

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
FISHERIES DIVISION

**STATUS OF THE FISHERIES  
IN MICHIGAN WATERS OF  
LAKE ERIE AND LAKE ST. CLAIR  
2007**



*Collecting blood from a Lake St. Clair muskellunge for VHS surveillance.*



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Website: [http://www.michigan.gov/dnr/0,1607,7-153-10364\\_10951\\_11304---,00.html](http://www.michigan.gov/dnr/0,1607,7-153-10364_10951_11304---,00.html)

Prepared for the GLFC Lake Erie Committee Meeting  
Niagara Falls, Ontario  
March 17, 2008

## Highlights for 2007

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 remained high in 2007, but yellow perch harvest rates were low in 2006 and 2007.
- Michigan non-charter anglers on Lake Erie caught over 166,000 walleye and harvested nearly 153,000 of those fish. Anglers reported releasing very low numbers of sub-legal size walleye in 2007 (5,932 released). The strong 2003 year class accounted for more than 80% of the Michigan sport harvest.
- Charter boat harvest rates for Lake Erie walleye were about three times higher than 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 2007.
- Rock bass, smallmouth bass, and channel catfish were the dominant species in the Lake St. Clair trap net survey in 2006. 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 2007

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 and Lake St. Clair, with a strong contribution from the 2003 year class. Although walleye abundance will decrease in 2008, the average size of walleye available for anglers will be larger. However, since larger walleye tend to be more migratory, anglers will likely find it more difficult to consistently locate the schools in both the Michigan waters of Lake Erie and also in the St. Clair system. Muskellunge and bass numbers tend to remain more stable from year to year and both species should continue to provide excellent fishing opportunities in 2008, 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 about the same this year, remaining well 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 369,624 fish (Table 1) for Michigan's 2007 Lake Erie sport fishery (non-charter). In combination, walleye and yellow perch accounted for 88% of the total harvest, reflecting their importance in the sport fishery. Although few bass are harvested by Michigan's Lake Erie anglers, over 20,000 largemouth and smallmouth bass were reported caught and released. Estimated angler effort in 2007 decreased from 2006 and remained within the range of effort observed since 1991 (Figure 1). The walleye harvest rate in 2007 declined by 30% from 2006, but was still the third highest catch rate observed in the last 10 years (Figure 2). The yellow perch harvest rate increased by about 15% in 2007, but was still the second lowest since 1995. 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 2007 on-site creel survey. The walleye harvest was dominated by the 2003 year class (age 4), which represented 83% 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 4 walleye averaged 460 mm (18.1 in.) in total length. The overall average length of walleye harvested in the sport fishery in 2007 was 469 mm (18.5 in.).

Yellow perch harvest was dominated by age 4 fish (2003 year class), which accounted for 56% of the total harvest (Figure 3). In combination, age 2 and age 3 fish contributed an additional 31% of the total harvest. Average lengths of harvested age 2, 3, and 4 yellow perch were 210 mm (8.3 in.), 220 mm (8.7 in.), and 239 mm (9.4 in.), respectively. The overall average length of yellow perch harvested in the sport fishery in 2007 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 2007 (Figure 4).

Since 1989, Michigan charter boat operators have been required to report their charter fishing harvest and effort to the MDNR. In 2007, Michigan charter boat anglers harvested 29,818 fish from Lake Erie (Table 2). Walleye (66%) and yellow perch (33%) were the major species harvested, accounting for 99% of the harvest. The walleye harvest rate in 2007 declined, but remained comparable to the harvest rates observed during most years from 1992 to 2003 (Figure 5). In contrast, the yellow perch harvest rate increased slightly, but remained comparatively low. The charter boat walleye harvest rate was about three times higher than those estimated for non-charter anglers in 2007, 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 16,645 fish (Table 3). Yellow perch (62%), walleye (28%), and "other" species (10%), 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 improved in 2007 and were the highest recorded since the charter boat reporting

system was initiated in 1990 (Figure 6). Yellow perch harvest rates increased for the third consecutive year, reaching the highest level since 2002. 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 2007, the Lake Erie charter harvest rate was roughly double 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 2007 by about 30% (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 2007, 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 increased in 2007 to the highest total reported since 1991. 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 (Figure 8). The quality of the Lake St. Clair muskellunge fishery is also reflected in the MDNR's Master Angler Program. The total number of muskellunge from Lake St. Clair entered for Master Angler Awards in 2007 remained below 50 fish for the second consecutive year (Figure 9), with 46 of the 53 total statewide entries originating from the St. Clair system. In fact, a slight downward trend in total entries and number of fish over 30 pounds was



evident over the past 3 years. 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. However, it is important to recognize that 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 21% of all smallmouth bass entries in 2007 (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 seven 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 2007, 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 Michigan's Lake Erie shoreline. However, in 2006 and 2007, a small-mesh trap net license was active. The 2007 commercial harvest included 12 types of fish for a total of 1,058,253 pounds (Table 4), exceeding the one million pound harvest mark for the first time since 1985. In combination, common carp (23%), gizzard shad (23%) and buffalo (20%) accounted for 66% of the total harvest by weight. The major species in the trap

net harvest included gizzard shad (213,135 lbs.), carp (241,066 lbs.), and buffalo (165,175 lbs.). The total value of the 2007 Lake Erie commercial harvest from Michigan waters was estimated at \$398,253.

## Summary of Netting Surveys

Since 1978, the MDNR has fished variable mesh multi-filament gill nets at two locations in western Lake Erie each fall, as part of the interagency yearling walleye assessment program. During 2007, four net lifts caught a total of 280 walleye. The total walleye catch-per-effort (CPE) for the index sites (55.8) declined by more than 20% from 2006 (Table 5). Age 4 walleye (2003 year class) accounted for 50% of the catch, while the CPE for yearling walleye (2006 year class), 1.8 fish per net lift, was among the lowest recorded. Total CPE for the dominant 2003 year class exceeded the total CPE observed for any previous year class, including the exceptional 1982 and 1986 year classes. Unfortunately, presence of five very weak year classes in the past 7 years will result in declining abundance for walleye over the next several years.

In 2007, 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 3,608 fish representing 20 species were captured during the survey. Rock bass were numerically dominant, accounting for 60% of the total (Figure 11). Other common species in the nets included smallmouth bass (15%), channel catfish (6%), and walleye (5%).

Ages were estimated for smallmouth bass and walleye based on interpretation of dorsal spine samples. Age composition for those species is presented in Figure 12. The dominant walleye year class was the 2003 year class (Age 4), accounting for 64% of the total catch. For smallmouth bass, the 2004 (14%), 2003 (30%) and 2002 (23%) year classes accounted for 67% of the total trap net catch. A total of 131 walleye and 553 smallmouth bass were tagged and released at the Anchor Bay trap net site in 2007.

Ages were estimated for northern pike and muskie caught in the Anchor Bay trap nets, based on interpretation of dorsal fin ray sections (Figure 13). For northern pike (n=60), 85% of the fish were 5 years old or younger. In contrast, for muskies (n=47), 57% of the fish were 10 years old



or older. The oldest muskie sampled in 2007 was 20 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 2007 trap net survey was 7.0 pounds. Over 26% 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 6). 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 16 trawl tows were conducted at the Anchor Bay index trawling site in 2007. The spring samples were dominated by mimic shiner, yellow perch, rock bass, and spottail shiner (Table 7). The species with highest mean densities in the fall samples were spottail shiner, yellow perch, rock bass, and largemouth bass (Table 8). 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 9). Yellow perch recruitment in 1994, 1998, and 2003 was strong, with total CPE values for those year classes all over 900 fish per tow. Alternatively, recruitment was poor from 1999 to 2002. Anglers will find the strength of the 2003 year class clearly illustrated by the number of yellow perch in the 7 to 9 inch size range in 2008.

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 2007 year class was very strong and similar in abundance to the exceptionally strong 2003 year class (Figure 14). Additionally, contributions from the 2004, 2005, and 2006 year classes have been lower, but steady. As a result, the Lake St. Clair yellow perch population will be dominated by age 5 and younger fish in 2008.

