MICHIGAN DEPARTMENT OF NATURAL RESOURCES
FISHERIES DIVISION

STATUS OF THE FISHERIES

IN MICHIGAN WATERS OF

LAKE ERIE AND LAKE ST. CLAIR

2009

Northern madtom, St. Clair River – photo courtesy of Greg Lashbrook

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Website: http://www.michigan.gov/dnr/0,1607,7-153-10364_10951_11304---,00.html

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Highlights for 2009

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 research studies. Some of the highlights described in detail include:

- Lake Erie yellow perch abundance has been steady in recent years, whereas walleye abundance has been more variable. Walleye experienced very good reproduction in 2003, but very poor or below average reproduction in 2004, 2005, 2006, 2008, and 2009.
- Non-charter angler harvest rates Lake Erie yellow perch were the highest recorded since 1998.
- Michigan non-charter anglers on Lake Erie caught over 118,000 walleye and harvested about 85,000 of those fish. Anglers reported releasing higher numbers of sub-legal size walleye in 2009 (30,612 released). The strong 2003 year class accounted for more than 50% of the Michigan sport harvest.
- Charter boat harvest rates for Lake Erie walleye were more than triple those estimated for non-charter anglers, while yellow perch charter boat harvest rates were similar to those estimated for non-charter anglers.
- Lake St. Clair is the premier Michigan water for trophy muskellunge and smallmouth bass based on the number of entries recorded in the Master Angler program in 2009.
- White perch and walleye dominated the catch in survey trap nets in Lake Erie, while rock bass, smallmouth bass, and channel catfish were the dominant species in the Lake St. Clair trap net survey in 2009. Many of the channel catfish exceed 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 2010

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 will be about the same as last year in Lake Erie, with a strong contribution from the 2006 year class. Although walleye abundance will remain about the same in 2009, the average size of walleye available for anglers will be smaller. The fast growing 2007 year class will continue to contribute to the harvest in Lake Erie and the connecting waters as the summer progresses, but survivors from the strong 2003 year class will be less abundant and more difficult to locate in 2010. Muskellunge and bass numbers tend to remain more stable from year to year and both species should continue to provide excellent fishing opportunities in 2010, 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 are forecasted to remain below or near the long term average in 2010. 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 460,425 fish (Table 1) for Michigan's 2009 Lake Erie sport fishery (non-charter). In combination, walleye and yellow perch accounted for 93% of the total harvest, reflecting their importance in the sport fishery. Non-charter anglers caught an estimated 118,586 walleye in Michigan waters of Lake Erie, and harvested 85,348 of those fish. The 2007 year class (age 2 cohort) contributed heavily to the increased number of sublegal-walleye released in 2009. Although few bass are harvested by Michigan's Lake Erie anglers, over 16,000 legal-size largemouth and smallmouth bass were reported caught and released. Estimated angler effort in 2009 decreased slightly from 2008, but remained within the range of effort observed since 1991 (Figure 1). The walleye harvest rate in 2009 also declined from 2007, and remained below the long-term mean of 0.24 walleye per angler hour (Figure 2). The yellow perch harvest rate increased by 169% in 2009, reaching the highest level seen since 1998. 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, and regional economic conditions have likely contributed to the comparatively low level of fishing effort since 1991.

Biological data were collected from walleye and yellow perch during the 2009 on-site creel survey. The walleye harvest was dominated by the 2003 year class (age 6), which represented 53% of the harvest (Figure 3). The 2007 year class (age 2) was the only other major contributor to the harvest, accounting for 21% of the total. The continued dominance of the 2003 year class reflects both the strength of that year class and the weakness of the other year classes in the fishery. Harvested age 6 walleye averaged 513 mm (20.2 in.) in total length. The overall average length of walleye harvested in the sport fishery in 2009 was 487 mm (19.2 in.).

Yellow perch harvest was dominated by age 2 fish (2007 year class), which accounted for 74% of the total harvest (Figure 3). Age 3 fish (2006 year class) were also a major portion of the harvest and accounted for 16% of the total harvest. Average lengths of harvested age 2 and 3 yellow perch were 203 mm (8.0 in.) and 239 mm (9.4 in.). The overall average length of yellow perch harvested in the sport fishery in 2009 was 211 mm (8.3 in.). The observed mean length at age for yellow perch taken in the Michigan sport fishery declined slightly for most ages in 2009 (Figure 4).

Since 1989, Michigan charter boat operators have been required to report their charter fishing harvest and effort to the MDNR. In 2009, Michigan charter boat anglers harvested 20,736 fish from Lake Erie (Table 2). Walleye (49%) and yellow perch (48%) were the major species harvested. The walleye harvest rate in 2009 increased slightly, but remained below the rates typical for the fishery from 1991 to 2002 (Figure 5). Yellow perch harvest rate increased by 84% from 2008 and was the highest recorded since 2005. The charter boat walleye harvest rate (0.607) was about three times higher than those estimated for non-charter anglers (0.172) in 2009, while the yellow perch charter harvest rate (0.591) was slightly lower than the rate for non-charter boat anglers (0.695).

For the St. Clair-Detroit River system, charter boat anglers harvested 6,489 fish (Table 3). Yellow perch (24%), walleye (58%), and “other” species (18%), made up the bulk of the harvest. The “other” species category is thought to consist mainly of smallmouth bass. Charter boat harvest rates for walleye increased in 2009 to the second highest level seen since 1991 (Figure 6). Yellow perch harvest rates declined by more than 50% in 2009, reaching the lowest level recorded since 1992. The yellow perch harvest total was also the lowest since 1992. Over the last 10 years, the walleye charter harvest rate for Lake Erie has generally been about 3 to 4 times higher than the St. Clair-Detroit River system rate. In 2009, the Lake Erie charter harvest rate was 47% higher than the Lake St. Clair charter harvest rate for walleye. Overall, the lower harvest rate typical for the St. Clair system is a reflection of much lower walleye densities in Lake St. Clair throughout this time period. The decline of the Thames River walleye population has been a contributing factor to lower walleye abundance in St. Clair-Detroit River system since 1990.

The number of reported Michigan charter excursions on Lake Erie decreased about 21% in 2009 (Figure 7). Michigan waters of Lake Erie are shallow and warm up quickly during early summer. Young walleye are more tolerant of warm water than older, larger walleye. In 2009, young walleye (ages 2 and 3) were low in abundance in Lake Erie. As a result, we suspect that some Michigan charter boat captains fished more often in the deeper, cooler waters of Lake Erie in Ohio where older walleye are more frequently encountered. Michigan charter boats are not required to report their fishing trips outside of Michigan waters. Charter boat excursions on the St. Clair-Detroit River system also decreased in 2009. In general, since 1990, roughly 2 to 4 times as many charter excursions report harvesting fish from the Michigan waters of Lake Erie than from the Michigan waters of the St. Clair system. However, it should be noted that catch-and-release charter fishing activity is not recorded and the St. Clair system charter boat fleet includes many operators practicing catch-and-release charter fishing for muskellunge and smallmouth bass.

Muskellunge catch rates derived from the Sport Fishery Diary Program on Lake St. Clair improved through the late 1980’s and early 1990’s and have remained fairly steady over the past 10 years. In 2009, the catch rate rebounded and was the third

highest observed since 1985 (Figure 8). We suspect the drastic changes in catch rates seen over the last 4 years may be more reflective of the number of anglers involved in the diary program, than of actual changes in the muskellunge population.

The quality of the Lake St. Clair muskellunge fishery is reflected in the MDNR's Master Angler Program. While Lake St. Clair continued to dominate the statewide Master Angler entries for muskellunge, with 40 of the 56 total statewide 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), while entries for muskellunge weighing over 30 pounds (or 50" in length) have been fairly stable. We suspect this trend may be a reflection of increased natural mortality and lower population abundance due to disease impacts from muskie pox and viral hemorrhagic septicemia which have been documented in the muskie population. It is also possible that the level of interest in entering medium sized muskellunge from Lake St. Clair in the Master Angler program has waned over the last few years. In either case, the muskie population continues to provide excellent fishing opportunities. We expect that the following factors will continue to contribute to a strong muskie 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 muskies in Lake St. Clair by both sport and charter anglers.

Statistics from the Master Angler program also indicate that Lake St. Clair is one of the premier waterbodies in the state for trophy smallmouth bass. Lake St. Clair accounted for 27% of all smallmouth bass entries statewide in 2009 (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 10 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 a strong catch-and-release ethic among smallmouth bass anglers.

Commercial Fishery Summary

In 2009, 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 2009 commercial harvest included 12 types of fish for a total of 974,830 pounds (Table 4). In combination, common carp (21%), buffalo (14%), freshwater drum (13%), gizzard shad (13%), and white bass (10%) accounted for 71% of the total harvest by weight. The major species in the trap net harvest included buffalo, gizzard shad, freshwater drum, and white bass. The primary species in the seine harvest included common carp and goldfish. The reported harvest of bullhead, goldfish, and suckers in 2009 were the highest since at least 1980 (Table 5). The harvest of buffalo, channel catfish, freshwater drum, white bass, and white perch in 2009 were also near the record harvests observed for those species since 1980. The total value of the 2009 Lake Erie commercial harvest from Michigan waters was estimated at $391,179.

Summary of Netting Surveys

During most years since 1978, the fish community in the Michigan waters of the western basin of Lake Erie has been monitored with spring trap net surveys. In 2009, the trap net survey was heavily affected by rough weather and algae. In fact, the nets were so heavily fouled with algae that the efficiency of the gear for capturing fish was compromised. As a result, catch rate data from the 2009 trap net survey can not be compared with data from prior years. Continued problems with algae fouling of the trap nets could force the trap net locations to be moved to deeper water or termination of the trap net survey.

A total of 6,244 fish were caught in the trap net survey in 2009, with white perch accounting for 48% of the total (Figure 11). Walleye were the second most abundant species in the catch, followed by freshwater drum and yellow perch. Age 6 walleye (2003 year class) accounted for 71% of the trap net walleye catch in 2009 (Figure 12). In comparison, the age distribution of the

smallmouth bass catch was more evenly distributed across ages 2 to 9. Based on mean length-at-age, no trend is evident for Lake Erie walleye growth rates. A total of 818 walleye captured in the trap nets were tagged and released as part of the ongoing interagency tagging project.

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 2009, four net lifts caught a total of 520 walleye. The total walleye catch-per-effort (CPE) for the index sites (57.8) decreased by 30% from 2008 (Table 6). Yearling walleye (2008 year class) accounted for 20% of the catch, with the yearling walleye CPE of 11.8 similar to the CPE recorded for the 2005 year class. The 2007 year class was the most abundant cohort in the survey, accounting for 57% of the catch. This year class will be the largest component of the Michigan Lake Erie walleye fishery in 2010, and most individuals from that cohort will exceed the 15" minimum size this year.

