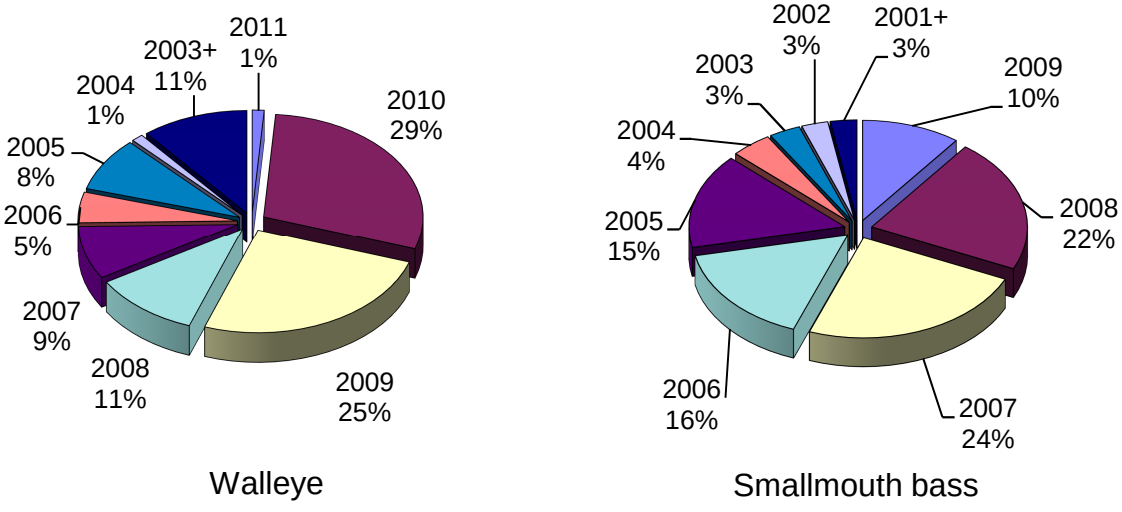

Figure 12.—Contribution by year class to catch in survey trap nets in Lake St. Clair during May 2012.

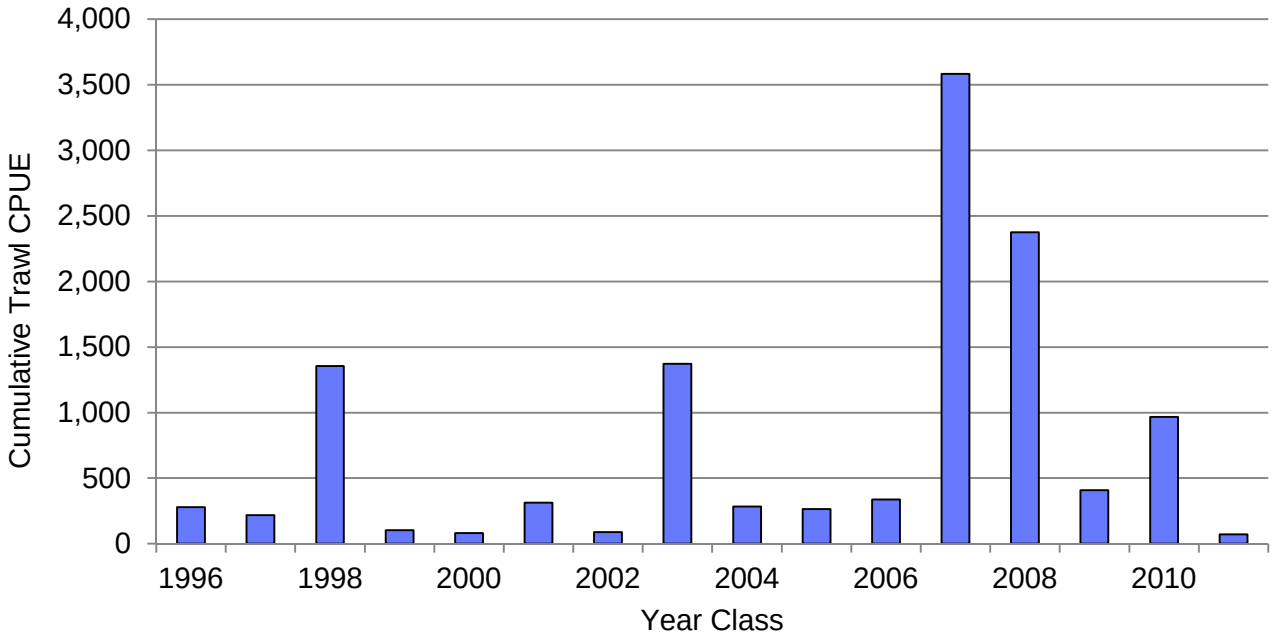

Figure 13.—Year-class strength for yellow perch in Lake St. Clair as indicated by June trawl catch rates summed across years (survey years 1996 to 2012).