Smallmouth bass recruitment patterns appear fairly consistent based on September trawl catch rates of young-of-year (Figure 15). 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 156 lake sturgeon were collected during assessment surveys on Lake St. Clair and the St. Clair River in 2007. Sturgeon captured averaged 44.7 inches in total length, with a range from 19.5 inches to 68 inches. Ages were estimated for 125 sturgeon based on pectoral fin ray sections. Thirty-two year classes were represented with ages ranging from 4 to 51 years. Combined age samples from 1997-2007 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 16). 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 2007, a total of 4,383 walleye were tagged with non-reward jaw tags by Ontario, Ohio, New York, and Michigan at six Lake Erie and Lake St. Clair sites. A total of 118 non-reward tags placed on fish in 2007 were recovered by fishermen for a single season reporting rate of 3.3%. This is almost exactly the same rate as 2006. The 2007 site-specific reporting rate varied from a high of 9.9% at the Anchor Bay site, to a low of 1.2% for the Sandusky Bay site in Ohio waters of Lake Erie. We suspect tag recovery rate has remained high due to greater fishing effort and catch stimulated by good catch rates for the abundant 2003 year class. The distribution of tag recoveries



from Michigan's tagging sites on Lake Erie (Figure 17) 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 (131 fish) and smallmouth bass (553 fish) captured in survey trap nets in Anchor Bay during May, 2007 were tagged and released. A total of 13 walleye and 31 smallmouth bass tagged in 2007 were recovered by anglers and reported to MDNR. A map showing the geographical distribution of walleye tag recoveries in 2007 for walleye tagged in Anchor Bay is presented in Figure 18. On average, recaptured walleyes tagged prior to 2007 had traveled 31.7 km from the Anchor Bay tag site, while those tagged in 2007 had traveled 19.2 km. The tagged walleye recovered by anglers averaged slightly larger in total length at tagging (498 mm) compared to the overall tagged population (484 mm). This is a reversal of the difference observed in 2006 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 2007 were reported during May, June, and July and came from Lake St. Clair, the St. Clair River, and one from the middle of the Detroit River. In contrast, recoveries in 2007 of walleye tagged in Anchor Bay in 2002-2006 were reported during March through August and were caught from Lake Erie, the Detroit River, Lake St. Clair, and the St. Clair River. The four fish from Lake Erie and the lower Detroit River were caught prior to their tagging anniversary apparently preventing them from migrating to their traditional summer feeding grounds in Anchor Bay of Lake St. Clair. These results suggest 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 2006, there was virtually no difference in the tag reporting rate between walleye and smallmouth bass. However, in 2007 walleye reporting was 9.9% compared to 5.6% for smallmouth bass. Walleye tag reporting was similar both years and smallmouth bass reporting declined from 8.5% in 2006.

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, 181 tagged lake sturgeon have been recaptured with survey gear or reported by fishermen. A total of 106 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 37 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 46% of the sturgeon tagged and released during this study, but only 23 recoveries (13%) 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.

## Viral Hemorrhagic Septicemia

A new viral fish disease was identified in Lake St. Clair muskie samples collected in 2003. Since then, viral hemorrhagic septicemia (VHS) has been documented in yellow perch, freshwater drum, gizzard shad, spottail shiner, and emerald shiners from Lake St. Clair. The VHS virus is believed to have been a primary factor in die-offs of muskie, gizzard shad, and yellow perch in Lake St. Clair and the St. Clair River during spring 2006. It has also been linked to fish die-offs in Lake Erie (freshwater drum and yellow perch), Lake Ontario (freshwater drum and round goby), and Lake Huron (lake whitefish and walleye). The ultimate impact of this fish disease on the sport fish populations of the Huron-Erie Corridor is unpredictable.



In 2007, personnel from the Lake St. Clair Fisheries Research Station participated in VHS surveillance efforts on Lake Erie and Lake St. Clair. No fish kills were evident on these waters during 2007. Tissue samples were collected from fish captured in survey nets or commercial trap nets. Lake Erie samples included walleye (60 fish), freshwater drum (60 fish), channel catfish (60 fish), and carp (60 fish). From Lake St. Clair, a total of 60 yellow perch and 34 muskellunge were sampled. Samples were tested for VHS presence at the Animal Health Laboratory at Michigan State University. All samples tested negative for the virus. The Michigan DNR will monitor the fish populations of these waters during 2008 to gain a better understanding of the species affected and the impact of the disease on those populations.

Anglers are encouraged to report sick fish or fish kills to their local DNR office or use the DNR Web site at [www.michigan.gov/dnr](http://www.michigan.gov/dnr). Anglers should contact the DNR if they observe fish that exhibit any of the following signs: hemorrhaging in the skin, including large red patches particularly on the sides and anterior portion of the head; multiple hemorrhages on the liver, spleen, or intestines; or hemorrhages on the swim bladder that give the otherwise transparent organ a mottled appearance. This information will help DNR fisheries staff to track VHS and take appropriate management actions to help slow the spread of this virus.

Anglers and boaters can also help prevent the spread of VHS and other viruses or bacteria that cause disease in fish by not transferring fish between water bodies, and by thoroughly cleaning boats, trailers, nets, and other equipment when traveling between different lakes and streams. The use of a light disinfectant such as a solution of one part chlorine bleach to 10 parts water (i.e., one gallon of bleach to 10 gallons of water) to clean vessels and live wells is very effective against VHS and other viruses and bacteria that cause disease in fish. Soaking exposed items such as live wells, nets, anchors, and bait buckets in a light disinfectant for 30 minutes is also an effective method to prevent the spread of a wide range of aquatic nuisance species.

## 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 eight years. Water levels in the connecting waters are expected to be about the same in 2008 as last year, but will remain near the long term average. The effect of lower water levels on fish populations is uncertain. 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 6 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 will 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 2007 and will be even lower in 2008 and 2009, we do not anticipate a need for modifying the current Michigan Lake Erie sport fishing regulations at this time.

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 26, 2008) 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 21, 2008) to December 31. The harvest season for the Michigan waters of Lake Erie opens on the Saturday before Memorial Day (May 24 in 2008).



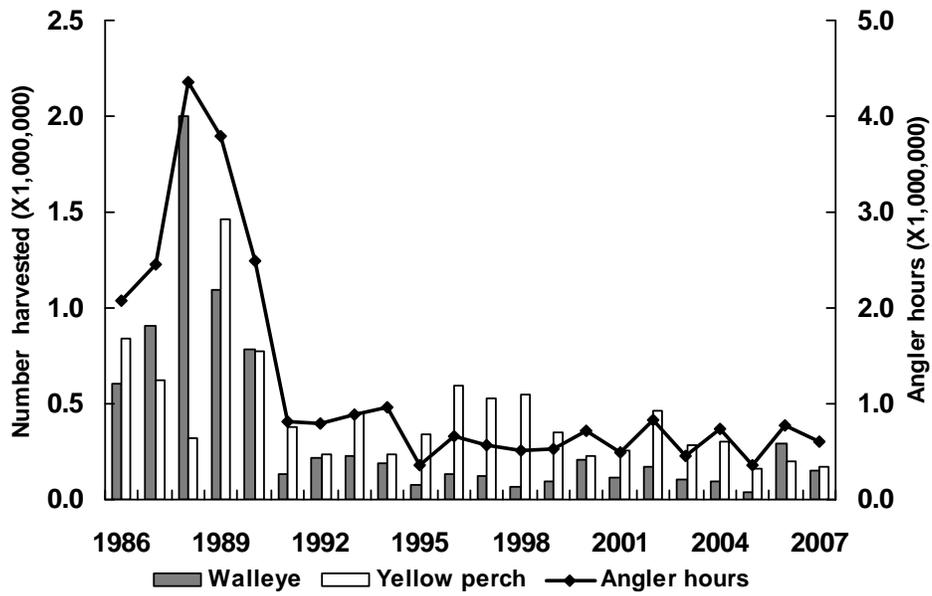


Figure 1.—Estimated harvest and effort for Michigan’s Lake Erie sport fishery, 1986-2007.

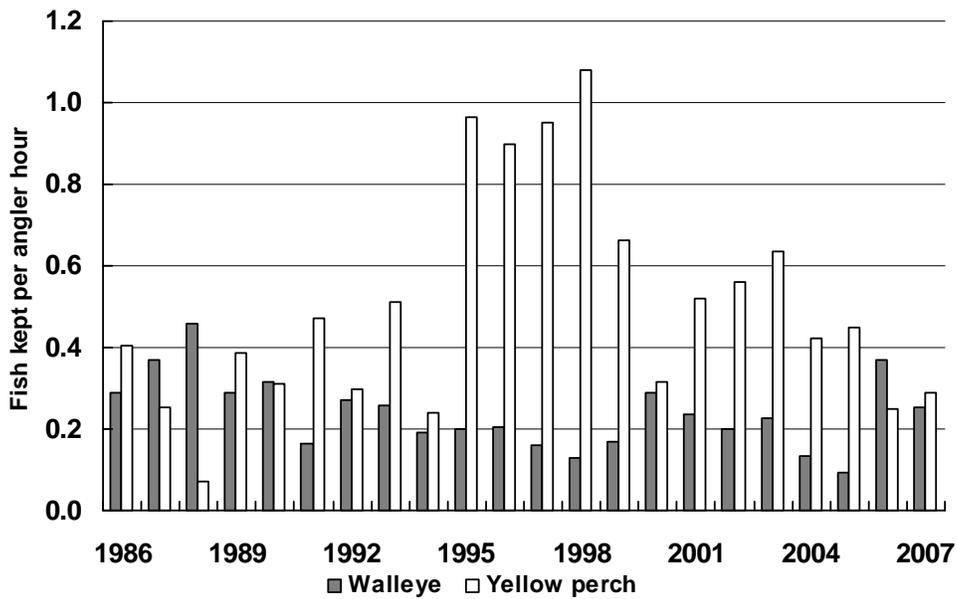


Figure 2.—Walleye and yellow perch harvest rates for Michigan’s Lake Erie sport fishery, 1986-2007.



