Ohio's
Lake Erie Fisheries
2015

Prepared
March 2016
by:

Lake Erie Fisheries Units*

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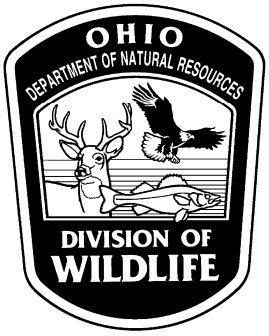

* Most work was completed under Federal Aid in Sport Fish Restoration Project F-69-P, *Fish Management in Ohio.*

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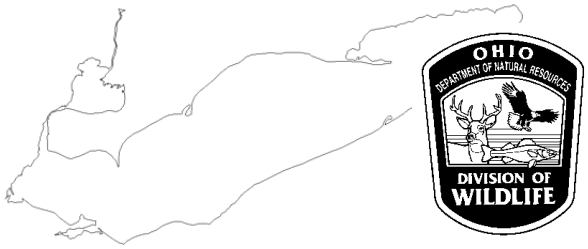
Note: The data and management summaries contained in this report are provisional. Every effort has been made to insure their correctness. Contact the Division of Wildlife's Lake Erie office nearest you prior to using this data or before citing research and management findings.

1.0 Executive Summary/Overview



Ohio's Lake Erie Fisheries, 2015

Executive Report to the Lake Erie Committee
March 24, 2016

The Ohio Department of Natural Resources, Division of Wildlife manages sport and commercial fisheries within the 2.24 million acres of Lake Erie under Ohio's jurisdiction. In this report, we briefly summarize Lake Erie fish and fisheries assessment, research, and other projects conducted by our fisheries personnel at our Sandusky and Fairport Harbor Fisheries Research Units during calendar year 2015. This executive report highlights findings presented in our full Lake Erie Annual Status Report that will be available online at http://wildlife.ohiodnr.gov and in print form in late April by request from Division of Wildlife personnel.

Our sampling activities are directed in Ohio's portion of Lake Erie's two basins and three management districts: western basin (District 1) and central basin (west-central, District 2, Huron to Fairport; and east-central, District 3, Fairport to the OH-PA state line). Our projects provide fishery harvest and effort information, baseline stock assessment data for important sport, commercial and forage fish species, and information on how various parts of the food web are responding to changes in the Lake Erie ecosystem.

Overview

In 2015, sport anglers made over a half-million fishing trips on the Ohio waters of Lake Erie. Private sport fishing effort was approximately 3.3 million angler hours, a 8% decrease when compared to 2014. Most of the private boat effort was directed toward walleye (63%) and yellow perch (32%). Smallmouth bass (3%), largemouth bass (1%), white bass (<1%) and anglers seeking "anything that bites" (<1%) were minor components of the 2015 estimated private angler effort. Charter boat fishing effort was about 0.3 million hours, a 27% decrease from 2014. Charter boat anglers mainly sought walleye (84%) and yellow perch (14%). Total angler effort (i.e., charter and private) decreased 7%, compared to 2014, and was below the ten-year average of 4.0 million angler hours.

The Ohio commercial fishery harvested 4.6 million pounds of fish in 2015, a 2% increase from the 2014 harvest of 4.5 million pounds. The harvest of burbot, freshwater drum, gizzard shad, and lake whitefish increased, compared to 2014, while declines were observed for buffalo, bullhead, common carp, channel catfish, goldfish, quillback, suckers, white bass, white perch, and yellow perch. Ohio's yellow perch commercial harvest (1.3 million pounds) was 17.8% lower than 2014 and was below the 10-year mean. The bulk (70%) of the commercial harvest (in pounds) was taken by the end of June, though lake whitefish harvest was primarily in November. The total dockside value of the commercial harvest was $4.9 million, slightly above the 10-year mean.

Population assessment surveys during 2015 were completed by the Ohio Division of Wildlife's two Lake Erie Research Units using bottom trawl, gillnet, hydroacoustic, and lower trophic level sampling gears. Growth and condition of Lake Erie fish are within acceptable ranges. Hatch success rates were mixed in 2015. Most species were in the low to below average range for the time series, but there were some exceptions of moderate to large year classes, such as walleye, white perch, yellow perch (western basin), and gizzard shad (central basin). Juvenile (age-0) growth rates were at or above the long-term averages except for walleye, yellow perch (western basin), and gizzard shad (central basin). Growth of yearlings was good for many species, including yellow perch yearlings which were above or well-above the long-term averages, while walleye growth was well below the mean. Detailed trends in relative abundance, growth, maturity and diets are presented in the full annual report.

Walleye

The 2015 Ohio walleye harvest was comprised mostly of fish from the 2011 (23%), 2003 (22%), and 2010 (13%) year classes. Age-6 and older walleye constituted 45% of the lakewide catch due to the strength of the 2003 cohort. Overall, the Ohio sport harvest of 1.073 million walleye was a 18% decrease from 2014. The 2015 western basin walleye sport harvest decreased approximately 18%, relative to 2014. Across the central basin, walleye sport harvest increased 6% relative to 2014; harvest was higher in the east central (District 3) and slightly lower in the west central (District 2) basins. Western basin walleye angler effort decreased 5% overall compared to 2014; this represents a 1% decrease for private anglers and a 44% decrease for charter anglers. Central basin walleye effort decreased for anglers in the east central basin (23%), but was offset by a gain in the west central basin (23%), resulting in a small increase (5 %). Mean annual walleye angler harvest rates in fish per hour for 2015 were 0.50 f/hr in District 1; 0.32 f/hr in District 2 and 0.40 f/hr in District 3.

The Maumee and Sandusky River walleye sport fisheries were assessed again in 2015. Compared to 2014, angler effort decreased in the Sandusky River (-34%) and increased in the Maumee River (35%) in 2015. The 2015 targeted walleye harvest rate was lower in the Maumee River (0.31 f/hr; -11%) and Sandusky River (0.09 f/hr; -50%) compared to 2014.

The abundance of yearling and older walleye, in the Ohio waters of Lake Erie, has been assessed annually with gill nets since 1978. In 2015, District 1 walleye assessment gill net catch rates for yearlings and older fish were nearly identical to those seen in 2014, while catch rates in the central basin increased by 142% from 2014, but still remained below the long term average. Substantial contributions from the younger cohorts (ages 1-3) were dominant in both basins. The 2003 year class, as age-11 fish, continued to contribute to gill net catches, albeit in declining numbers.

As active participants on the Great Lakes Fishery Commission's Lake Erie Committee, we continue to participate in the development and evaluation of the walleye population model, the review of our assessment programs, and activities of the Lake Erie Percid Management Advisory Group along with Ohio fishery stakeholders. We continue to implement research to examine the performance of individual walleye stocks spawning in both tributaries and the open lake reef complex and have initiated research to describe fine scale movement patterns of walleye. The walleye daily bag limit will be set following the determination of the Total Allowable Catch (TAC) at the Great Lakes Fishery Commission's Lake Erie Committee Meeting. Daily bag limits will be determined based on Ohio's portion of the TAC and projected estimates of Ohio sport angler effort and harvest. The new daily bag limit regulations will take effect on May 1, 2016, and will be effective through April 30, 2017.

Yellow Perch

In 2015, Ohio yellow perch sport and commercial fisheries primarily declined, other than the district 1 sport fishery and the district 3 commercial fishery. Total harvest, at approximately 2.2 million pounds, decreased 25% relative to 2014 (2.9 million pounds). Total harvest increased 24% in District 1, as angler harvest rates improved slightly to 3.1 fish/hr. There was no District 1 Ohio commercial yellow perch harvest allocated in 2015. In district 2 targeted angler effort fell 22% while the harvest rate declined 44% from 2.7 fish/hr to 1.5 fish/hr, compared to 2014. The commercial fishery also saw declines in district 2 as harvest (1.0 million pounds) was 21% lower than 2014 and yellow perch harvest rates decreased by 29% to 158 pounds per lift. District 3 yellow perch fisheries (combined) saw a 42% decrease in harvest compared to 2014, due to a 57% decrease in the sport fishery harvest. Commercial harvest in district 3 was nearly identical to 2014 (0.266 million pounds), although harvest rates dropped 46% to 249 pounds per lift. Angler harvest rates in district 3 declined to 3.2 fish/hr compared to 4.0 fish/hr in 2014, and targeted effort was 37% lower at just over 200

thousand hours. The 2 year old 2013 year class carried angler harvest in district 1 supplying 1.3 million fish of the 2.1 million harvested. The 3 year old 2012 year class was the most abundant year class in the combined commercial and angler harvest in districts 2 and 3. The large 2003 year class is nearly gone from the fishery with an estimated 23 thousand harvested lakewide in Ohio waters.

The yellow perch population has been assessed annually since 1969 with bottom trawling gear throughout the Ohio waters of Lake Erie. In 2015, the catch rate of age-2 and older yellow perch in Districts 1 was higher than what was observed in 2014, but still below the 20-year average. Catch rates in Districts 2 & 3 both declined from 2014.

Good reproduction in the western basin in 2013, 2014, and 2015, and in the central basin in 2012 and 2014, will contribute to stability and enhancement of the population of yellow perch over the next several years. Future contributions from the 2008-2012 year classes are expected to be moderate, based on results from the population assessment surveys. The weaker 2009 and 2011 year classes lakewide, and the below average 2010 year class in District 1, are not expected to contribute much in future fisheries.

The yellow perch daily bag limit will be set following the determination of the yellow perch TAC by Lake Erie Management Unit at the Great Lakes Fishery Commission's Lake Erie Committee meeting. Daily bag limits will be determined based on Ohio's portion of the TAC in each management unit, projected estimates of Ohio sport angler effort and harvest, and the sport and commercial sharing formula for Ohio yellow perch fisheries. The new daily bag limit regulations, by management unit or fishing district, will take effect on May 1, 2016, and will be effective through April 30, 2017.

Smallmouth Bass

Private boat smallmouth bass harvest decreased 34% while targeted angler hours increased 45%, compared to 2014. Angler effort was the highest since the 2010. Smallmouth bass was the third most sought after species by private boat anglers behind walleye and yellow perch, but at 87,145 angler hours, it constitutes only 3% of the total angler hours. As in previous years, the smallmouth bass fishery was mainly catch and release, as the release rate (0.69 fish per angler hour) was considerably higher than the targeted harvest rate (0.01 fish per angler hour). Charter boat harvest decrease 35%, compared to 2014, but still ranked as the second highest since the closed season regulation was implemented in 2004. Targeted angler hours and targeted harvest rate decreased 15% and 25%, respectively, compared to 2014. In 2015, the 2010 year-class comprised 25% of the smallmouth bass harvest, followed by the 2005 (17%) and 2006 (12%). Thirteen year-classes were present in the 2015 harvest. Mean age in the harvest was 7.6 yr and the smallmouth bass mean size at harvest was 426 mm and 1,496 g.

In 2006, we began a more robust smallmouth bass population survey to track recruitment and biological parameters. The 2011 and 2012 smallmouth bass cohorts appears to be strong in the west and west-central basins, and the 2010 cohort remains strong in the east-central. Catch rates for age-2 and older smallmouth bass were below the historic mean in both basins. Sampling effort was increased in District 3 (east-central) because catches had decreased in past years and more fish were needed for biological sampling. A five-fish daily bag limit and a 14-inch minimum length limit remain in effect to reduce exploitation of smaller fish. Again this year, the bass "catch-and-immediate-release" season is in effect from May 1 through the last Friday in June (June 26, 2015) to reduce harvest of spawning bass.

Steelhead Trout

The combined 2015 private and charter boat harvest of steelhead trout increased 32%, compared to 2014. Steelhead trout were primarily harvested in the central basin with 92% of the

harvest in District 3 and 5% in District 2. Private boat targeted angler effort increased 30%, compared to 2014. There were 140 targeted angler hours by the charter boat fishery in 2015. The private boat targeted harvest and release rates were 0.04 fish per angler hour and 0.00 fish per angler hour, respectively.

Beginning in 2000, an additional category was added to the target species list (walleye/ steelhead trout or "combo") in order to measure the number of combined angler trips targeting both walleye and steelhead trout as both can be sought while trolling. Anglers expended 3,112 and 504 targeted angler hours, respectively, for the private and charter boat fisheries in 2015.

Tributary and lake fisheries will remain good with continued annual stocking of yearling Little Manistee River (Michigan) strain steelhead. Ohio Division of Wildlife hatchery personnel raised and stocked 421,740 Little Manistee River strain steelhead yearlings in spring 2015. Steelhead stocking numbers are expected to remain at, or just above, target levels for the near future. Very good returns to anglers have been seen in the five Ohio stocked streams: Vermilion, Rocky, Chagrin, and Grand rivers, and Conneaut Creek. A 12" minimum size limit remains in effect for steelhead and the daily bag limit is 5 fish from May 16 to August 31, 2016, and 2 fish from September 1, 2016, to May 15, 2017.