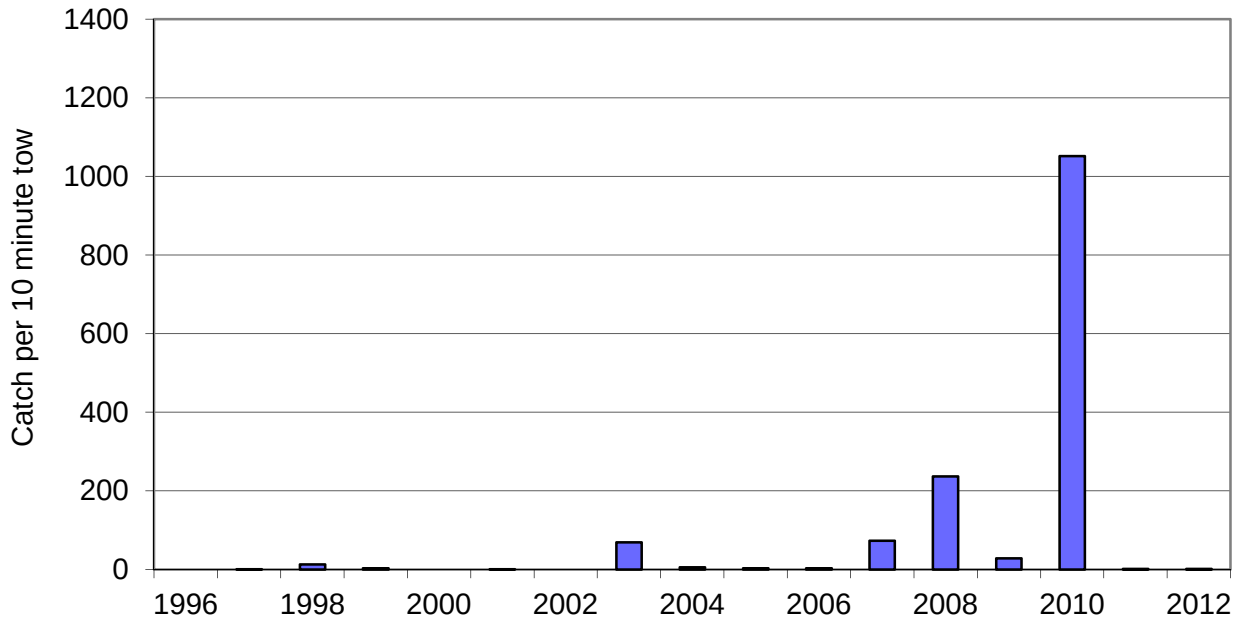

Figure 14.—Year-class strength for yellow perch in Lake St. Clair as indicated by September trawl age 0 catch rates, 1996 to 2012.

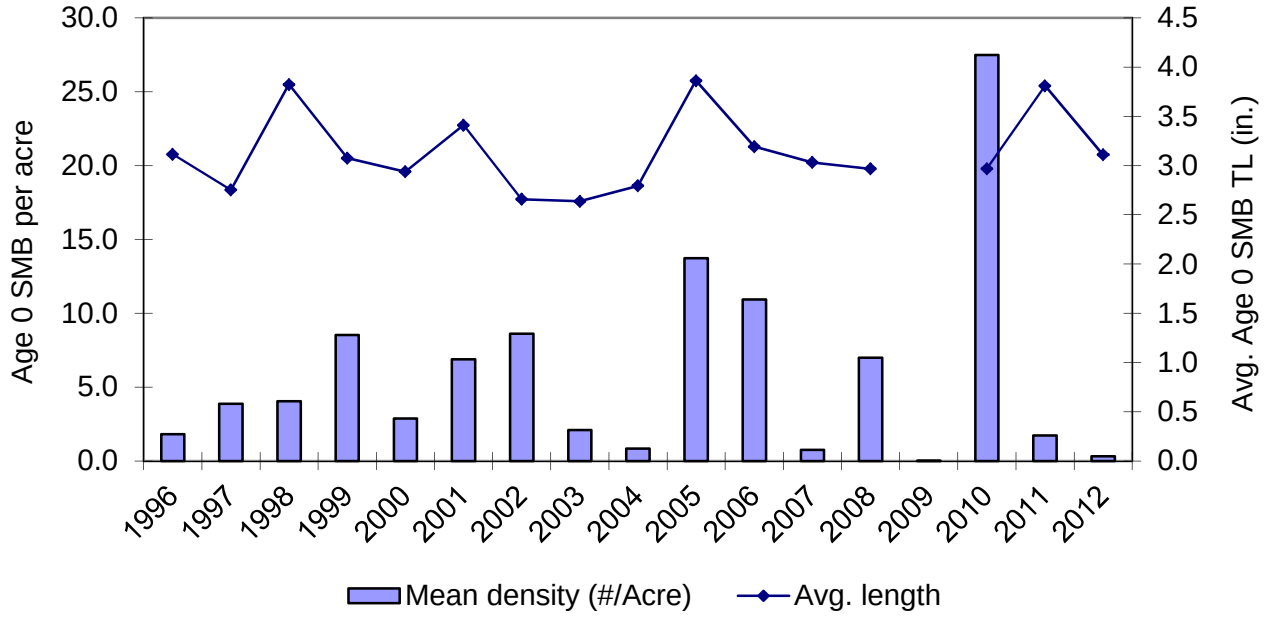

Figure 15.—Year-class strength for Lake St. Clair smallmouth bass as indicated by September trawl catch rates and mean length for young-of-year, 1996 to 2012.