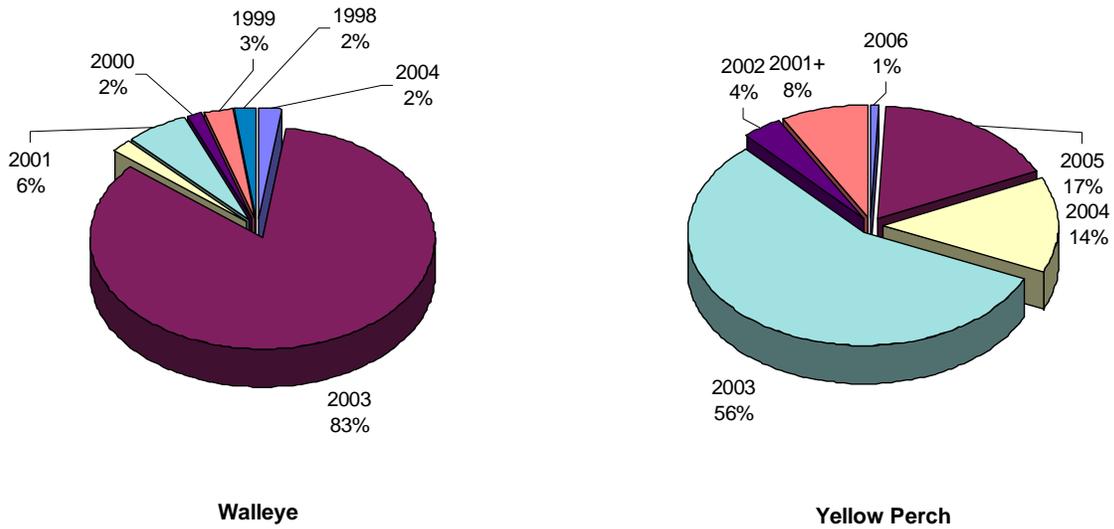


Figure 3.—Year-class contribution to Michigan sport harvest for walleye and yellow perch from Lake Erie in 2007.

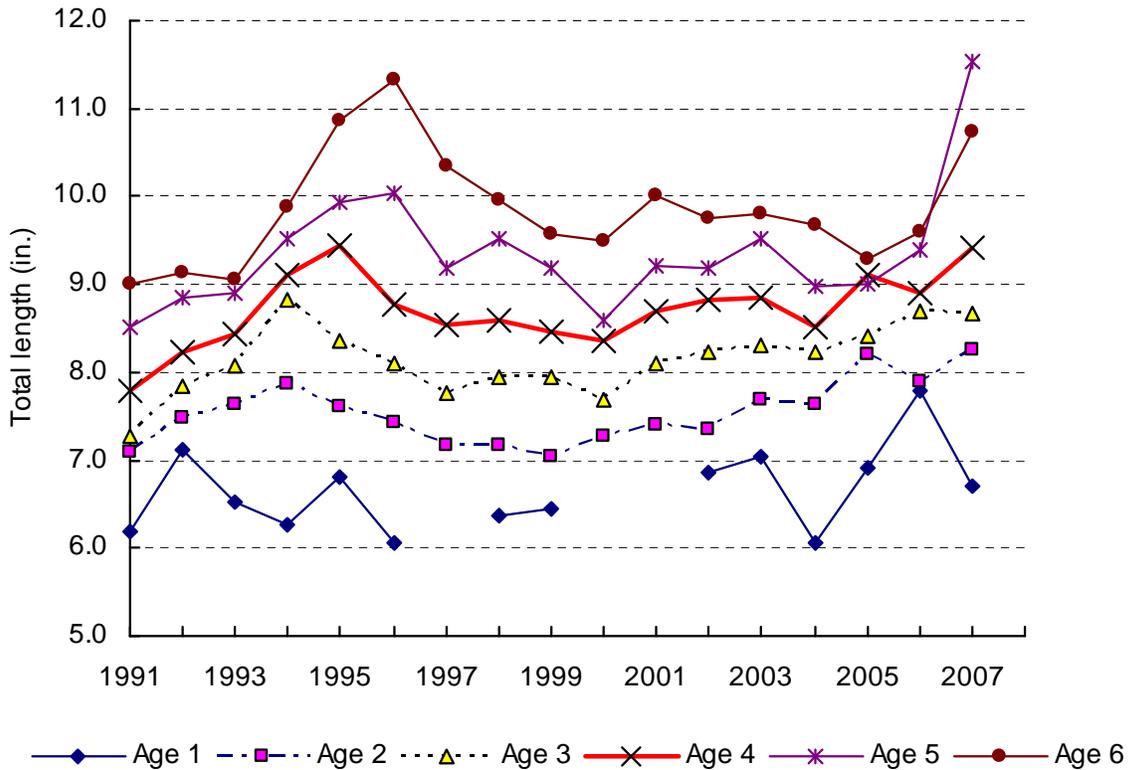


Figure 4.—Mean length at age for sport-harvested yellow perch from Michigan's waters of Lake Erie, 1991-2007.



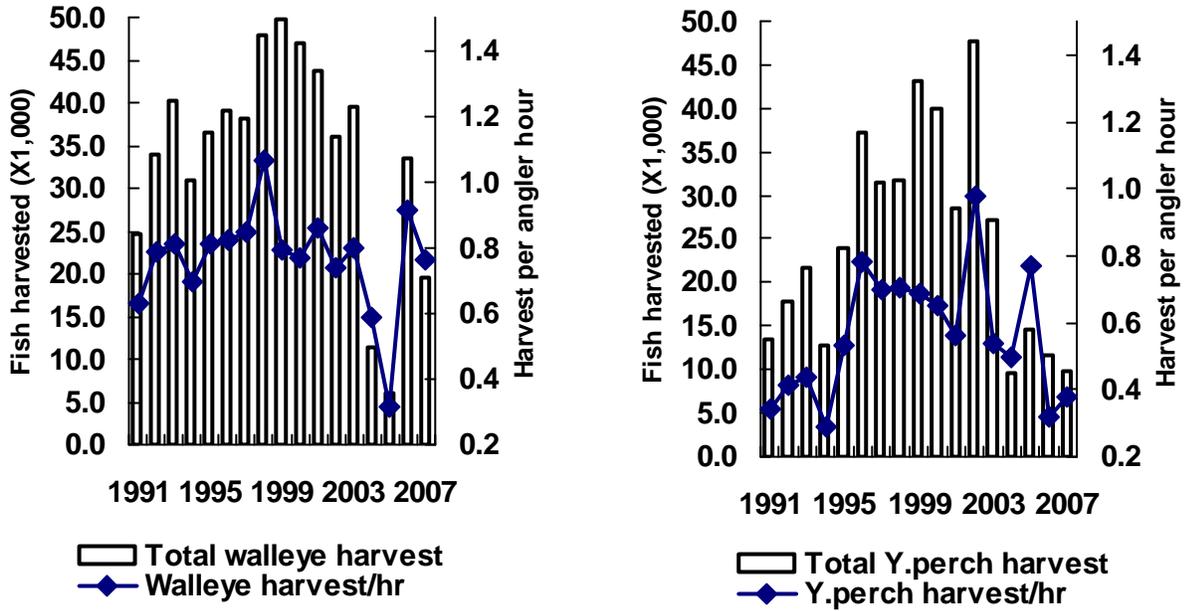


Figure 5.—Michigan charter boat harvest and harvest rates for Lake Erie, 1991-2007.

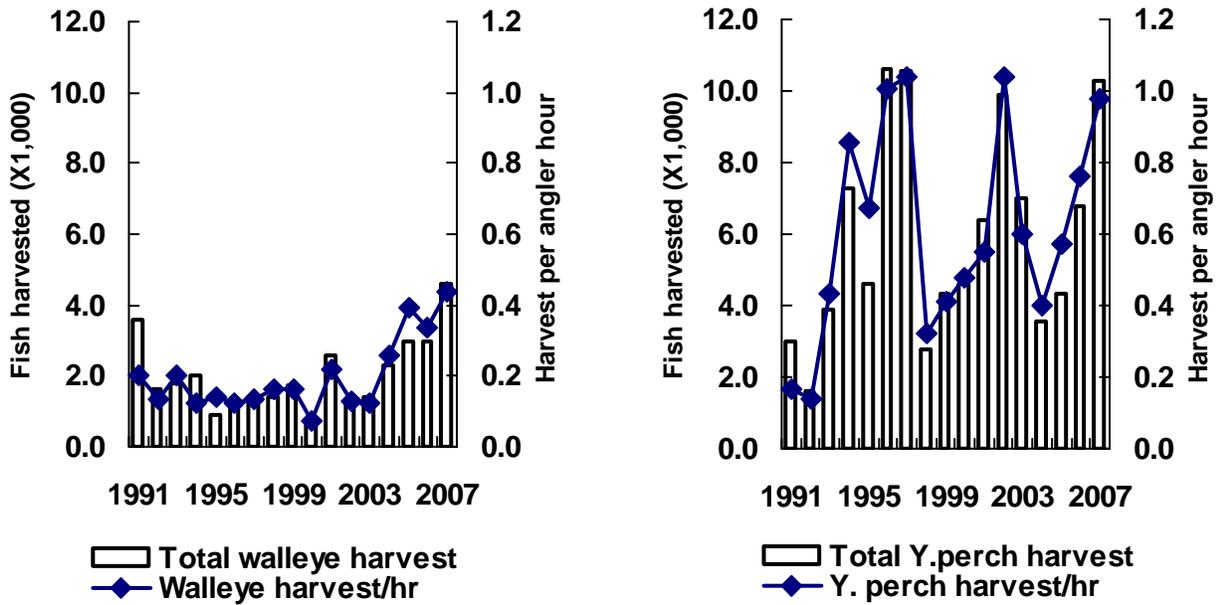


Figure 6.—Michigan charter boat harvest and harvest rates for the St. Clair-Detroit River system, 1991-2007.