The sea lamprey population and its parasitic effect on steelhead and other Lake Erie coldwater species remains a concern. In 2015, sea lamprey abundance continued a downward trend, but still remains above the target level. Lakewide wounding rates continued a small decline from the recent high levels observed in 2009 and 2010. Monitoring of sea lamprey populations and wounding rates will continue. Conneaut Creek was treated with lampricide (3-trifluoromethyl-4-nitrophenol (TFM)) by the U.S. Fish and Wildlife Service in April 2015 The entire infested distribution on Conneaut Creek was successfully treated for the first time, including 3.2 miles further upstream than the historical upper application point. Thirteen Ohio tributaries were surveyed in 2015 and all were negative except the Grand River. The Grand River is scheduled to be treated with TFM in 2016.

Issues surrounding the repair and/or replacement of Harpersfield Dam on the Grand River continue. The U.S. Army Corps of Engineers (USACE) is the lead agency administering a project to construct a Sea Lamprey barrier to replace a deteriorated structure in Harpersfield, Ohio. The USACE developed several alternatives, including: status quo, onsite rebuild, or rebuild further downstream. The USACE selected an onsite rebuild as the preferred alternative and completed the Detailed Project Report. The public review period closed on July 10, 2015.

White Bass

In 2015, populations of age1 and older white bass were well above the long-term averages in all Lake Erie districts. The population is dominated by individuals from the 2010 and 2012 year classes. The white bass private boat harvest and targeted effort decreased 52% and 93%, respectively, compared to 2014 (Table 4.1.17). As in past years, very few angler trips were targeted for this species and the majority of white bass were harvested as incidental catch from anglers targeting other species. The majority of the harvest came from District 2 (48%), followed by District 1 (38%). The targeted harvest rate was 7.82 fish per angler hour (Table 4.1.17). The 2012 year-class comprised 43% of the harvest, followed by the 2013 (24%) and 2014 (14%) cohorts (Table 4.1.18). Lakewide, the mean age in the harvest was 3.0 yr, and the mean size was 305 mm and 437 g. In 2015, reported commercial harvest of white bass was just over 800 thousand pounds, well above the long-term average.

The Maumee and Sandusky rivers' sport fisheries for white bass were again evaluated in 2015, this year's survey being continued through May 31 compared to recent years that were only surveyed through the end of April or mid-May. In 2015, 186,489 white bass were harvested in the Sandusky River, which is similar to harvest in the main lake creel for the entire open water survey season. An

estimated 45,063 white bass were harvested in the Maumee River during the same time period. Extended surveys should be continued to define trends in the riverine white bass fishery.

Assessment surveys showed lower numbers of age-0 white bass, in both basins, yet numbers of age-2 white bass remain high, particularly in the central basin. Gill net assessment catches remain above the long term average in both the western and central basins. Growth of juvenile white bass exceeded the recent 20-year average in the western and central basins, but was lower in the central basin.

Lake Trout

Ohio continued a program of stocking western and central basin waters of Lake Erie with lake trout, as part of a recovery plan for this species. In April 2015, a total of 82,551 lake trout yearlings were stocked: 41,357 (average size: 16.8 fish/lb) at Miller Boat Line docks at Catawba, and 41,194 (average size: 16.1 fish/lb) at the Fairport Harbor boat ramp. In October 2015, a total of 81,702 lake trout fingerlings were stocked: 40,778 (average size: 61.0 fish/lb) at Miller Boat Line docks at Catawba, and 40,924 (average size: 66.9 fish/lb) at the Fairport Harbor boat ramp. All fish had adipose fin clips and coded wire tags were implanted prior to stocking. To date, 15 Fairport-released lake trout have been recaptured, all in the eastern basin. Future tag recovery efforts will evaluate their growth, survival and return to Ohio spawning grounds.

Forage Fish and Lower Trophic Sampling

In 2015, District 1 trawling indices were below long-term means for most forage fish species. Only age-0 freshwater drum recruitment was above the mean, while age-0 rainbow smelt and gizzard shad increased showed strong increases from 2014. Similar to District 1, most age-0 trawl indices were below long-term means in Districts 2 and 3. Gizzard Shad were the only species above long-term means in both districts. Rainbow smelt and round goby in District 2 were the only other age-0 indices above long-term means.

In District 1, 94 lower trophic level samples were collected from May through October, 2015. Lower trophic samples were also collected in District 2 (44) and District 3 (44) from April through October, 2014. Samples included turbidity, dissolved oxygen, water temperature, zooplankton, phytoplankton, and water samples for phosphorus and chlorophyll-*a* analyses. These samples are part of a larger sampling program through both the Ohio State University and the Forage Task Group of the Lake Erie Committee and are used to monitor changes in the physical and chemical environment in Lake Erie and to explore changes in the biotic community.

2.0 List of Tables

3.0 List of Figures

4.0. Sport Fishery Summary (Project *FSDS01*)

4.1 Open Lake Sport Fisheries

Ohio's private and charter boat fisheries were assessed by an access point direct contact creel survey during 2015. The creel survey was conducted from Toledo to Conneaut at 40 major boat departure sites along Ohio's portion of the Lake Erie shoreline. These sites were grouped into six areas (Figure 4.1.1). Areas 1-3 were surveyed from April 7 to October 24, area 4 from May 4 to October 31, and areas 5 and 6 from May 12 to October 31. Three weekdays and two weekend days were surveyed each week in each survey area. Survey dates and count and interview schedules were randomly selected. Each survey day included time interval counts of boats returning from Lake Erie at all major harbors and completed trip interviews of people on boats returning to marinas, docks, and ramps within the harbors.

Boat effort was estimated from counts of private and charter boats returning to major harbor areas during 20-minute count intervals at 36 access points. Boat counts were scheduled to include coverage of the busiest hours of the day: 1000-2000 hours (military time) for April, 1100-2100 hours for May, 1030-2130 hours for June and July, 1030-2030 hours for August, 1100-2000 hours for September, and 1100-1900 hours for October. Boat counts included all vessels except sailboats, commercial boats, and government boats that were assumed not to be involved in fishing. Boat count means and variances were expanded with monthly constants for count locations per area, count intervals per day, and days per month.

Completed trip interviews were obtained from boaters returning to harbor areas. Boat interviews identified the type of fishery (private or charter), number of anglers per boat, hours fished, the number of each species harvested and released, the grid location where the majority of time was spent fishing, and the primary target species. The duration of the fishing trip was defined as the time when actual fishing began until fishing was completed.

Calculations of angler hours and catch were computed following standard procedures (Table 4.1.1). Survey data were stratified by type of fishery, month, survey area, and weekday or weekend. The primary location fished was coded into one of the 50 grids in the statistical catch district (Figure 4.1.2). Estimates for private and charter boat fisheries were summarized by grid, district, and month.

Catch per unit effort (catch rate) was expressed as the number of fish harvested per angler hour. Catch rates were calculated for all targeted species. Differences in fishing methods, areas, and seasons for each target species did not allow catch per unit effort to be comparable across target species. If more than one species was indicated as the primary target species, they were recorded to "anything that bites" and not included in species analyses.

Angler harvest was sampled weekly to obtain fish lengths. Mean weights in grams were obtained by using species-specific length-weight regressions (Table 4.1.2). Otoliths were used to determine the age of walleye, yellow perch, smallmouth bass, white bass, and white perch. An age-length key computer program was used to assign an age to measured fish in predetermined increments (25 mm for walleye and smallmouth bass, 10 mm for all other species) based on the age composition of aged fish. Age composition by percent, mean length, and mean weight was calculated for each district and month for walleye, yellow perch, smallmouth bass, white bass, and white perch. Mean length and weight was calculated for freshwater drum, channel catfish, and steelhead trout.

A total of 4,776 boat interviews were collected during the 2015 angler survey. Interviews collected by the survey clerks in Sandusky Bay (private boats) and the major rivers (private and charter boats) were not included in the estimates. Private and charter boat estimates of harvest and effort were based on 4,585 boat interviews and 8,296 interval boat counts.

The 2015 total sport harvest, for the private and charter boat fisheries combined, was 4.3 million fish and 5.3 million pounds (Appendix A). Yellow perch (72%) and walleye (25%) represented the majority of the total harvest in numbers (Tables 4.1.3 and 4.1.4). Anglers released 3.7 million fish in 2015, down from 5.6 million in 2014, including 313,521 walleye and 828,489 yellow perch (Table 4.1.5). Anglers estimated that 10% (30,838) of released walleye were over the legal size limit, along with 86% (62,492) of released smallmouth bass and 73% (63,330) of released largemouth bass (Table 4.1.5). The combined effort for the private and charter boat fisheries was 3.6 million angler hours (Tables 4.1.6 and 4.1.7). Angler hours decreased 7%, compared to 2014, and were below the ten-year average of 4.0 million angler hours. The private boat fishery accounted for 92% of the total harvest and also the total angler effort. The primary target species were walleye (63%) and yellow perch (32%) for the private boat fishery, and walleye (84%) and yellow perch (14%) for the charter fishery. Characteristics of private and charter boat angler trips by target species are presented in Tables 4.1.8 and 4.1.9, respectively. There were 694 Ohio licensed charter guides in 2015. This was the first annual increase since 2009, but remains below the ten-year average of 767 licensed charter guides (Figure 4.1.3).

Walleye

Private boat walleye harvest and targeted angler effort decreased 14% and 1%, respectively, compared to 2014 (Table 4.1.10). The majority of the harvest came from District 1 (70%), followed by District 2 (19%) and District 3 (11%). Walleye harvest was greatest in May to July in District 1 (86%), and in July and August in District 2 (53%) and District 3 (71%), respectively (Table 4.1.3). The majority of the charter boat harvest came from District 1 (66%), followed by District 3 (28%) and District 2 (6%). The peak harvest occurred in May and June (62%; Table 4.1.4).

The primary fishing method used on walleye trips differed among districts (Table 4.1.11). Since 1989 flat-line and control depth trolling, were considered to be two different trolling methods and were recorded separately in the angler survey. With the trolling gear becoming more sophisticated over the years, the two methods were combined into one category for the 2015 season. Each year since 2007, the percentage of anglers trolling was greater than casting. Trolling represented 75% of the fishing effort in District 1, 72% in District 2 and 94% in District 3. Harvest rates were greatest for trolling in all Districts. Harvest rates by district for anglers seeking walleye ranged from 0.32 fish per angler hour in District 2, to 0.49 fish per angler hour in District 1. The lakewide harvest rate, 0.43 fish per angler hour, decreased 14% from 2014. The targeted release rate was 0.11 fish per angler hour. Boat limit trips ranged from 7% in District 2, to 18 % in District 1, and lakewide averaged 14% (Table 4.1.8).

The 2015 charter boat harvest and targeted effort decreased 33% and 27%, respectively, compared to 2014 (Table 4.1.10). Walleye harvest was highest in District 1 (66%), followed by District 3 (28%) and District 2 (6%). The targeted harvest rate was 0.58 fish per angler hour and was 9 % lower than in 2014 (Table 4.1.10). The targeted release rate was 0.14 fish per angler hour (Table 4.1.9). Charter trips achieving boat limits for walleye averaged 19% lakewide in 2015.

The 2011 year-class comprised 23% of the sport harvest and was the leading cohort in the harvest (Table 4.1.12), followed by the 2003 (22%) and 2010 (13%) cohorts. Nineteen year classes were present in the 2015 harvest. Age-6 and older walleye constituted 45% of the lakewide catch due to the strength of the 2003 cohort. Walleye mean age at harvest increased from west to east, and averaged 6.7 yr in 2015, compared to 6.4 yr in 2014. Walleye mean size also increased from west to east, and ranged from 540 mm and 1,617 g in District 1, to 613 mm and 2,400 g in District 3. The lakewide average was 553 mm and 1,761 g.

Yellow Perch

Private boat anglers harvested 2.9 million yellow perch and expended 1.0 million targeted angler hours during 2015 (Table 4.1.13). Harvest decreased 23%, compared to 2014, and was the lowest since 1991. Harvest was greatest in District 1 (68%), followed by District 3 (21%) and District 2 (11%). The peak harvest occurred during the traditional yellow perch season in August (35%) and September (36%). Targeted angler hours decreased 12% from 2014, and effort was the lowest since 1995 (Table 4.1.13). The harvest rate decreased 14% from 2014, and averaged 2.73 fish per angler hour. Anglers averaged 12.7 fish per angler trip and 32.8 fish per boat trip (Table 4.1.8). Private angler trips achieving their boat limit ranged from 4% in District 2, to 21% in District 1.

Charter boat yellow perch harvest and targeted angler hours decreased 7% and 17%, respectively, compared to 2014, while harvest per angler hour (4.20 fish per angler hour) increased 11%. The proportion of limit trips by charter anglers (43%) increased 21%, compared to 2014 (Table 4.1.9).