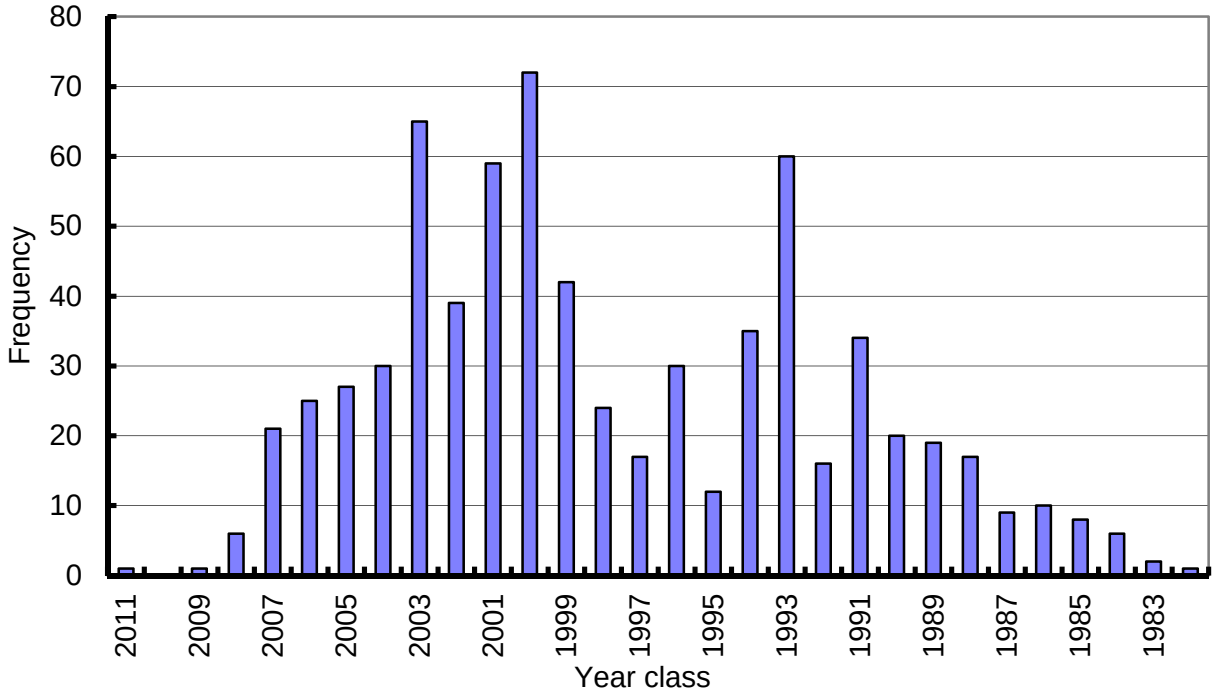

Figure 16.—Hatch year for lake sturgeon (sub-adults >40 in. TL) sampled from Lake St. Clair and St. Clair River from 1997 to 2012 by Lake St. Clair Fisheries Research Station (n=708) based on pectoral fin ray ages.

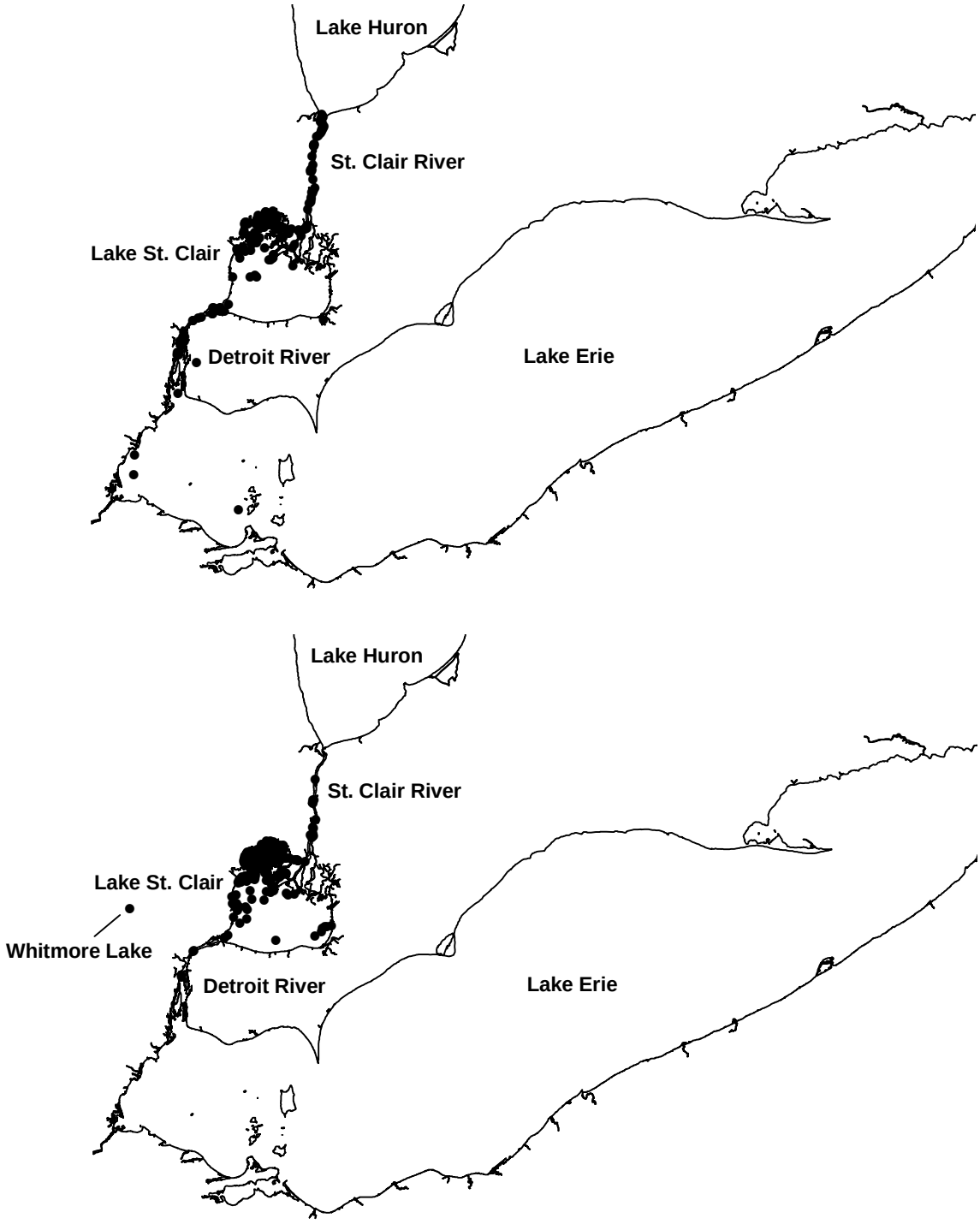

Figure 17.— Geographical distribution of walleye tag recoveries (N=171, top map) and smallmouth bass tag recoveries (N=422, bottom map) for fish tagged during 2002-2012 at the Anchor Bay site in Lake St. Clair. Black dots represent the recovery location of individual fish.