In 2009, the MDNR surveyed adult fish populations in Anchor Bay, Lake St. Clair with trap nets. Four trap nets were fished from May 7 to May 20. A total of 2,091 fish representing 23 species were captured during the survey. Rock bass were numerically dominant, accounting for 66% of the total (Figure 13). Other common species in the nets included smallmouth bass (7%), channel catfish (6%), and walleye (4%).

Ages were estimated for smallmouth bass and walleye based on interpretation of dorsal spine samples. The dominant walleye year class was the 2007 year class (Age 2), accounting for 42% of the total catch (Figure 14). For smallmouth bass, the 2005 (45%), 2004 (14%) and 2006 (12%) year classes accounted for 71% of the total trap net catch. A total of 93 walleye and 144 smallmouth bass were tagged and released at the Anchor Bay trap net site in 2009.

Ages were estimated for northern pike and muskie caught in the Anchor Bay trap nets, based on interpretation of dorsal fin ray sections (Figure 15). For northern pike (n=32), 90% of the fish were 6 years old or younger. In contrast, for muskies (n=37), 76% of the fish were 7 years old or older. The oldest muskie sampled in 2009 was 18 years old.

The trap net survey revealed an abundant population of channel catfish in Anchor Bay with many trophy size individuals. The average weight of channel catfish captured during the 2009 trap net survey was 6.9 pounds. Over 21% of the channel catfish exceeded the minimum size requirement (27 inches total length) for the MDNRE Master Angler program. 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 8 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 rather 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 6 trawl tows were conducted at the Anchor Bay index trawling site in 2009. The spring samples were dominated by spottail shiner, rainbow smelt, and emerald shiner (Table 8). The species with highest mean densities in the fall samples were yellow perch, spottail shiner, and log perch (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). Yellow perch recruitment in 1998, 2003, 2007, and 2008 was strong, with total CPE values for those year classes all over 1,200 fish per tow. Anglers will find the strength of the 2007 and 2008 year classes clearly illustrated by the number of yellow perch in the 4 to 8 inch size range in 2010.

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 2009 year class was less abundant than the previous two year classes, but stronger than the

2004, 2005, and 2006 year classes (Figure 16). In combination, the strong 2007 and 2008 year classes will result in a continued high abundance of small, young, yellow perch in Lake St. Clair in 2010.

Smallmouth bass recruitment patterns are variable based on September trawl catch rates of young-of-year (Figure 17). The 2009 year class appears to have been a complete failure, with no age 0 smallmouth bass captured during the September trawl survey. This is the first zero catch of smallmouth bass young-of-year recorded since at least 1996. 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. Based on young-of-year mean length, the 1998, 2001, 2005, and 2006 year classes should be strong contributors to the smallmouth bass population in Lake St. Clair in 2010.

A total of 102 lake sturgeon were collected during assessment surveys on Lake St. Clair and the St. Clair River in 2009. Sturgeon captured averaged 1,103 mm (43.4 in.) in total length, with a range from 475 mm (18.7 in.) to 1,664 mm (65.5 in.) Ages were estimated for 79 sturgeon based on pectoral fin ray sections and a correction factor was applied based on the published relationship between otolith and fin ray ages for lake sturgeon. Twenty-nine year classes were represented with ages ranging from 1 to 50 years. Combined age samples from 1997-2009 indicate that survival of lake sturgeon spawned in the 1970's and 1980's has been fairly consistent, but lake sturgeon spawned in the 1950's and 60's are less abundant (Figure 18). This may be a result of improved water quality after the Clean Water Act of 1972. More conservative lake sturgeon sport fishing regulations implemented by Michigan in 1983 could also be a factor in the increased survival.

Fish Tagging Studies

In 2009, a total of 911 walleye were tagged with non-reward jaw tags by Michigan at one Lake Erie and one Lake St. Clair site. A total of 23 non-reward tags placed on walleye in 2009 were recovered by fishermen for a single season reporting rate of 2.5%. This is only slightly lower than the rate observed for 2008 tags (2.8%). The 2009 site-specific reporting rate varied from a high of 5.4% (6.8% in 2008) at the Anchor Bay site, to a low of 2.2% for the Monroe site in Michigan waters of Western Lake Erie (2.6% in 2008). We suspect tag recovery rate has declined due to reduced fishing effort and catch stimulated by lower walleye populations resulting from minimal reproductive success from 2004 through 2006. The distribution of tag recoveries from Michigan's tagging sites on Lake Erie (Figure 19) indicates that walleye tagged at separated locations at spawning time belong to different genetic stocks. Walleye tagged in the Huron River at Flat Rock tend to be captured along the south shore of Lake Erie and on Michigan's side of Lake St. Clair. However, walleye tagged in Lake Erie off Monroe show a stronger tendency to be caught in the St. Clair River and along the north shore of Lake Erie. In general, the interagency tagging study continues to provide evidence of substantial movement of walleye from spawning locations in Lake Erie through the St. Clair connecting waters.

Legal size walleye (93 fish) and smallmouth bass (144 fish) captured in survey trap nets in Anchor Bay during May, 2009 were tagged and released. A total of 5 walleye and 10 smallmouth bass tagged in 2009 were recovered by anglers and reported to MDNR. A map showing the geographical distribution of walleye tag recoveries in 2009 for walleye tagged in Anchor Bay is presented in Figure 20. On average, recaptured walleyes tagged prior to 2009 had traveled 23.7 km from the Anchor Bay tag site, while those tagged in 2009 had traveled 21.5 km. The tagged walleye recovered by anglers averaged slightly smaller in total length at tagging (475 mm) compared to the overall tagged population (481 mm). This is the same relationship that we observed in 2008. The seasonal pattern of walleye tag recoveries differed between years. Recoveries for walleye tagged in 2009 were reported in June, July, August and October. They came from Lake St. Clair, the St. Clair River, and southern Lake Huron. Recoveries in 2009 of walleye tagged in Anchor Bay in 2002-2008 were reported during May, June, and July and were caught from Lake St. Clair, the St. Clair River, and southern Lake Huron. 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. However, it is obvious from tag recovery patterns that many individuals from the Lake Erie spawning stocks migrate within that lake, never venturing into the Detroit River and Lake St. Clair. Only one of the walleye tagged at the Anchor Bay site has been recovered in a subsequent year on a known spawning ground,

the Maumee River, so their natal spawning site is still a matter of conjecture.

In 2008 tag reporting for walleye tagged at Lake St. Clair was 6.8% compared to 9.0% for smallmouth bass. In 2009, there was an apparent decline in fishing pressure or success because walleye tag reporting decreased to 1.2% and smallmouth bass reporting decreased to 6.9%. Factors involved in this change are not clear, but angler behavior likely plays a role.

A total of 2,054 lake sturgeon have been tagged and released on the St. Clair River and Lake St. Clair since 1996. To date, 258 tagged lake sturgeon have been recaptured with survey gear or reported by fishermen. A total of 153 tagged sturgeon have been recovered with survey setlines in the North Channel. One was recovered in survey trap nets in Anchor Bay, while 11 have been recaptured in assessment trawls on Lake St. Clair. Sport anglers have reported 64 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 from the tag site. All other recaptures have occurred within 10 km of the tag sites. Trawling has accounted for the capture of 43% of the sturgeon tagged and released during this study, but only 25 recoveries (10%) have been fish originally caught in a trawl on Lake St. Clair. This may be 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 2001, 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 or near the long-term average again in 2010. 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 over the past several years. Unfortunately, invasive common reed (*Phragmites australis)* has also expanded its distribution in the St. Clair Flats area during this period of low water. 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. In response to lower abundances and reduced harvest quotas, the Michigan sport fishing regulations for walleye in Lake Erie were more restrictive from 2004-2005. However, walleye abundance rebounded due to strong spawning success in 2003. As a result, since April 2006, walleye fishing has been open all year for Michigan waters of Lake Erie. The daily bag limit remains at 5 fish, while the walleye minimum size limit is 15 inches. While walleye abundance in Lake Erie has declined over the last couple years and will remain low in 2010, we do not anticipate a need for modifying the current Michigan Lake Erie sport fishing regulations at this time. However, current projections for 2011 indicate abundance will continue to decline and could approach levels that will necessitate more restrictive regulations to ensure the fishery remains within the allocated quota.

In 2006, Michigan bass fishing seasons were changed to include a statewide early catch-and-immediate-release (CIR) season. This change remains in effect through at least 2010. The CIR season opens statewide the last Saturday in April (April 24, 2010) 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 19, 2010) to December 31. The harvest season for the Michigan waters of Lake Erie opens on the Saturday before Memorial Day (May 29 in 2010).

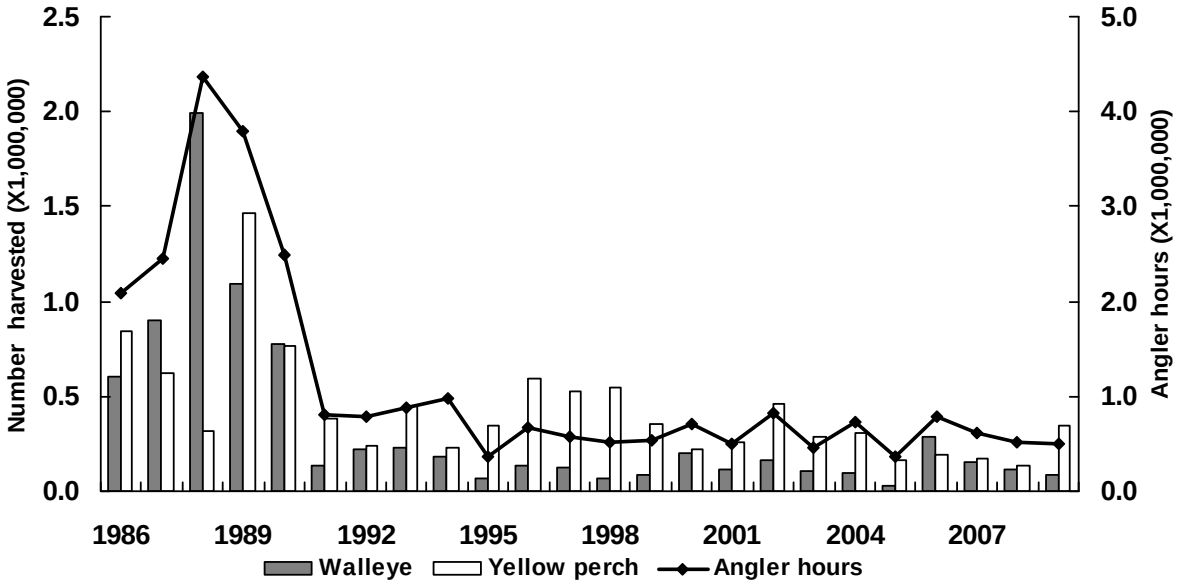

Figure 1.—Estimated harvest and effort for Michigan's Lake Erie sport fishery, 1986-2009.