The 2013 year-class comprised 45% of the yellow perch harvest, followed by the 2012 (29%) and 2011 (9%) cohorts (Table 4.1.14). Twelve year classes were present in the 2015 harvest. The lakewide mean age of harvested yellow perch was 3.1 yr, compared to 3.6 yr in 2014. Yellow perch mean age ranged from 2.5 yr in District 1, to 4.3 yr in District 3. Fish ages 6 and older comprised only 8% of the harvest. Mean size at harvest averaged 216 mm and 134 g.

Smallmouth Bass

Private boat smallmouth bass harvest decreased 34% while targeted angler hours increased 45%, compared to 2014 (Table 4.1.15). Angler effort was the highest since the 2010. Smallmouth bass was the third most sought after species by private boat anglers behind walleye and yellow perch, but at 87,145 angler hours, it constitutes only 3% of the total angler hours (Table 4.1.6). As in previous years, the smallmouth bass fishery was mainly catch and release, as the release rate (0.69 fish per angler hour) was considerably higher than the targeted harvest rate (0.01 fish per angler hour; Table 4.1.8). Charter boat harvest decrease 35%, compared to 2014, but still ranked as the second highest since the closed season regulation was implemented in 2004 (Table 4.1.15). Targeted angler hours and targeted harvest rate decreased 15% and 25%, respectively, compared to 2014. In 2015, the 2010 year-class comprised 25% of the smallmouth bass harvest, followed by the 2005 (17%) and 2006 (12%; Table 4.1.16). Thirteen year-classes were present in the 2015 harvest. Mean age in the harvest was 7.6 yr and the smallmouth bass mean size at harvest was 426 mm and 1,496 g.

Steelhead Trout

The combined 2015 private and charter boat harvest of steelhead trout increased 32%, compared to 2014 (Table 4.1.3 and 4.1.4). Steelhead trout were primarily harvested in the central basin with 92% of the harvest in District 3 and 5% in District 2. Private boat targeted angler effort increased 30%, compared to 2014 (Table 4.1.6). There were 140 targeted angler hours by the charter boat fishery in 2015 (Table 4.1.7). The private boat targeted harvest and release rates were 0.04 fish per angler hour and 0.00 fish per angler hour, respectively (Table 4.1.8).

Beginning in 2000, an additional category was added to the target species list (walleye/ steelhead trout or “combo”) in order to measure the number of combined angler trips targeting both walleye and steelhead trout as both can be sought while trolling. Anglers expended 3,112 and 504 targeted angler hours, respectively, for the private and charter boat fisheries in 2015.

White Bass

The white bass private boat harvest and targeted effort decreased 52% and 93%, respectively, compared to 2014 (Table 4.1.17). As in past years, very few angler trips were targeted for this species and the majority of white bass were harvested as incidental catch from anglers targeting other species. The majority of the harvest came from District 2 (48%), followed by District 1 (38%). The targeted harvest rate was 7.82 fish per angler hour (Table 4.1.17). The 2012 year-class comprised 43% of the harvest, followed by the 2013 (24%) and 2014 (14%) cohorts (Table 4.1.18). Lakewide, the mean age in the harvest was 3.0 yr, and the mean size was 305 mm and 437 g.

White Perch

The 2015 estimated sport harvest of 17,050 white perch (Tables 4.1.3 and 4.1.4) was a 59% decrease, compared to 2014. Angler harvest occurred in all surveyed months with the greatest harvest in May (41%), July (19%) and August (17%). District 2 anglers accounted for 50% of the catch, followed by 39% from District 1. There were no targeted angler trips for white perch in 2015. Harvested white perch were from anglers targeting other species or from anglers in the category of "anything that bites." The 2012 year-class comprised 38% of the white perch harvest, followed by the 2011 (23%) and 2010 (12%) cohorts (Table 4.1.19). Lakewide, white perch mean age in the harvest was 3.9 yr, and the mean size was 243 mm and 262 g.

Other Species

Private and charter boat anglers harvested 27,686 fish of other species in 2015 (Tables 4.1.3 and 4.1.4), including freshwater drum, channel catfish, largemouth bass, round goby, rock bass, bluegill, and rainbow smelt These fish were primarily harvested by anglers as incidental catch while targeting other major species or when seeking anything that bites. Estimated harvest weights for channel catfish and freshwater drum are reported by fishing district in Appendix A.

Zip Code Analyses

In 2015, the angler survey clerks were instructed to obtain home zip code information from anglers and non-angling boaters during the course of the interview. Zip code responses include 3,773 angling and 838 non-angling boater interviews. The angling and non-angling boaters will be called boaters for this analysis. Of the 4,611 responses collected, 3,716 (81%) of the respondents resided in Ohio, and 895 (19%) were from out-of-state (Table 4.1.20). Boaters from 30 states were interviewed during the 2015 survey, along with two responses from Canada and one from the Ireland. The neighboring states of Pennsylvania (28%), Indiana (16%) and Michigan (13%) had the highest number of out-of-state responses.

Responses were summarized by Division of Wildlife District and which Lake Erie geographic district the boaters spent their time (Table 4.1.21). The two Wildlife districts which border Lake Erie, District 3 (61%) and District 2 (27%), comprised the majority of the trips. The three Wildlife districts removed from the lakeshore accounted for 11% of the trips. Eighty-four of Ohio's 88 counties were represented in the 2015 survey (Figure 4.1.4). Boaters from the seven lakeshore counties comprised 51% of the total responses (Table.1.22). Ohio counties with the greatest number of responses were Cuyahoga (16%), Lorain (10%) and Erie (9%). Counties not located along the lakeshore with the most responses were from northeast Ohio, and include Summit (4%) and Trumbull (3%).

In order to determine how many boaters from the lakeshore counties remained in their home county for their Lake Erie trip, responses were grouped by county of origin and county of destination. The twenty counties with the greatest number of responses, which include the seven lakeshore counties, are reported in Table 4.1.22. Of the seven lakeshore counties, boaters from Ottawa (91%) and Ashtabula (91%) were most likely to stay in their home county. Only 42% of the trips by Lucas County boaters were in their home county. The top destination for Lucas County residents outside their home county was Ottawa County.

4.2 Sandusky and Maumee Rivers Tributary Fisheries

A direct contact creel survey was conducted on the Sandusky and Maumee rivers from March 23 to May 31, 2015. The survey was started later in March due to ice in the rivers on the normal start date (March 15) and was continued through May 31 to include most of the white bass fishery. Surveys were conducted from Ewing Island to Jerome Road on the Maumee River, and from Brady's Island to Rodger Young Park on the Sandusky River (Figure 4.2.1). Two weekdays and both weekend days were surveyed each week of the survey. All survey sites were scheduled to be sampled on each day worked. Instantaneous angler counts were completed at each site. After the count was completed at a site, the clerk stayed for a pre-determined amount of time to interview anglers and collect biological data from harvested fish. Survey dates and times of counts were randomly selected within strata for month, survey location, and weekday-weekend. Angler interviews were conducted to determine hours fished, target species sought, and the number of each species harvested and released. Only completed-trip interviews were used to estimate harvest. Angler effort was estimated from instantaneous counts during daylight hours which included 0800-2000 in March, 0800-2030 in April, and 0800-2100 in May. Mean counts were expanded to angler hours by constants for daylight hours per day, days per month, and the number of count locations on each river.

Walleye length and gender data were collected to characterize harvested fish size and age by sex. Walleye lengths observed in the fisheries were categorized by sex and placed into 25-mm length bins for each river. Otoliths were collected from walleye sampled in electrofishing survey assessments and were used to develop a length-age key for each river and apply proportions of ages for each 25-mm length bin, by sex, to estimate age-specific harvest for each river.

Compared to 2014, estimated walleye harvest increased in the Maumee River (39,813 harvested) and decreased in the Sandusky River (1,479 harvested; Tables 4.2.1 and 4.2.2). The walleye harvest in the Maumee River was above the prior ten-year mean, while the harvest in the Sandusky River was second lowest in the entire time series since 1975. Targeted walleye angler hours directly observed from interviews totaled 2,926 (2.3% of the total estimated walleye hours) and 1,068 (6.5% of the total estimated walleye hours) for the Maumee and Sandusky rivers, respectively (Table 4.2.3). Targeted walleye angler effort was estimated at 127,947 hours in the Maumee River and 16,443 hours in the Sandusky River (Table 4.2.2). The harvest rate for anglers seeking walleye averaged 0.31 fish per hour on the Maumee River (down from 0.35 in 2014) and 0.09 fish per hour on the Sandusky River (down from 0.18 in 2014). Release rates were 0.23 fish per hour on the Maumee River and 0.26 fish per hour on the Sandusky River (Table 4.2.2).

Male walleye dominated the catch in the Maumee River, accounting for 94.2% of the harvest, while the harvest was more evenly balanced in the Sandusky River with 55.5% of the harvest being male (Tables 4.2.4 and 4.2.5). In the Maumee River, mean male walleye age was 6.48 years, mean female age was 7.94 years, and the oldest walleye harvested was 19 years old (1996 year-class). In the Sandusky River, average male walleye age was 6.77 years, average female age was 7.20 years, and the oldest walleye harvested was 14 years old (2001 year-class). The 2010 year-class comprised the largest percentage of harvest in the Maumee River (27.11%) for the third consecutive year,

followed closely by the 2011 year-class (25.84%) and still a large harvest from the strong 2003 year-class (15.66%). The 2009 year-class accounted for the largest percentage of the Sandusky River harvest (23.11%) for the third consecutive year, followed by the 2010 and 2006 year-classes (16.73% and 16.70%, respectively). The strong 2003 year-class represented just 2.06% of the harvest in the Sandusky River. Harvested walleye mean lengths and mean ages were 519 mm and 6.57 years, respectively, in the Maumee River and 569 mm and 6.96 years in the Sandusky River, respectively.

We also estimated white bass harvest from both rivers during the tributary survey period through the end of May (Tables 4.2.1 and 4.2.2). The targeted white bass harvest rate in the Sandusky River was 3.83 fish per hour (the second highest in the entire data series, but down from 5.13 fish per hour in 2014) with an estimated harvest of 186,489 fish. The targeted white bass harvest rate in the Maumee River was 1.54 fish per hour (down from 2.18 fish per hour in 2014) with an estimated harvest of 45,063 fish. In the Maumee River the white bass harvest was 60.3% male (316 mm mean length) and 39.7% female (339 mm mean length). In the Sandusky River the white bass harvest was 55.2% male (311 mm mean length) and 44.8% female (341 mm mean length).

Table 4.1.1. Method of calculating boat trips, angler hours, and harvest per grid, area, and month.

a) Boat trips for the i^{th} day of week strata:

$T_i = (b_i) * (I_i) * (D_i) * (L_i)$ where:

T_i = estimated number of boat trips
b_i = mean number of boats counted in 20-minute interval
I_i = number of 20-minute count intervals per day
D_i = number of days per month
L_i = number of harbor count locations per area.

b) Grid angler hours for the j^{th} grid:

$E_{ij} = (T_i) * (P_{ij}) * (A_{ij}) * (a_{ij}) * (h_{ij})$ where:

E_{ij} = estimated number of angler hours
P_{ij} = proportion of boat interviews in each grid
A_{ij} = proportion of angling interviews
a_{ij} = mean number of anglers per fishing boat
h_{ij} = mean number of hours per fishing trip.

c) Grid catch per angler hour for the k^{th} species:

$F_{ijk} = (c_{ijk}) / (e_{ijk})$ where:

F_{ijk} = catch per angler hour
c_{ijk} = observed number of fish in sample interviews
e_{ijk} = observed number of angler hours in sample interviews.

d) Grid catch for the k^{th} species:

$C_{ijk} = (E_{ij}) * (F_{ijk})$ where:

C_{ijk} = estimated catch of a species.

Table 4.1.2. Length-weight regression equations used for the 2015 biological sampling of harvest from the Ohio waters of Lake Erie.

