

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
FISHERIES DIVISION

**STATUS OF THE FISHERIES
IN MICHIGAN WATERS OF
LAKE ERIE AND LAKE ST. CLAIR
2008**



Lake Erie brown bullheads from MDNR survey trap net near Monroe



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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 2008

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 2000, 2002, 2004, 2005, and 2006.
- Non-charter angler harvest rates for Lake Erie walleye and yellow perch declined in 2008.
- Michigan non-charter anglers on Lake Erie caught over 130,000 walleye and harvested about 115,000 of those fish. Anglers reported releasing higher numbers of sub-legal size walleye in 2008 (12,078 released). The strong 2003 year class accounted for more than 70% of the Michigan sport harvest.
- Charter boat harvest rates for Lake Erie walleye were more than double 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 2008.
- White perch and walleye dominated the catch in survey trap nets in Lake Erie, while rock bass, channel catfish, and smallmouth bass were the dominant species in the Lake St. Clair trap net survey in 2008. 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 2008

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 2007 year class will begin 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 2009. Muskellunge and bass numbers tend to remain more stable from year to year and both species should continue to provide excellent fishing opportunities in 2009, 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 be somewhat higher this year, but will likely remain below the long term average. 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 260,440 fish (Table 1) for Michigan's 2008 Lake Erie sport fishery (non-charter). In combination, walleye and yellow perch accounted for 96% of the total harvest, reflecting their importance in the sport fishery. Although few bass are harvested by Michigan's Lake Erie anglers, over 17,000 legal-size largemouth and smallmouth bass were reported caught and released. Estimated angler effort in 2008 decreased slightly from 2007, but remained within the range of effort observed since 1991 (Figure 1). The walleye harvest rate in 2008 also declined slightly from 2007, and dropped below the long-term mean of 0.24 walleye per angler hour (Figure 2). The yellow perch harvest rate also decreased in 2008, continuing a trend of lower catch rates over the last 3 years. 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 2008 on-site creel survey. The walleye harvest was dominated by the 2003 year class (age 5), which represented 72% of the harvest (Figure 3). This dominance reflects both the strength of the 2003 year class and the weakness of the other year classes in the fishery. Harvested age 5 walleye averaged 500 mm (19.7 in.) in total length. The overall average length of walleye harvested in the sport fishery in 2008 was 500 mm (19.7 in.).

Yellow perch harvest was dominated by age 2 fish (2006 year class), which accounted for 33% of the total harvest (Figure 3). Age 5 fish (2003 year class) were also a major portion of the harvest and accounted for 29% of the total harvest. Average lengths of harvested age 2, 3, and 4 yellow perch were 210 mm (8.3 in.), 254 mm (10.0 in.), and 256 mm (10.1 in.), respectively. The overall average length of yellow perch harvested in the sport fishery in 2008 was 235 mm (9.2 in.). The observed mean length at age for yellow perch taken in the Michigan sport fishery improved slightly for most ages in 2008 (Figure 4).

Since 1989, Michigan charter boat operators have been required to report their charter fishing harvest and effort to the MDNR. In 2008, Michigan charter boat anglers harvested 19,871 fish from Lake Erie (Table 2). Walleye (64%) and yellow perch (36%) were the major species harvested. The walleye harvest rate in 2008 was the 2nd lowest observed since 1991 (Figure 5). Yellow perch harvest rate also declined and was the 3rd lowest recorded since 1991. The charter boat walleye harvest rate was about two times higher than those estimated for non-charter anglers in 2008, while the yellow perch charter harvest rate was less than double the rate for non-charter boat anglers.

For the St. Clair-Detroit River system, charter boat anglers harvested 9,564 fish (Table 3). Yellow perch (38%), walleye (21%), and "other" species (41%), 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 declined in 2008, but remained higher than the rates recorded during most years prior to 2004 (Figure 6). Yellow perch harvest rates declined by more than 50% in 2008, and the

yellow perch harvest total was the lowest since 2004. 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 2008, the Lake Erie charter harvest rate was roughly 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 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 in 2008 by about 16% (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 2008, 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 2008. In general, 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 Angler 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 2008, the catch rate declined to the lowest level recorded since 1992 (Figure 8). We suspect the drastic changes in catch rates seen in 2006, 2007, and 2008 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 37 of the 57 total statewide entries originating from the St. Clair system.



However, the number of Lake St. Clair muskellunge Master Angler entries declined in 2008 for the 4th consecutive year (Figure 9). In fact, a general downward trend in total entries has been evident since 2000, but 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 good 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 24% of all smallmouth bass entries in 2008 (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 nine 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 2008, 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 2008 commercial harvest included 11 types of fish for a total of 974,830 pounds (Table 4), the fourth highest total harvest since 1971. In combination, common carp (21%), buffalo (15%), freshwater drum (14%), gizzard shad (14%), and white bass (10%) accounted for 74% of the total harvest by weight. The major species in the trap net harvest included gizzard shad (130,396 lbs.), freshwater drum (128,446 lbs.), and buffalo (106,786 lbs.). The primary species in the seine harvest included common carp (161,820 lbs.) and goldfish (84,001 lbs.). The total value of the 2008 Lake Erie commercial harvest from Michigan waters was estimated at \$398,636.

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 2008, total catch per net lift (CPE) for all species combined was below the long-term mean (Table 5), and much lower than in 2006. White perch dominated the trap net catch again in 2008, accounting for 46% of the total catch (Figure 11). CPE values for walleye, yellow perch, white sucker, common carp, goldfish, and gizzard shad were all below the long-term mean. Conversely, CPE values for smallmouth bass, white bass, white perch, channel catfish, and brown bullhead, were all well above the long-term mean CPE. Smallmouth bass catch rates increased in the mid-90's and since then have held steady. We believe this indicates increased abundance since the mid-90's, probably a result of improved habitat conditions for smallmouth bass in Michigan's waters of Lake Erie. Environmental conditions during the survey period in 2008 included warmer water temperatures, which likely contributed to the high white perch and low yellow perch catch rates.

Age 5 walleye (2003 year class) accounted for 69% of the trap net walleye catch in 2008 (Figure 12). In comparison, the age distribution of the smallmouth bass catch was more evenly distributed across ages 2, 3, 4, 5, 6, 7, and 8. Based on mean length-at-age, no trend is evident for Lake Erie walleye growth rates. A total of 1,380 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 yearling walleye assessment program. During October 2008, four net lifts caught a total of 520 walleye. The total walleye catch-per-effort (CPE) for the index sites (82.1) increased by more than 47% from 2007 (Table 6). Yearling walleye (2007 year class) accounted for 84% of the catch, with the yearling walleye CPE of 69.0 the highest seen since the 2003 year class yearling CPE of 81.2 in 2004. While the 2003 year class was strong, numbers of survivors from that cohort have declined and will provide less benefit to the fisheries in 2009 as age 6 fish. Unfortunately, contributions from the 2007 year class will be minimal in 2009, as most individuals from that cohort will not exceed the 15" minimum size limit for Michigan waters of Lake Erie.

In 2008, the MDNR surveyed adult fish populations in Anchor Bay, Lake St. Clair with trap nets. Five trap nets were fished from May 3 to May 22. A total of 2,375 fish representing 20 species were captured during the survey. Rock bass were numerically dominant, accounting for 59% of the total (Figure 13). Other common species in the nets included smallmouth bass (8%), channel catfish (9%), and walleye (4%).

Ages were estimated for smallmouth bass and walleye based on interpretation of dorsal spine samples. Age composition for those species is presented in Figure 14. The dominant walleye year class was the 2003 year class (Age 5), accounting for 62% of the total catch. For smallmouth bass, the 2005 (26%), 2004 (18%) and 2003 (24%) year classes accounted for 68% of the total trap net catch. A total of 88 walleye and 144 smallmouth bass were tagged and released at the Anchor Bay trap net site in 2008.

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=33), 85% of the fish were 5 years old or younger. In contrast, for muskies (n=9), all of the fish were at least 9 years old. The oldest muskie sampled in 2008 was 22 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 2008 trap net survey was 6.2 pounds. Over 18% of the

channel catfish exceeded the minimum size requirement (27 inches total length) for the MDNR 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 6 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 7 trawl tows were conducted at the Anchor Bay index trawling site in 2008. 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 spottail shiner, yellow perch, mimic shiner, white perch, and rock bass (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 1994, 1998, 2003, and 2007 was strong, with total CPE values for those year classes all over 900 fish per tow. Anglers will find the strength of the 2007 year class clearly illustrated by the number of yellow perch in the 5 to 7 inch size range in 2009.

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 2008 year class was very strong (Figure 16). In combination, the strong 2007 and 2008 year classes will result in a high abundance of small, young, yellow perch in Lake St. Clair in 2009.

Smallmouth bass recruitment patterns appear fairly consistent based on September trawl catch



rates of young-of-year (Figure 17). 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.

A total of 106 lake sturgeon were collected during assessment surveys on Lake St. Clair and the St. Clair River in 2008. Sturgeon captured averaged 43.6 inches in total length, with a range from 15.2 inches to 63.5 inches. Ages were estimated for 76 sturgeon based on pectoral fin ray sections. Twenty-seven year classes were represented with ages ranging from 1 to 35 years. Combined age samples from 1997-2008 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 much 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 2008, a total of 1,380 walleye were tagged with non-reward jaw tags by Michigan at one Lake Erie and one Lake St. Clair site. A total of 39 non-reward tags placed on walleye in 2008 were recovered by fishermen for a single season reporting rate of 2.8%. This is somewhat lower than the rates observed for 2006 and 2007 tags. The 2008 site-specific reporting rate varied from a high of 6.8% (9.9% in 2007) at the Anchor Bay site, to a low of 2.6% (none tagged in 2007) for the Monroe site in Michigan waters of Western Lake Erie. 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 (88 fish) and smallmouth bass (144 fish) captured in survey trap nets in Anchor Bay during May, 2008 were tagged and released. A total of 6 walleye and 13 smallmouth bass tagged in 2008 were recovered by anglers and reported to MDNR. A map showing the geographical distribution of walleye tag recoveries in 2008 for walleye tagged in Anchor Bay is presented in Figure 20. On average, recaptured walleyes tagged prior to 2008 had traveled 24.6 km from the Anchor Bay tag site, while those tagged in 2008 had traveled 26.3 km. The tagged walleye recovered by anglers averaged slightly smaller in total length at tagging (481 mm) compared to the overall tagged population (483 mm). This is a reversal of the difference observed in 2007 suggesting that size-related vulnerability to angling may vary significantly between years. The seasonal pattern of walleye tag recoveries differed between years. Recoveries for walleye tagged in 2008 were reported in July and August and came from Lake St. Clair and the St. Clair River. In contrast, recoveries in 2008 of walleye tagged in Anchor Bay in 2002-2007 were reported during May, June, August, and September and were caught from Lake St. Clair, and the St. Clair River. 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. None of the walleye tagged at the Anchor Bay site have been recovered in subsequent years on known spawning grounds, so their natal spawning site is still a matter of conjecture.