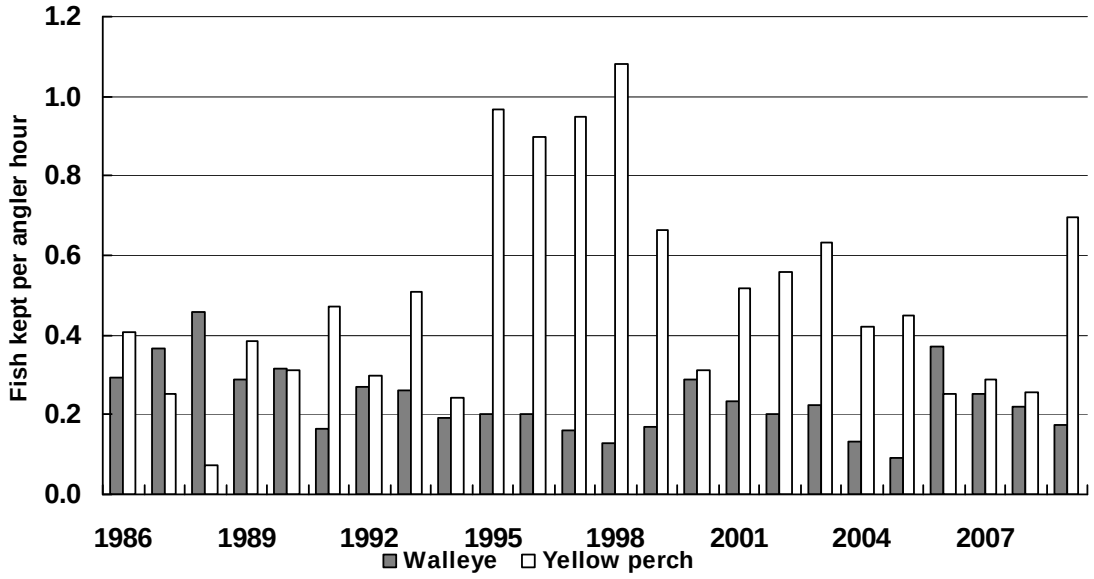

Figure 2.—Walleye and yellow perch harvest rates for Michigan's Lake Erie sport fishery, 1986-2009.

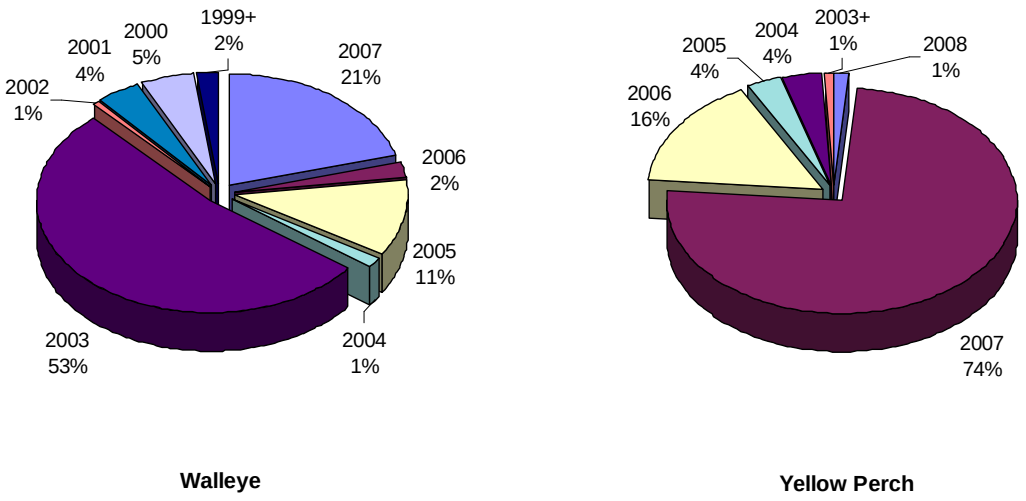

Figure 3.—Year-class contribution to Michigan sport harvest for walleye and yellow perch from Lake Erie in 2009.

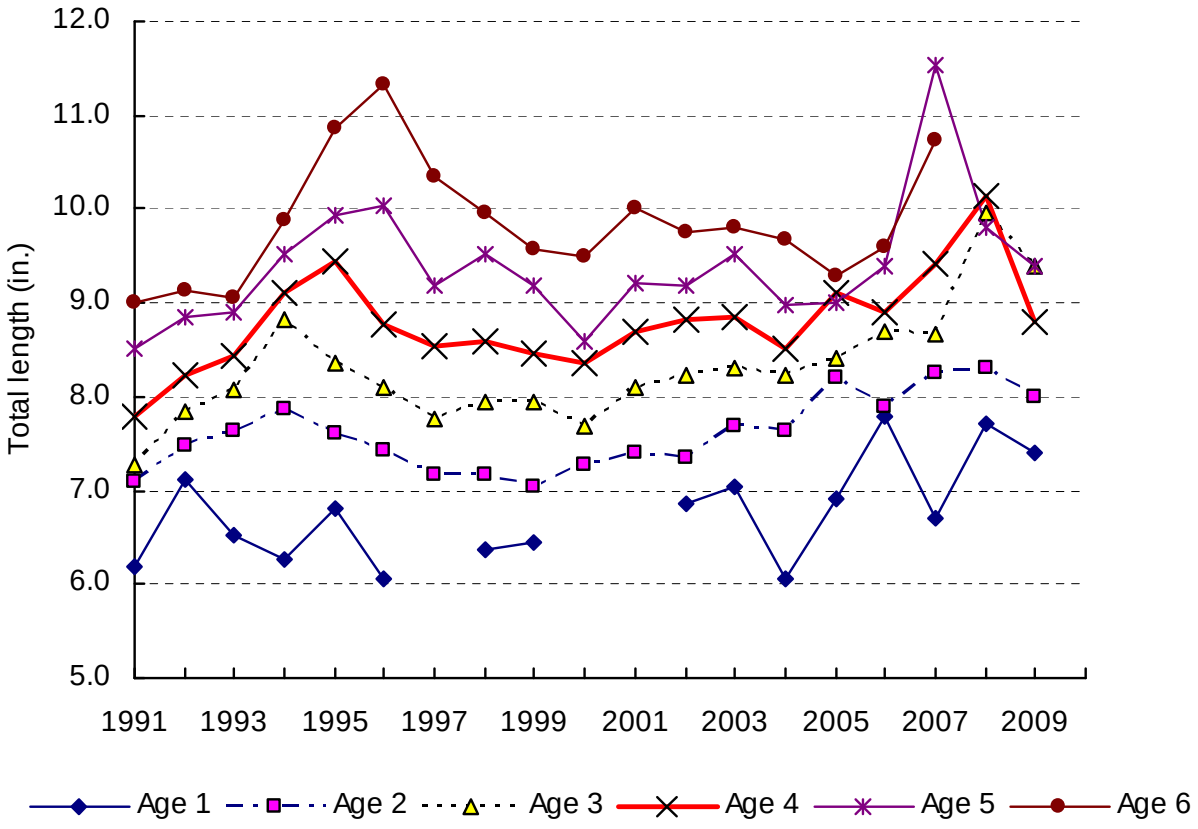

Figure 4.—Mean length at age for sport-harvested yellow perch from Michigan's waters of Lake Erie, 1991-2009.

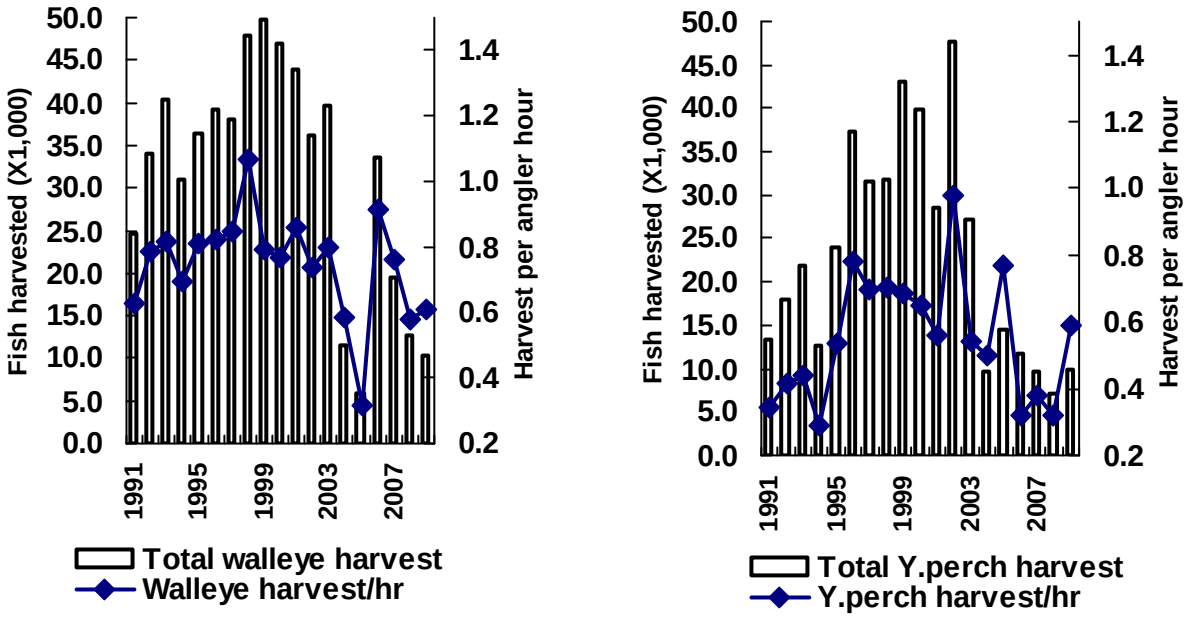

Figure 5.—Michigan charter boat harvest and harvest rates for Lake Erie, 1991-2009.