Species	Assessment Method	District	Season	Regression Equation [a,b]	Year	SE[c] Intercept	SE[c] Slope	Sample Size
Walleye	Sport	All	All	log W= -5.47636+3.16461 log TL	2013	0.037	0.013	1,525
Yellow Perch	Creel Survey							
	Sport, Trawl	1	April-June	log W= -5.30579+3.16208 log TL	2013	0.061	0.026	666
	Trawl	1	July-August	log W= -5.00412+3.04033 log TL	2013	0.057	0.025	348
	Sport, Trawl	1	Sept-Oct	log W= -5.36783+3.18597 log TL	2013	0.040	0.017	659
	Sport, Trawl, Commercial	2	May-June	log W= -5.01058+3.02885 log TL	2013	0.045	0.019	730
	Sport, Trawl	2	July-August	log W= -5.09688+3.08515 log TL	2013	0.058	0.025	425
	Sport, Trawl, Commercial	2	Sept-Oct	log W= -5.50842+3.25907 log TL	2013	0.033	0.014	963
	Sport, Trawl	3	May-June	log W= -5.36038+3.18267 log TL	2013	0.043	0.019	654
	Sport, Trawl, Commercial	3	July-August	log W= -4.84100+2.97578 log TL	2013	0.033	0.014	1,239
	Sport, Trawl	3	Sept-Oct	log W= -5.30062+3.16930 log TL	2013	0.038	0.016	839
	Commercial Trap Net							
	Commercial	1[d]	All	log W= -5.36452+3.17270 log TL	2010	0.072	0.030	
	Sport, Trawl, Commercial	2	May-July	log W= -5.36943+3.18057 log TL	2013	0.071	0.030	607
	Sport, Trawl, Commercial	2	August-December	log W= -5.37797+3.20451 log TL	2013	0.050	0.021	1,059
	Sport, Trawl, Commercial	3	All	log W= -5.35579+3.18341 log TL	2013	0.055	0.023	980
White Bass	Gillnet	All	All	log W= -5.38884+3.22080 log TL	2015	0.049	0.019	2,405
White Perch	Gillnet	All	All	log W= -5.76573+3.41786 log TL	2015	0.020	0.008	2,017
Smallmouth Bass	Sport	All	All	log W= -4.46342+2.90185 log TL	2013	0.206	0.078	118
Steelhead Trout	Sport	All	All	log W= -4.1708+2.7217 log TL	2004	0.236	0.084	
Channel Catfish	Trawl	All	All	log W= -6.15014+3.43989 log TL	2015	0.179	0.067	64
Freshwater Drum	Trawl	All	All	log W= -5.2402+3.1206 log TL	2014	0.194	0.076	89
Lake Whitefish	Commercial	All	All	log W= -7.07507+3.75576 log TL	2015	0.446	0.161	145

[a] W = weight in grams; TL = total length in millimeters.

[b] Log values are $\log_{10}$

[c] SE = standard error

[d] Summary includes data contributed by the USGS Great Lakes Science Center, Lake Erie Biological Station, Sandusky, OH.

Table 4.1.3. Private boat angler harvest (numbers of fish) of major species, by statistical district and month, in the Ohio waters of Lake Erie during 2015.

District	Month	Walleye	Yellow Perch	White Bass	Smallmouth Bass	Largemouth Bass	Freshwater Drum	Channel Catfish	White Perch	Steelhead Trout	Others[a]	Total
1	April	61,906	551	679	0	0	136	0	136	68	0	63,476
	May	215,613	15,301	10,012	0	0	2,924	1,162	1,976	54	0	247,042
	June	137,697	14,437	9,767	0	0	0	468	238	0	3,103	165,710
	July	205,240	312,723	3,228	0	0	428	2,083	914	0	0	524,616
	August	19,550	784,717	162	1,471	390	219	840	260	0	0	807,609
	September	5,899	664,522	0	0	0	0	284	1,228	0	0	671,933
	October	2,677	186,180	0	0	0	0	0	0	0	0	188,857
	Total	648,582	1,978,431	23,848	1,471	390	3,707	4,837	4,752	122	3,103	2,669,243
2	May	38,623	30,431	3,308	100	0	427	38	3,655	100	818	77,500
	June	33,112	5,619	11,188	0	0	0	143	393	0	1,562	52,017
	July	58,078	49,350	15,077	0	0	212	1,272	1,318	99	0	125,406
	August	37,440	92,768	8,217	0	0	589	776	2,125	0	0	141,915
	September	5,010	82,193	829	0	0	0	650	135	0	0	88,817
	October	6,327	61,037	727	0	0	0	172	414	0	32	68,709
	Total	178,590	321,398	39,346	100	0	1,228	3,051	8,040	199	2,412	554,364
3	May	7,196	24,698	0	0	0	0	432	169	0	6,327	38,822
	June	16,996	24,973	4,083	0	0	265	72	0	66	205	46,660
	July	40,647	95,703	5,043	79	0	0	0	715	2,541	0	144,728
	August	28,469	140,165	874	0	0	0	0	146	147	0	169,801
	September	4,458	317,581	1,076	0	0	0	74	40	275	0	323,504
	October	27	16,501	42	0	0	0	0	948	47	0	17,565
	Total	97,793	619,621	11,118	79	0	265	578	2,018	3,076	6,532	741,080
Lakewide	April	61,906	551	679	0	0	136	0	136	68	0	63,476
	May	261,432	70,430	13,320	100	0	3,351	1,632	5,800	154	7,145	363,364
	June	187,805	45,029	25,038	0	0	265	683	631	66	4,870	264,387
	July	303,965	457,776	23,348	79	0	640	3,355	2,947	2,640	0	794,750
	August	85,459	1,017,650	9,253	1,471	390	808	1,616	2,531	147	0	1,119,325
	September	15,367	1,064,296	1,905	0	0	0	1,008	1,403	275	0	1,084,254
	October	9,031	263,718	769	0	0	0	172	1,362	47	32	275,131
	Total	924,965	2,919,450	74,312	1,650	390	5,200	8,466	14,810	3,397	12,047	3,964,687

[a] "Others" includes rock bass, bluegill and round goby.

Table 4.1.4. Charter boat angler harvest (numbers of fish) of major species, by statistical district and month, in the Ohio waters of Lake Erie during 2015.

District	Month	Walleye	Yellow Perch	White Bass	Smallmouth Bass	Largemouth Bass	Freshwater Drum	Channel Catfish	White Perch	Steelhead Trout	Others[a]	Total
1	April	7,181	35	0	0	0	0	0	0	0	0	7,216
	May	43,604	330	5,101	0	0	18	319	806	9	0	50,187
	June	34,780	630	1,337	11	0	145	381	446	0	0	37,730
	July	10,325	17,028	1,538	313	10	9	434	277	0	0	29,934
	August	755	52,351	7	2,173	0	129	19	302	0	0	55,736
	September	739	20,514	122	121	0	0	0	0	0	0	21,496
	October	0	23,623	0	0	0	0	0	0	0	0	23,623
	Total	97,384	114,511	8,105	2,618	10	301	1,153	1,831	9	0	225,922
2	May	846	0	484	0	0	0	0	356	0	0	1,686
	June	2,573	46	96	0	0	0	63	30	0	0	2,808
	July	3,601	20	422	9	0	0	11	23	30	0	4,116
	August	1,411	14	236	0	0	0	0	0	0	0	1,661
	September	220	0	0	0	0	0	0	0	0	0	220
	October	0	634	0	0	0	0	0	0	0	0	634
	Total	8,651	714	1,238	9	0	0	74	409	30	0	11,125
3	May	2,205	0	0	0	0	0	28	0	0	0	2,233
	June	7,957	516	0	0	0	0	0	0	0	12	8,485
	July	11,123	1,112	532	0	0	0	0	0	935	0	13,702
	August	19,634	15,714	713	0	0	0	0	0	215	0	36,276
	September	1,344	56,226	0	0	0	5	0	0	66	0	57,641
	October	0	6,028	0	0	0	0	0	0	0	0	6,028
	Total	42,263	79,596	1,245	0	0	5	28	0	1,216	12	124,365
Lakewide	April	7,181	35	0	0	0	0	0	0	0	0	7,216
	May	46,655	330	5,585	0	0	18	347	1,162	9	0	54,106
	June	45,310	1,192	1,433	11	0	145	444	476	0	12	49,023
	July	25,049	18,160	2,492	322	10	9	445	300	965	0	47,752
	August	21,800	68,079	956	2,173	0	129	19	302	215	0	93,673
	September	2,303	76,740	122	121	0	5	0	0	66	0	79,357
	October	0	30,285	0	0	0	0	0	0	0	0	30,285
	Total	148,298	194,821	10,588	2,627	10	306	1,255	2,240	1,255	12	361,412

[a] "Others" are rainbow smelt.

Table 4.1.5. Estimated numbers of released fish, legal size, and percent legal size, in the private and charter boat fisheries, by district, in the Ohio waters of Lake Erie during 2015.

District	Fishery	Walleye	Yellow Perch	White Bass	Smallmouth Bass	Largemouth Bass	Freshwater Drum	Channel Catfish	White Perch	Steelhead Trout	Others	Total
1	Private	229,127	699,155	425,210	43,704	73,478	454,641	48,145	366,202	0	43,424	2,383,086
	Charter	32,223	46,671	49,892	4,249	18	48,504	4,103	40,983	0	2,378	229,021
	All	261,350	745,826	475,102	47,953	73,496	503,145	52,248	407,185	0	45,802	2,612,107
2	Private	44,687	60,513	178,423	12,058	10,998	196,660	19,219	89,429	99	55,166	667,252
	Charter	1,685	192	5,308	65	0	3,623	714	1,919	0	1,397	14,903
	All	46,372	60,705	183,731	12,123	10,998	200,283	19,933	91,348	99	56,563	682,155
3	Private	4,361	20,876	159,535	15,606	2,458	56,528	2,118	27,439	746	20,410	310,077
	Charter	1,438	1,082	34,481	37	0	8,684	206	1,874	26	467	48,295
	All	5,799	21,958	194,016	15,643	2,458	65,212	2,324	29,313	772	20,877	358,372
All	Private	278,175	780,544	763,168	71,368	86,934	707,829	69,482	483,070	845	119,000	3,360,415
	Charter	35,346	47,945	89,681	4,351	18	60,811	5,023	44,776	26	4,242	292,219
	All	313,521	828,489	852,849	75,719	86,952	768,640	74,505	527,846	871	123,242	3,652,634

District	Fishery	Legal size[a] Walleye	Percent Legal size[a]	Legal size[a] Smallmouth Bass	Percent Legal size[a]	Legal size[a] Largemouth Bass	Percent Legal size[a]	Legal size[a] Total
1	Private	19,793	8.64	37,481	85.76	53,274	73.21	110,548
	Charter	1,299	4.03	3,212	75.59	10	55.56	4,521
	All	21,092	8.07	40,693	84.86	53,284	73.21	115,069
2	Private	8,271	18.51	8,015	90.14	8,254	75.05	24,540
	Charter	90	5.34	20	100.00	--	--	110
	All	8,361	18.03	8,035	90.16	8,254	75.05	24,650
3	Private	1,034	23.71	13,764	88.20	1,792	72.90	16,590
	Charter	351	24.41	--	--	--	--	351
	All	1,385	23.88	13,764	88.20	1,792	72.90	16,941
All	Private	29,098	10.46	59,260	86.89	63,320	73.44	151,678
	Charter	1,740	4.92	3,232	75.71	10	55.56	4,982
	All	30,838	9.84	62,492	86.23	63,330	73.43	156,660

[a] Legal size refers to the estimated number of fish over the legal size limit (15" for walleye, 14" for smallmouth and largemouth bass) that were released, calculated by applying the percent of legal fish released by fishery, district, and month. Only interviews with responses were used to estimate percentage of legal released fish. Legal size released fish are a sub-set of the total number of released fish that are in the top portion of the table.

Table 4.1.6. Private boat angler hours for target species, by statistical district and month, in the Ohio waters of Lake Erie during 2015.

District	Month	Walleye	Yellow Perch	White Bass	Smallmouth Bass	Largemouth Bass	Steelhead Trout	Walleye/ Steelhead	Rock Bass	Anything	Total Hours
1	April	152,186	0	0	468	0	0	0	0	0	152,654
	May	392,449	5,643	0	7,825	4,937	0	0	0	2,548	413,402
	June	263,740	9,259	0	9,635	7,895	0	0	0	0	290,529
	July	381,406	94,958	0	6,875	9,905	0	0	0	5,094	498,238
	August	55,026	256,169	0	12,769	11,015	0	0	0	0	334,979
	September	10,208	206,558	0	3,350	4,159	0	0	0	4,449	228,724
	October	7,191	57,715	0	1,937	645	0	0	0	0	67,488
	Total	1,262,206	630,302	0	42,859	38,556	0	0	0	12,091	1,986,014
2	May	102,484	17,773	0	9,383	524	0	0	0	2,061	132,225
	June	119,218	8,958	188	52	1,149	0	0	629	3,465	133,659
	July	181,189	48,160	613	8,957	2,773	0	0	0	4,429	246,121
	August	114,752	62,723	0	1,982	1,883	160	0	0	3,572	185,072
	September	13,424	53,730	0	302	647	216	0	0	1,982	70,301
	October	11,942	26,088	0	116	87	0	552	0	521	39,306
	Total	543,009	217,432	801	20,792	7,063	376	552	629	16,030	806,684
3	May	39,530	10,699	0	15,989	0	0	0	0	3,136	69,354
	June	48,699	9,246	0	2,579	0	0	0	0	136	60,660
	July	116,687	41,832	0	3,197	0	0	2,560	0	141	164,417
	August	60,837	55,840	0	892	0	0	0	0	1,086	118,655
	September	10,200	75,770	0	431	0	620	0	0	116	87,137
	October	0	4,806	0	406	0	573	0	0	0	5,785
	Total	275,953	198,193	0	23,494	0	1,193	2,560	0	4,615	506,008
Lakewide	April	152,186	0	0	468	0	0	0	0	0	152,654
	May	534,463	34,115	0	33,197	5,461	0	0	0	7,745	614,981
	June	431,657	27,463	188	12,266	9,044	0	0	629	3,601	484,848
	July	679,282	184,950	613	19,029	12,678	0	2,560	0	9,664	908,776
	August	230,615	374,732	0	15,643	12,898	160	0	0	4,658	638,706
	September	33,832	336,058	0	4,083	4,806	836	0	0	6,547	386,162
	October	19,133	88,609	0	2,459	732	573	552	0	521	112,579
	Total	2,081,168	1,045,927	801	87,145	45,619	1,569	3,112	629	32,736	3,298,706

Table 4.1.7. Charter boat angler hours for target species, by statistical district and month, in the Ohio waters of Lake Erie during 2015.