In 2007, tag reporting for walleye tagged at Lake St. Clair was 9.9% compared to 5.6% for smallmouth bass. In 2008, there was an apparent switch because walleye tag reporting declined to 6.8% and smallmouth bass reporting increased to 9.0%. Factors involved in this change are not clear, but angler behavior likely plays a role.

A total of 1,976 lake sturgeon have been tagged and released on the St. Clair River and Lake St. Clair since 1996. To date, 232 tagged lake sturgeon have been recaptured with survey gear or reported by fishermen. A total of 141 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 53 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 45% of the sturgeon tagged and released during this study, but only 25 recoveries (11%) 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

After nearly 30 years of above-average water levels, anglers and boaters have experienced below-average water levels in the connecting waters and Lake Erie during the last ten years. Water levels in the connecting waters are expected to be about the same in 2009 as last year, but will remain near the long term average. 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 7 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 water levels return to average or higher, 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 declined in 2008 and will remain low in 2009, we do not anticipate a need for modifying the current Michigan Lake Erie sport fishing regulations at this time. However, current projections for 2010 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 25, 2009) 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 20, 2009) to December 31. The harvest season for the Michigan waters of Lake Erie opens on the Saturday before Memorial Day (May 23 in 2009).



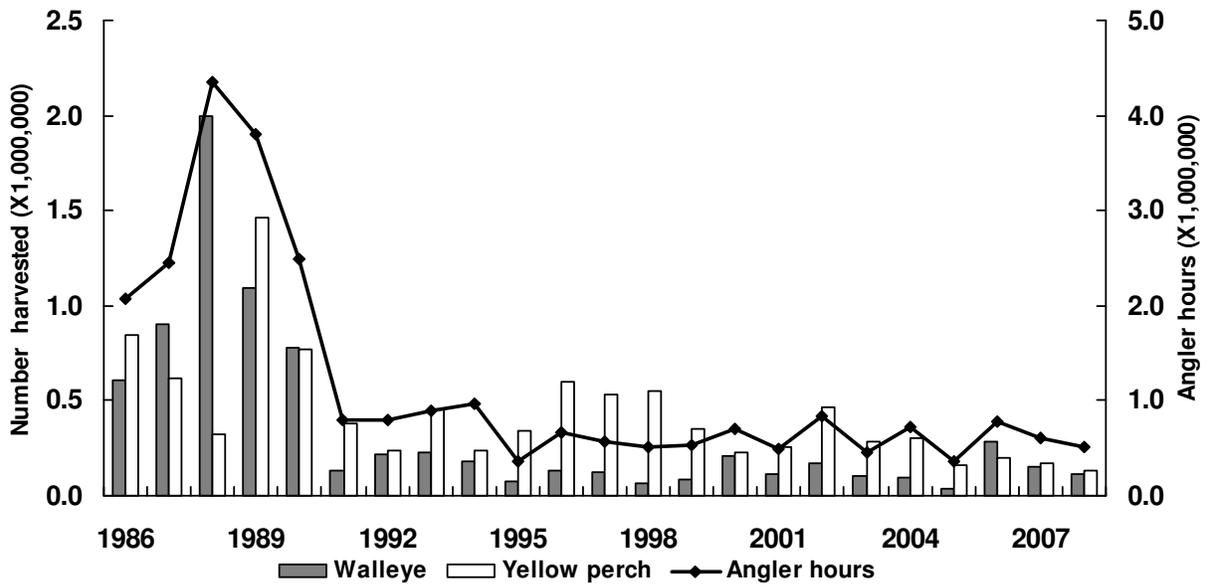


Figure 1.—Estimated harvest and effort for Michigan’s Lake Erie sport fishery, 1986-2008.

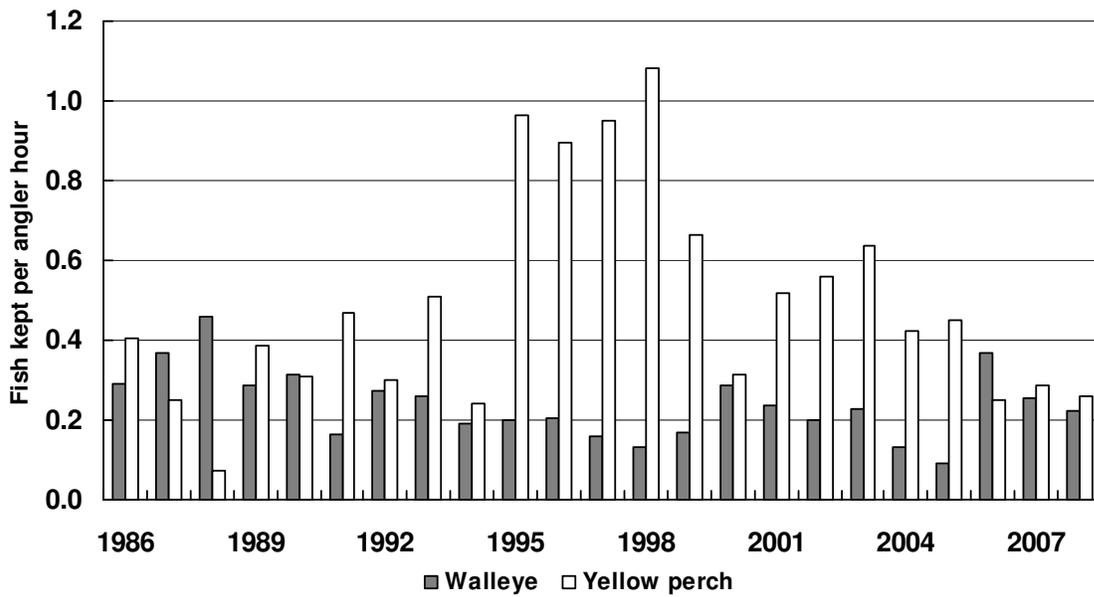


Figure 2.—Walleye and yellow perch harvest rates for Michigan’s Lake Erie sport fishery, 1986-2008.



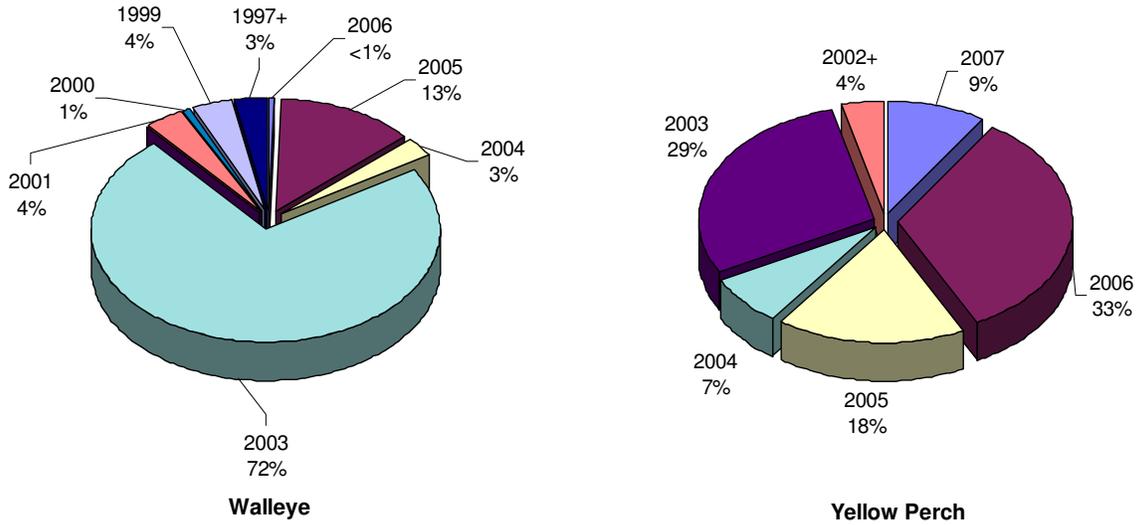


Figure 3.—Year-class contribution to Michigan sport harvest for walleye and yellow perch from Lake Erie in 2008.

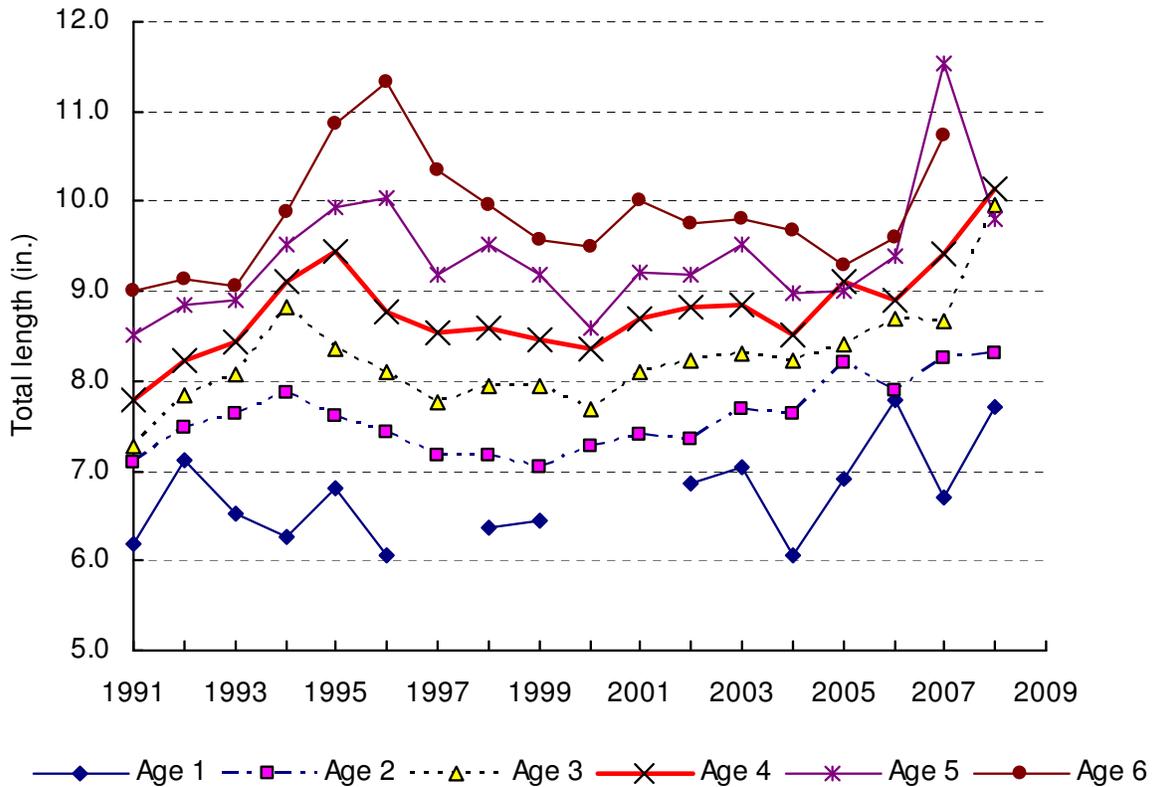


Figure 4.—Mean length at age for sport-harvested yellow perch from Michigan's waters of Lake Erie, 1991-2008.