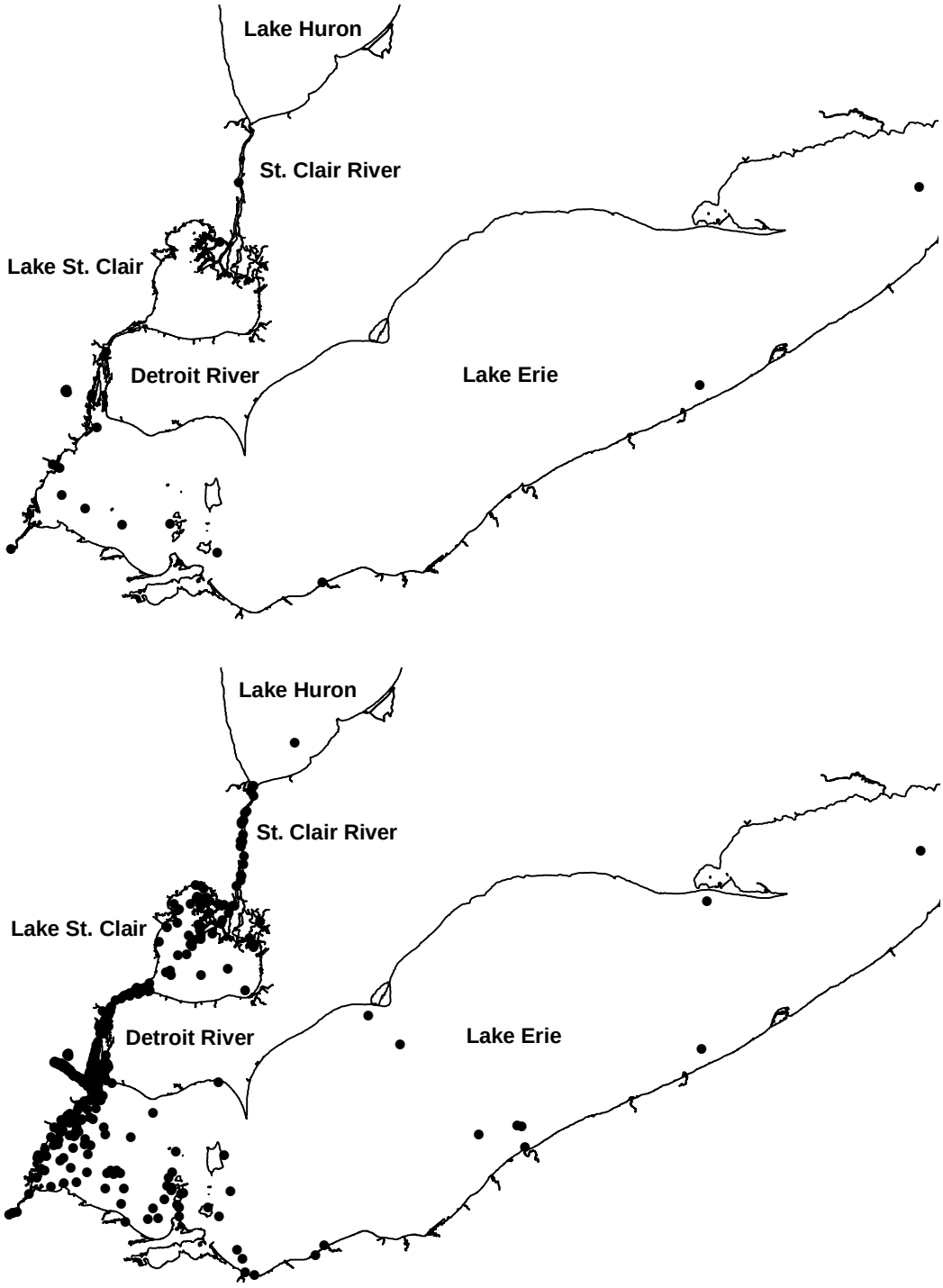

Figure 18.— Geographical distribution of walleye tag recoveries in 2012 from fish tagged during 1994-2010 in the Huron River at Flat Rock, MI (N=25, top map) and for all tag recoveries since 2003 for fish tagged during 1994-2010 in the Huron River (N=468, bottom map). Black dots represent the recovery location of individual fish.

Table 1.—Estimated harvest, harvest rate, effort, and released catch for Michigan's 2012 Lake Erie non-charter boat fishery. Two standard errors in parentheses.

Species	Harvest rate	Month Apr	May	Jun	Jul	Aug	Sep	Oct	Season
HARVEST									
Yellow perch	0.6870 (0.4853)	596	8,184	50,552	70,057	89,141	61,417	19,125	299,071 (134,249)
Walleye	0.1508 (0.1318)	13,920	20,512	28,514	12,937	995	544	26	77,448 (35,577)
Channel catfish	0.1468 (0.0674)	628	5,130	8,168	3,649	4,047	288	286	22,195 (13,943)
White bass	0.0554 (0.0824)	488	13,868	1,483	463	17	0	0	16,320 (12,765)
White perch	0.0204 (0.0147)	0	2,964	1,234	979	1,687	709	466	8,039 (5,705)
Freshwater drum	0.0021 (0.0034)	0	57	396	0	105	212	0	770 (851)
Smallmouth bass	0.0008 (0.0007)	0	0	28	52	67	4	59	211 (179)
Largemouth bass	0.0005 (0.0016)	0	0	59	12	5	0	0	76 (151)
Total Harvest	0.1182 (0.0946)	15,632	50,715	90,435	88,149	96,063	63,175	19,961	424,130 (203,420)
EFFORT									
Angler hours		32,285	85,091	113,231	72,630	45,939	38,496	12,095	399,766 (57,804)
Angler trips		7,394	17,747	23,544	16,380	10,077	7,623	2,719	85,484 (12,210)
RELEASED									
Walleye Legal size	0.0053 (0.0033)	1,178	163	577	139	72	7	0	2,136 (2,037)
Walleye Sub-legal	0.0468 (0.0141)	2,037	5,196	8,887	2,072	326	194	0	18,712 (9,455)
Largemouth bass	0.0384 (0.0187)	0	680	2,821	2,201	1,281	4,389	3,981	15,353 (12,076)
Smallmouth bass	0.0114 (0.0056)	616	1,010	1,494	374	653	408	12	4,567 (4,269)
White bass	0.5146 (0.1415)	10,886	114,999	43,449	30,113	5,931	106	252	205,737 (80,358)

Table 2.—Total harvest per hour, harvest per excursion, number harvested, and fishing effort (angler hours, trips, and charter excursions) for charter boats on Lake Erie, 2012.