District	Month	Walleye	Yellow Perch	Smallmouth Bass	Steelhead Trout	Walleye/ Steelhead	Total Hours
1	April	16,061	0	0	0	0	16,061
	May	68,163	0	0	0	0	68,163
	June	56,551	0	200	0	0	56,751
	July	22,601	3,487	1,820	0	0	27,908
	August	1,925	14,661	2,828	0	0	19,414
	September	2,187	5,643	750	0	0	8,580
	October	0	5,367	229	0	0	5,596
	Total	167,488	29,158	5,827	0	0	202,473
2	May	2,229	0	0	0	0	2,229
	June	7,061	0	0	0	0	7,061
	July	7,986	0	0	0	0	7,986
	August	2,962	0	0	0	0	2,962
	September	364	0	0	0	0	364
	October	0	205	0	0	0	205
	Total	20,602	205	0	0	0	20,807
3	May	6,021	0	0	0	0	6,021
	June	13,517	182	0	0	0	13,699
	July	17,866	776	0	0	504	19,146
	August	25,487	2,398	0	0	0	27,885
	September	2,101	9,499	0	140	0	11,740
	October	0	1,178	0	0	0	1,178
	Total	64,992	14,033	0	140	504	79,669
Lakewide	April	16,061	0	0	0	0	16,061
	May	76,413	0	0	0	0	76,413
	June	77,129	182	200	0	0	77,511
	July	48,453	4,263	1,820	0	504	55,040
	August	30,374	17,059	2,828	0	0	50,261
	September	4,652	15,142	750	140	0	20,684
	October	0	6,750	229	0	0	6,979
	Total	253,082	43,396	5,827	140	504	302,949

Table 4.1.8. Characteristics of private boat angler trips, by target species, in the Ohio waters of Lake Erie during 2015.

					Target Species			Angler Harvest Success[a]		
Target Species	District	Number of Interviews	Boat Trips	Angler Trips	Harvested per Angler Hour	Released per Angler Hour	Total per Angler Hour	Fish per Angler Trip	Fish per Boat Trip	% Boat[b] Limit Trips
Walleye	1	667	77,376	216,206	0.49	0.14	0.64	2.50	6.98	18.39
	2	517	38,143	98,289	0.32	0.07	0.39	1.76	4.54	6.55
	3	270	17,372	47,341	0.34	0.01	0.35	1.97	5.38	8.02
	Total	1,454	132,891	361,836	0.43	0.11	0.54	2.23	6.07	13.64
Yellow Perch	1	320	46,662	122,528	3.06	1.01	4.07	15.00	39.39	20.52
	2	395	20,803	47,903	1.45	0.26	1.71	6.23	14.34	4.41
	3	341	16,275	45,017	3.06	0.10	3.16	13.47	37.26	20.11
	Total	1,056	83,740	215,448	2.73	0.68	3.40	12.73	32.75	16.44
Smallmouth Bass	1	27	2,798	5,983	0.03	0.83	0.85	0.21	0.45	0.00
	2	27	1,834	3,358	0.00	0.58	0.58	0.00	0.00	0.00
	3	33	2,193	4,869	0.00	0.54	0.54	0.00	0.00	0.00
	Total	87	6,825	14,210	0.01	0.69	0.70	0.09	0.19	0.00
Largemouth Bass	1	29	3,033	5,392	0.00	1.55	1.55	0.00	0.00	0.00
	2	16	868	1,490	0.00	0.67	0.67	0.00	0.00	0.00
	3	0	-	-	-	-	-	-	-	-
	Total	45	3,901	6,882	0.00	1.41	1.41	0.00	0.00	0.00
White Bass	1	0	-	-	-	-	-	-	-	-
	2	3	216	356	7.82	0.00	7.82	17.70	29.17	-
	3	0	-	-	-	-	-	-	-	-
	Total	3	216	356	7.82	0.00	7.82	17.70	29.17	-
Steelhead Trout	1	0	-	-	-	-	-	-	-	-
	2	2	83	83	0.00	0.00	0.00	0.00	0.00	0.00
	3	5	142	261	0.05	0.00	0.05	0.24	0.45	0.00
	Total	7	225	344	0.04	0.00	0.04	0.18	0.28	0.00

[a] Angler success reported in numbers of fish.

[b] Boat limits were defined as those boats for which each individual angler had a personal limit. There is no daily limit for white bass.

Note: Daily personal bag limits during 2015: 4 walleye during March and April, 6 walleye during May through February; 30 yellow perch; 5 black bass from June 27 to April 30; 5 trout and salmon in the aggregate from May 16 to August 31, and 2 trout and salmon in

Table 4.1.9. Characteristics of charter boat angler trips, by target species, in the Ohio waters of Lake Erie during 2015.

					Target Species			Angler Harvest Success[a]		
Target Species	District	Number of Interviews	Boat Trips	Angler Trips	Harvested per Angler Hour	Released per Angler Hour	Total per Angler Hour	Fish per Angler Trip	Fish per Boat Trip	% Boat[b] Limit Trips
Walleye	1	480	4,701	27,884	0.58	0.19	0.77	3.49	20.69	21.76
	2	53	613	3,234	0.43	0.08	0.51	2.72	14.35	9.75
	3	158	2,063	10,407	0.64	0.02	0.66	3.99	20.10	16.41
	Total	691	7,377	41,525	0.58	0.14	0.72	3.55	20.00	19.27
Yellow Perch	1	107	941	5,180	3.56	1.45	5.01	20.06	110.30	37.45
	2	1	4	31	2.98	0.65	3.63	19.57	137.00	0.00
	3	58	615	3,179	5.55	0.06	5.61	24.48	126.60	52.68
	Total	166	1,560	8,390	4.20	1.00	5.20	21.73	116.79	43.36
Smallmouth Bass	1	22	192	1,107	0.43	0.55	0.98	2.27	13.08	30.38
	2	0	.	.	.	.	.	-	-	-
	3	0	.	.	.	.	.	-	-	-
	Total	22	192	1,107	0.43	0.55	0.98	2.27	13.08	30.38

[a] Angler success reported in numbers of fish.

[b] Boat limits were defined as those boats for which each individual angler had a personal limit. There is no daily limit for white bass.

Note: Daily personal bag limits during 2015: 4 walleye during March and April, 6 walleye during May through February; 30 yellow perch; 5 black bass from June 27 to April 30; 5 trout and salmon in the aggregate from May 16 to August 31, and 2 trout and salmon in the aggregate from September 1 to May 15.

Table 4.1.10. Walleye sport angler harvest (thousands of fish), targeted angler effort (thousands of angler hours), and targeted harvest rate (fish per angler hour), by statistical district and fishery, 1975-2015.

		District 1			District 2			District 3			Lakewide		
		Private	Charter		Private	Charter		Private	Charter		Private	Charter	
	Year	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]
Total [b]	1975-77 mean	905	32	937	26	--	26	2	--	2	933	32	965
Harvest	1978-79 "	2,264	160	2,424	--	--	--	--	--	--	--	--	--
	1980-84 "	2,260	260	2,520	218	3	221	55	1	56	2,533	264	2,797
	1985-89 "	2,853	643	3,496	507	49	556	249	30	279	3,609	722	4,331
	1990-94 "	950	427	1,378	305	32	337	258	44	302	1,512	503	2,016
	1995-99 "	869	358	1,227	235	34	269	131	40	172	1,236	432	1,668
	2000-04 "	474	198	672	176	20	196	45	20	65	696	238	933
	2005-09 "	633	179	812	342	20	362	128	36	164	1,102	236	1,338
	2010	498	89	587	247	10	257	86	29	114	831	127	958
	2011	190	33	224	94	11	104	59	31	89	342	75	417
	2012	493	103	596	226	7	233	69	24	93	788	133	921
	2013	641	116	757	183	7	190	100	36	136	924	159	1,083
	2014	720	188	909	170	7	177	190	28	218	1,080	223	1,303
	2015	649	97	746	179	9	187	98	42	140	925	148	1,073
Targeted	1975-77 mean	1,501	36	1,537	125	--	125	8	--	8	1,634	36	1,670
Effort	1978-79 "	3,381	149	3,530	--	--	--	--	--	--	--	149	--
	1980-84 "	4,368	407	4,775	514	9	523	239	2	241	5,120	418	5,538
	1985-89 "	5,088	918	6,005	1,271	95	1,366	624	47	671	6,983	1,060	8,042
	1990-94 "	2,799	876	3,676	1,208	80	1,287	707	70	777	4,714	1,026	5,740
	1995-99 "	2,288	587	2,875	747	60	807	363	52	415	3,398	698	4,097
	2000-04 "	1,312	347	1,659	578	40	618	197	44	241	2,087	431	2,518
	2005-09 "	1,175	246	1,421	810	32	841	250	48	298	2,234	325	2,560
	2010	1,235	168	1,403	632	20	652	185	34	219	2,053	221	2,274
	2011	769	93	862	320	26	346	170	48	218	1,258	167	1,425
	2012	1,074	209	1,283	544	16	560	153	30	182	1,771	254	2,026
	2013	1,230	194	1,424	488	15	503	191	45	236	1,909	254	2,162
	2014	1,253	299	1,552	445	14	459	405	36	441	2,103	349	2,451
	2015	1,262	167	1,430	543	21	564	276	65	341	2,081	253	2,334
Targeted	1975-77 mean	0.35	0.76	0.36	0.16	--	0.16	0.16	--	0.16	0.34	0.76	0.35
Harvest	1978-79 "	0.51	1.04	0.53	--	--	--	--	--	--	--	--	--
Rate [c]	1980-84 "	0.42	0.65	0.44	0.23	0.28	0.23	0.15	0.38	0.15	0.40	0.65	0.41
	1985-89 "	0.53	0.70	0.56	0.37	0.48	0.38	0.34	0.57	0.36	0.49	0.68	0.52
	1990-94 "	0.33	0.49	0.37	0.25	0.40	0.26	0.36	0.63	0.38	0.32	0.49	0.35
	1995-99 "	0.36	0.60	0.41	0.28	0.55	0.30	0.36	0.73	0.40	0.35	0.61	0.39
	2000-04 "	0.35	0.57	0.40	0.29	0.47	0.30	0.23	0.45	0.27	0.32	0.54	0.36
	2005-09 "	0.50	0.72	0.54	0.38	0.63	0.39	0.49	0.78	0.54	0.46	0.71	0.49
	2010	0.39	0.53	0.41	0.38	0.53	0.38	0.45	0.84	0.51	0.40	0.57	0.42
	2011	0.24	0.35	0.25	0.28	0.44	0.29	0.34	0.64	0.41	0.26	0.45	0.28
	2012	0.44	0.50	0.45	0.42	0.38	0.42	0.44	0.80	0.50	0.44	0.52	0.45
	2013	0.53	0.59	0.54	0.38	0.56	0.39	0.50	0.77	0.55	0.49	0.62	0.50
	2014	0.56	0.63	0.57	0.37	0.52	0.37	0.46	0.76	0.48	0.50	0.64	0.52
	2015	0.49	0.58	0.50	0.32	0.43	0.32	0.34	0.64	0.40	0.43	0.58	0.45

[a] Totals may differ due to rounding.

[b] Includes catch from targeted and untargeted effort.

[c] Targeted harvest rate means for grouped time periods reflect an average of annual values, not weighted means.

Table 4.1.11. Private boat angler hours seeking walleye and walleye harvest per angler hour, by fishing method[a], in the Ohio waters of Lake Erie during 2015.