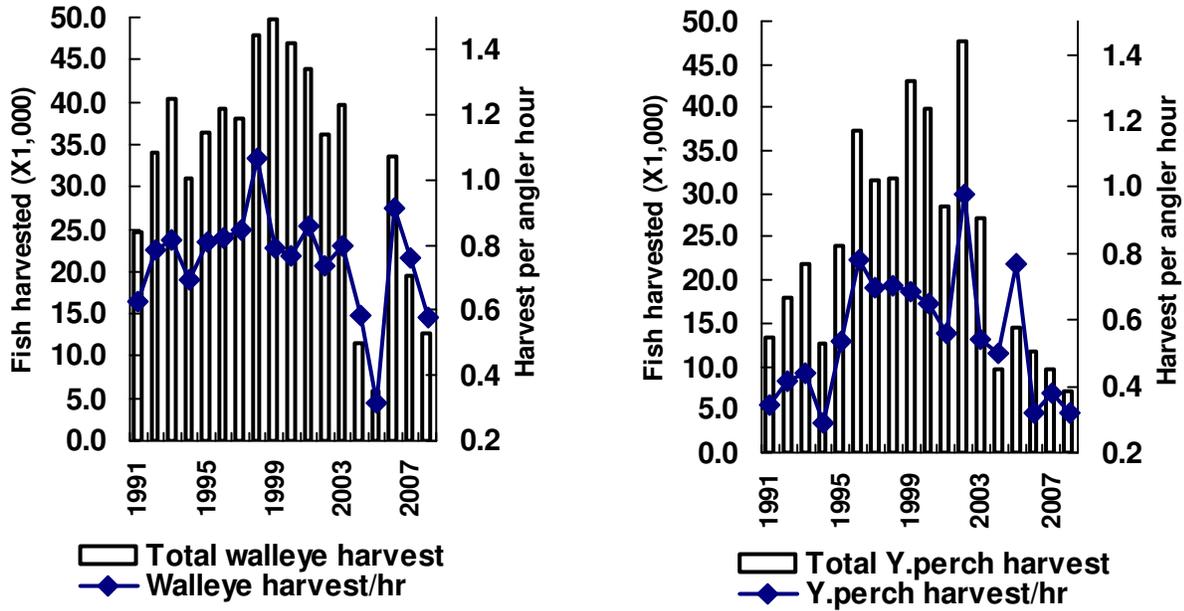


Figure 5.—Michigan charter boat harvest and harvest rates for Lake Erie, 1991-2008.

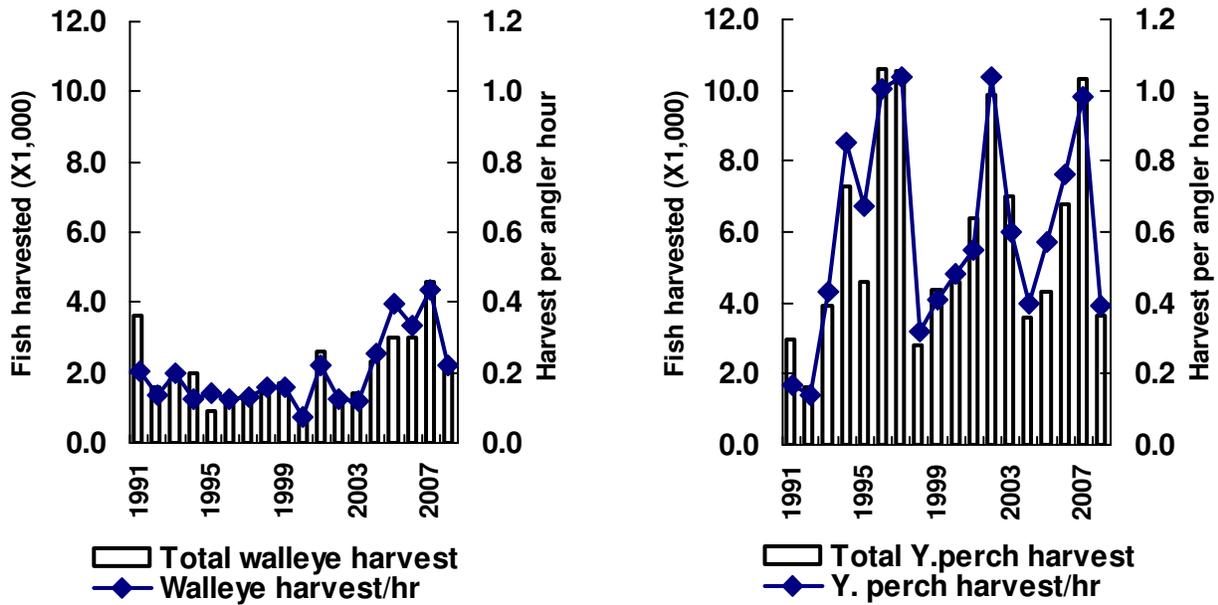


Figure 6.—Michigan charter boat harvest and harvest rates for the St. Clair-Detroit River system, 1991-2008.



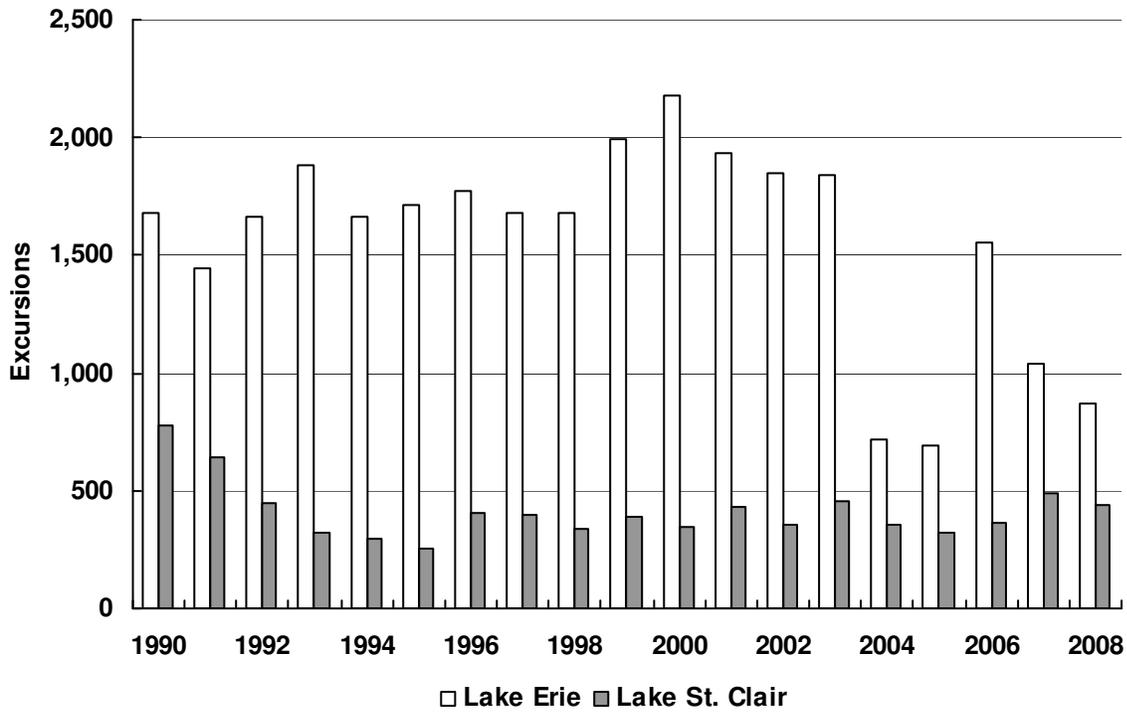


Figure 7.—Reported charter boat excursions on Lake Erie and the St. Clair-Detroit River system, 1990-2008.

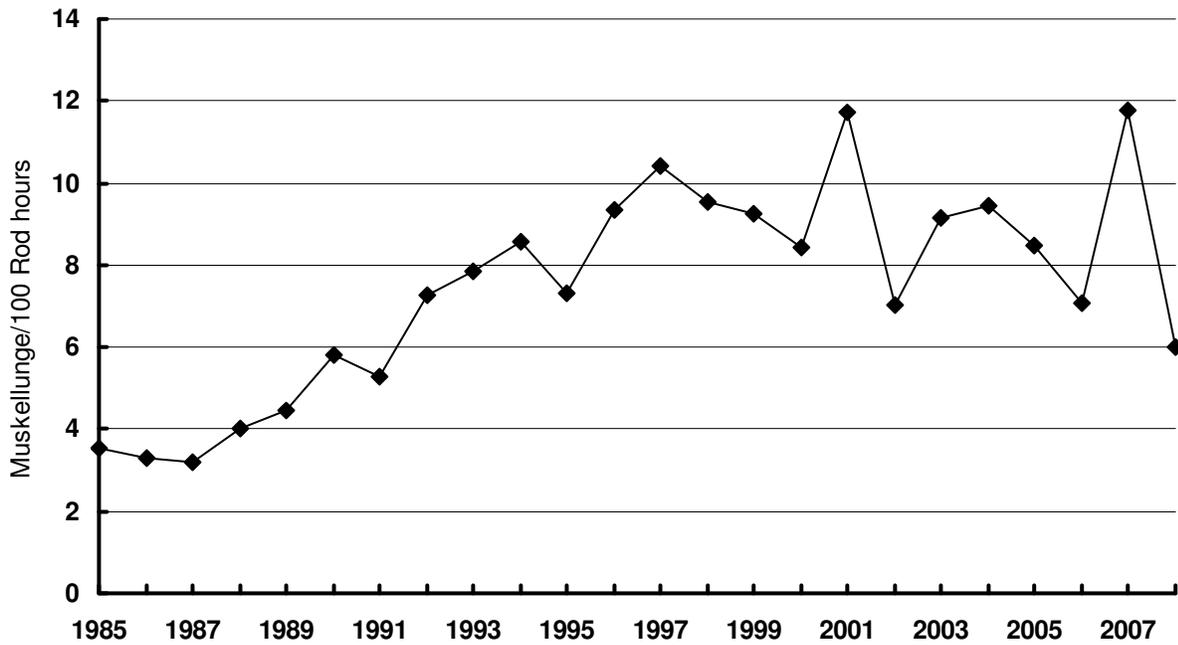


Figure 8.—Lake St. Clair muskellunge catch rate from Angler Diary Program, 1985-2008.