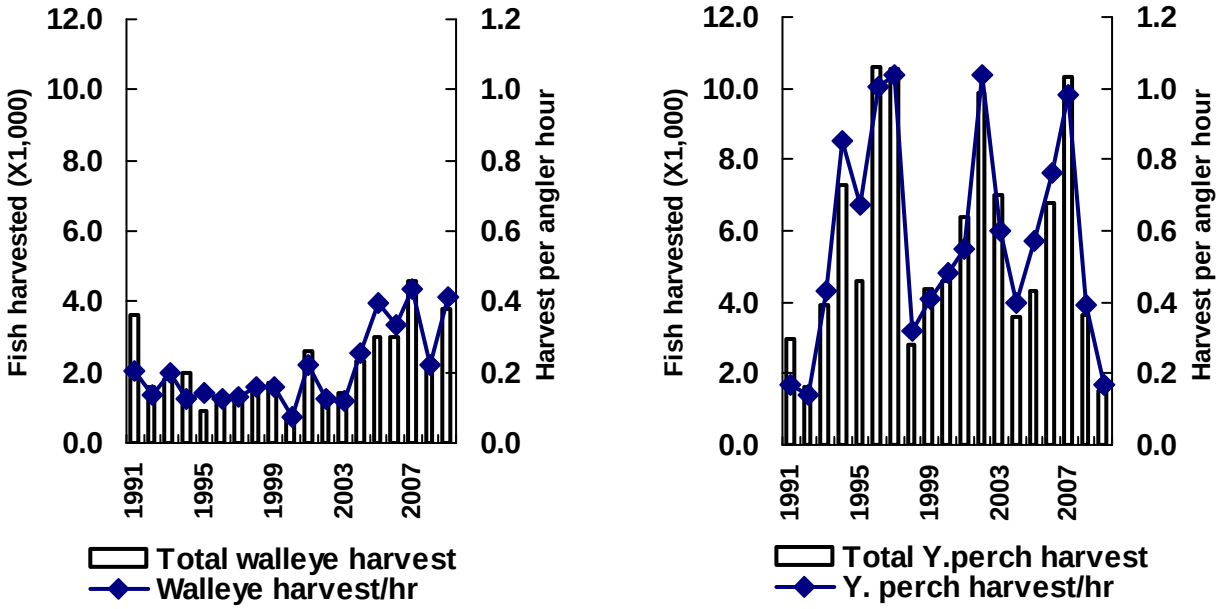

Figure 6.—Michigan charter boat harvest and harvest rates for the St. Clair-Detroit River system, 1991-2009.

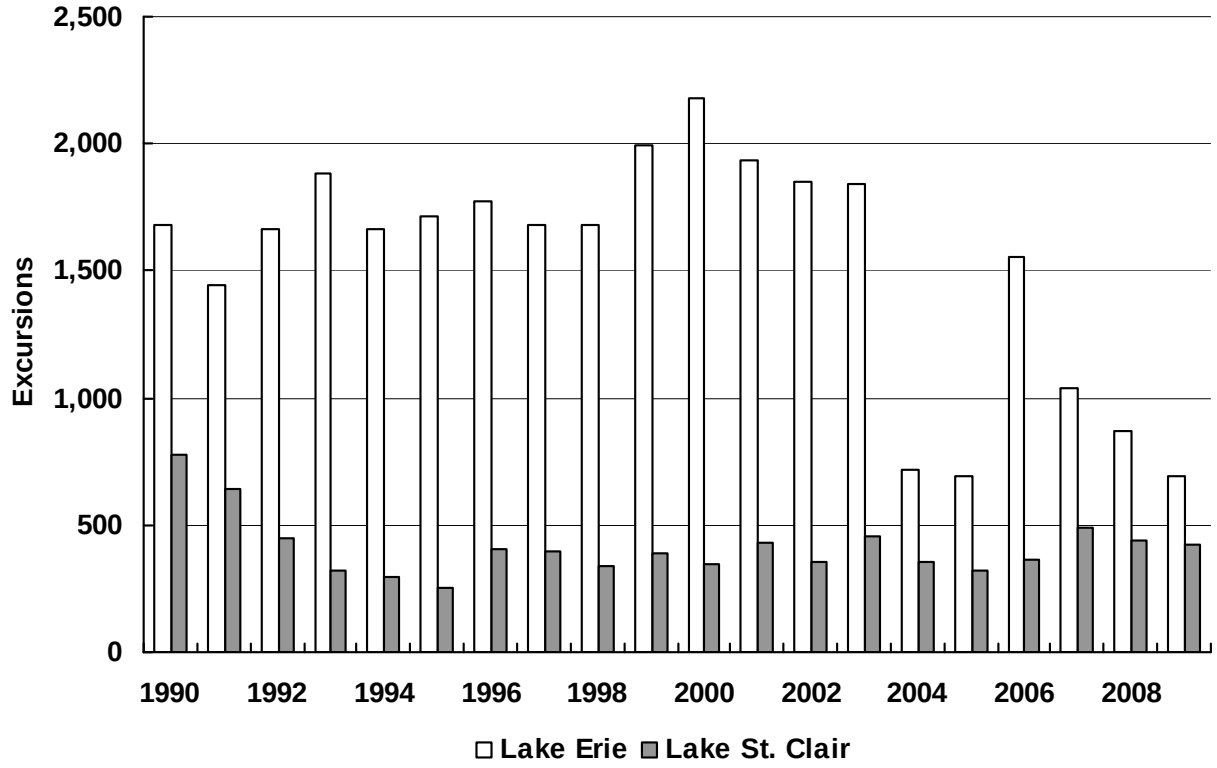

Figure 7.—Reported charter boat excursions on Lake Erie and the St. Clair-Detroit River system, 1990-2009.

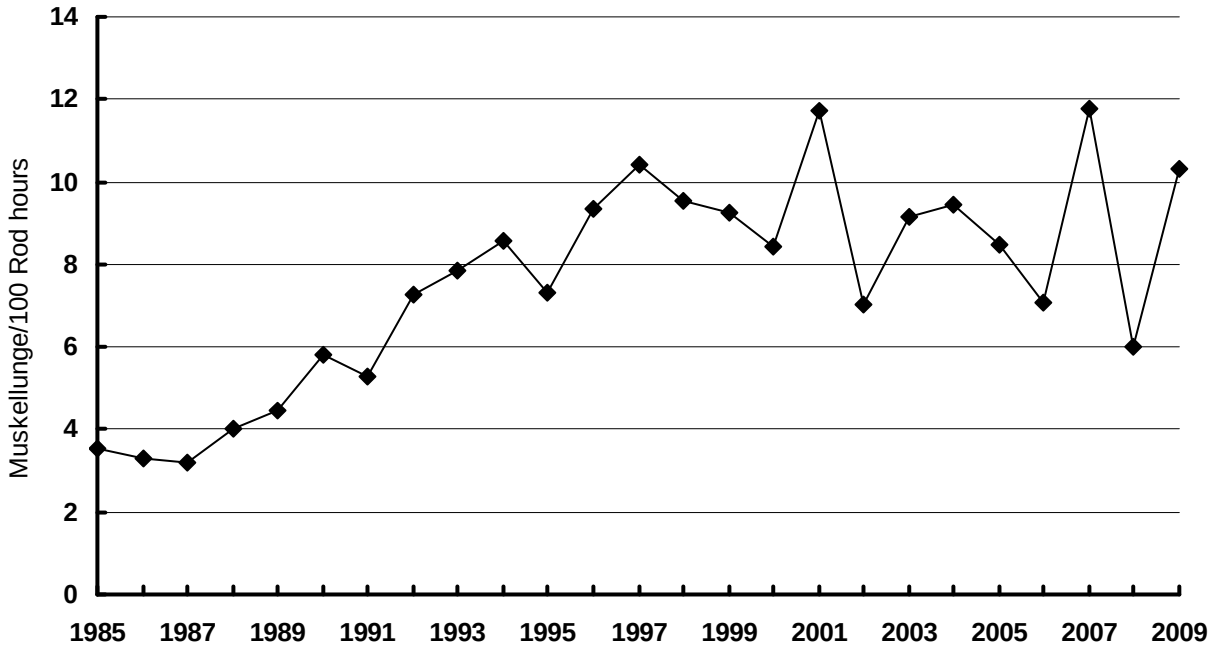

Figure 8.—Lake St. Clair muskellunge catch rate from the Sport Fishery Diary Program, 1985-2009.

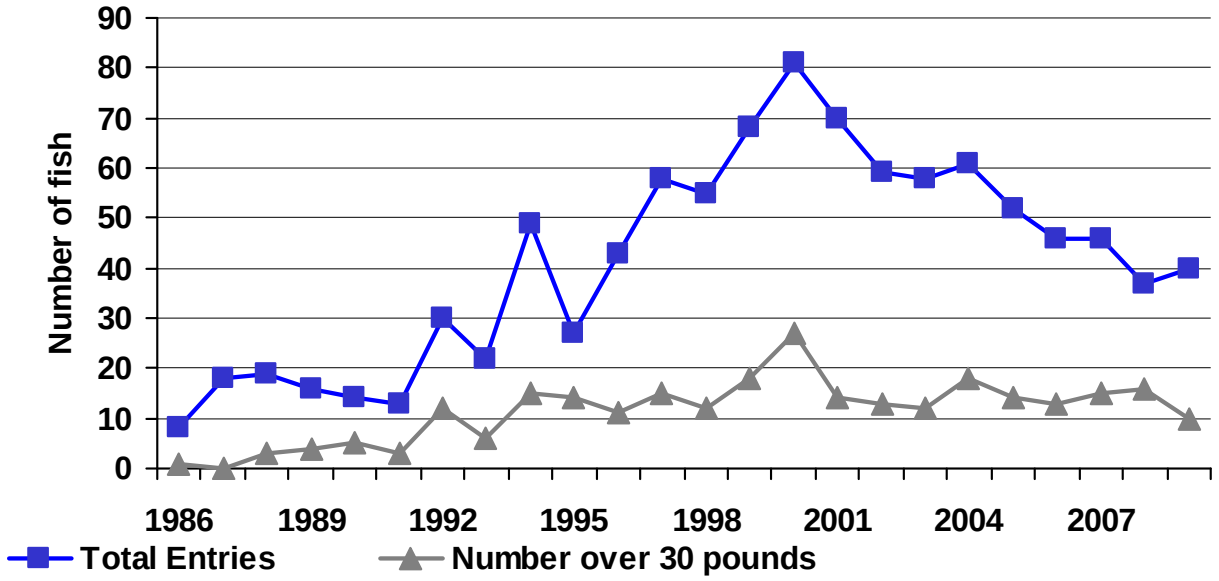

Figure 9.—Lake St. Clair muskellunge entered in the Michigan DNR Master Angler Program, 1986-2009. Values for 1992-2009 represent combined regular and catch-and-release Master Angler categories.

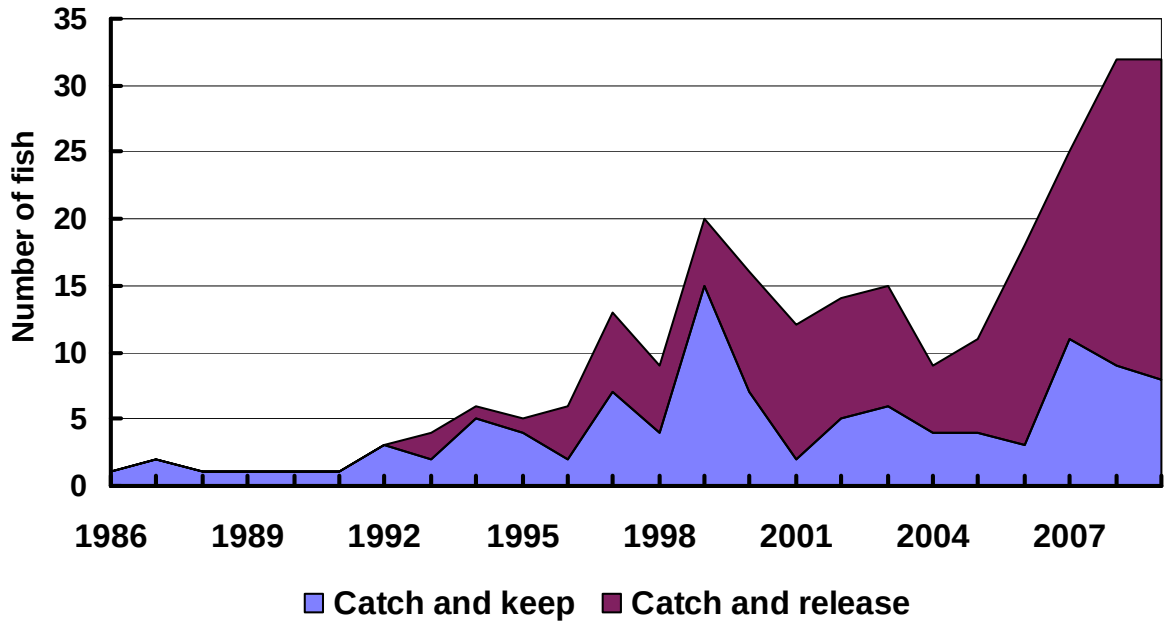

Figure 10.—Lake St. Clair smallmouth bass entered in the Michigan DNR Master Angler Program, 1986-2009.