			Casting		Trolling		All
District	Month	Walleye Angler Hours	Hours (%)	Harvest Rate	Hours (%)	Harvest Rate	Harvest Rate
1	April	152,186	37.17%	0.41	62.83%	0.38	0.39
	May	392,449	23.87%	0.32	75.35%	0.58	0.52
	June	263,740	21.18%	0.33	78.43%	0.55	0.50
	July	381,406	17.17%	0.30	79.70%	0.57	0.52
	August	55,026	40.05%	0.15	53.37%	0.61	0.40
	September	10,208	0.00%	-	86.42%	0.44	0.41
	October	7,191	38.87%	0.53	61.13%	0.32	0.40
	Total	1,262,206	23.48%	0.32	74.85%	0.55	0.49
2	May	102,484	18.24%	0.26	79.18%	0.39	0.36
	June	119,218	24.98%	0.15	70.10%	0.33	0.28
	July	181,189	23.36%	0.28	75.42%	0.32	0.31
	August	114,752	34.81%	0.28	61.24%	0.36	0.33
	September	13,424	11.25%	0.59	88.75%	0.40	0.42
	October	11,942	39.70%	0.48	54.19%	0.49	0.49
	Total	543,009	25.23%	0.26	71.83%	0.35	0.32
3	May	39,530	7.93%	0.33	76.82%	0.17	0.17
	June	48,699	5.60%	0.20	94.40%	0.35	0.34
	July	116,687	2.37%	0.05	97.63%	0.34	0.33
	August	60,837	3.01%	0.81	96.99%	0.44	0.46
	September	10,200	0.00%	-	100.00%	0.36	0.36
	October	0	0.00%	-	0.00%	-	-
	Total	275,953	3.79%	0.31	94.03%	0.35	0.34
Lakewide	April	152,186	37.17%	0.41	62.83%	0.38	0.39
	May	534,463	21.61%	0.31	76.19%	0.51	0.46
	June	431,657	20.47%	0.27	77.93%	0.47	0.42
	July	679,282	16.28%	0.28	81.64%	0.46	0.43
	August	230,615	27.67%	0.25	68.79%	0.44	0.38
	September	33,832	4.46%	0.59	91.44%	0.40	0.40
	October	19,133	39.39%	0.50	56.80%	0.42	0.46
	Total	2,081,168	21.33%	0.30	76.60%	0.47	0.43

[a] A 97.9% response level was achieved for the question regarding fishing method.

Table 4.1.12. Walleye sport harvest (numbers), year-class composition (% comp), mean length (mm), mean weight (g) by age, and mean age (yr), by district, for Ohio's private and charter boat fisheries in 2015.

District	Year Class / Age	2013 / 2	2012 / 3	2011 / 4	2010 / 5	2009 / 6	2008 / 7	2007 / 8	2006 / 9	2005 / 10	2004 / 11	2003 / 12	*Continued below*
1	Numbers	76,149	74,194	187,034	109,318	47,265	32,463	50,075	9,049	6,115	3,482	126,172	
	% Comp	10.21	9.95	25.07	14.65	6.34	4.35	6.71	1.21	0.82	0.47	16.91	
	Length	406	459	504	542	570	583	590	634	688	599	644	
	Weight	607	896	1202	1523	1794	1934	2016	2569	3222	2082	2697	
2	Numbers	24,762	13,531	38,170	20,734	9,735	7,494	12,743	1,727	3,282	2,480	46,290	
	% Comp	13.22	7.23	20.39	11.07	5.20	4.00	6.81	0.92	1.75	1.32	24.72	
	Length	407	461	509	542	585	597	606	653	675	612	667	
	Weight	610	908	1246	1527	1931	2080	2205	2802	3050	2226	2979	
3	Numbers	6,327	7,036	18,680	11,801	6,481	6,761	8,025	1,456	2,739	2,586	62,266	
	% Comp	4.52	5.02	13.34	8.43	4.63	4.83	5.73	1.04	1.96	1.85	44.46	
	Length	414	474	505	548	595	615	628	662	696	618	679	
	Weight	644	987	1215	1574	2043	2273	2440	2885	3334	2281	3143	
Total[a]	Numbers	107,238	94,762	243,884	141,853	63,480	46,719	70,842	12,232	12,136	8,548	234,728	
	% Comp	9.99	8.83	22.72	13.22	5.91	4.35	6.60	1.14	1.13	0.80	21.87	
	Length	407	461	505	542	575	590	597	640	686	609	658	
	Weight	610	904	1210	1528	1840	2006	2098	2639	3201	2184	2871	

District	Year Class / Age	2002 / 13	2001 / 14	2000 / 15	1999 / 16	1998 / 17	1997 / 18	1996 / 19	1995 / 20	1994 / 21	Total[a]	Mean	Sample (N)
1	Numbers	2,284	12,535	3,482	1,041	1,561	0	2,921	0	826	745,966		
	% Comp	0.31	1.68	0.47	0.14	0.21	0.00	0.39	0.00	0.11		6.23 yr	70
	Length	711	593	718	705	564	-	605	-	760		540 mm	1,617
	Weight	3534	2093	3697	3445	1700	-	2129	-	4361		1,617 g	
2	Numbers	498	2,549	1,548	276	180	186	0	0	1,056	187,241		
	% Comp	0.27	1.36	0.83	0.15	0.10	0.10	0.00	0.00	0.56		6.88 yr	384
	Length	709	665	667	693	561	685	-	-	789		560 mm	918
	Weight	3505	2933	2947	3261	1667	3144	-	-	4922		1,859 g	
3	Numbers	817	2,188	1,971	139	0	0	139	0	645	140,056		
	% Comp	0.58	1.56	1.41	0.10	0.00	0.00	0.10	0.00	0.46		8.73 yr	242
	Length	715	661	718	705	-	-	608	-	794		613 mm	753
	Weight	3602	2958	3713	3444	-	-	2156	-	5016		2,400 g	
Total[a]	Numbers	3,598	17,272	7,000	1,456	1,741	186	3,060	0	2,527	1,073,263		
	% Comp	0.34	1.61	0.65	0.14	0.16	0.02	0.29	0.00	0.24		6.67 yr	696
	Length	711	612	707	703	564	685	606	-	780		553 mm	3,288
	Weight	3546	2327	3536	3410	1697	3144	2130	-	4763		1,761 g	

[a] Totals may differ due to rounding.

Table 4.1.13. Yellow perch sport angler harvest (thousands of fish), targeted angler effort (thousands of angler hours), and targeted harvest rate (fish per angler hour), by statistical district and fishery, 1975-2015*.

		District 1			District 2			District 3			Lakewide		
		Private	Charter		Private	Charter		Private	Charter		Private	Charter	
	Year	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]
Total [b]	1975-77 mean	6,463	104	6,567	1,221	2	1,223	258	0	258	7,942	106	8,048
Harvest	1980-84 "	7,780	202	7,982	1,417	26	1,443	232	1	233	9,429	229	9,658
	1985-89 "	4,525	381	4,906	1,745	88	1,833	491	19	510	6,761	488	7,249
	1990-94 "	1,109	133	1,242	1,093	51	1,144	172	16	187	2,374	199	2,573
	1995-99 "	3,271	187	3,458	1,443	26	1,469	317	21	338	5,031	234	5,265
	2000-04 "	2,968	187	3,154	2,071	74	2,145	961	78	1,038	5,999	338	6,338
	2005-09 "	2,255	115	2,370	1,673	46	1,719	801	77	878	4,729	239	4,967
	2010	2,720	66	2,786	1,565	18	1,583	679	87	766	4,963	171	5,135
	2011	2,484	53	2,538	999	23	1,022	673	92	765	4,156	169	4,325
	2012	3,253	106	3,358	1,396	37	1,433	656	55	711	5,305	198	5,502
	2013	2,662	137	2,799	1,177	9	1,185	1,114	101	1,215	4,953	247	5,200
	2014	1,730	121	1,851	743	24	768	1,336	64	1,401	3,810	209	4,019
	2015	1,978	115	2,093	321	1	322	620	80	699	2,919	195	3,114
Targeted	1975-77 mean	1,747	24	1,771	649	7	656	133	0	133	2,529	31	2,560
Effort	1980-84 "	1,682	29	1,711	612	16	628	156	<1	157	2,450	46	2,496
	1985-89 "	1,008	68	1,076	461	34	495	147	6	153	1,617	108	1,724
	1990-94 "	441	39	480	392	19	411	83	5	88	916	63	979
	1995-99 "	766	33	798	448	5	453	100	5	105	1,314	43	1,357
	2000-04 "	885	35	921	614	16	630	287	18	305	1,787	68	1,855
	2005-09 "	659	26	684	520	10	530	223	15	238	1,402	50	1,452
	2010	787	11	798	497	6	503	165	18	182	1,449	34	1,483
	2011	716	13	729	388	7	395	166	17	183	1,270	37	1,307
	2012	875	21	896	447	9	456	147	8	154	1,469	38	1,507
	2013	911	35	946	426	3	428	218	15	232	1,555	52	1,607
	2014	595	36	631	274	6	280	326	10	337	1,195	53	1,248
	2015	630	29	659	217	<1	218	198	14	212	1,046	43	1,089
Targeted	1975-77 mean	4.2	3.9	4.2	2.0	0.3	2.0	2.0	--	2.0	3.6	3.8	3.6
Harvest	1980-84 "	5.0	5.9	5.0	2.3	2.7	2.3	1.3	2.2	1.3	4.0	4.7	4.0
Rate [c]	1985-89 "	4.0	5.1	4.0	3.5	2.4	3.5	2.9	3.2	2.9	3.8	4.1	3.8
	1990-94 "	2.2	2.9	2.3	2.6	3.0	2.6	1.8	2.8	1.9	2.3	2.9	2.4
	1995-99 "	4.0	4.2	4.0	3.2	4.2	3.2	2.9	3.6	2.9	3.7	4.3	3.7
	2000-04 "	3.2	4.1	3.3	3.2	4.7	3.3	3.2	4.5	3.3	3.2	4.3	3.3
	2005-09 "	3.3	3.9	3.3	3.1	4.4	3.1	3.4	5.1	3.5	3.3	4.3	3.3
	2010	3.4	4.7	3.4	3.2	2.9	3.2	3.9	5.0	4.0	3.4	4.6	3.4
	2011	3.5	3.9	3.5	2.6	2.9	2.6	4.0	5.2	4.1	3.3	4.3	3.3
	2012	3.6	4.4	3.6	3.0	4.2	3.1	4.4	6.7	4.5	3.5	4.8	3.5
	2013	2.7	3.5	2.8	2.6	3.2	2.6	4.9	6.6	5.0	3.0	4.3	3.1
	2014	3.0	3.1	3.0	2.7	3.9	2.7	3.9	6.1	4.0	3.2	3.8	3.2
	2015	3.1	3.6	3.1	1.5	3.0	1.5	3.1	5.6	3.2	2.7	4.2	2.8

[a] Totals may differ due to rounding.

[b] Includes catch from targeted and untargeted effort.

[c] Targeted harvest rate means for grouped time periods reflect an average of annual values, not weighted means.

* No surveys completed in 1978 and 1979.

Table 4.1.14. Yellow perch sport harvest (numbers), year-class composition (% comp), mean length (mm), mean weight (g), by age, and mean age (yr), by district, for Ohio's private and charter boat fisheries in 2015.

District	Year Class / Age	2014 1	2013 2	2012 3	2011 4	2010 5	2009 6	2008 7	2007 8	*Continued below*
1	Numbers	68,678	1,312,961	508,674	58,017	75,288	30,363	26,707	9,880	
	% Comp	3.28	62.73	24.30	2.77	3.60	1.45	1.28	0.47	
	Length	163	193	223	231	230	230	254	277	
	Weight	51	86	137	156	151	151	212	274	
2	Numbers	11,823	43,491	153,374	26,957	41,753	6,310	21,730	13,794	
	% Comp	3.67	13.50	47.62	8.37	12.96	1.96	6.75	4.28	
	Length	163	196	232	249	255	284	275	289	
	Weight	52	95	162	204	215	298	275	315	
3	Numbers	8,379	39,142	243,341	181,023	78,884	30,347	66,356	43,962	
	% Comp	1.20	5.60	34.80	25.89	11.28	4.34	9.49	6.29	
	Length	172	211	223	243	262	279	284	305	
	Weight	65	119	140	186	232	283	303	367	
Total[a]	Numbers	88,880	1,395,595	905,389	265,997	195,925	67,020	114,793	67,635	
	% Comp	2.85	44.81	29.07	8.54	6.29	2.15	3.69	2.17	
	Length	164	193	224	241	248	257	275	297	
	Weight	52	87	142	181	197	225	276	343	

District	Year Class / Age	2006 9	2005 10	2004 11	2003 12	2002 13	Total[a]	Mean	Sample (N)
1	Numbers	1,116	767	0	490	0	2,092,942		
	% Comp	0.05	0.04	0.00	0.02	0.00		2.53 yr	798
	Length	292	289	-	264	-		203 mm	9,308
	Weight	330	320	-	230	-		105 g	
2	Numbers	413	2,069	0	398	0	322,112		
	% Comp	0.13	0.64	0.00	0.12	0.00		3.74 yr	542
	Length	310	318	-	273	-		236 mm	1,612
	Weight	405	465	-	234	-		179 g	
3	Numbers	2,180	3,681	0	881	1,041	699,217		
	% Comp	0.31	0.53	0.00	0.13	0.15		4.31 yr	641
	Length	295	333	-	257	278		245 mm	928
	Weight	328	491	-	207	279		199 g	
Total[a]	Numbers	3,709	6,517	0	1,769	1,041	3,114,271		
	% Comp	0.12	0.21	0.00	0.06	0.03		3.06 yr	1,981
	Length	296	323	-	263	278		216 mm	11,848
	Weight	337	463	-	219	279		134 g	

[a] Totals may differ due to rounding.