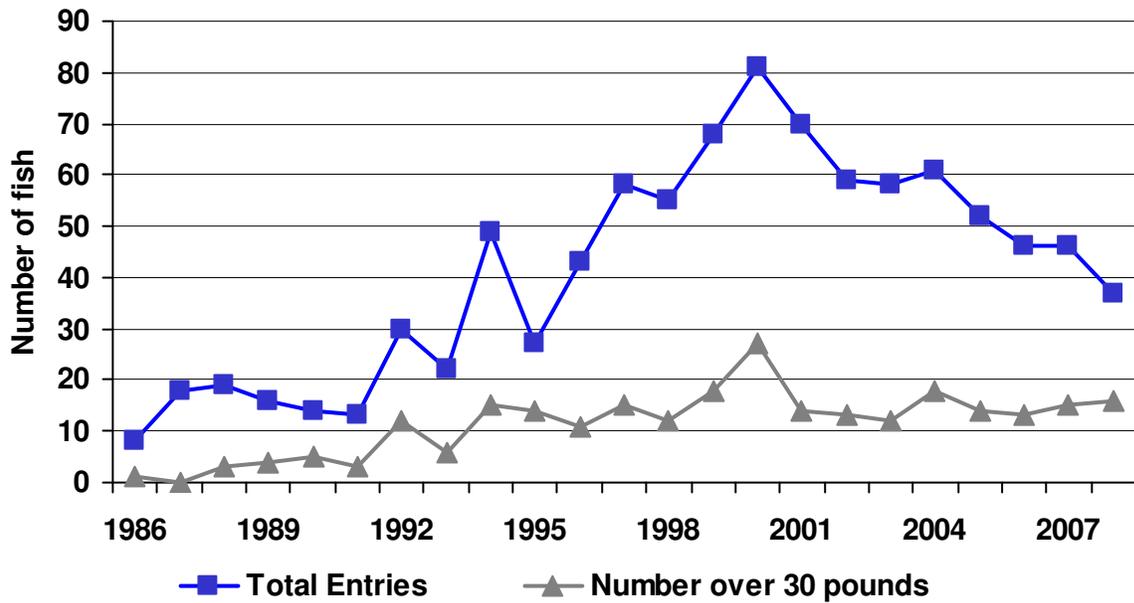


Figure 9.—Lake St. Clair muskellunge entered in the Michigan DNR Master Angler Program, 1986-2008. Values for 1992-2008 represent combined regular and catch-and-release Master Angler categories.

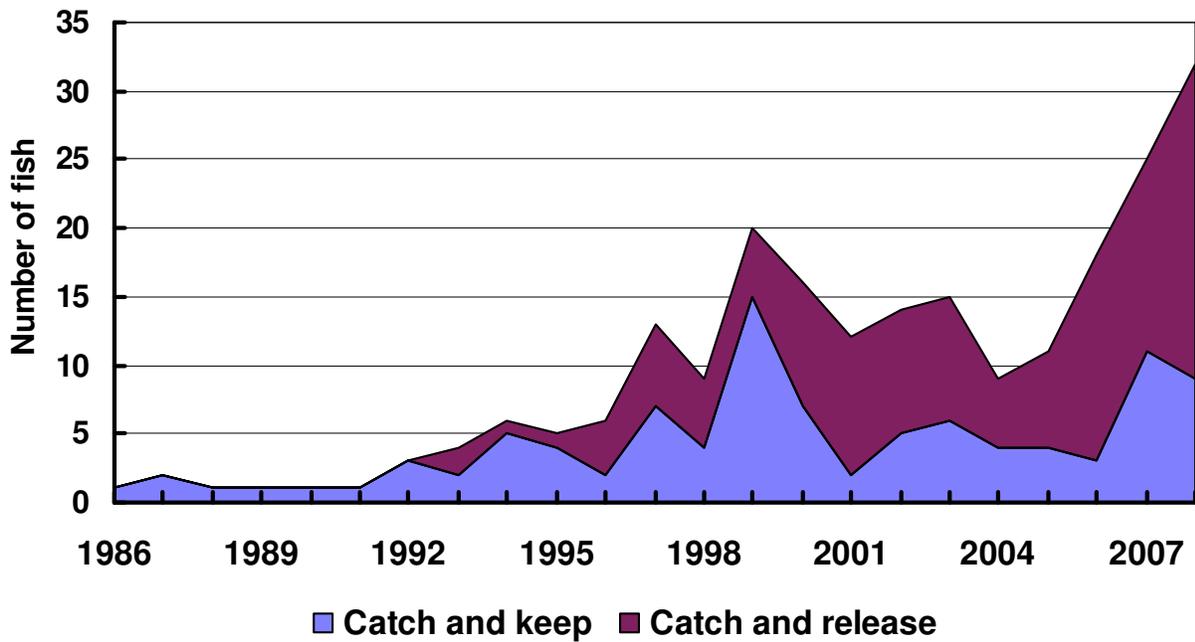


Figure 10.—Lake St. Clair smallmouth bass entered in the Michigan DNR Master Angler Program, 1986-2008.



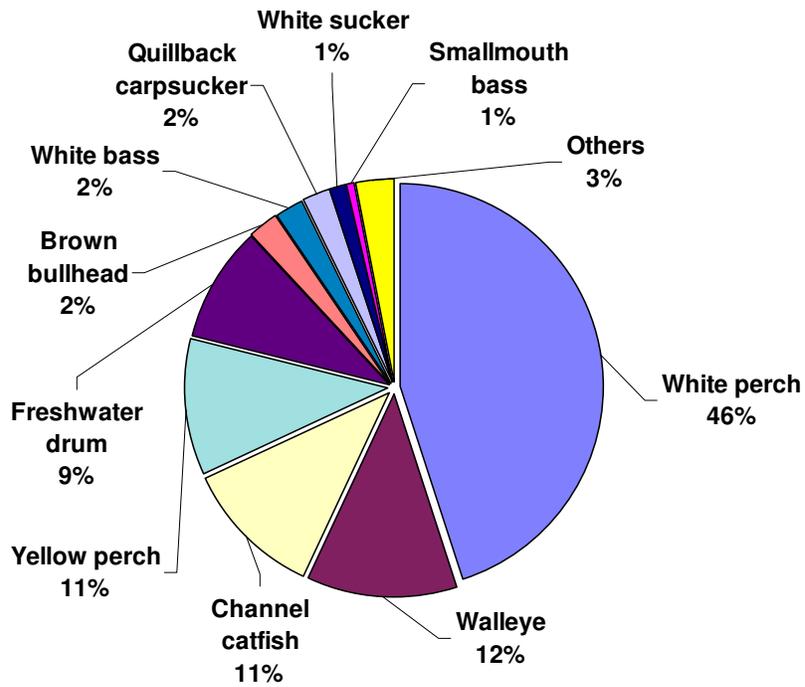


Figure 11 —Catch composition for trap nets fished in Lake Erie during April 2008.

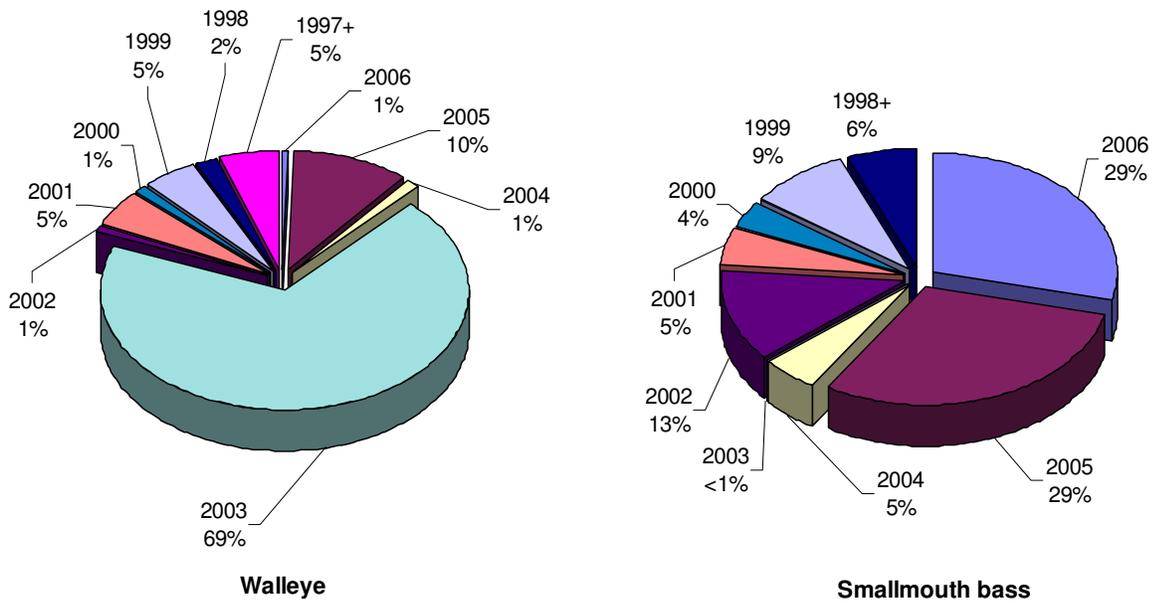


Figure 12 —Contribution by year class to catch in survey trap nets in Lake Erie, April 2008.



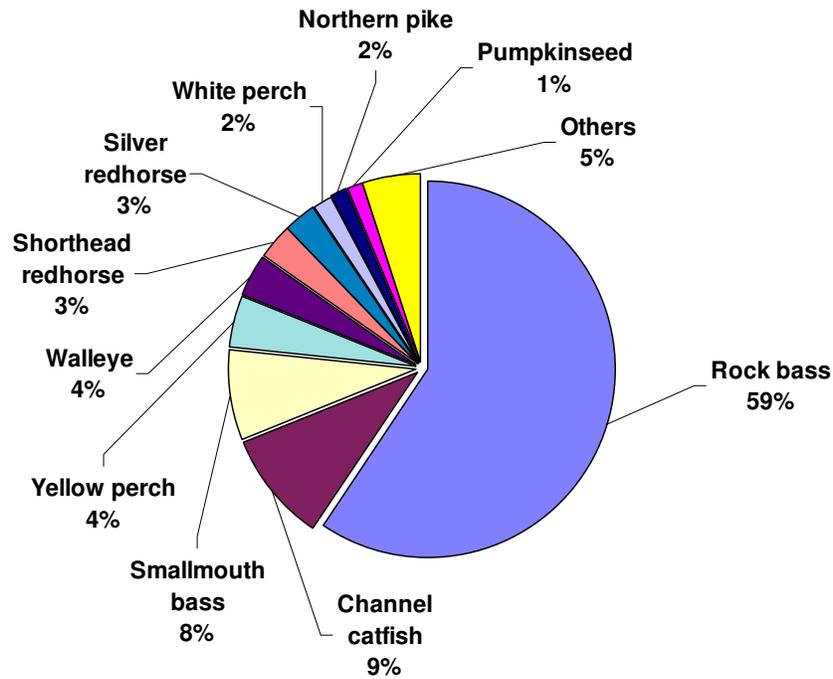


Figure 13.—Catch composition for trap nets fished in Lake St. Clair during May 2008.