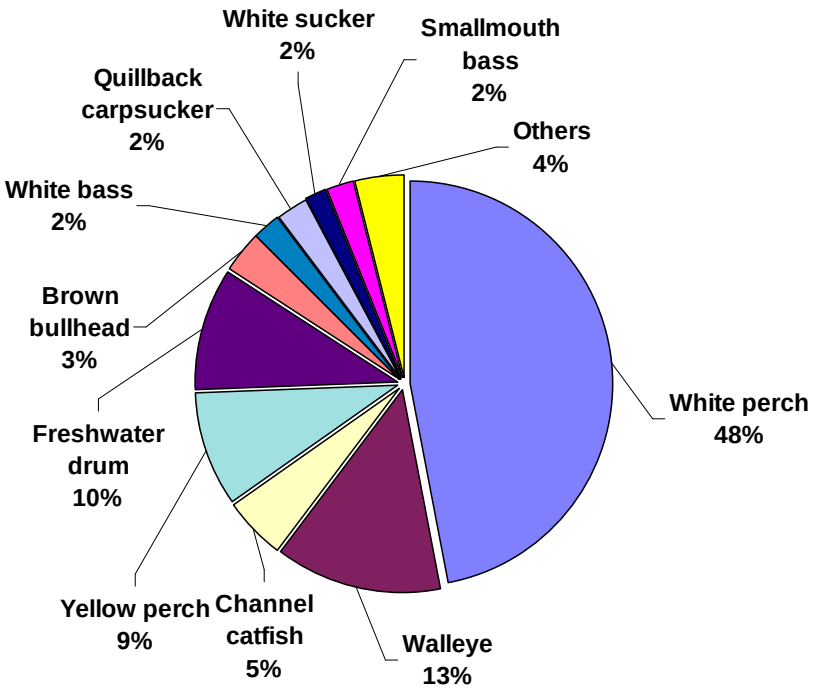

Figure 11 —Catch composition for trap nets fished in Lake Erie during April 2009.

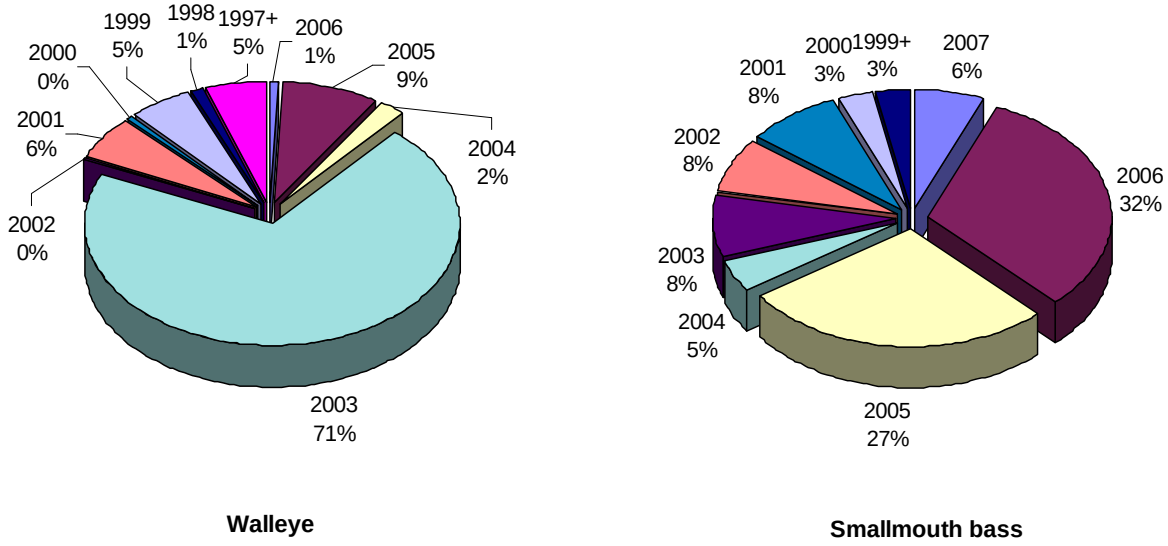

Figure 12 —Contribution by year class to catch in survey trap nets in Lake Erie, April 2009.

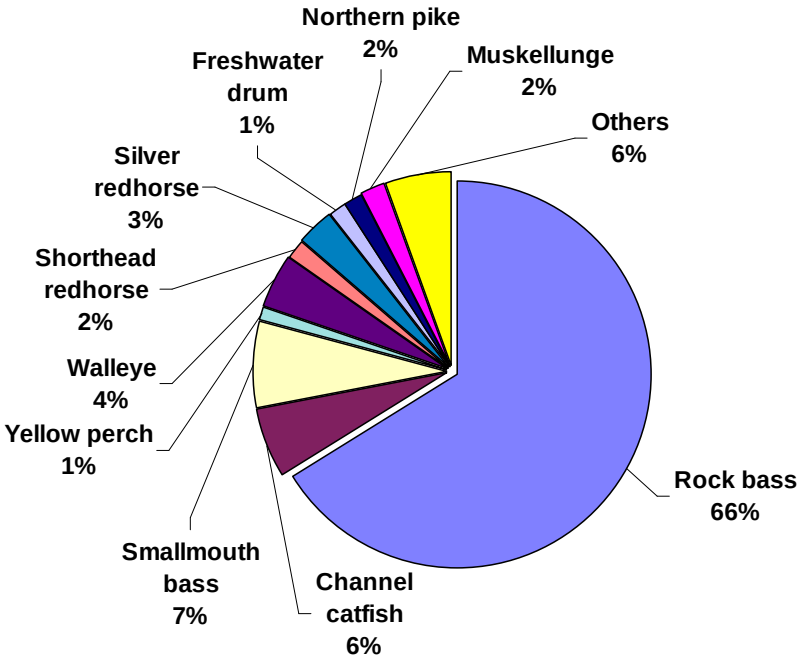

Figure 13.—Catch composition for trap nets fished in Lake St. Clair during May 2009.

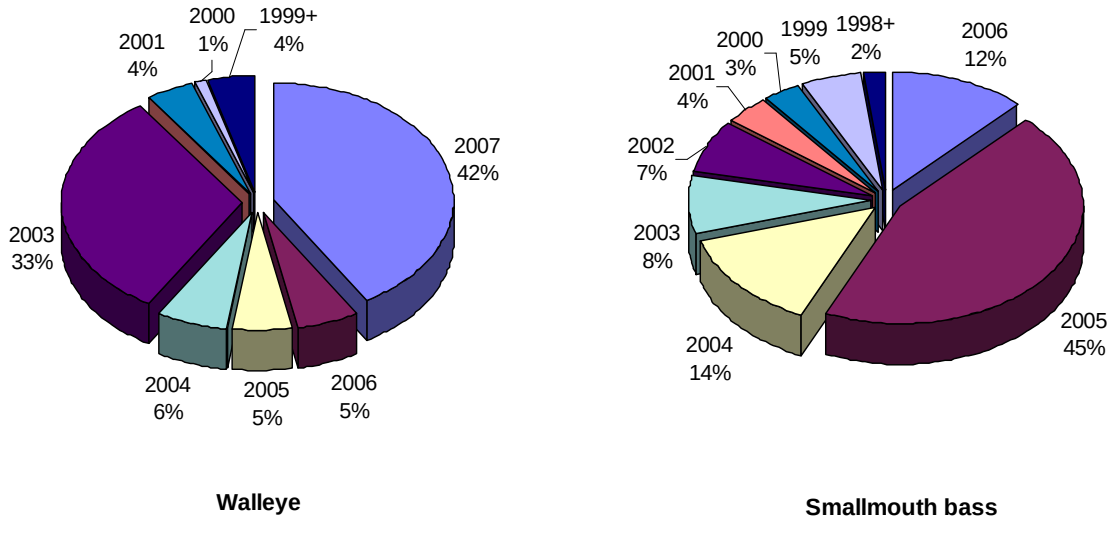

Figure 14.—Contribution by year class to catch in survey trap nets in Lake St. Clair during May 2009.

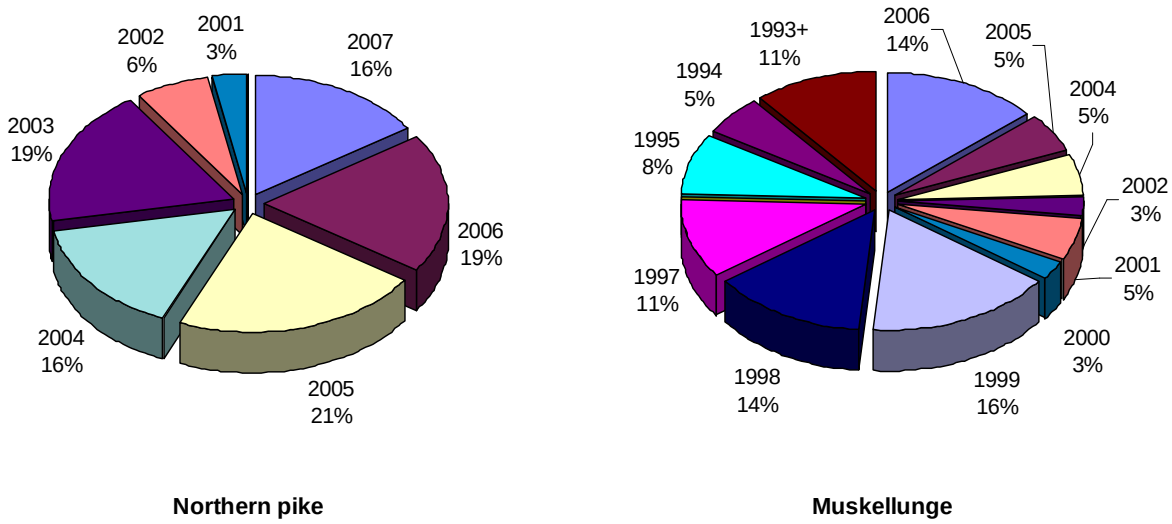

Figure 15.—Contribution by year class to catch in survey trap nets in Lake St. Clair during May 2009.