Table 4.1.15. Smallmouth bass sport angler harvest (thousands of fish), targeted angler effort (thousands of angler hours), and targeted harvest rate (fish per angler hour), by statistical district and fishery, 1975-2015*.

		District 1			District 2			District 3			Lakewide		
		Private	Charter		Private	Charter		Private	Charter		Private	Charter	
	Year	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]
Total [b]	1975-77 mean	18.0	3.2	21.2	4.2	0.0	4.2	4.9	0.0	4.9	27.1	3.2	30.3
Harvest	1980-84 "	29.2	4.6	33.8	4.3	0.0	4.3	13.0	0.0	13.0	46.5	4.6	51.1
	1985-89 "	13.7	6.8	20.5	3.0	0.2	3.2	4.5	0.1	4.6	21.2	7.1	28.3
	1990-94 "	18.3	7.3	25.6	5.8	0.4	6.2	7.1	0.7	7.8	31.2	8.4	39.6
	1995-99 "	39.2	13.6	52.9	14.7	4.4	19.1	15.9	2.0	18.0	69.9	20.1	90.0
	2000-04 "	17.3	5.9	23.3	10.6	0.7	11.1	6.1	0.7	6.8	34.0	7.2	41.2
	2005-09 "	2.8	0.7	3.5	1.3	0.0	1.3	0.8	0.0	0.8	5.0	0.8	5.7
	2010	1.0	0.4	1.4	1.2	0.0	1.2	0.2	0.0	0.2	2.4	0.4	2.7
	2011	1.7	1.0	2.6	0.1	<0.1	0.1	0.2	0.0	0.2	1.9	1.0	2.9
	2012	2.8	0.2	3.0	0.1	0.0	0.1	0.3	0.0	0.3	3.2	0.2	3.4
	2013	7.1	0.7	7.8	0.2	0.0	0.2	0.1	0.0	0.1	7.4	0.7	8.0
	2014	1.7	4.0	5.7	0.1	0.0	0.1	0.7	0.0	0.7	2.5	4.0	6.5
	2015	1.5	2.6	4.1	0.1	<0.1	0.1	0.1	0.0	0.1	1.7	2.6	4.3
Targeted	1975-77 mean	6.7	3.6	10.3	1.0	0.0	1.0	1.3	0.0	1.3	9.0	3.6	12.6
Effort	1980-84 "	64.0	7.4	71.4	5.5	0.0	5.5	24.2	0.0	24.2	93.7	7.4	101.1
	1985-89 "	29.1	10.7	39.8	1.1	0.2	1.4	8.9	0.4	9.2	39.2	11.2	50.4
	1990-94 "	101.2	13.4	114.5	15.6	0.6	16.2	23.8	1.4	25.3	140.6	15.4	156.0
	1995-99 "	222.3	20.9	243.3	88.3	4.3	92.6	61.1	3.8	64.9	371.6	29.1	400.7
	2000-04 "	168.0	15.4	183.5	104.8	0.7	105.5	49.4	4.8	54.2	322.2	20.9	343.1
	2005-09 "	72.0	1.7	73.6	79.4	0.7	80.0	33.5	0.2	33.7	184.8	2.5	187.3
	2010	59.4	1.2	60.6	22.5	0.0	22.5	13.2	0.0	13.2	95.1	1.2	96.3
	2011	52.1	1.1	53.2	20.4	0.0	20.4	7.7	0.5	8.2	80.3	1.6	81.9
	2012	41.7	0.4	42.1	10.3	0.0	10.3	7.4	0.1	7.5	59.3	0.5	59.8
	2013	55.9	0.3	56.2	14.5	0.0	14.5	8.1	0.0	8.1	78.5	0.3	78.8
	2014	38.1	6.8	44.9	2.8	0.0	2.8	19.5	0.0	19.5	60.3	6.8	67.1
	2015	42.9	5.8	48.7	20.8	0.0	20.8	23.5	0.0	23.5	87.1	5.8	93.0
Targeted	1975-77 mean	0.14	0.73	0.31	0.13	-	0.13	0.13	-	0.13	0.14	0.73	0.43
Harvest	1980-84 "	0.27	0.43	0.29	0.17	-	0.17	0.25	-	0.25	0.25	0.43	0.26
Rate [c]	1985-89 "	0.20	0.46	0.27	0.21	0.27	0.28	0.30	0.31	0.30	0.22	0.45	0.28
	1990-94 "	0.12	0.37	0.15	0.10	0.32	0.10	0.22	0.41	0.24	0.13	0.37	0.16
	1995-99 "	0.11	0.43	0.14	0.08	0.79	0.11	0.19	0.46	0.22	0.13	0.50	0.15
	2000-04 "	0.06	0.37	0.09	0.07	0.15	0.07	0.09	0.13	0.09	0.07	0.32	0.08
	2005-09 "	0.03	0.26	0.03	0.01	0.08	0.01	0.02	0.00	0.02	0.02	0.18	0.02
	2010	0.02	0.36	0.03	0.02	-	0.02	0.01	-	0.01	0.02	0.36	0.02
	2011	0.02	0.56	0.03	0.00	-	0.00	0.00	0.00	0.00	0.01	0.40	0.02
	2012	0.06	0.21	0.06	0.00	-	0.00	0.05	0.00	0.05	0.05	0.16	0.05
	2013	0.19	1.67	0.20	0.01	-	0.01	0.00	-	0.00	0.14	1.67	0.14
	2014	0.05	0.57	0.13	0.00	-	0.00	0.04	-	0.04	0.04	0.57	0.09
	2015	0.03	0.43	0.08	0.00	-	0.00	0.00	-	0.00	0.01	0.43	0.04

[a] Totals may differ due to rounding.

[b] Includes catch from targeted and untargeted effort.

[c] Targeted harvest rate means for grouped time periods reflect an average of annual values, not weighted means.

* No surveys completed in 1978 and 1979

Table 4.1.16. Smallmouth bass sport harvest (numbers), year-class composition (% comp), mean length (mm), mean weight (g), by age, and mean age (yr), for Ohio's private and charter boat fisheries in 2015.

District	Year Class / Age	2012 / 3	2011 / 4	2010 / 5	2009 / 6	2008 / 7	2007 / 8	2006 / 9	2005 / 10	2004 / 11	*Continued below*
All	Numbers	329	197	1,053	395	197	395	526	724	66	
	% Comp	7.69	4.62	24.62	9.23	4.62	9.23	12.31	16.92	1.54	
	Length	366	391	388	420	439	451	457	458	455	
	Weight	945	1,157	1,131	1,413	1,602	1,746	1,807	1,811	1,777	

District	Year Class / Age	2003 / 12	2002 / 13	2001 / 14	2000 / 15	1999 / 16	1998 / 17	Total[a]	Mean	Sample[b] (N)
All	Numbers	132	0	0	66	132	66	4,277		
	% Comp	3.08	0.00	0.00	1.54	3.08	1.54		7.58 yrs	119 ages
	Length	443	-	-	458	469	480		426 mm	65 lengths
	Weight	1,646	-	-	1,811	1,936	2,076		1,496 g	

[a] Totals may differ due to rounding

[b] Otoliths collected from gillnet surveys were pooled by 25-mm bins to apply ages to length samples collected in the creel.

Table 4.1.17. White bass sport angler harvest (thousands of fish), targeted angler effort (thousands of angler hours), and targeted harvest rate (fish per angler hour), by statistical district and fishery, 1975-2015**.

		District 1			District 2			District 3			Lakewide		
		Private	Charter		Private	Charter		Private	Charter		Private	Charter	
	Year	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]	Boat	Boat	Total [a]
Total [b]	1975-77 mean	154	19	173	778	0	778	76	0	76	1,008	19	1,027
Harvest	1980-84 "	298	14	312	599	<1	599	72	0	72	969	14	983
	1985-89 "	151	15	166	136	3	139	25	1	26	312	19	331
	1990-94 "	26	3	28	36	<1	36	3	<1	4	65	4	69
	1995-99 "	33	3	36	103	2	104	7	<1	7	143	5	148
	2000-04 "	47	8	55	78	4	82	10	1	9	133	13	146
	2005-09 "	88	3	91	79	2	80	3	1	4	169	5	174
	2010	81	2	83	21	<1	21	1	<1	1	102	3	105
	2011	97	1	98	7	<1	7	3	<1	3	107	1	108
	2012	73	9	83	91	3	94	5	<1	6	169	13	182
	2013	73	5	78	50	5	55	10	2	12	133	12	145
	2014	40	7	47	53	4	57	61	2	63	154	13	168
	2015	24	8	32	39	1	41	11	1	12	74	11	85
Targeted	1975-77 mean	80	4	84	252	0	252	27	0	27	359	4	363
Effort	1980-84 "	26	1	27	128	0	128	34	0	34	188	1	189
	1985-89 "	8	<1	8	33	<1	33	4	<1	4	45	<1	45
	1990-94 "	3	<1	3	10	<1	10	2	<1	2	14	<1	15
	1995-99 "	5	<1	6	21	0	21	1	0	1	28	<1	28
	2000-04 "	6	0	7	14	0	14	1	0	1	21	0	21
	2005-09 "	14	0	14	8	0	8	0	0	0	23	0	23
	2010	13	0	13	3	0	3	0	0	0	17	0	17
	2011	11	0	11	1	0	1	0	0	0	11	0	11
	2012	7	<1	7	3	0	3	0	0	0	10	<1	11
	2013	5	0	5	4	0	4	0	0	0	9	0	9
	2014	8	0	8	3	0	3	1	0	1	12	0	12
	2015	0	0	0	1	0	1	0	0	0	1	0	1
Targeted	1975-77 mean	1.17	2.81	1.25	2.65	-	2.65	2.65	-	2.65	2.29	2.81	2.30
Harvest	1980-84 "	3.98	3.47	3.88	4.18	-	4.18	2.09	-	2.09	3.69	3.47	3.69
Rate [c]	1985-89 "	4.58	8.39	4.67	2.86	2.12	2.86	1.74	0.04	1.72	3.20	2.42	2.92
	1990-94 "	2.10	0.28	2.03	1.47	1.32	1.48	3.70	0.22	3.11	1.54	0.69	1.51
	1995-99 "	1.39	0.00	1.39	2.93	-	2.93	0.02	-	0.02	2.65	0.00	2.64
	2000-04 "	1.98	4.04	2.07	3.06	-	3.06	3.09	-	3.09	2.45	4.04	2.49
	2005-09 "	4.04	2.67	4.03	5.66	-	5.66	-	-	-	4.28	2.67	4.28
	2010	5.66	-	5.66	3.28	-	3.28	-	-	-	5.17	-	5.17
	2011	3.56	-	3.56	1.49	-	1.49	-	-	-	3.42	-	3.42
	2012	0.44	7.14	0.88	9.06	-	9.06	-	-	-	3.26	7.14	3.44
	2013	6.11	-	6.11	3.41	-	3.41	-	-	-	4.92	-	4.92
	2014	2.25	-	2.25	3.75	-	3.75	0.00	-	0.00	2.54	-	2.54
	2015	-	-	-	7.82	-	7.82	-	-	-	7.82	-	7.82

[a] Totals may differ due to rounding.

[b] Includes catch from targeted and untargeted effort.

[c] Targeted harvest rate means for grouped time periods reflect an average of annual values, not weighted means.

** No Surveys completed in 1978 and 1979.

Table 4.1.18. White bass sport harvest (numbers), year-class composition (% comp), mean length (mm), mean weight (g), by age, and mean age (yr), by district, for Ohio's private and charter boat fisheries in 2015.