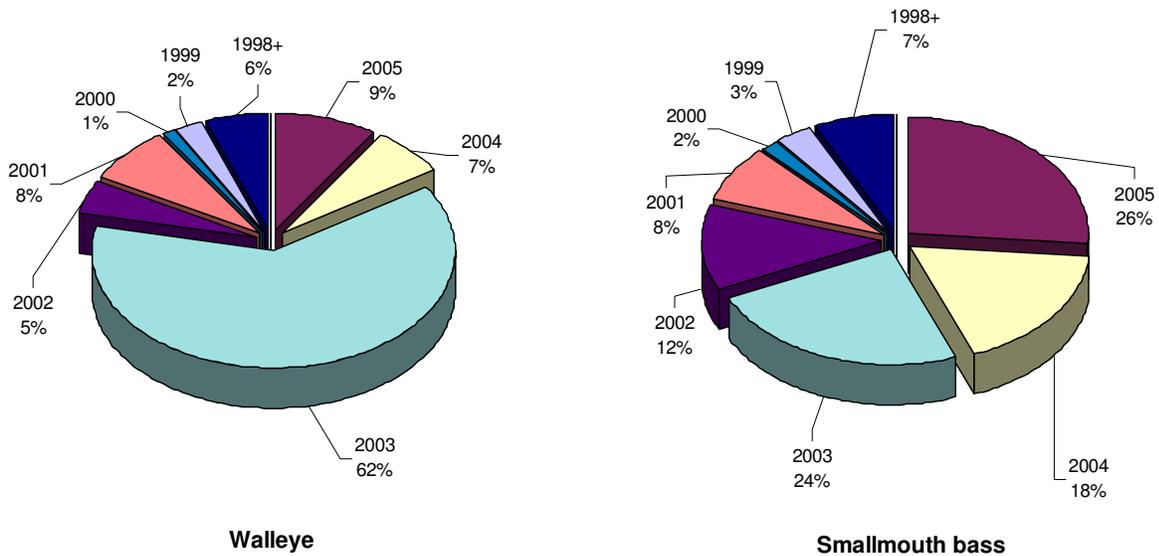


Figure 14.—Contribution by year class to catch in survey trap nets in Lake St. Clair during May 2008.



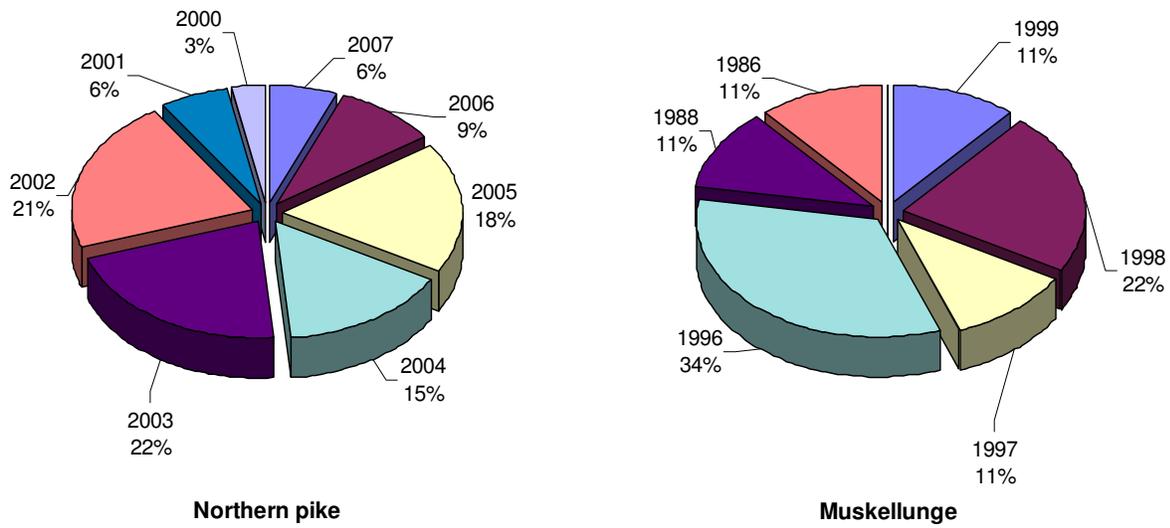


Figure 15.—Contribution by year class to catch in survey trap nets in Lake St. Clair during May 2008.

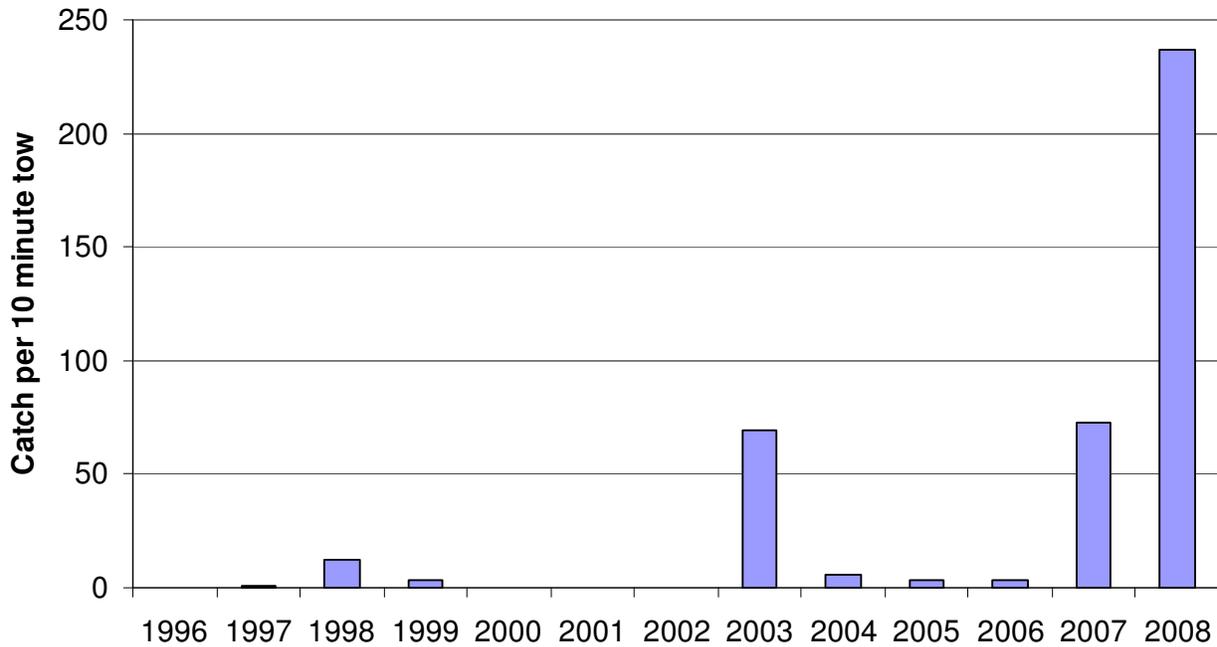


Figure 16.—Year-class strength for yellow perch in Lake St. Clair as indicated by September trawl catch rates, 1996 to 2008.



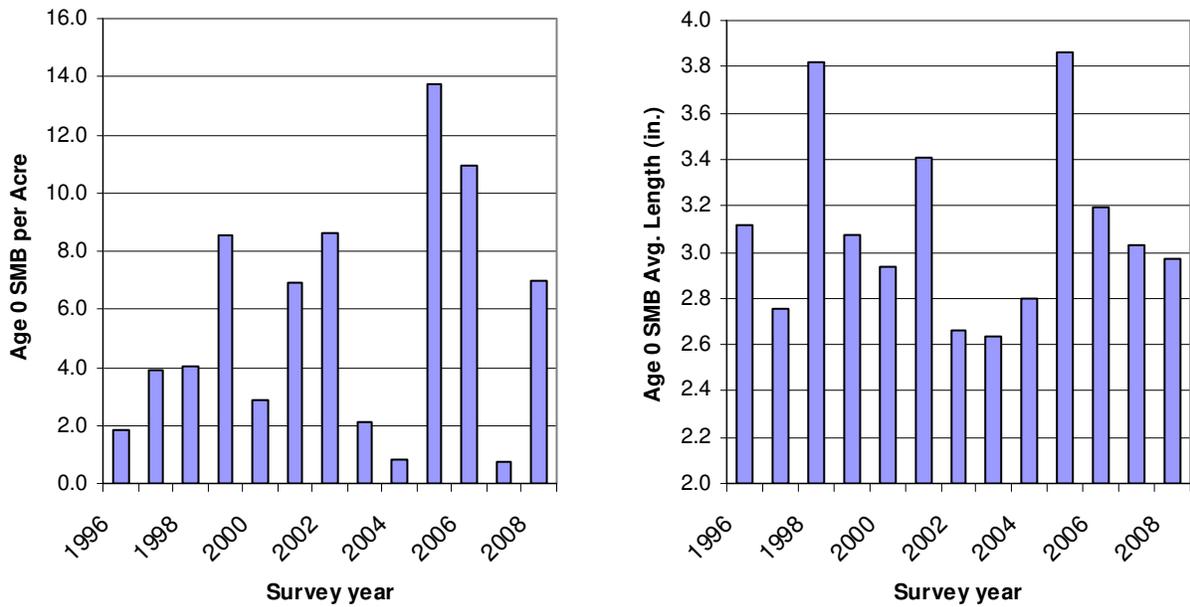


Figure 17.—Year-class strength for Lake St. Clair smallmouth bass as indicated by September trawl catch rates and mean length for young-of-year, 1996 to 2008.