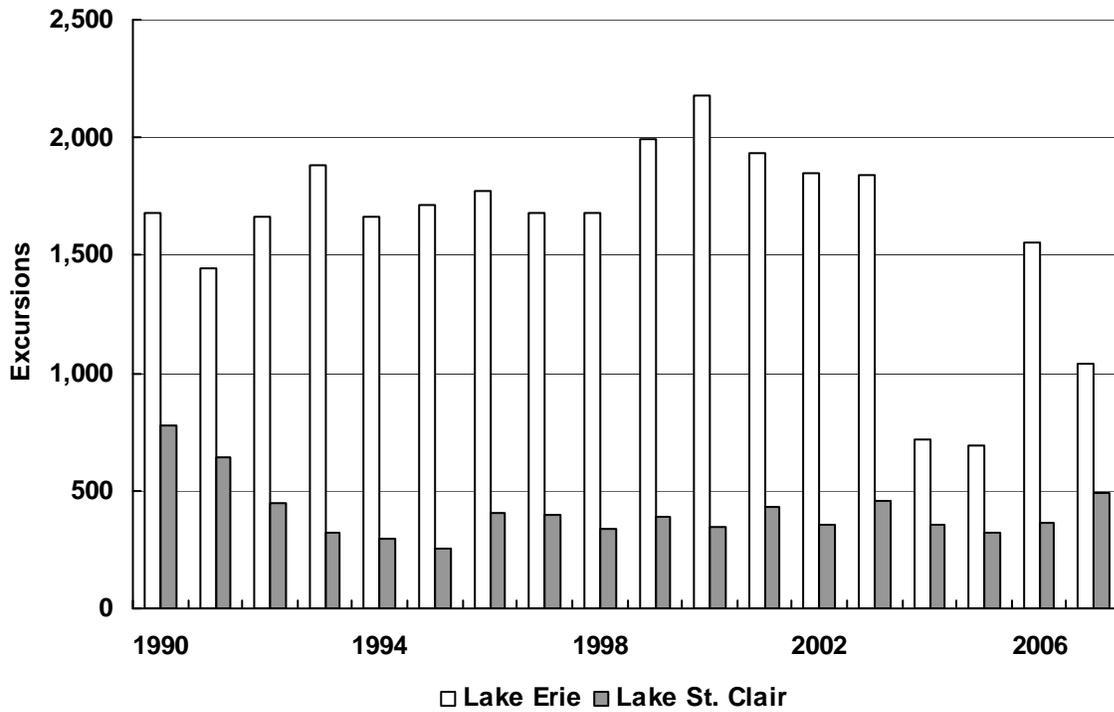


Figure 7.—Reported charter boat excursions on Lake Erie and the St. Clair-Detroit River system, 1990-2007.

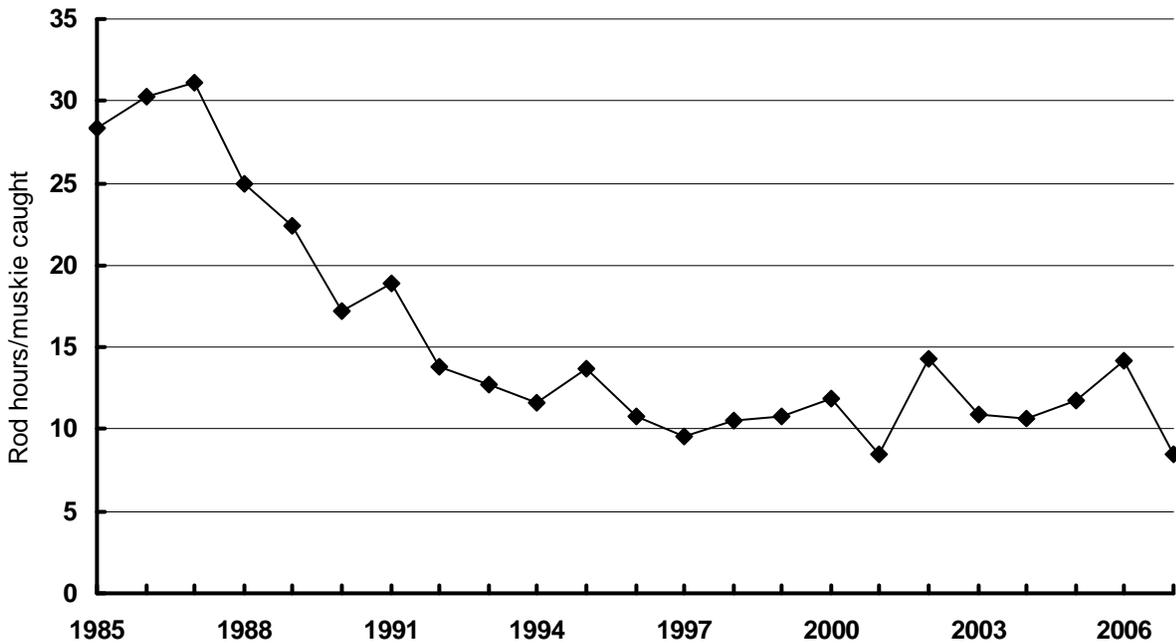


Figure 8.—Lake St. Clair muskellunge catch rate from Angler Diary Program, 1985-2007.



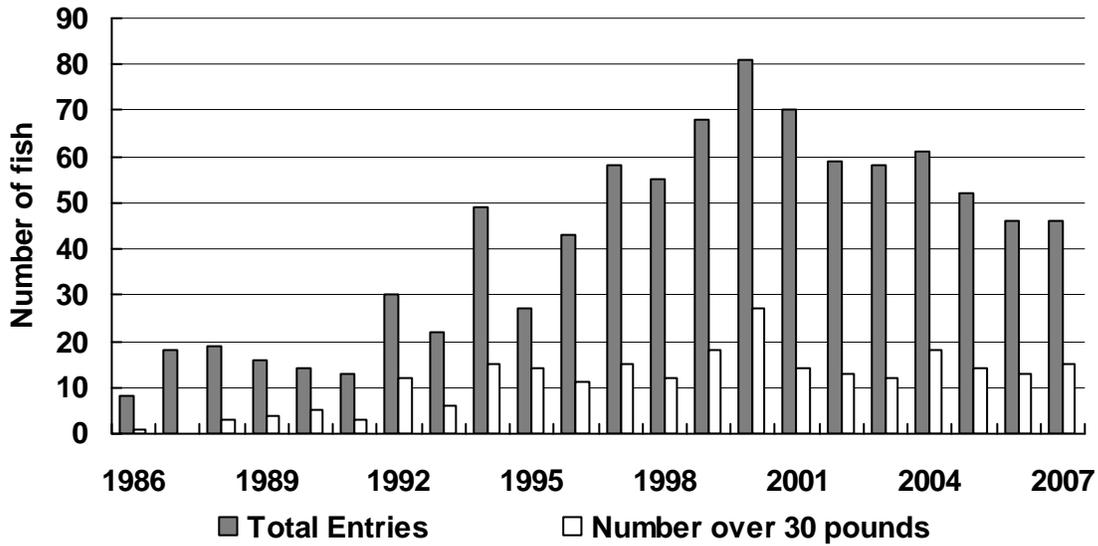


Figure 9.—Lake St. Clair muskellunge entered in the Michigan DNR Master Angler Program, 1986-2007. Values for 1992-2007 represent combined regular and catch-and-release Master Angler categories.

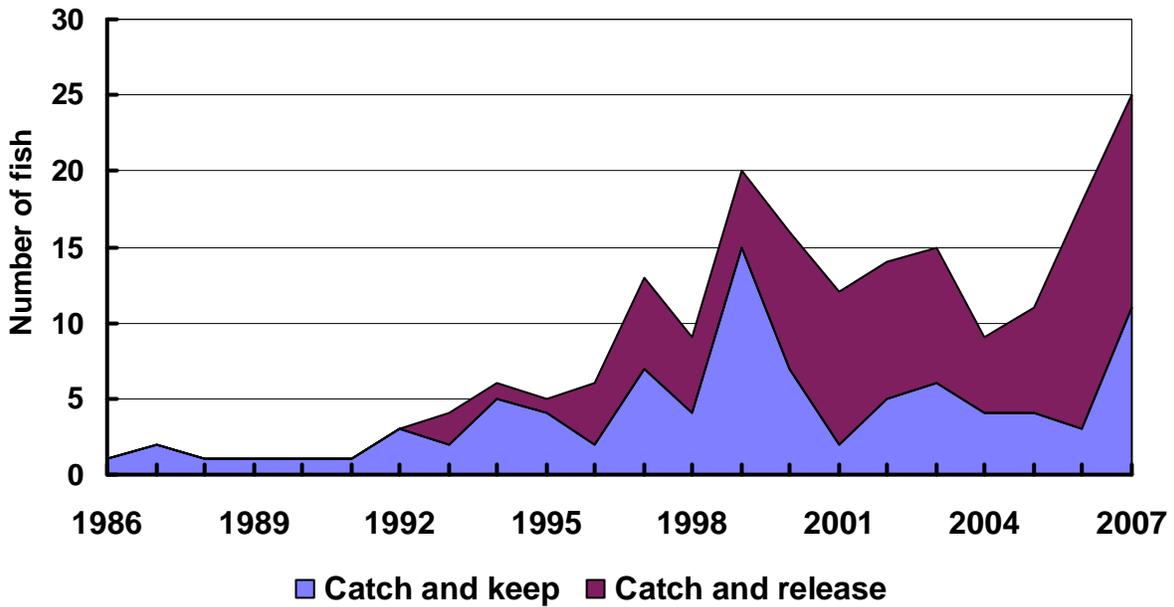


Figure 10.—Lake St. Clair smallmouth bass entered in the Michigan DNR Master Angler Program, 1986-2007.