Species	Total catch per hour	Catch per excursion	Month							Season
			Apr[1]	May	Jun	Jul	Aug	Sep	Oct[1]	
Harvested										
Rainbow trout	0.0001	0.0025	0	0	2	0	0	0	0	2
Yellow perch	0.8527	20.1444	0	1,521	1,128	3,220	4,181	4,338	1,929	16,317
Walleye	0.6713	15.8593	546	2,133	7,446	2,482	156	45	38	12,846
Small. bass	0.0019	0.0444	0	0	2	3	13	10	8	36
Other	0.0476	1.1235	2	404	267	207	30	0	0	910
Released										
Yellow perch	0.0313	0.7395	0	23	4	115	285	107	65	599
Walleye	0.0760	1.7963	90	320	840	177	8	1	19	1,455
Small. bass	0.0200	0.4728	3	2	3	10	14	31	320	383
Muskellunge	0.0006	0.0136	1	8	2	0	0	0	0	11
Other	0.2011	4.7519	37	1,388	1,558	395	196	178	97	3,849
Angler hours			809	3,441	8,602	3,548	1,102	1,097	536	19,135
Angler trips			151	615	1,677	681	202	211	91	3,628
Charter excursions			42	86	338	148	48	38	27	810

[1]March and April values combined; October, November, and December values combined.

Table 3.—Total harvest per hour, harvest per excursion, number harvested, and fishing effort (angler hours, trips, and charter excursions) for charter boats on the Detroit River, Lake St. Clair, and the St. Clair River, 2012.

Species	Total catch per hour	Catch per excursion	Month							Season
			Apr[1]	May	Jun	Jul	Aug	Sep	Oct[1]	
Harvested										
Rainbow trout	0.0001	0.0012	0	0	0	0	0	1	0	1
Yellow perch	0.1129	2.5311	0	137	90	63	16	1,032	735	2,073
Walleye	0.2212	4.9585	1,949	693	505	638	207	8	61	4,061
Small. bass	0.0785	1.7582	3	15	208	488	528	198	0	1,440
Muskellunge	0.0001	0.0024	0	0	1	0	0	0	1	2
Other	0.0143	0.3199	18	189	9	29	10	6	1	262
Released										
Yellow perch	0.0415	0.9304	3	10	8	18	6	313	404	762
Walleye	0.0200	0.4493	273	64	5	0	25	1	0	368
Small. bass	0.5281	11.8364	137	2,732	2,487	1,579	1,234	936	589	9,694
Muskellunge	0.0630	1.4127	22	9	438	304	132	134	118	1,157
Other	0.1011	2.2662	106	887	744	48	35	34	2	1,856
Angler hours			3,882	2,554	3,542	3,355	2,227	1,732	1,063	18,355
Angler trips			642	391	550	503	350	266	167	2,869
Charter excursions			162	121	161	147	101	78	49	819

[1]March and April values combined; October, November, and December values combined.

Table 4.—Commercial harvest (pounds caught) of selected species from Michigan waters of Lake Erie, 1981 to 2012.

Year	Buffalo	Bullhead	Common carp	Channel catfish	Gizzard shad	Goldfish	Quillback	Freshwater drum	Sucker	White bass	White perch	White-fish	Grand Total
1981	29,774	10,183	661,868	49,147	0	0	0	0	0	14,322	0	0	765,294
1982	22,474	58	676,896	20,354	76,000	0	1,430	608	178	1,742	0	0	799,740
1983	7,837	997	622,604	28,990	665,000	0	1,510	3,555	185	12,042	0	0	1,342,720
1984	789	152	422,571	9,208	1,265,200	0	56,061	116	44	2,041	0	0	1,756,182
1985	7,885	7,340	738,857	9,253	878,000	0	80,018	905	1,378	4,764	0	0	1,728,400
1986	14,732	7,687	367,310	11,183	0	0	2,217	2,032	123	1,397	0	0	406,681
1987	17,814	4,462	685,395	39,603	0	551	1,062	1,825	88	4,142	0	0	754,942
1988	9,471	5,421	417,365	15,208	0	188	1,380	1,180	0	1,049	0	0	451,262
1989	19,549	3,572	194,320	11,481	0	2,951	568	0	0	991	0	0	233,432
1990	40,064	488	158,151	2,025	0	877	0	0	0	0	0	0	201,605
1991	0	704	206,244	1,941	0	466	6,894	0	0	19	8	0	216,276
1992	0	444	251,365	2,929	2,845	1,025	30,204	290	0	357	10	0	289,469
1993	0	844	238,805	9,152	395	501	28,175	4,206	0	1,180	0	0	283,258
1994	0	659	94,662	5,760	2,103	111	8,930	111	0	1,819	0	0	114,155
1995	0	827	329,262	16,168	23	517	66,013	39,673	436	1,850	64	0	454,833
1996	104	828	387,671	24,969	36,996	7,138	73,662	48,218	4,286	2,923	45	0	586,840
1997	91,877	744	325,433	17,936	24,494	10,497	33,937	8,823	72	7,306	4	0	521,123
1998	15,721	2,139	620,015	16,573	4,988	6,862	22,990	24,507	6,180	1,326	0	0	721,301
1999	25,894	7,050	211,055	7,561	6,200	0	0	265	1,945	23	0	0	259,993
2000	27,843	1,742	313,200	14,400	4,595	3,025	0	0	0	1,776	0	0	366,581
2001	24,393	1,197	185,495	16,328	55	8,281	310	2,935	0	492	0	0	239,486
2002	45,367	6,500	336,820	39,778	6,655	4,660	1,300	4,035	0	3,810	0	0	448,925
2003	9,350	900	65,020	7,890	0	0	2,150	0	0	0	0	0	85,310
2004	18,883	1,650	97,380	23,600	5,120	0	3,400	0	550	1,973	0	0	152,556
2005	96,621	5,495	319,700	15,657	14,910	78,333	1,600	331	2,390	1,338	0	0	536,375
2006	85,269	7,277	378,123	42,931	52,382	67,171	5,030	7,876	1,410	5,237	796	10,693	664,195
2007	215,282	12,536	241,356	98,979	242,695	39,140	9,900	67,072	9,712	77,249	35,946	8,800	1,058,667
2008	142,726	31,969	204,881	71,385	134,008	84,361	2,257	137,304	11,244	98,041	56,867	0	975,043
2009	130,295	45,294	196,888	63,725	122,379	90,771	3,900	116,312	11,339	96,456	34,522	9,439	921,320
2010	68,511	47,612	191,321	64,913	0	77,550	107,037	130,533	7,919	37,021	19,524	963	752,904
2011	107,610	57,670	401,034	138,540	0	84,857	84,727	227,873	17,435	47,058	31,949	4,155	1,202,908
2012	221,255	24,450	507,305	129,666	110,800	57,015	93,296	136,679	12,520	96,916	26,070	6,436	1,422,408
Grand Total	1,497,390	298,891	11,048,372	1,027,233	3,655,843	626,848	729,958	967,264	89,434	526,660	205,805	40,486	19,291,776