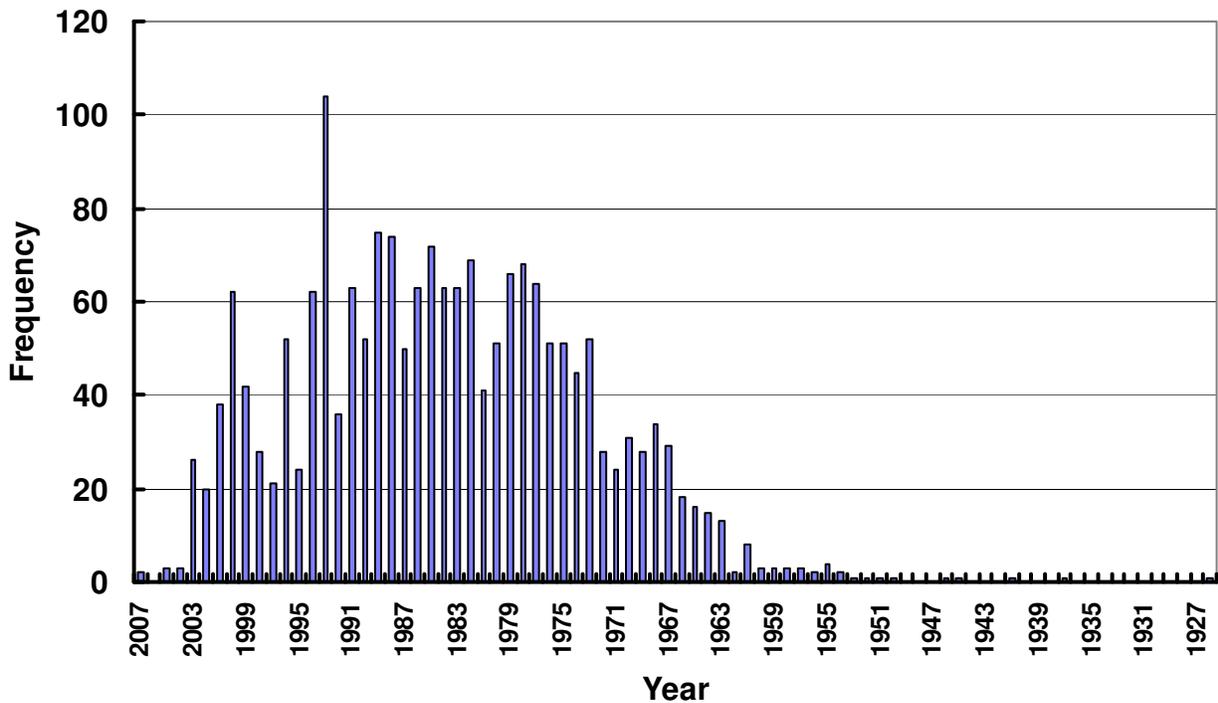


Figure 18.—Year of hatching for lake sturgeon sampled from Lake St. Clair and St. Clair River from 1997 to 2008 by Lake St. Clair Fisheries Research Station (n=1,896).



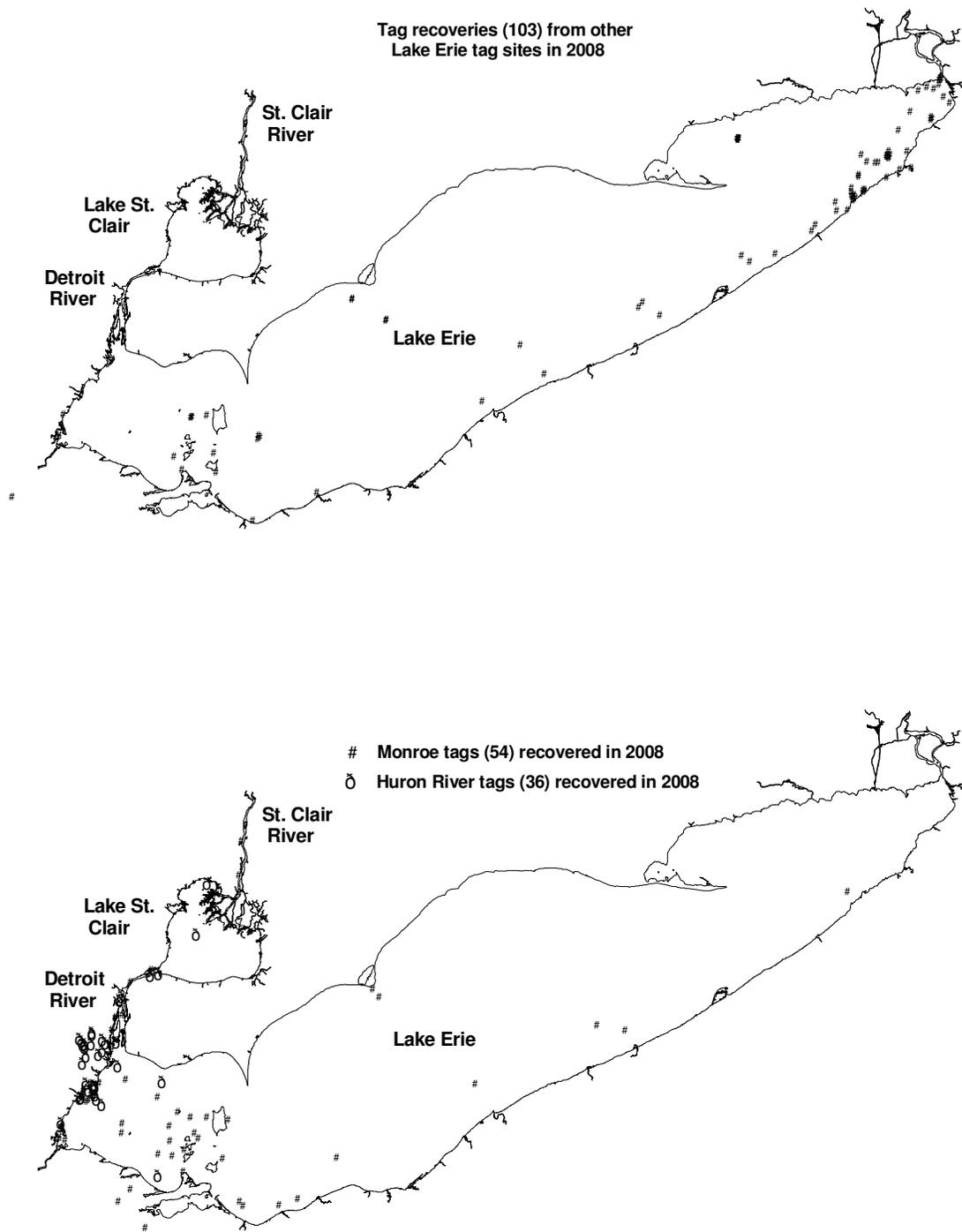
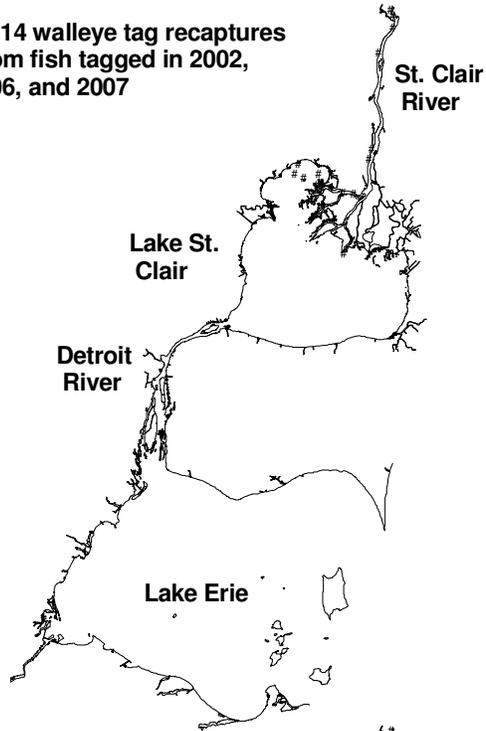


Figure 19.—Geographical distribution of walleye tag recoveries in 2008 from fish tagged during all years in Lake Erie at Monroe and the Huron River at Flat Rock, MI (bottom map) and other Lake Erie tag sites (top map).



Distribution of 14 walleye tag recaptures during 2008 from fish tagged in 2002, 2003, 2005, 2006, and 2007



Distribution of 6 walleye tag recaptures during 2008 from 88 fish tagged in 2008

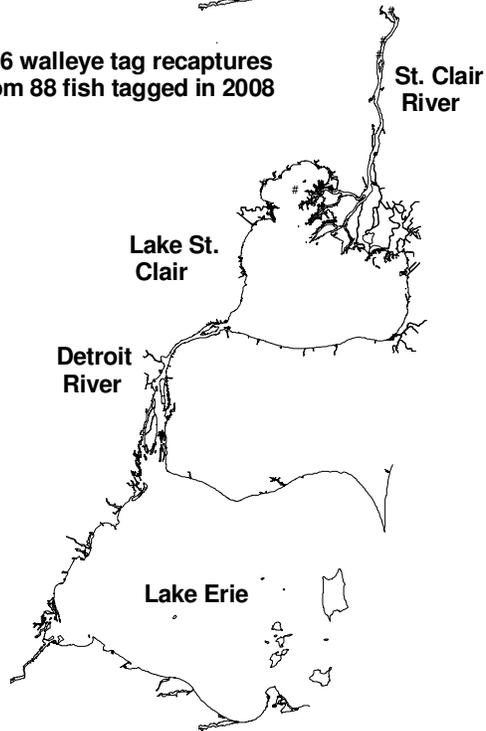


Figure 20.—Geographical distribution of walleye tag recoveries in 2008 from fish tagged during each year at the Anchor Bay site in Lake St. Clair



Table 1. —Estimated harvest, harvest rate, effort, and released catch for Michigan's 2008 Lake Erie non-charter boat fishery. Two standard errors in parentheses.

Species	C/H	Month							
		Apr	May	Jun	Jul	Aug	Sep	Oct	Season
HARVEST									
Yellow perch	0.2584 (0.0831)	26	7,372	3,497	9,506	41,330	38,701	34,171	134,603 (39,138)
Walleye	0.2211 (0.0507)	5,761	31,992	52,806	17,431	7,099	11	85	115,185 (25,547)
White perch	0.006 (0.0062)	0	1,393	0	670	1,070	0	0	3,133 (3,681)
Channel catfish	0.0018 (0.0017)	349	121	285	141	0	16	0	912 (884)
White bass	0.0096 (0.0054)	25	1,894	1,422	1,247	10	63	341	5,002 (2,712)
Freshwater drum	0.0023 (0.0021)	0	0	826	0	235	113	0	1,174 (1,080)
Largemouth bass	0.0001 (0.0002)	0	0	0	51	0	0	0	51 (96)
Smallmouth bass	0.0006 (0.0008)	0	0	238	64	0	0	22	324 (427)
Rainbow trout	0.0001 (0.0001)	12	0	27	0	0	0	0	39 (58)
Other	0.0000 (0.0001)	0	16	0	0	0	0	0	16 (32)
Total Harvest	0.5000 (0.1099)	6,173	42,788	59,101	29,111	49,745	38,904	34,618	260,440 (44,600)
EFFORT									
Angler hours		21,879	120,328	162,188	88,858	56,780	47,966	22,855	520,855 (71,711)
Angler trips		3,845	22,031	32,972	27,456	11,282	10,453	4,695	112,734 (11,642)
RELEASED									
Walleye Legal size	0.0063 (0.0071)	70	1,950	188	697	279	15	76	3,276 (3,667)
Walleye Sub-legal	0.0232 (0.0123)	0	172	2,675	6,402	2,736	76	17	12,078 (6,182)
Largemouth Bass	0.0245 (0.0178)	90	2,329	3,390	3,453	385	1,402	1,707	12,757 (9,081)
Smallmouth bass	0.0093 (0.0057)	412	809	616	1,522	973	38	461	4,831 (2,904)
White bass	0.1526 (0.0342)	1,872	36,290	22,458	7,912	7,293	3,448	204	79,478 (14,065)



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, 2008.