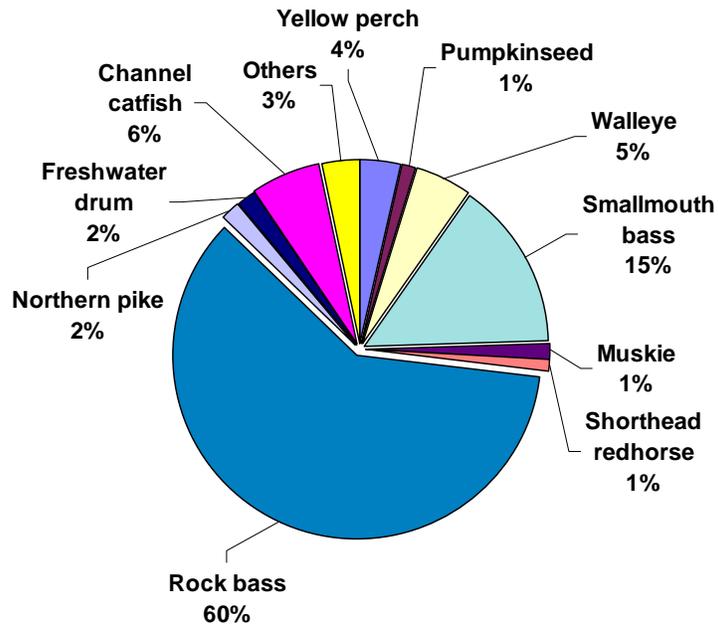


Figure 11.—Catch composition for trap nets fished in Lake St. Clair during May 2007.

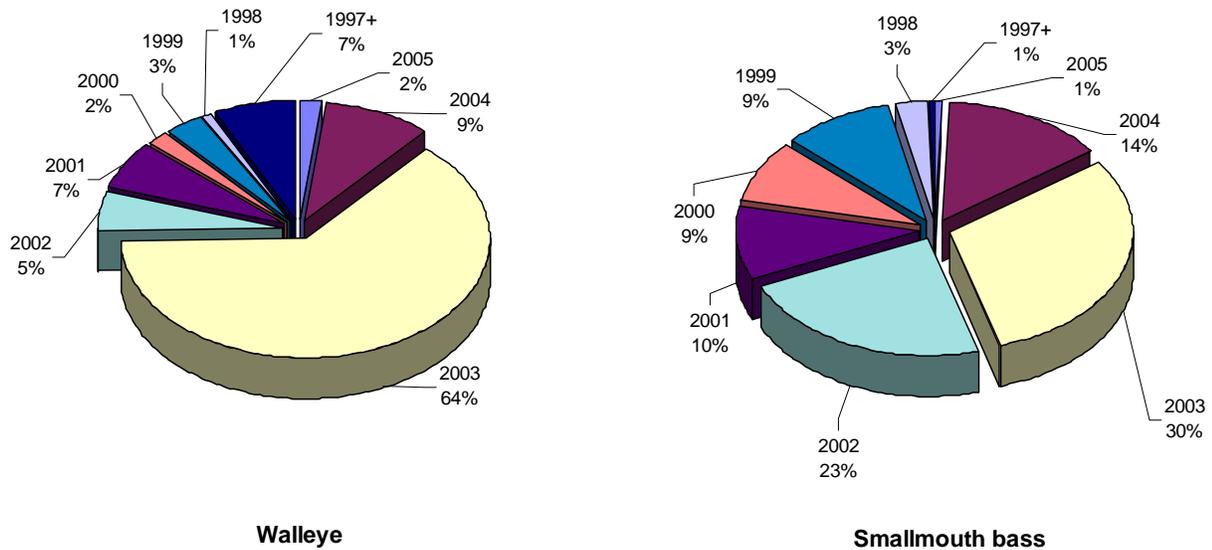


Figure 12.—Contribution by year class to catch in survey trap nets in Lake St. Clair during May 2007.



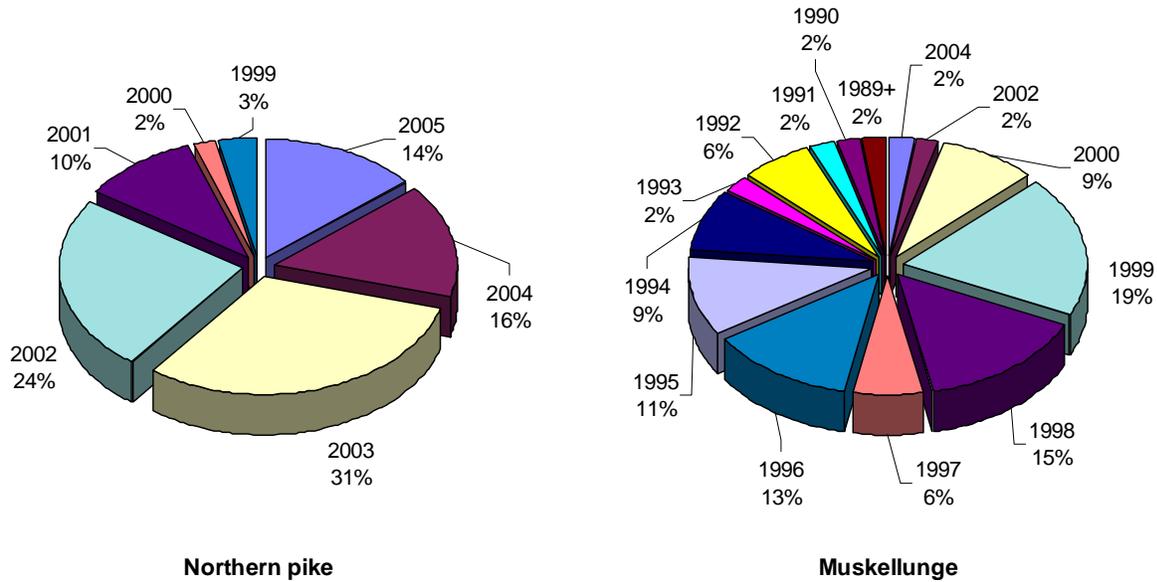


Figure 13.—Contribution by year class to catch in survey trap nets in Lake St. Clair during May 2007.

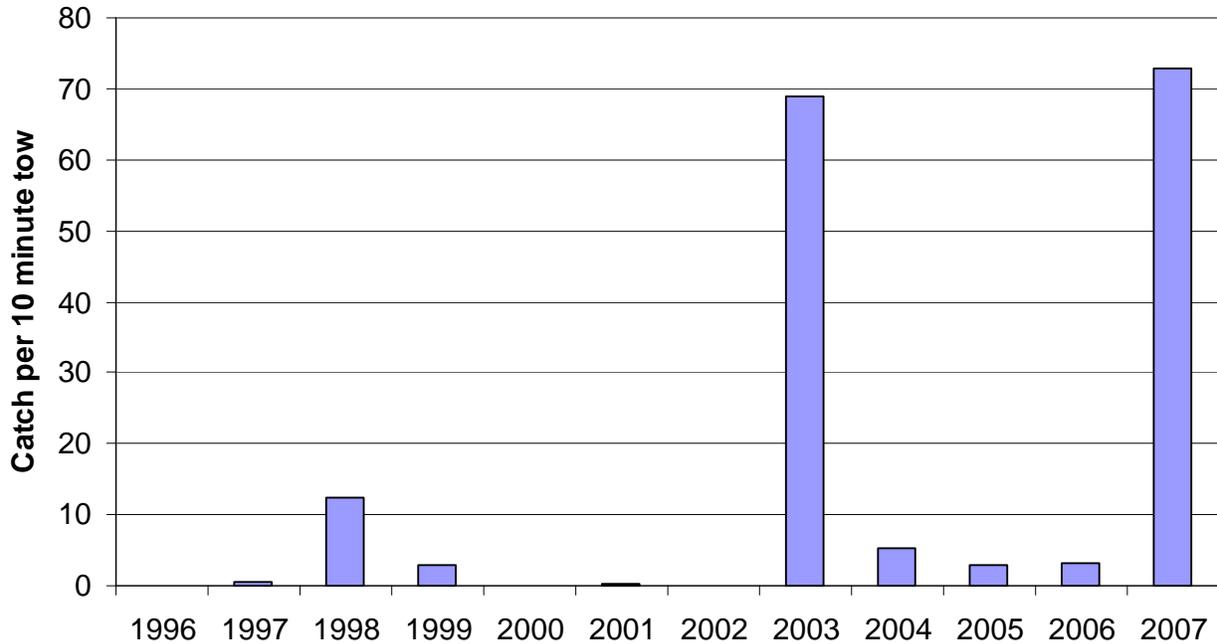


Figure 14.—Year-class strength for yellow perch in Lake St. Clair as indicated by September trawl catch rates, 1996 to 2007.