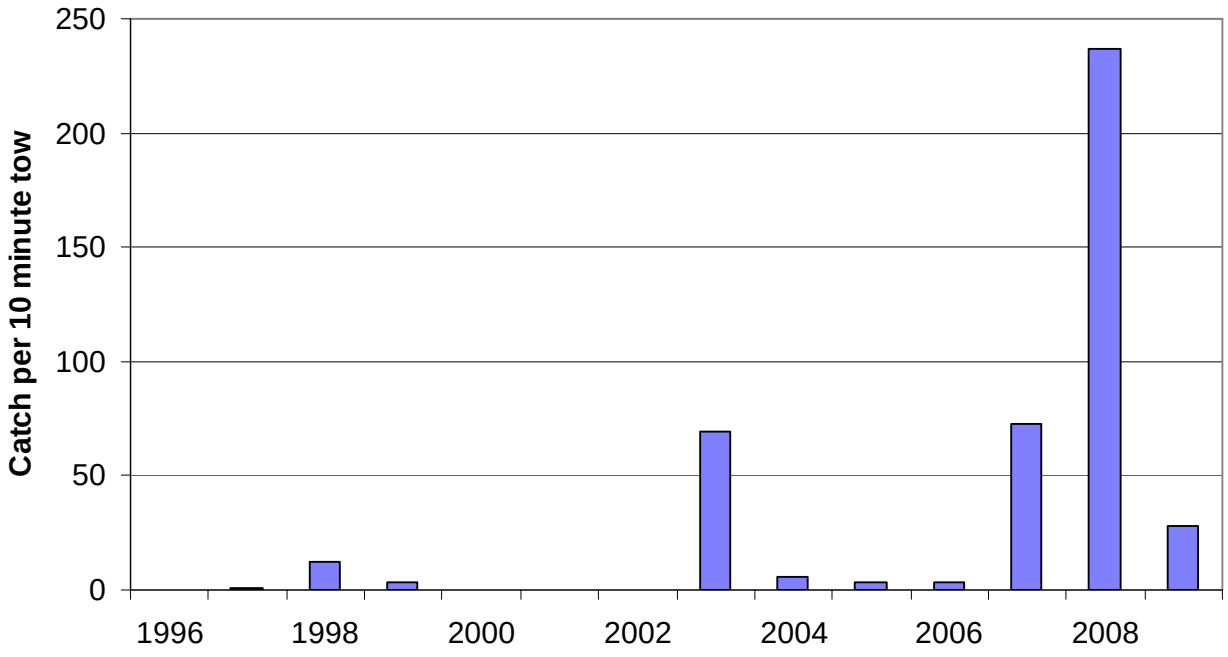

Figure 16.—Year-class strength for yellow perch in Lake St. Clair as indicated by September trawl catch rates, 1996 to 2009.

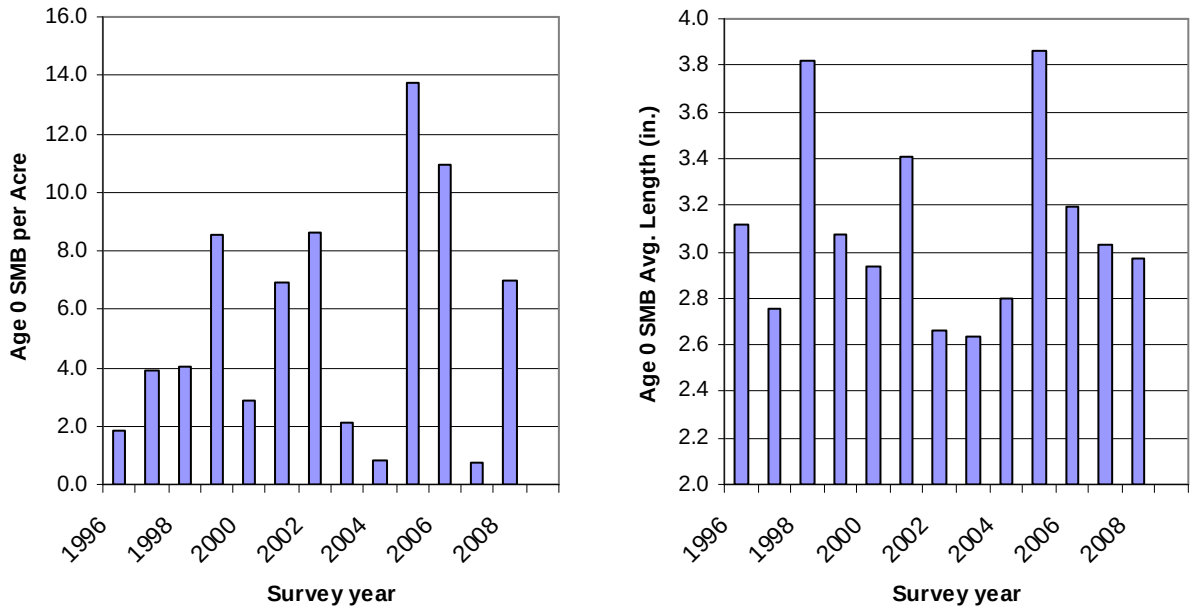

Figure 17.—Year-class strength for Lake St. Clair smallmouth bass as indicated by September trawl catch rates and mean length for young-of-year, 1996 to 2009.

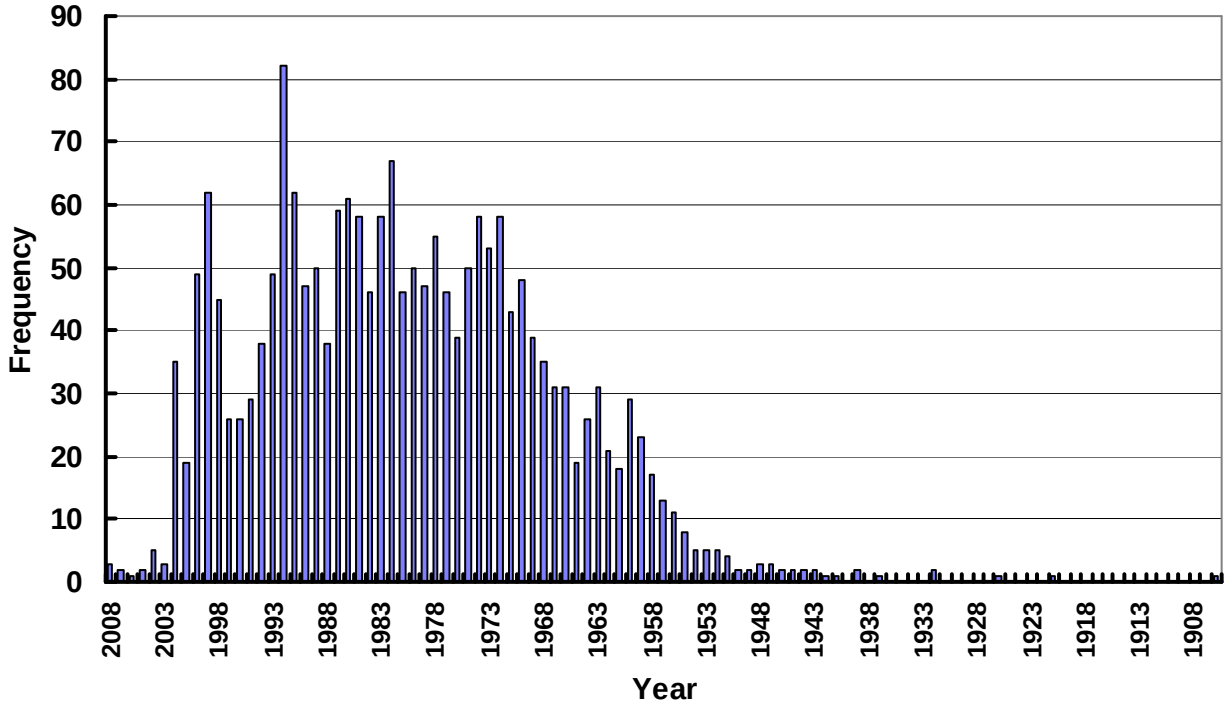

Figure 18.—Hatch year for lake sturgeon sampled from Lake St. Clair and St. Clair River from 1997 to 2009 by Lake St. Clair Fisheries Research Station (n=2,014) based on pectoral fin ray ages and otolith correction factor.