Species	Total harvest per hour	Harvest per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct ¹	
Rainbow trout	0.000	0.002	0	0	1	1	0	0	0	2
Yellow perch	0.321	8.129	0	29	121	232	2,671	3,557	462	7,072
Walleye	0.577	14.589	144	2,681	6,836	2,677	353	1	0	12,692
Other	0.005	0.123	3	37	47	6	11	3	0	107
Angler hours			410	4,226	10,584	3,863	1,679	1,064	172	21,998
Angler trips			68	769	1,960	727	301	205	33	4,063
Charter excursions			20	166	414	157	63	43	7	1,039

¹October 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, 2008.

Species	Total harvest per hour	Harvest per excursion	Month									Season
			Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Yellow perch	0.392	8.280	0	13	47	440	457	806	1,024	638	210	3,635
Walleye	0.218	4.608	0	893	800	64	110	140	16	0	0	2,023
Other	0.166	3.538	0	133	1,785	408	648	739	171	19	0	3,903
Angler hours			16	2,329	2,122	964	1,286	1,451	638	398	74	9,278
Angler trips			2	393	423	173	227	235	113	72	16	1,654
Charter excursions			1	115	120	42	61	56	24	16	4	439

Table 4.—Commercial harvest from Michigan waters of Lake Erie in 2008.

Species	Harvest (lbs.)	% of total harvest	Reported market value
Carp	204,881	21%	\$49,216
Buffalo	142,526	15%	\$70,572
Freshwater drum	137,301	14%	\$31,040
Gizzard shad	134,008	14%	\$33,758
White bass	98,041	10%	\$55,259
Goldfish	84,361	9%	\$63,254
Channel catfish	71,385	7%	\$34,150
White perch	56,867	6%	\$33,431
Bullhead	31,969	3%	\$13,118
Other ¹	13,491	1%	\$2,840
Grand Total	974,830	100%	\$386,636

¹Other category includes sucker and quillback



Table 5.—Mean catch per trap net lift for species commonly taken during spring trap net surveys in Michigan waters of Lake Erie.

Species	Survey year														
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Walleye	28.1	49.0	18.1	20.6	38.8	26.1	36.6	75.5	61.7	33.9	83.1	35.9	23.8	95.9	37.7
Smallmouth bass	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.1	0.2	0.1
Yellow perch	377	320.0	669.0	512.0	146.0	257.0	129.0	156.0	40.3	174.0	22.9	251.5	41.7	94.6	35.0
Rock bass	1.2	0.8	1.9	0.9	1.5	1.3	1.0	1.5	0.7	1.5	0.9	0.8	0.3	0.8	0.5
White bass	1.5	1.5	3.7	1.4	10.5	4.9	2.5	2.8	7.6	0.4	5.3	4.7	0.9	1.6	0.5
White perch	0	0.1	0.3	0.5	24.6	35.0	10.9	38.9	30.3	43.5	63.1	233.0	40.5	56.8	5.1
Pumpkinseed	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Bluegill	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0
Black crappie	0.2	0.0	0.2	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.4	0.2	0.0	0.0	0.0
Channel catfish	3.5	9.7	5.4	5.8	4.9	10.6	4.6	5.5	5.4	2.7	3.5	4.1	9.0	6.0	4.6
Brown bullhead	0.2	1.1	1.6	1.9	1.7	4.2	2.5	1.5	4.1	0.9	9.2	3.9	13.1	4.3	4.0
White sucker	7.8	8.3	7.9	12.2	8.7	6.7	10.2	33.0	10.2	7.0	6.7	2.8	4.3	13.5	14.6
Redhorse sp.	2.4	1.2	0.6	1.0	0.8	1.5	1.7	1.4	1.3	1.7	1.8	0.6	0.4	0.6	3.1
Freshwater drum	37.4	66.8	14.0	42.9	13.4	23.5	25.1	30.6	25.3	9.1	15.6	6.4	5.1	25.6	8.9
Common carp	5.1	26.1	4.7	8.2	6.9	14.9	3.5	2.0	1.9	0.6	6.0	0.6	2.3	2.3	1.3
Goldfish	4.8	2.4	0.3	0.4	0.4	2.5	0.6	0.2	0.1	0.0	0.2	0.1	0.1	0.1	0.1
Gizzard shad	4.4	4.7	2.3	3.9	17.8	28.4	18.1	17.4	2.7	2.3	15.9	0.3	2.3	0.0	0.6
Longnose gar	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowfin	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Quillback	4	18.6	1.8	2.0	2.4	5.6	2.0	1.9	1.7	1.8	1.5	0.7	1.9	2.9	4.4
Stonecat	0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
Total	477.9	510.3	731.8	613.9	278.8	422.4	248.7	368.5	193.6	279.7	236.4	546.2	145.8	305.5	120.5
% yellow perch	78.9	62.7	91.4	83.4	52.4	60.8	51.9	42.3	20.8	62.2	9.7	46.0	28.6	31.0	29.0
% white perch	0	0.0	0.0	0.1	8.8	8.3	4.4	10.6	15.7	15.6	26.7	42.7	27.8	18.6	4.2
Net lifts	50	46	48	36	37	53	57	51	49	55	51	55	82	29	55



Table 5. —Continued.

Species	Survey year													78-89	90-99	78-08
	1993	1994	1995 ¹	1996	1997	1998	1999	2000	2002	2004	2005	2006	2008	Mean	Mean	Mean
Walleye	39.2	53.0	26.2	52.0	30.2	34.8	38.0	41.4	35.7	38.7	11.6	73.5	27.5	42.3	43.1	41.7
Smallmouth bass	0.2	0.8	2.2	2.1	1.2	1.9	1.9	2.2	1.2	3.3	2.2	2.4	1.7	0.1	1.1	0.9
Yellow perch	50.2	23.2	10.3	36.6	30.7	33.3	61.0	50.1	74.5	11.2	2.0	6.0	24.7	254.6	41.5	129.9
Rock bass	1.2	1.0	4.1	1.1	0.9	1.0	2.8	0.7	1.1	0.9	0.6	1.3	0.8	1.2	1.4	1.2
White bass	0.1	1.1	2.1	0.6	2.6	1.3	4.6	4.0	3.0	7.7	6.8	30.3	5.4	3.9	1.5	4.3
White perch	0.0	14.7	72.8	5.9	10.2	8.7	79.4	54.7	36.3	62.2	84.1	403.0	103.1	40.0	29.4	52.4
Pumpkinseed	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0
Bluegill	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black crappie	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Channel catfish	4.6	5.4	3.7	8.8	4.4	11.4	16.0	5.2	8.0	7.6	1.4	2.2	25.1	5.5	7.4	6.8
Brown bullhead	1.6	1.1	0.2	1.1	0.4	0.0	1.0	2.9	0.8	0.7	0.2	0.7	5.7	2.7	2.7	2.5
White sucker	9.0	5.8	7.4	14.0	4.7	15.0	6.0	5.8	6.3	4.3	1.6	2.6	3.0	10.1	9.4	8.5
Redhorse sp.	3.6	1.8	1.0	5.5	1.9	3.3	2.2	3.8	4.8	4.3	1.8	3.9	2.3	1.3	2.3	2.1
Freshwater drum	20.7	8.8	13.0	15.4	6.8	28.3	50.4	11.3	42.7	21.5	4.2	6.2	21.1	25.8	18.3	21.4
Common carp	1.4	3.7	2.9	8.2	0.6	3.1	8.0	12.2	1.6	7.6	1.6	1.8	1.2	6.7	3.4	5.0
Goldfish	0.0	4.4	0.1	0.5	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.6	1.0	0.5	0.7
Gizzard shad	0.3	0.3	1.7	0.3	0.0	0.0	0.2	2.4	0.1	0.0	0.2	1.0	1.5	9.9	0.6	4.6
Longnose gar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowfin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quillback	3.2	4.6	6.7	8.9	2.2	7.9	8.5	3.7	20.8	14.2	3.3	14.5	5.1	3.7	5.1	5.6
Stonecat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	135.2	129.6	155.2	161.2	96.9	150.0	280.3	200.4	237.0	184.4	121.7	549.5	229.1	409.0	167.8	289.6
% yellow perch	37.1	17.9	6.2	22.7	31.7	22.2	21.8	25.0	31.4	6.1	1.7	1.1	10.8	55.2	24.8	35.2
% white perch	0.0	11.3	46.9	3.6	10.5	5.8	28.3	27.3	15.3	33.7	69.1	73.3	45.0	11.1	15.7	19.8
Net lifts	40	45	39	45	57	44	45	51	81	38	42	29	48	49	48	48

¹Sampling period delayed two weeks.

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																	
		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1977	171.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1978	61.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1979	72.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1980	92.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1981	72.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1982	306.2	0.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1983	34.6	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1984	147.7	2.0	0.5	0.3	0.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1985	177.2	1.5	1.3	0.8	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1986	297.5	19.5	11.0	3.8	2.0	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—
1987	127.8	20.0	13.8	2.5	3.8	1.0	0.5	0.8	—	0.3	—	—	—	—	—	—	—	—	—
1988	125.0	9.3	7.3	4.5	4.5	0.5	0.8	0.8	0.0	—	—	—	—	—	—	—	—	—	—
1989	52.6	17.0	10.0	2.8	3.3	1.3	0.8	0.8	0.3	0.3	—	—	—	—	—	—	—	—	—
1990	136.4	54.5	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	180.5	—	—	—	—	—	—	—	—	—	57.0	73.3	21.5	5.8	13.0	6.8	1.5	1.3	0.3
2000	21.4	—	—	—	—	—	—	—	—	—	—	6.5	6.3	0.8	4.0	2.0	0.8	1.0	0.0
2001	133.7	—	—	—	—	—	—	—	—	—	—	—	42.8	32.5	43.8	10.0	1.8	1.8	1.0
2002	14.4	—	—	—	—	—	—	—	—	—	—	—	—	0.8	4.0	6.5	2.3	0.8	0.0
2003	322.5	—	—	—	—	—	—	—	—	—	—	—	—	—	81.2	157.5	48.3	28.0	7.5
2004	9.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.8	2.3	3.3	0.5
2005	31.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.3	17.0	2.5
2006	3.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	1.3
2007	69.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	69.0
Total		126.3	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
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.