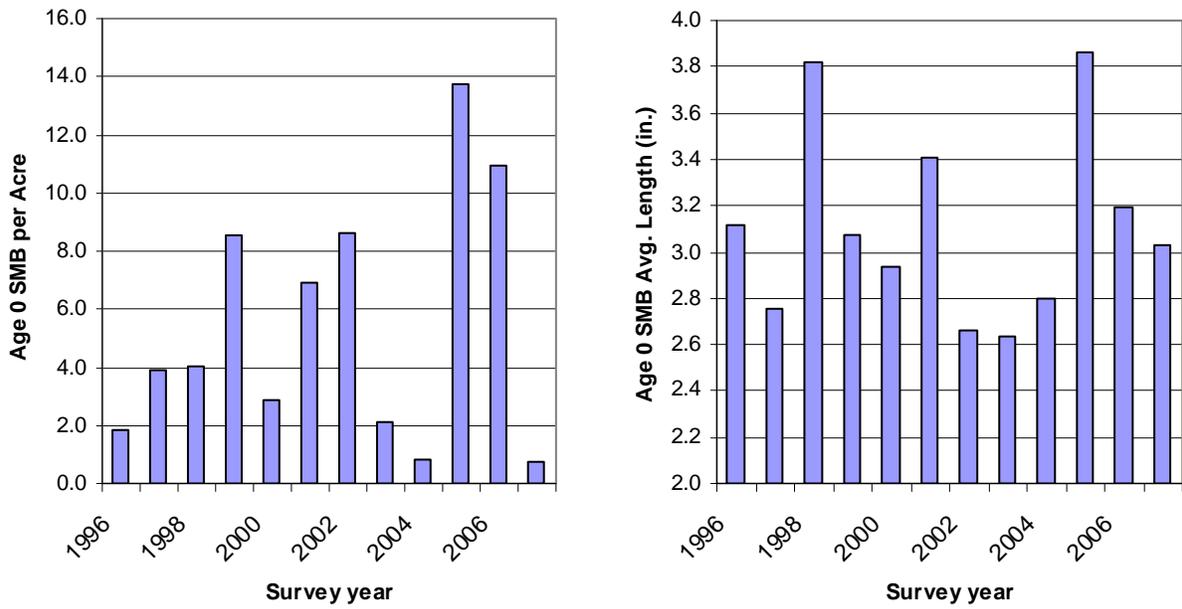


Figure 15.—Year-class strength for Lake St. Clair smallmouth bass as indicated by September trawl catch rates and mean length for young-of-year, 1996 to 2007.

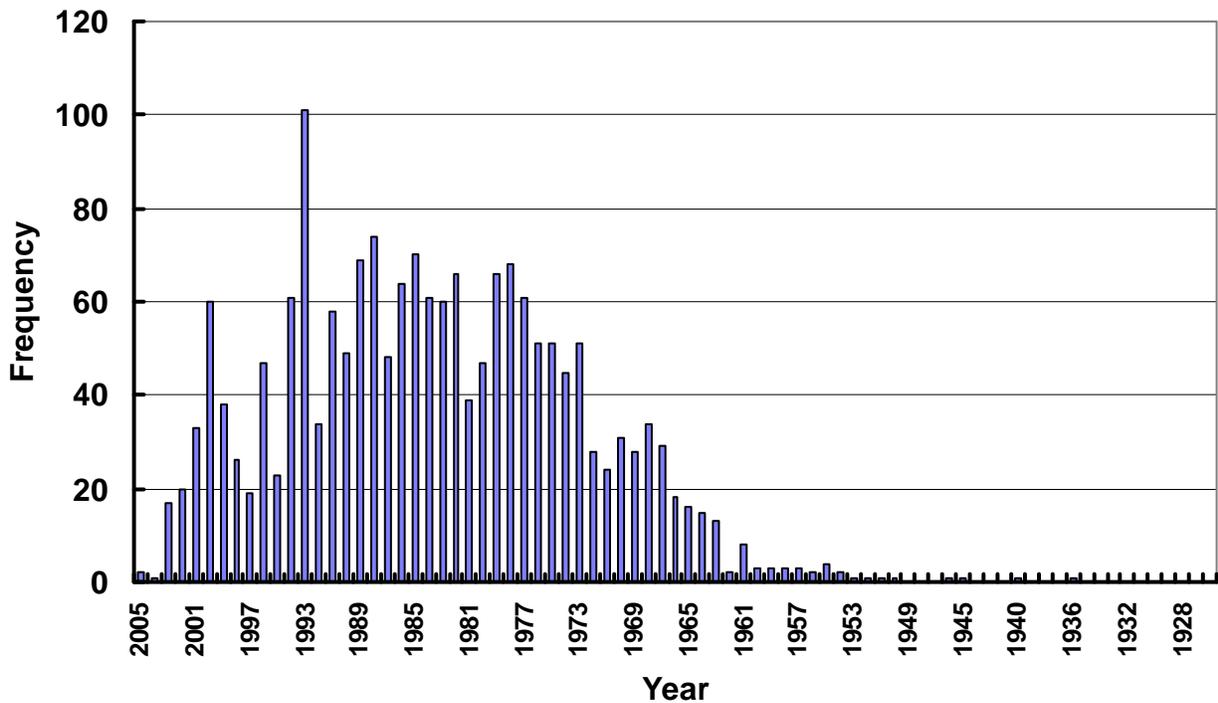


Figure 16.—Year of hatching for lake sturgeon sampled from Lake St. Clair and St. Clair River from 1997 to 2007 by Lake St. Clair Fisheries Research Station (n=1,824).



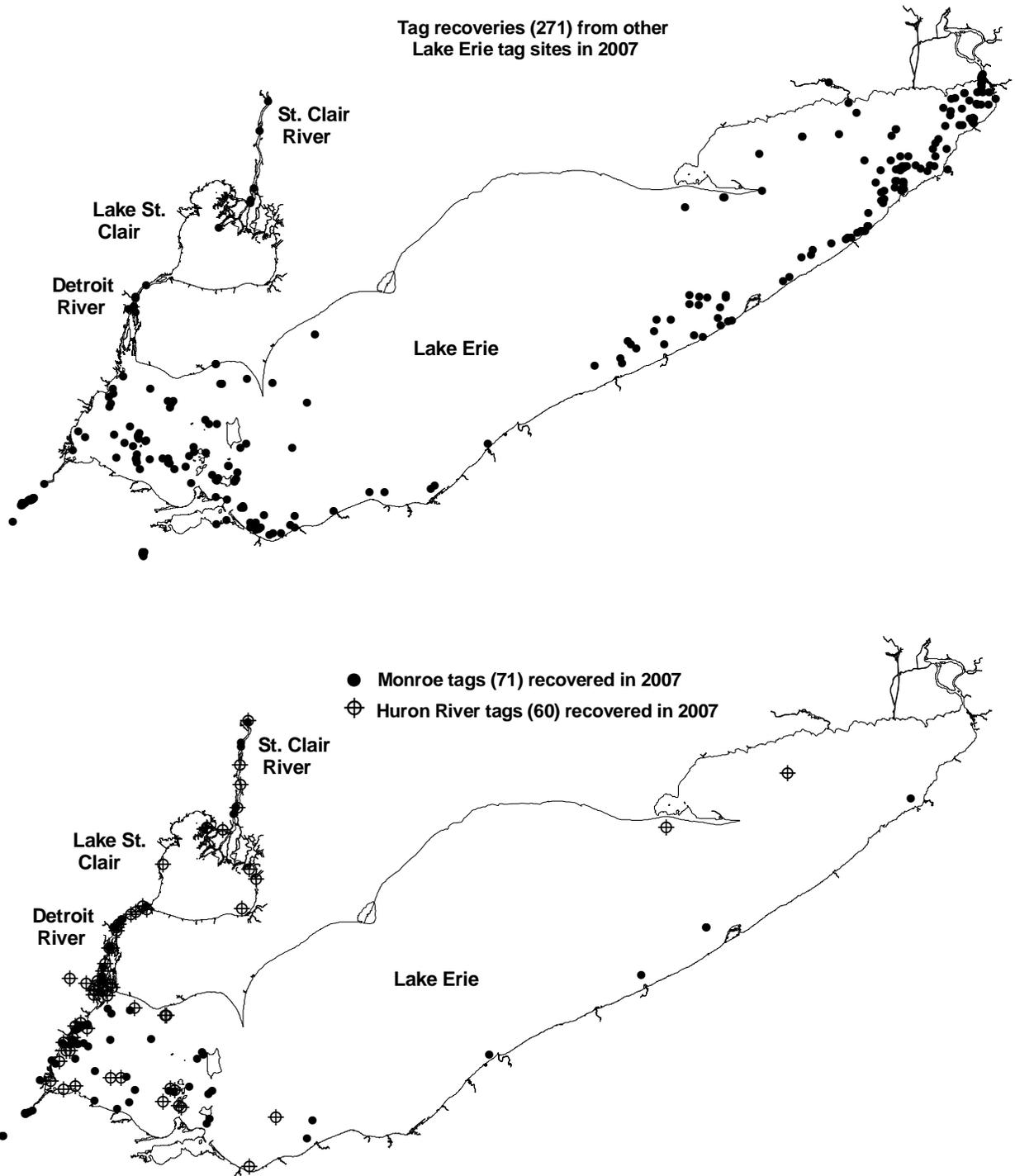
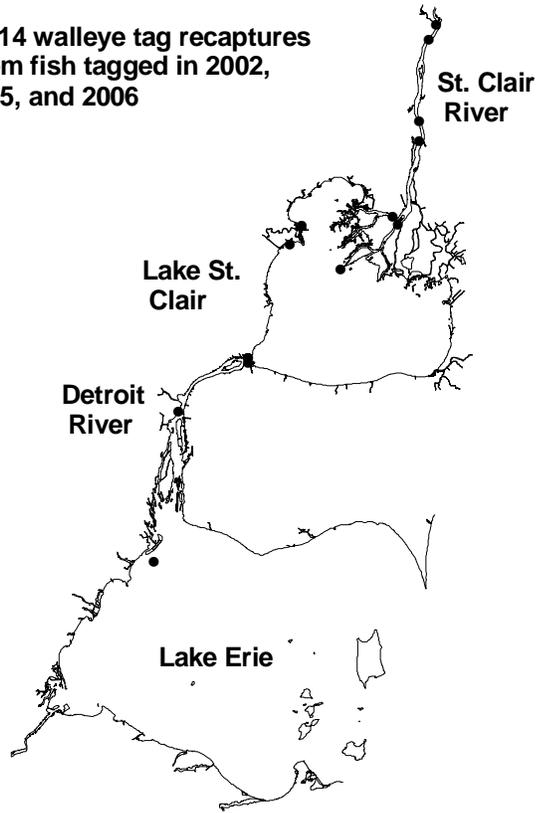