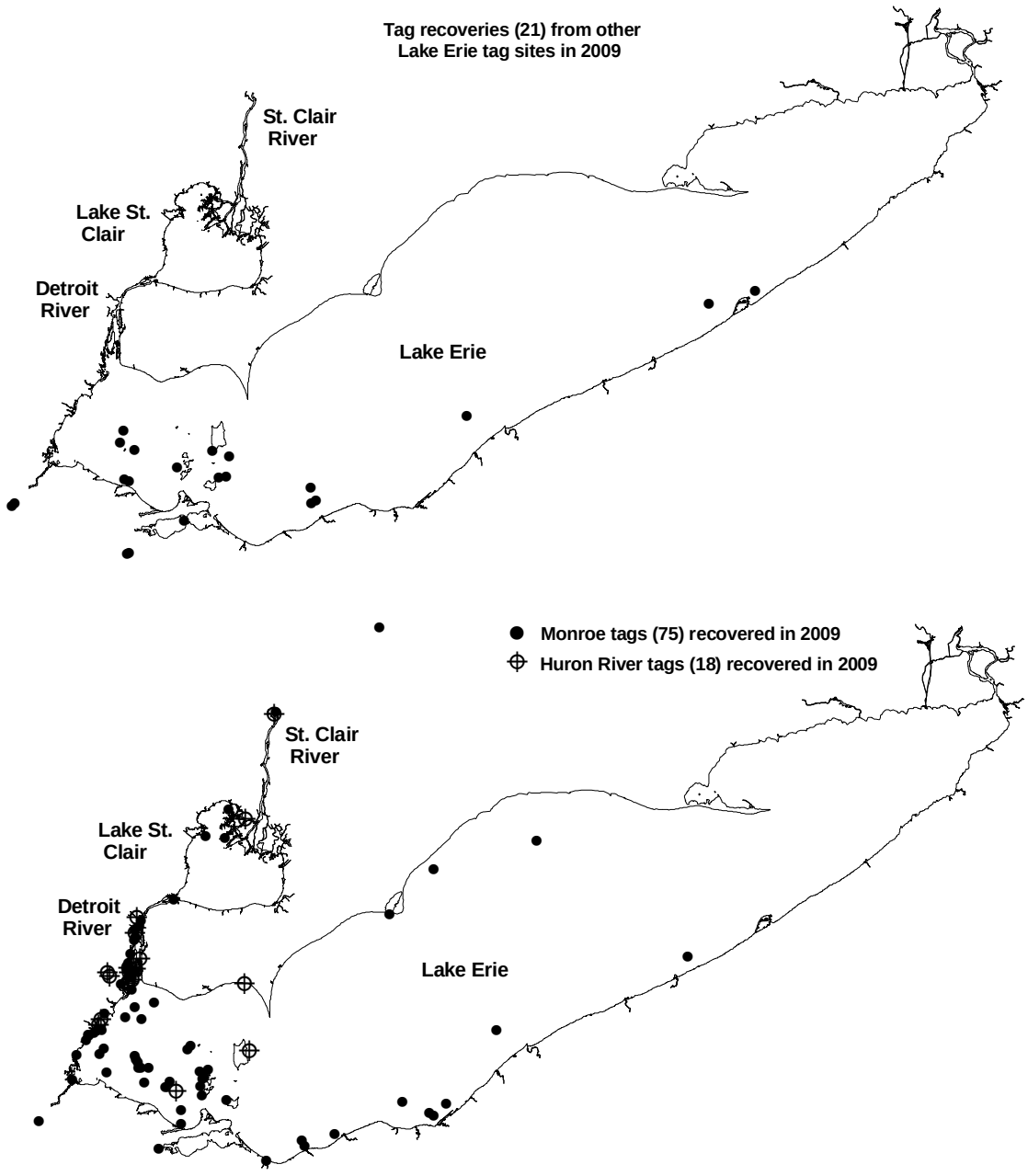

Figure 19.—Geographical distribution of walleye tag recoveries in 2009 from fish tagged during all years in Lake Erie at Monroe and the Huron River at Flat Rock, MI (bottom map) and other Lake Erie tag sites (top map).

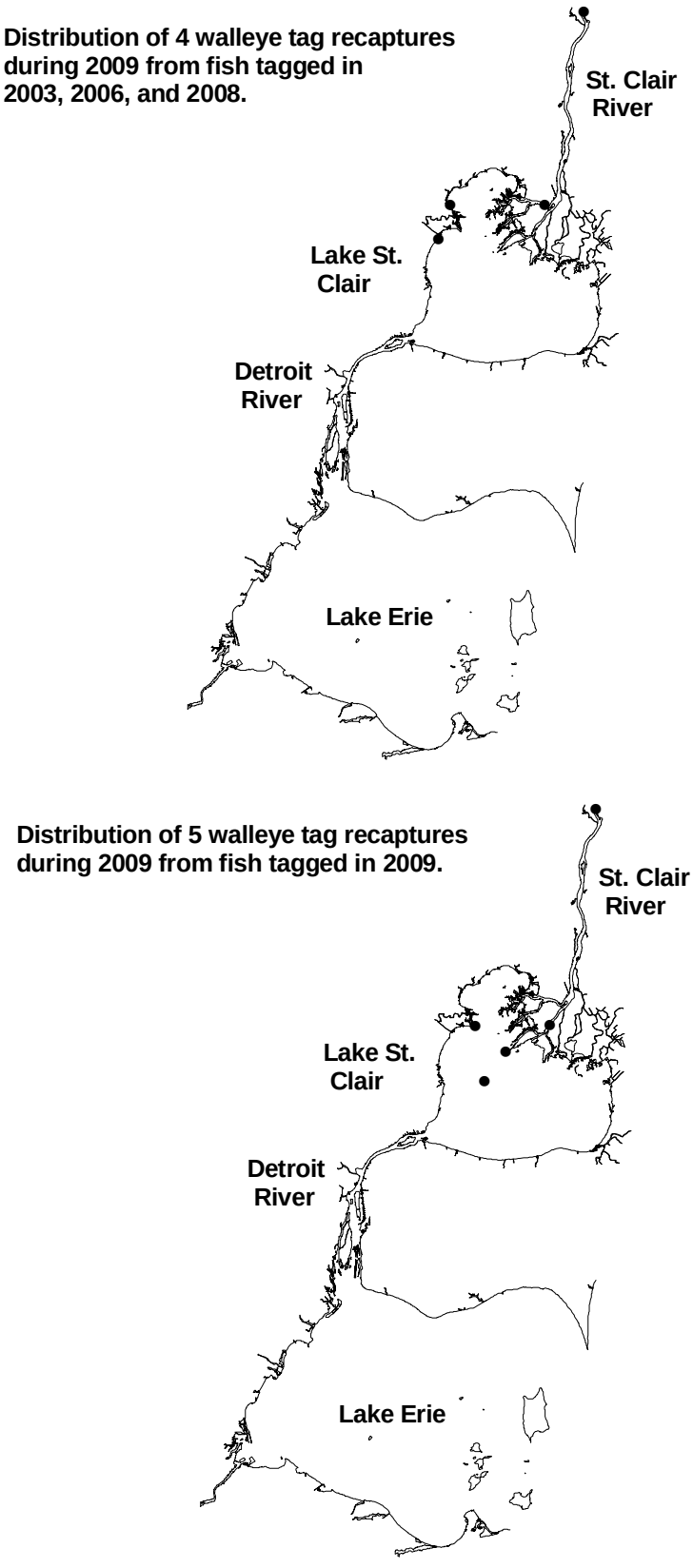

Figure 20.—Geographical distribution of walleye tag recoveries in 2009 from fish tagged during each year at the Anchor Bay site in Lake St. Clair.

Table 1. —Estimated harvest, harvest rate, effort, and released catch for Michigan's 2009 Lake Erie non-charter boat fishery. Two standard errors in parentheses.

		Month							
Species	C/H	Apr	May	Jun	Jul	Aug	Sep	Oct	Season
HARVEST									
Yellow perch	0.6953	0	4,815	8,014	115,189	73,825	104,839	38,129	344,811
	(0.2961)								(110,779)
Walleye	0.1721	821	17,986	23,628	36,515	5,390	339	670	85,348
	(0.1575)								(19,423)
White perch	0.0026	0	1,164	0	0	91	0	26	1,282
	(0.1386)								(1,455)
Channel	0.0255	295	1,558	1,603	6,997	1,466	734	0	12,652
catfish	(0.1674)								(8,729)
White bass	0.0065	78	250	2,856	22	0	0	26	3,233
	(0.1436)								(2,759)
Freshwater	0.0050	1	0	0	734	624	1,113	0	2,473
drum	(0.1414)								(2,244)
Largemouth	0.0002	0	0	0	0	76	0	0	76
bass	(0.1282)								(143)
Smallmouth	0.0001	0	0	0	0	0	0	26	26
bass	(0.1269)								(53)
Rainbow	0.0003	0	48	103	0	0	0	0	150
trout	(0.1275)								(167)
Total Harvest	0.9290	1,195	26,217	36,204	159,457	81,472	117,002	38,879	460,425
	(0.2371)								(112,092)
EFFORT									
Angler hours		5,440	96,844	110,571	121,428	66,021	73,744	21,846	495,892
									(62,493)
Angler trips		1,308	17,723	19,781	25,039	13,385	15,686	4,745	97,667
									(12,440)
RELEASED									
Walleye	0.0053	14	954	529	64	480	66	519	2,626
Legal size	(0.1339)								(1,636)
Walleye	0.0617	0	4,445	11,584	13,156	1,273	0	144	30,612
Sub-legal	(0.0267)								(13,027)
Largemouth	0.0270	149	4,088	2,712	722	2,270	203	3,232	13,377
Bass	(0.1532)								(7,094)
Smallmouth	0.0069	129	1,673	272	261	711	248	127	3,422
bass	(0.1388)								(2,398)
White bass	0.1495	48	22,318	14,747	18,623	10,539	7,815	53	74,144
	(0.2163)								(33,709)

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, 2009.

Species	Total harvest per hour	Harvest per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct[1]	
Chinook salmon	0.000	0.001	0	0	1	0	0	0	0	1
Rainbow trout	0.000	0.004	0	0	2	1	0	0	0	3
Yellow perch	0.591	14.498	0	88	369	263	4,587	3,594	1,088	9,989
Walleye	0.607	14.888	90	1,554	3,954	4,387	260	12	1	10,258
Other	0.029	0.704	0	230	163	82	10	0	0	485
Angler hours			162	2,502	5,899	5,320	1,727	1,049	240	16,899
Angler trips			27	449	1,089	1,038	321	190	48	3,162
Charter excursions			8	103	230	224	72	42	10	689

[1]October and November values combined.

Table 3.—Total harvest per hour, harvest per excursion, number harvested, and fishing effort (angler hours, trips, and charter excursions) for St. Clair-Detroit system charter boats, 2009.

Species	Total harvest per hour	Harvest per excursion	Month									Season
			Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Yellow perch	0.167	3.605	0	1	0	288	357	424	344	77	34	1,525
Walleye	0.412	8.905	1	1,313	1,419	142	224	298	104	129	137	3,767
Other	0.131	2.830	0	0	0	301	414	350	122	10	0	1,197
Angler hours			12	2,824	2,161	863	1,164	1,180	489	280	166	9,139
Angler trips			2	480	407	135	181	182	81	45	24	1,537
Charter excursions			1	135	111	37	49	49	22	11	8	423

Table 4.—Commercial harvest from Michigan waters of Lake Erie in 2009.

Species	Harvest (lbs.)	% of total harvest	Reported market value
Carp	196,888	21%	$51,516
Buffalo	130,295	14%	$68,231
Gizzard shad	122,379	13%	$32,859
Freshwater drum	116,312	13%	$25,489
White bass	96,456	10%	$62,447
Goldfish	90,771	10%	$73,767
Channel catfish	63,725	7%	$29,747
Bullhead	45,294	5%	$17,906
White perch	34,522	4%	$18,492
Sucker	11,339	1%	$3,937
Whitefish	9,439	1%	$6,135
Quillback	3,900	<1%	$652
Grand Total	974,830	100%	$391,179

Table 5.—Commercial harvest from Michigan waters of Lake Erie, 1980 to 2009. Harvest reported in pounds sold.

Year	Buffalo	Bull-head	Common carp	Channel catfish	Gizzard shad	Goldfish	Quillback	Fresh-water drum	Sucker	White bass	White perch	White-fish	Grand Total
1980	36,275	0	545,006	20,635	0	0	0	0	0	2,770	0	0	604,686
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
Grand Total	1,136,295	169,159	10,495,772	715,749	3,545,043	407,416	444,898	472,251	51,560	348,435	128,262	28,932	17,940,650

Table 6.—Walleye CPUE (number per net lift) in multi-filament gill nets during fall surveys on Michigan waters of Lake Erie.