Table 5.—Commercial harvest (pounds sold) from Michigan waters of Lake Erie in 2012.

Species	Harvest (lbs.)	% of total harvest	Reported market value
Carp	507,305	36%	$135,886
Buffalo	221,255	16%	$103,856
Freshwater drum	136,679	10%	$30,204
Channel catfish	129,666	9%	$58,219
Gizzard shad	110,800	8%	$22,160
White bass	96,916	7%	$64,165
Quillback	93,296	7%	$25,318
Goldfish	57,015	4%	$56,474
White perch	26,070	2%	$11,195
Bullhead	24,450	2%	$11,375
Sucker	12,520	1%	$2,259
Whitefish	6,436	<1%	$8,045
Bowfin	1,915	<1%	$958
Grand Total	1,424,323	100%	$530,115

Table 6.—Number of walleye per net lift in multi-filament gill nets during fall surveys on Michigan waters of Lake Erie.

Year	Total	Survey year																	
Class	CPUE	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1980	92.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1981	72.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1982	306.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1983	34.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1984	147.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1985	177.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1986	297.5	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1987	127.8	1.0	0.5	0.8	–	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–
1988	125.0	0.5	0.8	0.8	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1989	52.6	1.3	0.8	0.8	0.3	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–
1990	136.4	1.5	1.3	1.3	0.0	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–
1991	194.3	11.3	6.8	2.8	1.3	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–
1992	17.0	2.0	0.3	1.5	2.3	1.0	0.3	–	–	–	0.3	–	–	–	–	–	–	–	–
1993	170.3	71.0	11.8	8.0	3.3	1.5	0.3	0.5	–	–	0.3	0.3	–	–	–	–	–	–	–
1994	131.8	63.3	43.0	14.0	4.8	2.8	1.8	0.8	–	–	0.8	0.5	–	–	–	–	–	–	–
1995	10.7	–	3.3	1.3	0.8	1.0	0.8	0.8	0.3	–	0.8	0.8	0.5	0.3	–	–	–	–	–
1996	180.0	–	–	37.5	84.3	30.5	13.3	9.8	1.8	1.0	1.5	0.3	0.0	0.0	–	–	–	–	–
1997	134.4	–	–	–	54.3	34.3	20.3	15.3	3.0	1.0	3.8	1.0	0.3	0.5	–	–	0.3	–	0.3
1998	83.2	–	–	–	–	26.0	29.5	14.8	6.3	1.0	3.8	1.0	0.3	0.0	–	–	0.5	–	0.0
1999	181.6	–	–	–	–	–	57.0	73.3	21.5	5.8	13.0	6.8	1.5	1.3	0.3	0.5	0.3	–	0.3
2000	22.8	–	–	–	–	–	–	6.5	6.3	0.8	4.0	2.0	0.8	1.0	0.0	0.0	0.3	0.3	0.8
2001	134.3	–	–	–	–	–	–	–	42.8	32.5	43.8	10.0	1.8	1.8	1.0	0.0	0.3	0.3	0.0
2002	14.7	–	–	–	–	–	–	–	–	0.8	4.0	6.5	2.3	0.8	0.0	0.0	0.0	0.0	0.3
2003	336.6	–	–	–	–	–	–	–	–	–	81.2	157.5	48.3	28.0	7.5	7.8	1.0	2.0	3.3
2004	12.8	–	–	–	–	–	–	–	–	–	–	3.8	2.3	3.3	0.5	0.3	0.5	0.3	1.8
2005	37.7	–	–	–	–	–	–	–	–	–	–	–	12.3	17.0	2.5	3.8	0.5	0.8	0.8
2006	7.7	–	–	–	–	–	–	–	–	–	–	–	–	1.8	1.3	0.8	0.5	0.5	2.8
2007	124.1	–	–	–	–	–	–	–	–	–	–	–	–	–	69.0	32.8	11.5	4.5	6.3
2008	28.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11.8	5.5	2.0	9.0
2009	33.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12.3	7.0	14.3
2010	63.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	24.0	39.8
2011	21.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	21.8
Total		152.2	68.6	68.8	151.4	98.3	123.3	121.8	82.0	42.9	157.3	190.5	70.0	55.8	82.1	57.8	33.5	41.7	101.0
Net lifts		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Table 7.—Mean catch per trap net lift for species commonly taken during spring trap net surveys in Anchor Bay, Lake St. Clair.