Figure 17.—Geographical distribution of walleye tag recoveries in 2007 from fish tagged during all years in Lake Erie at Monroe and the Huron River at Flat Rock, MI (bottom map) and other Lake Erie tag sites (top map).



**Distribution of 14 walleye tag recaptures during 2007 from fish tagged in 2002, 2003, 2004, 2005, and 2006**



**Distribution of 13 walleye tag recaptures during 2007 from 131 fish tagged in 2007**

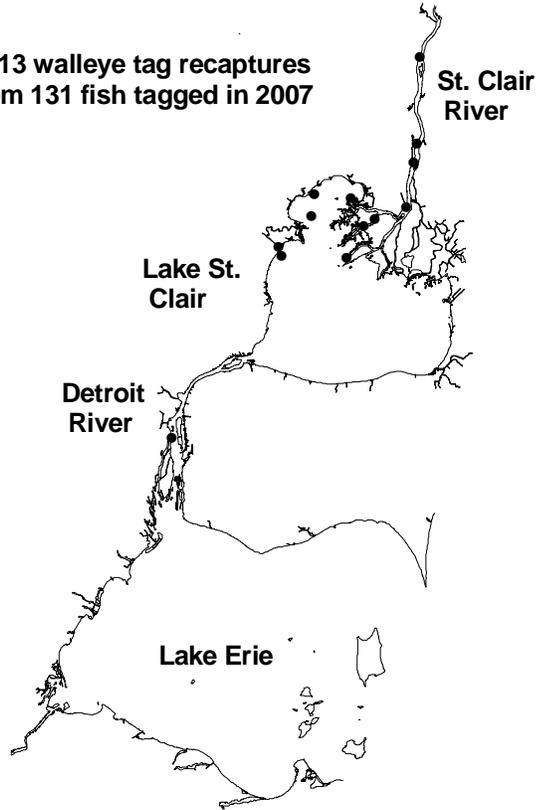


Figure 18.—Geographical distribution of walleye tag recoveries in 2007 from fish tagged during each year at the Anchor Bay site in Lake St. Clair.



Table 1. —Estimated harvest, harvest rate, effort, and released catch for Michigan's 2007 Lake Erie non-charter boat fishery. Two standard errors in parentheses.

Species	C/H	Month								
		Apr	May	Jun	Jul	Aug	Sep	Oct	Season	
<b>HARVEST</b>										
Yellow perch	0.287 (0.0550)	0	5,180	6,135	20,338	41,270	74,992	25,543	173,457 (32,573)	
Walleye	0.2531 (0.0201)	0	70,180	57,795	22,015	1,005	1,055	925	152,975 (10,568)	
White perch	0.0319 (0.0274)	0	8,021	974	0	5,087	5,206	0	19,288 (16,545)	
Channel catfish	0.0218 (0.0119)	0	1,157	4,900	1,327	3,471	595	1,754	13,204 (7,167)	
White bass	0.0131 (0.0107)	0	2,207	578	4,046	724	356	0	7,911 (6,437)	
Freshwater drum	0.0026 (0.0023)	0	533	936	0	129	0	0	1,597 (1,407)	
Largemouth bass	0.0010 (0.0016)	0	33	584	0	0	0	0	617 (973)	
Smallmouth bass	0.0003 (0.0003)	0	21	0	105	0	74	0	200 (193)	
Rainbow trout	0.0001 (0.0002)	0	0	0	62	0	0	0	62 (125)	
Other	0.0005 (0.0009)	0	0	0	0	253	59	0	312 (544)	
Total Harvest	0.6116 (0.0650)	0	87,332	71,902	47,893	51,939	82,336	28,222	369,624 (36,531)	
<b>EFFORT</b>										
Angler hours		0	117,689	185,418	121,984	68,822	78,708	31,774	604,396 (23,635)	
Angler trips		0	27,638	34,395	26,884	14,752	15,382	5,559	124,610 (5,290)	
<b>RELEASED</b>										
Walleye Legal size	0.0131 (0.0031)	0	5,824	377	1,232	467	30	18	7,947 (1,835)	
Walleye Sub-legal	0.0098 (0.0040)	0	2251	1436	2047	153	44	0	5932 (2385)	
Largemouth bass	0.0272 (0.0055)	0	195	2,315	1,522	73	652	11,702	16,459 (3,246)	
Smallmouth bass	0.0082 (0.0064)	0	628	721	2,053	932	562	30	4,926 (3,861)	
White bass	0.1307 (0.0404)	0	25,869	19,082	15,427	10,339	7,072	1,183	78,972 (24,216)	



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, 2007.

Species	Total harvest per hour	Harvest per excursion	Month							Season
			Apr	May	Jun	Jul	Aug	Sep	Oct	
Rainbow trout	0.000	0.006	0	0	6	0	0	0	0	6
Yellow perch	0.381	9.414	0	108	236	771	2,539	5,182	945	9,781
Walleye	0.762	18.836	323	2,978	11,741	4,128	386	15	0	19,571
Other	0.018	0.443	0	112	284	11	0	53	0	460
Angler hours			406	3,445	12,920	5,861	1,213	1,555	281	25,681
Angler trips			83	664	2,589	1,116	235	291	53	5,031
Charter excursions			19	140	528	237	47	57	11	1,039

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, 2007.

Species	Total harvest per hour	Harvest per excursion	Month									Season
			Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Yellow perch	0.980	20.890	0	0	2	594	872	592	3,195	4,166	878	10,299
Walleye	0.438	9.335	48	1,799	1,636	452	409	134	26	98	0	4,602
Other	0.166	3.538	0	4	0	316	541	713	138	32	0	1,744
Angler hours			142	2,185	2,085	1,226	1,442	1,427	905	997	101	10,510
Angler trips			22	414	412	215	227	222	166	180	22	1,808
Charter excursions			5	116	114	58	55	51	38	48	8	493

Table 4.—Commercial harvest from Michigan waters of Lake Erie in 2007.

Species	Harvest (lbs.)	% of total harvest	Reported market value
Gizzard shad	242,695	23	\$63,445
Carp	241,066	23	\$64,290
Buffalo	215,632	20	\$93,126
Channel catfish	98,979	9	\$40,340
White bass	77,249	7	\$64,113
Freshwater drum	67,072	6	\$10,935
Goldfish	38,515	4	\$26,278
White perch	35,946	3	\$18,199
Whitefish	8,800	1	\$8,540
Others <sup>1</sup>	32,299	3	\$8,985
Total	1,058,253	100	\$398,253

<sup>1</sup>Other category includes bullheads, suckers, quillback, and chub

Table 5.—Walleye CPE (number per net lift) in multi-filament gill nets during fall surveys on Michigan waters of Lake Erie.