Year Class	Total CPUE	Survey year																	
		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1977	171.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1978	61.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1979	72.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1980	92.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1981	72.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1982	306.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1983	34.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1984	147.7	0.5	0.3	0.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1985	177.2	1.3	0.8	1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1986	297.5	11.0	3.8	2.0	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1987	127.8	13.8	2.5	3.8	1.0	0.5	0.8	–	0.3	–	–	–	–	–	–	–	–	–	–
1988	125.0	7.3	4.5	4.5	0.5	0.8	0.8	0.0	–	–	–	–	–	–	–	–	–	–	–
1989	52.6	10.0	2.8	3.3	1.3	0.8	0.8	0.3	0.3	–	–	–	–	–	–	–	–	–	–
1990	136.4	48.0	13.0	16.5	1.5	1.3	1.3	0.0	0.3	–	–	–	–	–	–	–	–	–	–
1991	194.3	63.0	47.3	61.5	11.3	6.8	2.8	1.3	0.3	–	–	–	–	–	–	–	–	–	–
1992	17.0	–	2.0	7.3	2.0	0.3	1.5	2.3	1.0	0.3	–	–	–	0.3	–	–	–	–	–
1993	170.3	–	–	73.3	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	133.8	–	–	–	–	–	–	54.3	34.3	20.3	15.3	3.0	1.0	3.8	1.0	0.3	0.5	–	–
1998	82.7	–	–	–	–	–	–	–	26.0	29.5	14.8	6.3	1.0	3.8	1.0	0.3	0.0	–	–
1999	181.0	–	–	–	–	–	–	–	–	57.0	73.3	21.5	5.8	13.0	6.8	1.5	1.3	0.3	0.5
2000	21.4	–	–	–	–	–	–	–	–	–	6.5	6.3	0.8	4.0	2.0	0.8	1.0	0.0	0.0
2001	133.7	–	–	–	–	–	–	–	–	–	–	42.8	32.5	43.8	10.0	1.8	1.8	1.0	0.0
2002	14.4	–	–	–	–	–	–	–	–	–	–	–	0.8	4.0	6.5	2.3	0.8	0.0	0.0
2003	330.3	–	–	–	–	–	–	–	–	–	–	–	–	81.2	157.5	48.3	28.0	7.5	7.8
2004	10.2	–	–	–	–	–	–	–	–	–	–	–	–	–	3.8	2.3	3.3	0.5	0.3
2005	35.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12.3	17.0	2.5	3.8
2006	3.9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.8	1.3	0.8
2007	101.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	69.0	32.8
2008	11.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11.8
Total		154.9	77.0	173.7	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
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	Mean
Black crappie	0.00	0.02	0.35	0.00	0.00	0.00	0.00	0.05	0.05
Bluegill	0.08	0.00	0.11	0.03	0.05	0.00	0.11	0.00	0.05
Bowfin	0.00	0.04	0.05	0.00	0.02	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	0.02
Channel catfish	3.81	4.14	3.92	2.50	4.33	4.24	6.31	5.41	4.33
Common carp	0.52	0.62	1.30	0.32	0.88	0.60	0.26	0.86	0.67
Freshwater drum	2.07	10.80	3.65	0.70	8.24	1.10	0.80	1.32	3.58
Gizzard shad	0.05	0.08	0.02	0.06	0.02	0.02	0.00	0.00	0.03
Golden redhorse	0.02	0.04	0.04	0.06	0.05	0.02	0.00	0.14	0.05
Lake sturgeon	0.03	0.14	0.07	0.03	0.10	0.00	0.17	0.09	0.08
Largemouth bass	0.36	0.10	0.25	0.06	0.07	0.18	0.20	0.23	0.18
Muskie	0.64	0.56	1.41	1.64	1.09	1.02	0.29	1.77	1.05
Northern pike	1.87	0.30	1.30	2.00	2.05	1.30	1.03	1.59	1.43
Pumpkinseed	4.96	1.54	1.12	0.05	0.52	0.82	0.91	0.82	1.34
Quillback carpsucker	0.38	0.30	0.60	0.15	0.91	0.12	0.60	0.86	0.49
Rock bass	49.50	32.00	33.80	12.30	35.10	42.50	40.43	62.91	38.57
Shorthead redhorse	1.84	4.08	1.53	1.44	4.00	0.80	1.97	1.68	2.17
Silver redhorse	0.50	0.66	1.29	1.26	2.98	0.62	1.91	2.91	1.52
Smallmouth bass	6.23	19.20	5.49	3.32	8.21	11.80	5.29	6.91	8.31
Walleye	3.79	3.60	2.67	5.50	5.12	3.58	2.54	4.27	3.88
White bass	0.03	0.10	0.07	0.00	0.14	0.12	0.54	1.00	0.25
White perch	0.20	0.10	0.80	0.12	2.38	0.20	1.17	0.96	0.74
White sucker	0.28	0.20	0.27	0.20	0.43	0.52	0.31	0.14	0.29
Yellow perch	4.89	1.14	5.01	0.97	1.26	2.54	2.94	1.00	2.47
Total all species	82.07	79.78	68.00	32.71	77.97	72.12	67.80	94.95	71.57
Number of net lifts	64	50	55	34	42	50	35	22	
Starting date	5/3	5/28	5/3	5/11	5/5	5/3	5/6	5/8	
Ending date	5/30	6/20	5/26	5/25	5/24	5/22	5/20	5/20	
Starting water temperature (^{0}C)	9	12	8	9	13	9	13	12	
Ending water temperature (^{0}C)	15	16	15	13	13	13	11	14	
Average secchi depth (m)	1.8	2.2	1.2	2.2	1.7	2.6	2.1	1.5	

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	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Mean
Alewife	29	11	3	2	4	3	3	0	0	0	0	0	0	0	4
Bluntnose minnow	1	0	0	0	11	10	7	1	6	118	1	13	0	3	12
Common carp	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Emerald shiner	1	0	0	0	5	0	11	0	2	0	0	0	32	39	6
Freshwater drum	7	13	5	2	1	5	1	4	3	6	4	3	0	0	4
Johnny darter	22	3	7	0	0	0	0	0	3	2	0	7	2	17	4
Lake sturgeon	2	0	0	0	0	0	1	1	0	0	2	1	0	0	1
Largemouth bass	0	0	0	0	0	1	0	0	0	0	0	4	0	0	0
Logperch	9	76	83	8	0	2	8	0	42	6	0	1	3	29	19
Mimic shiner	17	26	2	0	14	20	362	0	118	45	2	640	4	15	90
Muskellunge	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0
Northern pike	0	0	0	0	0	1	0	1	0	1	1	0	0	0	0
Shorthead redhorse	8	7	1	7	3	4	7	4	2	6	9	1	0	0	4
Pumpkinseed	0	1	0	0	0	2	0	0	0	0	1	1	0	0	0
Quillback	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	593	656	4	4	4	61	0	14	53	11	6	1	68	110	113
Rock bass	43	18	5	1	13	30	39	18	5	10	33	73	4	2	21
Round goby	5	14	28	6	11	1	30	6	53	10	0	30	1	14	15
Silver lamprey	0	0	0	1	0	0	0	1	1	0	5	2	0	0	1
Silver redhorse	1	2	0	0	1	0	2	5	2	1	1	2	0	0	1
Smallmouth bass	0	3	1	0	1	3	4	2	2	10	4	13	0	0	3
Spottail shiner	178	123	8	69	935	7	5,730	211	1,777	524	769	53	90	2,705	941
Trout-perch	231	346	99	154	34	11	265	13	108	65	248	7	2	3	113
Walleye	5	10	1	2	1	1	1	1	0	2	12	2	0	1	3
White perch	1	1	0	0	13	1	1	1	2	1	2	0	1	1	2
White sucker	5	4	4	0	3	1	61	2	68	22	5	1	20	16	15
Yellow perch	1,184	560	250	867	158	1,132	725	306	888	1,107	869	303	3,137	7,144	1,331

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	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Mean
Alewife	28	31	12	2	3	32	0	0	0	1	1	0	0	5	8
Bluntnose minnow	0	34	0	9	15	54	33	13	43	238	61	36	65	198	57
Common carp	0	1	0	0	0	1	2	0	0	1	0	0	0	0	0
Emerald shiner	4	1	8	0	0	0	1	0	41	36	608	0	1	8	51
Freshwater drum	1	1	0	1	1	2	0	1	5	2	3	2	0	2	1
Johnny darter	18	4	0	0	0	0	0	7	0	0	0	1	1	0	2
Lake sturgeon	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0
Largemouth bass	0	0	0	3	2	16	36	13	13	29	22	58	50	45	20
Logperch	32	40	21	1	5	18	6	14	38	113	34	9	175	288	57
Mimic shiner	268	1,095	0	30	15	10	44	507	8,909	3,072	109	29	408	0	1,035
Muskellunge	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Northern pike	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0
Shorthead redhorse	0	0	0	0	1	2	0	0	0	1	2	1	0	0	1
Pumpkinseed	0	4	0	2	0	5	5	3	1	0	5	8	24	0	4
Quillback	1	0	1	0	1	0	2	1	1	0	0	0	5	0	1
Rainbow smelt	1	17	0	0	1	0	0	4	26	0	1	0	1	139	14
Rock bass	18	82	1	89	93	40	41	35	25	77	67	71	211	21	62
Round goby	66	10	22	10	10	10	99	2	28	14	10	4	7	11	22
Silver lamprey	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0
Silver redhorse	5	1	1	0	0	1	6	0	4	5	4	1	1	2	2
Smallmouth bass	14	11	25	11	6	0	51	7	3	41	32	3	22	2	16
Spottail shiner	17	487	45	200	51	879	2,407	1,068	545	2,410	2,668	983	2,191	981	1,067
Trout-perch	776	92	26	3	0	0	10	6	59	3	79	1	0	3	76
Walleye	7	1	3	1	1	0	11	0	2	9	3	1	0	2	3
White perch	16	12	8	0	0	0	13	8	6	146	12	31	398	9	47
White sucker	1	2	0	0	1	1	8	1	1	4	6	5	7	6	3
Yellow perch	34	27	69	22	41	114	73	181	48	52	34	220	625	1,100	189

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

Year class	Total CPUE	Survey year														
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1984	1	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1985	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1986	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1987	1	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–
1988	3	1	0	0	–	–	–	–	–	–	–	–	–	–	–	–
1989	7	2	1	0	–	–	–	–	–	–	–	–	–	–	–	–
1990	24	13	5	1	–	–	–	–	–	–	–	–	–	–	–	–
1991	117	32	19	13	5	1	–	–	–	–	–	–	–	–	–	–
1992	51	6	12	10	18	1	0	1	–	1	–	–	–	–	–	–
1993	581	126	171	114	54	54	2	3	–	1	–	–	–	–	–	–
1994	903	166	293	348	53	21	8	11	1	1	–	1	–	–	–	–
1995	148	–	21	41	7	32	12	21	10	3	1	0	–	–	–	–
1996	280	–	–	33	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	1,371	–	–	–	–	–	–	–	–	–	705	397	175	26	46	22
2004	280	–	–	–	–	–	–	–	–	–	–	9	158	18	78	17
2005	245	–	–	–	–	–	–	–	–	–	–	–	34	26	150	36