Species	Survey year							Mean
	2002	2003	2004	2005	2006	2007	2008	
Black crappie	0.00	0.02	0.35	0.00	0.00	0.00	0.00	0.05
Bluegill	0.08	0.00	0.11	0.03	0.05	0.00	0.11	0.05
Bowfin	0.00	0.04	0.05	0.00	0.02	0.00	0.00	0.02
Brown bullhead	0.03	0.02	0.03	0.00	0.02	0.02	0.00	0.02
Channel catfish	3.81	4.14	3.92	2.50	4.33	4.24	6.31	4.18
Common carp	0.52	0.62	1.30	0.32	0.88	0.60	0.26	0.64
Freshwater drum	2.07	10.80	3.65	0.70	8.24	1.10	0.80	3.91
Gizzard shad	0.05	0.08	0.02	0.06	0.02	0.02	0.00	0.04
Golden redhorse	0.02	0.04	0.04	0.06	0.05	0.02	0.00	0.03
Lake sturgeon	0.03	0.14	0.07	0.03	0.10	0.00	0.17	0.08
Largemouth bass	0.36	0.10	0.25	0.06	0.07	0.18	0.20	0.17
Muskie	0.64	0.56	1.41	1.64	1.09	1.02	0.29	0.95
Northern pike	1.87	0.30	1.30	2.00	2.05	1.30	1.03	1.41
Pumpkinseed	4.96	1.54	1.12	0.05	0.52	0.82	0.91	1.42
Quillback carpsucker	0.38	0.30	0.60	0.15	0.91	0.12	0.60	0.44
Redhorse	0.00	0.00	2.85	0.00	0.00	0.00	0.00	0.41
Rock bass	49.50	32.00	33.80	12.30	35.10	42.50	40.43	35.09
Shorthead redhorse	1.84	4.08	1.53	1.44	4.00	0.80	1.97	2.24
Silver redhorse	0.50	0.66	1.29	1.26	2.98	0.62	1.91	1.32
Smallmouth bass	6.23	19.20	5.49	3.32	8.21	11.80	5.29	8.51
Walleye	3.79	3.60	2.67	5.50	5.12	3.58	2.54	3.83
White bass	0.03	0.10	0.07	0.00	0.14	0.12	0.54	0.14
White perch	0.20	0.10	0.80	0.12	2.38	0.20	1.17	0.71
White sucker	0.28	0.20	0.27	0.20	0.43	0.52	0.31	0.32
Yellow perch	4.89	1.14	5.01	0.97	1.26	2.54	2.94	2.68
Total all species	82.07	79.78	68.00	32.71	77.97	72.12	67.80	68.63
Number of net lifts	64	50	55	34	42	50	35	
Starting date	5/3	5/28	5/3	5/11	5/5	5/3	5/6	
Ending date	5/30	6/20	5/26	5/25	5/24	5/22	5/20	
Starting water temperature (°C)	9	12	8	9	13	9	13	
Ending water temperature (°C)	15	16	15	13	13	13	11	
Average secchi depth (m)	1.8	2.2	1.2	2.2	1.7	2.6	2.1	



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.

Species	Year													Mean
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Alewife	29	11	3	2	4	3	3	0	0	0	0	0	0	4
Bluntnose minnow	1	0	0	0	11	10	7	1	6	118	1	13	0	13
Common carp	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Emerald shiner	1	0	0	0	5	0	11	0	2	0	0	0	32	4
Freshwater drum	7	13	5	2	1	5	1	4	3	6	4	3	0	4
Johnny darter	22	3	7	0	0	0	0	0	3	2	0	7	2	4
Lake sturgeon	2	0	0	0	0	0	1	1	0	0	2	1	0	1
Largemouth bass	0	0	0	0	0	1	0	0	0	0	0	4	0	0
Logperch	9	76	83	8	0	2	8	0	42	6	0	1	3	18
Mimic shiner	17	26	2	0	14	20	362	0	118	45	2	640	4	96
Muskellunge	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Northern pike	0	0	0	0	0	1	0	1	0	1	1	0	0	0
Shorthead redhorse	8	7	1	7	3	4	7	4	2	6	9	1	0	5
Pumpkinseed	0	1	0	0	0	2	0	0	0	0	1	1	0	0
Quillback	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	113
Rock bass	43	18	5	1	13	30	39	18	5	10	33	73	4	22
Round goby	5	14	28	6	11	1	30	6	53	10	0	30	1	15
Silver lamprey	0	0	0	1	0	0	0	1	1	0	5	2	0	1
Silver redhorse	1	2	0	0	1	0	2	5	2	1	1	2	0	1
Smallmouth bass	0	3	1	0	1	3	4	2	2	10	4	13	0	3
Spottail shiner	178	123	8	69	935	7	5,730	211	1,777	524	769	53	90	806
Trout-perch	231	346	99	154	34	11	265	13	108	65	248	7	2	122
Walleye	5	10	1	2	1	1	1	1	0	2	12	2	0	3
White perch	1	1	0	0	13	1	1	1	2	1	2	0	1	2
White sucker	5	4	4	0	3	1	61	2	68	22	5	1	20	15
Yellow perch	1,184	560	250	867	158	1,132	725	306	888	1,107	869	303	3,137	884



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.

Species	Year													Mean
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Alewife	28	31	12	2	3	32	0	0	0	1	1	0	0	8
Bluntnose minnow	0	34	0	9	15	54	33	13	43	238	61	36	65	46
Common carp	0	1	0	0	0	1	2	0	0	1	0	0	0	0
Emerald shiner	4	1	8	0	0	0	1	0	41	36	608	0	1	54
Freshwater drum	1	1	0	1	1	2	0	1	5	2	3	2	0	1
Johnny darter	18	4	0	0	0	0	0	7	0	0	0	1	1	2
Lake sturgeon	2	0	1	0	0	0	0	0	0	0	0	0	1	0
Largemouth bass	0	0	0	3	2	16	36	13	13	29	22	58	50	19
Logperch	32	40	21	1	5	18	6	14	38	113	34	9	175	39
Mimic shiner	268	1,095	0	30	15	10	44	507	8,909	3,072	109	29	408	1,115
Muskellunge	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Northern pike	0	0	0	0	0	1	1	1	0	0	0	0	0	0
Shorthead redhorse	0	0	0	0	1	2	0	0	0	1	2	1	0	1
Pumpkinseed	0	4	0	2	0	5	5	3	1	0	5	8	24	4
Quillback	1	0	1	0	1	0	2	1	1	0	0	0	5	1
Rainbow smelt	1	17	0	0	1	0	0	4	26	0	1	0	1	4
Rock bass	18	82	1	89	93	40	41	35	25	77	67	71	211	65
Round goby	66	10	22	10	10	10	99	2	28	14	10	4	7	22
Silver lamprey	1	0	0	0	0	0	0	0	0	0	1	1	1	0
Silver redhorse	5	1	1	0	0	1	6	0	4	5	4	1	1	2
Smallmouth bass	14	11	25	11	6	0	51	7	3	41	32	3	22	17
Spottail shiner	17	487	45	200	51	879	2,407	1,068	545	2,410	2,668	983	2,191	1,073
Trout-perch	776	92	26	3	0	0	10	6	59	3	79	1	0	81
Walleye	7	1	3	1	1	0	11	0	2	9	3	1	0	3
White perch	16	12	8	0	0	0	13	8	6	146	12	31	398	50
White sucker	1	2	0	0	1	1	8	1	1	4	6	5	7	3
Yellow perch	34	27	69	22	41	114	73	181	48	52	34	220	625	118



Table 10.—Catch rate by age for yellow perch in June index trawl tows on Lake St. Clair.

Year class	Total CPUE	Survey year														
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1984	0.5	0.1	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—
1985	0.2	0.2	0.0	—	—	—	—	—	—	—	—	—	—	—	—	—
1986	0.1	0.1	0.0	—	—	—	—	—	—	—	—	—	—	—	—	—
1987	1.0	0.6	0.3	0.1	—	—	—	—	—	—	—	—	—	—	—	—
1988	3.1	1.6	0.9	0.3	0.3	—	—	—	—	—	—	—	—	—	—	—
1989	7.4	3.7	2.2	1.2	0.3	—	—	—	—	—	—	—	—	—	—	—
1990	24.0	4.1	13.4	5.2	1.3	—	—	—	—	—	—	—	—	—	—	—
1991	116.6	47.0	32.1	18.7	12.9	5.3	0.6	—	—	—	—	—	—	—	—	—
1992	51.1	3.4	5.8	11.5	9.6	18.4	1.1	0.1	0.5	—	0.7	—	—	—	—	—
1993	581.3	56.3	125.8	171.4	113.7	53.7	54.3	1.5	3.3	—	1.3	—	—	—	—	—
1994	903.0	—	166.2	293.2	348.2	53.2	20.6	8.3	10.6	1.3	0.7	—	0.7	—	—	—
1995	148.1	—	—	21.4	40.7	6.7	32.2	12.3	21.1	10.4	2.7	0.6	0.0	—	—	—
1996	279.7	—	—	—	33.3	108.5	70.3	11.3	35.3	9.7	9.4	0.6	1.3	—	—	—
1997	217.7	—	—	—	—	3.8	37.6	5.5	52.8	61.3	44.4	3.6	7.9	0.8	—	—
1998	1,354.9	—	—	—	—	—	650.2	114.1	347.7	83.7	118.4	22.7	17.7	0.4	—	—
1999	102.6	—	—	—	—	—	—	4.8	25.8	17.6	24.9	22.7	3.9	2.5	0.4	—
2000	82.1	—	—	—	—	—	—	—	2.7	4.6	5.4	43.0	20.5	1.6	4.3	—
2001	312.0	—	—	—	—	—	—	—	—	131.3	89.5	50.2	25.3	11.7	3.6	0.4
2002	89.3	—	—	—	—	—	—	—	—	—	8.7	11.4	6.1	11.7	51.0	0.4
2003	1,348.9	—	—	—	—	—	—	—	—	—	—	705.3	396.6	174.8	26.4	45.8
2004	262.8	—	—	—	—	—	—	—	—	—	—	—	9.0	158.3	17.8	77.7
2005	209.3	—	—	—	—	—	—	—	—	—	—	—	—	33.6	25.8	149.9
2006	112.7	—	—	—	—	—	—	—	—	—	—	—	—	—	4.5	108.2
2007	1,003.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,003.3