Year Class	Total CPE	Survey year																		
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
1977	171.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1978	61.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1979	72.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1980	92.7	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1981	72.3	0.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1982	306.2	3.5	0.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1983	34.6	1.8	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1984	147.7	8.3	2.0	0.5	0.3	0.5	—	—	—	—	—	—	—	—	—	—	—	—	—	
1985	177.2	8.5	1.5	1.3	0.8	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	
1986	297.5	43.5	19.5	11.0	3.8	2.0	0.3	—	—	—	—	—	—	—	—	—	—	—	—	
1987	127.8	26.8	20.0	13.8	2.5	3.8	1.0	0.5	0.8	—	0.3	—	—	—	—	—	—	—	—	
1988	125.0	35.8	9.3	7.3	4.5	4.5	0.5	0.8	0.8	0.0	—	—	—	—	—	—	—	—	—	
1989	52.6	16.0	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	180.2	—	—	—	—	—	—	—	—	—	—	57.0	73.3	21.5	5.8	13.0	6.8	1.5	1.3	
2000	21.4	—	—	—	—	—	—	—	—	—	—	—	6.5	6.3	0.8	4.0	2.0	0.8	1.0	
2001	132.7	—	—	—	—	—	—	—	—	—	—	—	—	42.8	32.5	43.8	10.0	1.8	1.8	
2002	14.4	—	—	—	—	—	—	—	—	—	—	—	—	—	0.8	4.0	6.5	2.3	0.8	
2003	315.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	81.2	157.5	48.3	28.0	
2004	9.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.8	2.3	3.3	
2005	29.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.3	17.0	
2006	1.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	
Total		144.5	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	
Net lifts		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	



Table 6. —Mean catch per trap net lift for species commonly taken during spring trap net surveys in Anchor Bay, Lake St. Clair.

Species	Survey					
	2002	2003	2004	2005	2006	2007
Black crappie	0.00	0.02	0.35	0.00	0.00	0.00
Bluegill	0.08	0.00	0.11	0.03	0.05	0.00
Bowfin	0.00	0.04	0.05	0.00	0.02	0.00
Brown bullhead	0.03	0.02	0.03	0.00	0.02	0.02
Channel catfish	3.81	4.14	3.92	2.50	4.33	4.24
Common carp	0.52	0.62	1.30	0.32	0.88	0.60
Freshwater drum	2.07	10.80	3.65	0.70	8.24	1.10
Gizzard shad	0.05	0.08	0.02	0.06	0.02	0.02
Golden redhorse	0.02	0.04	0.04	0.06	0.05	0.02
Lake sturgeon	0.03	0.14	0.07	0.03	0.10	0.00
Largemouth bass	0.36	0.10	0.25	0.06	0.07	0.18
Muskie	0.64	0.56	1.41	1.64	1.09	1.02
Northern pike	1.87	0.30	1.30	2.00	2.05	1.30
Pumpkinseed	4.96	1.54	1.12	0.05	0.52	0.82
Quillback carpsucker	0.38	0.30	0.60	0.15	0.91	0.12
Redhorse	0.00	0.00	2.85	0.00	0.00	0.00
Rock bass	49.50	32.00	33.80	12.30	35.10	42.52
Shorthead redhorse	1.84	4.08	1.53	1.44	4.00	0.80
Silver redhorse	0.50	0.66	1.29	1.26	2.98	0.62
Smallmouth bass	6.23	19.20	5.49	3.32	8.21	11.82
Walleye	3.79	3.60	2.67	5.50	5.12	3.58
White bass	0.03	0.10	0.07	0.00	0.14	0.12
White perch	0.20	0.10	0.80	0.12	2.38	0.20
White sucker	0.28	0.20	0.27	0.20	0.43	0.52
Yellow perch	4.89	1.14	5.01	0.97	1.26	2.54
Total	82.07	79.78	68.00	32.71	77.97	72.16
Net lifts	64	50	55	34	42	50
Mean secchi depth (m)	1.8	2.2	1.2	2.2	1.7	2.6



Table 7.—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	
Alewife	29	11	3	2	4	3	3	0	0	0	0	0	5
Bluntnose minnow	1	0	0	0	11	10	7	1	6	118	1	13	14
Common carp	0	0	0	0	0	0	0	0	1	0	0	0	0
Emerald shiner	1	0	0	0	5	0	11	0	2	0	0	0	2
Freshwater drum	7	13	5	2	1	5	1	4	3	6	4	3	4
Johnny darter	22	3	7	0	0	0	0	0	3	2	0	7	4
Lake sturgeon	2	0	0	0	0	0	1	1	0	0	2	1	1
Largemouth bass	0	0	0	0	0	1	0	0	0	0	0	4	0
Logperch	9	76	83	8	0	2	8	0	42	6	0	1	20
Mimic shiner	17	26	2	0	14	20	362	0	118	45	2	640	104
Muskellunge	0	0	0	0	0	1	1	0	0	0	0	0	0
Northern pike	0	0	0	0	0	1	0	1	0	1	1	0	0
Shorthead redhorse	8	7	1	7	3	4	7	4	2	6	9	1	5
Pumpkinseed	0	1	0	0	0	2	0	0	0	0	1	1	0
Quillback	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	117
Rock bass	43	18	5	1	13	30	39	18	5	10	33	73	24
Round goby	5	14	28	6	11	1	30	6	53	10	0	30	16
Silver lamprey	0	0	0	1	0	0	0	1	1	0	5	2	1
Silver redhorse	1	2	0	0	1	0	2	5	2	1	1	2	1
Smallmouth bass	0	3	1	0	1	3	4	2	2	10	4	13	4
Spottail shiner	178	123	8	69	935	7	5,730	211	1,777	524	769	53	865
Trout-perch	231	346	99	154	34	11	265	13	108	65	248	7	132
Walleye	5	10	1	2	1	1	1	1	0	2	12	2	3
White perch	1	1	0	0	13	1	1	1	2	1	2	0	2
White sucker	5	4	4	0	3	1	61	2	68	22	5	1	15
Yellow perch	1,184	560	250	867	158	1,132	725	306	888	1,107	869	303	696



Table 8.—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	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean
Alewife	28	31	12	2	3	32	0	0	0	1	1	0	10
Bluntnose minnow	0	34	0	9	15	54	33	13	43	238	61	36	45
Common carp	0	1	0	0	0	1	2	0	0	1	0	0	0
Emerald shiner	4	1	8	0	0	0	1	0	41	36	608	0	64
Freshwater drum	1	1	0	1	1	2	0	1	5	2	3	2	1
Johnny darter	18	4	0	0	0	0	0	7	0	0	0	1	3
Lake sturgeon	2	0	1	0	0	0	0	0	0	0	0	0	0
Largemouth bass	0	0	0	3	2	16	36	13	13	29	22	58	12
Logperch	32	40	21	1	5	18	6	14	38	113	34	9	29
Mimic shiner	268	1,095	0	30	15	10	44	507	8,909	3,072	109	29	1,278
Muskellunge	0	0	0	0	0	1	0	0	0	0	0	0	0
Northern pike	0	0	0	0	0	1	1	1	0	0	0	0	0
Shorthead redhorse	0	0	0	0	1	2	0	0	0	1	2	1	1
Pumpkinseed	0	4	0	2	0	5	5	3	1	0	5	8	2
Quillback	1	0	1	0	1	0	2	1	1	0	0	0	1
Rainbow smelt	1	17	0	0	1	0	0	4	26	0	1	0	4
Rock bass	18	82	1	89	93	40	41	35	25	77	67	71	52
Round goby	66	10	22	10	10	10	99	2	28	14	10	4	25
Silver lamprey	1	0	0	0	0	0	0	0	0	0	1	1	0
Silver redhorse	5	1	1	0	0	1	6	0	4	5	4	1	2
Smallmouth bass	14	11	25	11	6	0	51	7	3	41	32	3	18
Spottail shiner	17	487	45	200	51	879	2,407	1,068	545	2,410	2,668	983	980
Trout-perch	776	92	26	3	0	0	10	6	59	3	79	1	96
Walleye	7	1	3	1	1	0	11	0	2	9	3	1	4
White perch	16	12	8	0	0	0	13	8	6	146	12	31	20
White sucker	1	2	0	0	1	1	8	1	1	4	6	5	2
Yellow perch	34	27	69	22	41	114	73	181	48	52	34	220	63



Table 9.—Catch rate by age for yellow perch in June index trawl tows on Lake St. Clair.

Year class	Total CPE	Survey year													
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
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	311.6	—	—	—	—	—	—	—	—	131.3	89.5	50.2	25.3	11.7	3.6
2002	88.9	—	—	—	—	—	—	—	—	—	8.7	11.4	6.1	11.7	51.0
2003	1,303.1	—	—	—	—	—	—	—	—	—	—	705.3	396.6	174.8	26.4
2004	185.1	—	—	—	—	—	—	—	—	—	—	—	9.0	158.3	17.8
2005	59.4	—	—	—	—	—	—	—	—	—	—	—	—	33.6	25.8
2006	4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	4.5





*A 50 pound grass carp caught by an angler at the Detroit Edison Power Plant warm water discharge on Lake Erie near Monroe, Michigan..*