	Survey year											
Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Mean
Black crappie	0.00	0.02	0.35	0.00	0.00	0.00	0.00	0.05	0.02	0.13	0.08	0.06
Bluegill	0.08	0.00	0.11	0.03	0.05	0.00	0.11	0.00	0.02	0.52	0.03	0.09
Bowfin	0.00	0.04	0.05	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Brown bullhead	0.03	0.02	0.03	0.00	0.02	0.02	0.00	0.05	0.04	0.04	0.00	0.03
Channel catfish	3.81	4.14	3.92	2.50	4.33	4.24	6.31	5.41	4.06	2.81	2.63	4.15
Common carp	0.52	0.62	1.30	0.32	0.88	0.60	0.26	0.86	0.87	0.67	0.08	0.69
Freshwater drum	2.07	10.80	3.65	0.70	8.24	1.10	0.80	1.32	2.20	1.26	0.35	3.21
Gizzard shad	0.05	0.08	0.02	0.06	0.02	0.02	0.00	0.00	0.00	0.02	0.15	0.03
Golden redhorse	0.02	0.04	0.04	0.06	0.05	0.02	0.00	0.14	0.00	0.02	0.00	0.04
Lake sturgeon	0.03	0.14	0.07	0.03	0.10	0.00	0.17	0.09	0.04	0.24	0.01	0.09
Largemouth bass	0.36	0.10	0.25	0.06	0.07	0.18	0.20	0.23	0.18	0.52	0.03	0.22
Muskellunge	0.64	0.56	1.41	1.64	1.09	1.02	0.29	1.77	0.37	0.30	0.00	0.91
Northern pike	1.87	0.30	1.30	2.00	2.05	1.30	1.03	1.59	1.72	2.56	0.70	1.57
Pumpkinseed	4.96	1.54	1.12	0.05	0.52	0.82	0.91	0.82	1.00	3.52	0.84	1.53
Quillback carpsucker	0.38	0.30	0.60	0.15	0.91	0.12	0.60	0.86	0.72	0.56	0.06	0.52
Rock bass	49.50	32.00	33.80	12.30	35.10	42.50	40.43	62.91	93.46	100.2	36.35	50.22
Shorthead redhorse	1.84	4.08	1.53	1.44	4.00	0.80	1.97	1.68	2.87	2.87	0.71	2.31
Silver redhorse	0.50	0.66	1.29	1.26	2.98	0.62	1.91	2.91	2.37	3.00	0.26	1.75
Smallmouth bass	6.23	19.20	5.49	3.32	8.21	11.80	5.29	6.91	13.63	16.22	4.01	9.63
Walleye	3.79	3.60	2.67	5.50	5.12	3.58	2.54	4.27	1.91	4.85	1.02	3.78
White bass	0.03	0.10	0.07	0.00	0.14	0.12	0.54	1.00	0.26	0.61	1.56	0.29
White perch	0.20	0.10	0.80	0.12	2.38	0.20	1.17	0.96	0.93	1.81	0.67	0.87
White sucker	0.28	0.20	0.27	0.20	0.43	0.52	0.31	0.14	0.15	0.50	0.03	0.30
Yellow perch	4.89	1.14	5.01	0.97	1.26	2.54	2.94	1.00	0.54	3.02	1.19	2.331
Total all species	82.07	79.78	68.00	32.71	77.97	72.12	67.80	94.95	127.36	146.27	50.94	84.90
Number of net lifts	64	50	55	34	42	50	35	22	54	54	39	
Starting date	5/3	5/28	5/3	5/11	5/5	5/3	5/6	5/8	5/3	4/25	4/25	
Ending date	5/30	6/20	5/26	5/25	5/24	5/22	5/20	5/20	5/24	5/25	5/14	
Starting water temperature (^{0}C)	9	12	8	9	13	9	13	12	14	9	9	
Ending water temperature (^{0}C)	15	16	15	13	13	13	11	14	17	13	14	
Average secchi depth (m)	1.8	2.2	1.2	2.2	1.7	2.6	2.1	1.5	1.7	1.3	1.9	

Table 8.—Mean density (number of fish caught per hectare trawled) for all fish species caught during spring (June) with 10 m headrope index trawls in Anchor Bay, Lake St. Clair.

	Year														
Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Mean
Alewife	2	4	3	3	0	0	0	0	0	0	0	0	0	0	3
Bluntnose minnow	0	11	10	7	1	6	118	1	13	0	3	2	4	3	11
Common carp	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Emerald shiner	0	5	0	11	0	2	0	0	0	32	39	4	18	26	8
Freshwater drum	2	1	5	1	4	3	6	4	3	0	0	0	2	0	3
Johnny darter	0	0	0	0	0	3	2	0	7	2	17	3	4	17	5
Lake sturgeon	0	0	0	1	1	0	0	2	1	0	0	0	0	1	0
Largemouth bass	0	0	1	0	0	0	0	0	4	0	0	1	0	0	0
Logperch	8	0	2	8	0	42	6	0	1	3	29	13	107	10	23
Muskellunge	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0
Northern pike	0	0	1	0	1	0	1	1	0	0	0	0	1	2	0
Shorthead redhorse	7	3	4	7	4	2	6	9	1	0	0	4	1	0	4
Pumpkinseed	0	0	2	0	0	0	0	1	1	0	0	0	0	6	1
Quillback	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	4	4	61	0	14	53	11	6	1	68	110	122	18	284	118
Rock bass	1	13	30	39	18	5	10	33	73	4	2	21	4	5	19
Round goby	6	11	1	30	6	53	10	0	30	1	14	33	24	1	16
Sand shiner	0	14	20	362	0	118	45	2	640	4	15	0	20	36	78
Silver lamprey	1	0	0	0	1	1	0	5	2	0	0	1	0	0	1
Silver redhorse	0	1	0	2	5	2	1	1	2	0	0	1	4	1	1
Smallmouth bass	0	1	3	4	2	2	10	4	13	0	0	2	2	1	3
Spottail shiner	69	935	7	5,730	211	1,777	524	769	53	90	2,705	495	5,093	1,988	1,221
Trout-perch	154	34	11	265	13	108	65	248	7	2	3	23	13	42	98
Walleye	2	1	1	1	1	0	2	12	2	0	1	0	0	2	2
White perch	0	13	1	1	1	2	1	2	0	1	1	0	1	1	2
White sucker	0	3	1	61	2	68	22	5	1	20	16	95	9	39	21
Yellow perch	867	158	1,132	725	306	888	1,107	869	303	3,137	7,144	3,120	3,101	1,865	1,572

Table 9.—Mean density (number of fish caught per hectare trawled) for all fish species caught during fall (September or October) with 10 m headrope index trawls in Anchor Bay, Lake St. Clair.

	Year														
Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Mean
Alewife	2	3	32	0	0	0	1	1	0	0	5	0	0	0	7
Bluntnose minnow	9	15	54	33	13	43	238	61	36	65	198	821	189	7	107
Common carp	0	0	1	2	0	0	1	0	0	0	0	0	1	0	0
Emerald shiner	0	0	0	1	0	41	36	608	0	1	8	2	5	0	42
Freshwater drum	1	1	2	0	1	5	2	3	2	0	2	2	0	1	1
Johnny darter	0	0	0	0	7	0	0	0	1	1	0	0	1	12	3
Lake sturgeon	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
Largemouth bass	3	2	16	36	13	13	29	22	58	50	45	23	9	1	19
Logperch	1	5	18	6	14	38	113	34	9	175	288	120	31	35	58
Muskellunge	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Northern pike	0	0	1	1	1	0	0	0	0	0	0	0	1	0	0
Shorthead redhorse	0	1	2	0	0	0	1	2	1	0	0	0	1	0	0
Pumpkinseed	2	0	5	5	3	1	0	5	8	24	0	0	5	0	4
Quillback	0	1	0	2	1	1	0	0	0	5	0	0	0	0	1
Rainbow smelt	0	1	0	0	4	26	0	1	0	1	139	0	1	2	11
Rock bass	89	93	40	41	35	25	77	67	71	211	21	104	80	5	62
Round goby	10	10	10	99	2	28	14	10	4	7	11	15	0	8	19
Sand shiner	30	15	10	44	507	8,909	3,072	109	29	408	0	0	383	2,516	1,023
Silver lamprey	0	0	0	0	0	0	0	1	1	1	0	0	1	3	0
Silver redhorse	0	0	1	6	0	4	5	4	1	1	2	1	1	0	2
Smallmouth bass	11	6	0	51	7	3	41	32	3	22	2	69	13	8	19
Spottail shiner	200	51	879	2,407	1,068	545	2,410	2,668	983	2,191	981	2,492	1,867	28	1,136
Trout-perch	3	0	0	10	6	59	3	79	1	0	3	105	7	14	70
Walleye	1	1	0	11	0	2	9	3	1	0	2	0	2	0	3
White perch	0	0	0	13	8	6	146	12	31	398	9	9	1	0	39
White sucker	0	1	1	8	1	1	4	6	5	7	6	10	1	0	3
Yellow perch	22	41	114	73	181	48	52	34	220	625	1,100	2,601	36	24	312

Table 10.—Catch rate (number per 10 minute tow) by age for yellow perch in June index trawl tows on Lake St. Clair.

Year	Total	Survey year														
class	CPUE	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1985	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1986	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1987	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1988	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1989	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1990	24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1991	117	5	1	–	–	–	–	–	–	–	–	–	–	–	–	–
1992	51	18	1	0	1	–	1	–	–	–	–	–	–	–	–	–
1993	581	54	54	2	3	–	1	–	–	–	–	–	–	–	–	–
1994	903	53	21	8	11	1	1	–	1	–	–	–	–	–	–	–
1995	148	7	32	12	21	10	3	1	0	–	–	–	–	–	–	–
1996	280	109	70	11	35	10	9	1	1	–	–	–	–	–	–	–
1997	218	4	38	6	53	61	44	4	8	1	–	–	–	–	–	–
1998	1,355	–	650	114	348	84	118	23	18	0	–	–	–	–	–	–
1999	103	–	–	5	26	18	25	23	4	3	0	–	–	–	–	–
2000	82	–	–	–	3	5	5	43	21	2	4	–	–	–	–	–
2001	312	–	–	–	–	131	90	50	25	12	4	0	–	–	–	–
2002	89	–	–	–	–	–	9	11	6	12	51	0	–	–	–	–
2003	1,373	–	–	–	–	–	–	705	397	175	26	46	22	1	–	2
2004	284	–	–	–	–	–	–	–	9	158	18	78	17	1	3	0
2005	265	–	–	–	–	–	–	–	–	34	26	150	36	10	6	3
2006	337	–	–	–	–	–	–	–	–	–	5	108	99	32	84	10
2007	3,583	–	–	–	–	–	–	–	–	–	–	1,003	1,718	647	198	17
2008	2,374	–	–	–	–	–	–	–	–	–	–	–	1,265	625	393	91
2009	409	–	–	–	–	–	–	–	–	–	–	–	–	64	153	193
2010	967	–	–	–	–	–	–	–	–	–	–	–	–	–	533	434
2011	73	–	–	–	–	–	–	–	–	–	–	–	–	–	–	73
Total		250	867	158	500	320	306	860	489	395	134	1,386	3,155	1,378	1,370	824