District	Year Class / Age	2014 1	2013 2	2012 3	2011 4	2010 5	2009 6	2008 7	2007 8	2006 9	2005 10	2004 11	Total[a]	Mean	Sample[b] (N)
1	Numbers	2,838	8,313	12,363	836	4,736	0	2,030	0	0	329	507	31,953		
	% Comp	8.88	26.02	38.69	2.62	14.82	0.00	6.35	0.00	0.00	1.03	1.59		3.34 yrs	55 ages
	Length	227	306	311	327	349	-	361	-	-	351	375		313 mm	102 lengths
	Weight	166	423	454	540	640	-	704	-	-	644	797		474 g	
2	Numbers	8,186	8,079	19,407	1,168	2,003	360	942	0	0	440	0	40,584		
	% Comp	20.17	19.91	47.82	2.88	4.93	0.89	2.32	0.00	0.00	1.09	0.00		2.72 yrs	104 ages
	Length	238	301	301	343	332	397	368	-	-	402	-		295 mm	168 lengths
	Weight	186	401	404	613	552	959	757	-	-	1,009	-		392 g	
3	Numbers	1,236	3,709	4,327	0	2,473	0	0	0	618	0	0	12,363		
	% Comp	10.00	30.00	35.00	0.00	20.00	0.00	0.00	0.00	5.00	0.00	0.00		3.20 yrs	19 ages
	Length	228	319	321	-	334	-	-	-	394	-	-		317 mm	20 lengths
	Weight	160	478	491	-	549	-	-	-	935	-	-		488 g	
All	Numbers	12,260	20,101	36,097	2,004	9,211	360	2,972	0	618	769	507	84,900		
	% Comp	14.44	23.68	42.52	2.36	10.85	0.42	3.50	0.00	0.73	0.91	0.60		3.02 yrs	178 ages
	Length	234	307	307	336	341	397	363	-	394	380	375		305 mm	290 lengths
	Weight	179	424	431	582	597	959	721	-	935	853	797		437 g	

[a] Totals may differ due to rounding.

[b] Otoliths collected from fall surveys were pooled by 25 mm bins to apply ages to length samples collected in the creel.

Table 4.1.19. White perch sport harvest (numbers), year-class composition (% comp), mean length (mm), mean weight (g), by age, and mean age (yr), by district, for Ohio's private and charter boat fisheries in 2015.

District	Year Class / Age	2014 1	2013 2	2012 3	2011 4	2010 5	2009 6	2008 7	2007 8	Total[a]	Mean	Sample[b] (N)
1	Numbers	308	510	2,069	1,863	136	566	417	715	6,583		
	% Comp	4.68	7.74	31.43	28.3	2.07	8.59	6.33	10.86		4.21 yrs	169 ages
	Length	173	196	233	259	253	281	285	283		248 mm	60 lengths
	Weight	77	119	222	309	279	401	421	418		282 g	
2-3	Numbers	411	888	4,360	2,050	1,834	344	344	236	10,467		
	% Comp	3.93	8.49	41.65	19.59	17.52	3.28	3.28	2.26		3.73 yrs	158 ages
	Length	169	210	233	246	266	258	276	299		240 mm	54 lengths
	Weight	77	149	217	255	336	302	381	497		249 g	
All	Numbers	719	1,398	6,429	3,913	1,971	909	760	951	17,050		
	% Comp	4.22	8.2	37.7	22.95	11.56	5.33	4.46	5.58		3.91 yrs	327 ages
	Length	171	205	233	252	265	272	281	287		243 mm	114 lengths
	Weight	77	138	218	281	332	364	403	438		262 g	

[a] Totals may differ due to rounding.

[b] Otoliths collected from fall surveys were pooled by 10 mm bins to apply ages to length samples collected in the creel.

Table 4.1.20. Zip code distribution by state, country, and Lake Erie Fishing District, for anglers and non-angling boaters on Lake Erie during 2015.

	Lake Erie Fishing District						All Responses	Out-of-State
State	1	2	3	4	5	All	Percent	Percent
AL	1					1	0.02	0.11
AR	2					2	0.04	0.22
AZ	3					3	0.07	0.34
CA		1				1	0.02	0.11
CO	2					2	0.04	0.22
FL	5	1	8		2	16	0.35	1.79
IA	15	1	3		6	25	0.54	2.79
IL	82	1	6		22	111	2.41	12.40
IN	119	6	6		15	146	3.17	16.31
KS	1					1	0.02	0.11
KY	20	1	1		7	29	0.63	3.24
MD	1		4			5	0.11	0.56
MI	93	9	5		9	116	2.52	12.96
MN	3	1			2	6	0.13	0.67
MO	2	1			1	4	0.09	0.45
MS	1					1	0.02	0.11
NC	1					1	0.02	0.11
NE	7					7	0.15	0.78
NJ					1	1	0.02	0.11
NV	1	1				2	0.04	0.22
NY	6	1	4			11	0.24	1.23
OH	1,426	1,371	740	73	106	3,716	80.59	--
PA	54	5	180		8	247	5.36	27.60
SC		1				1	0.02	0.11
SD	2					2	0.04	0.22
TN	1		1			2	0.04	0.22
TX	1				1	2	0.04	0.22
VA	3					3	0.07	0.34
WI	75	2	2		13	92	2.00	10.28
WV	15	4	28		5	52	1.13	5.81
Canada	1				1	2	0.04	0.22
Other Country	1					1	0.02	0.11
All	1,944	1,407	988	73	199	4,611	100.00	100.00
Out-of-State Total						895	19.41	

Table 4.1.21. Zip code distribution for Ohio anglers and non-angling boaters, by Wildlife District and Lake Erie Fishing District during 2015.

Wildlife District	Lake Erie Fishing District 1	2	3	4	5	All	Row Percent
1	158	23	9	3	6	199	5.91
2	640	190	15	61	19	925	27.45
3	267	1,143	636	8	10	2,064	61.25
4	40	4	10	.	1	55	1.63
5	106	6	6	1	8	127	3.77
All	1,211	1,366	676	73	44	3,370	100.00

Table 4.1.22. Zip code distribution for Ohio anglers and non-angling boaters for the twenty counties with the greatest number of responses, by county of origin, and county destination (port) on Lake Erie during 2015.

Rank	County of Origin	County Destination (Port) Lucas	Ottawa	Erie	Lorain	Cuyahoga	Lake	Ashtabula	All	% boat trips in home county
1	Cuyahoga [a]		31	45	45	376	21	14	532	70.68
2	Lorain [a]		25	107	178	10	1	1	322	55.28
3	Erie [a]		28	262	11			1	302	86.75
4	Lake [a]		5	2	1	27	154	42	231	66.67
5	Ashtabula [a]		2	1		2	9	142	156	91.03
6	Summit		20	12	8	58	12	21	131	
7	Ottawa [a]	1	106	7	1			1	116	91.38
8	Trumbull		4	2		1	3	105	115	
9	Medina		20	15	10	39	1	6	91	
10	Portage		15	4	2	20	10	29	80	
11	Geauga		3	2		19	28	24	76	
12	Huron		24	47	1			1	73	
13	Stark		15	11	2	21	4	20	73	
14	Wood	13	57	2	1				73	
15	Wayne		20	26	10	10	1	2	69	
16	Franklin		40	7	1	1		3	52	
17	Mahoning		2	1	1	3		44	51	
18	Seneca		43	7				1	51	
19	Lucas [a]	21	22	4		1	1	1	50	42.00
20	Richland		18	28	1			1	48	

[a] Lakeshore County

Table 4.2.1. Summary of angler hours, harvest rates, and harvest in the spring creel surveys on the Sandusky and Maumee rivers from 1975-2015.

Sandusky River								Maumee River							
	Angler Hours			Walleye		White Bass			Angler Hours			Walleye		White Bass	
Year*	Walleye[a]	White Bass[b]	Total	Harvest Rate[a]	Harvest	Harvest Rate[b]	Harvest	Year*	Walleye[a]	White Bass[b]	Total	Harvest Rate[a]	Harvest	Harvest Rate[b]	Harvest
1975	87,500	75,900	168,800	0.11	9,725	1.76	133,763	1975	112,500	43,800	214,100	0.14	15,475	0.84	36,731
1976	29,700	78,900	116,100	0.38	11,231	2.14	168,807	1976	36,700	81,600	186,800	0.15	5,336	1.52	124,235
1977	27,700	145,500	215,400	0.42	11,509	1.32	191,706	1977	41,600	40,800	125,700	0.15	6,136	2.00	79,995
1978[c]	63,500	-	-	0.12	9,289	-	-	1978[c]	73,900	-	-	0.29	22,747	-	-
1979[c]	94,400	-	-	0.11	8,212	-	-	1979[c]	184,800	-	-	0.18	33,614	-	-
1980	45,000	43,400	100,000	0.08	4,247	0.83	39,200	1980	155,800	46,700	230,800	0.23	38,442	1.34	87,700
1981	36,100	218,200	266,400	0.05	2,180	1.08	240,078	1981	161,700	93,200	298,200	0.11	21,415	1.48	165,500
1982	40,500	197,300	252,600	0.07	3,656	0.94	165,126	1982	201,400	133,100	368,900	0.16	37,300	1.05	172,372
1984	29,300	135,400	183,000	0.06	3,740	1.88	278,051	1984	143,200	59,900	210,100	0.17	28,899	1.56	137,091
1990	25,000	590	25,600	0.09	2,261	0.10	245	1987	247,000	56,100	339,500	0.25	69,871	0.75	66,633
1993	46,300	48,100	94,415	0.13	5,771	0.86	43,853	1990	250,600	2,400	253,500	0.36	92,146	0.03	33
1997	32,498	28,697	65,853	0.29	9,716	0.94	27,763	1993	150,300	32,700	183,400	0.13	19,477	1.24	45,317
1998	26,650	35,437	68,198	0.28	7,849	2.07	75,332	1997	150,671	14,053	164,724	0.31	47,502	1.76	33,622
2001	22,221	69,983	94,565	0.18	4,070	2.65	186,696	2001[c]	137,000	-	138,205	0.24	32,612	-	-
2002[c]	26,237	1,669	28,850	0.18	4,620	0.38	1,028	2002[c]	132,342	4,451	137,830	0.25	32,889	0.28	4,556
2003[c]	20,704	9,410	34,311	0.10	2,075	1.32	13,609	2003[c]	138,454	1,610	140,593	0.27	37,335	2.76	6,165
2004[c,d]	26,291	3,375	30,590	0.16	4,258	1.72	7,133	2004[c,d]	99,580	1,702	102,662	0.28	27,853	0.35	2,247
2005[c,d]	23,937	1,224	25,743	0.16	3,774	0.60	791	2005[c,d]	152,808	359	155,492	0.18	27,041	0.00	371
2006[c,d]	25,618	7,893	35,210	0.08	2,230	1.34	11,942	2006[c,d]	171,999	1,132	176,031	0.20	34,533	0.40	3,350
2007[c,d]	13,852	2,557	17,821	0.08	1,089	0.66	3,213	2007[c,d]	102,567	0	103,139	0.17	17,595	-	154
2008[c,d]	15,999	6,347	22,576	0.17	2,840	1.72	10,943	2008[c,d]	125,342	1,575	130,822	0.22	27,701	0.33	3,124
2009[c,d]	22,774	4,652	30,216	0.16	3,802	2.10	10,831	2009[c,d]	194,187	1,518	195,705	0.29	57,247	0.67	1,518
2010[c,d]	35,263	5,926	41,901	0.13	4,623	0.65	5,033	2010[c,d]	187,302	0	189,648	0.38	71,465	-	2,058
2011[c,d]	22,796	0	22,825	0.13	3,055	-	-	2011[c,d]	133,015	0	133,015	0.26	34,895	-	-
2012[c,d]	22,244	10,432	32,676	0.21	4,814	2.21	24,225	2012[c,d]	109,847	4,293	120,148	0.24	26,004	1.23	8,673
2013[c,d]	32,990	0	32,990	0.31	10,327	-	-	2013[c,d]	107,687	0	107,687	0.34	37,040	-	805
2014[d,e]	25,067	27,642	54,707	0.18	4,457	5.13	142,997	2014[d,e]	94,691	15,945	111,869	0.35	33,206	2.18	35,338
2015[d,f]	16,443	48,631	65,273	0.09	1,479	3.83	186,489	2015[d,f]	127,947	27,103	156,818	0.31	39,813	1.54	45,063

*Missing years were not surveyed.

[a] Anglers seeking walleye.

[b] Anglers seeking white bass.

[c] Only the walleye fishery was surveyed (mid-March - April 30).

[d] Only completed trip interviews were used to calculate effort and harvest

[e] The 2014 survey was from March 24 (due to ice in the rivers) through May 16 (to include the early stages of the white bass run).

[f] The 2015 survey was from March 23 (due to ice in the rivers) through May 31.

Table 4.2.2. Monthly summary of target angler hours, harvest and release rates, and total harvest (numbers) on the Sandusky and Maumee rivers in 2015.

		Walleye				White Bass		
River	Month	Angler Hours[a]	Harvest Rate[a]	Release Rate[a]	Harvest[b]	Angler Hours[a]	Harvest Rate[a]	Harvest[b]
Sandusky	March	4,990	0.07	0.33	327	0	-	0
	April	11,035	0.10	0.24	1,101	4,599	0.44	2,512
	May	418	0.08	0.00	50	44,032	4.18	183,977
	Totals	16,443	0.09	0.26	1,479	48,631	3.83	186,489
Maumee	March	14,758	0.18	0.16	2,592	0	-	0
	April	109,175	0.34	0.24	36,804	85	0.00	711
	May	4,014	0.09	0.03	417	27,018	1.55	44,352
	Totals	127,947	0.31	0.23	39,813	27,103	1.54	45,063

[a] Summary of hours and catch rates from targeted effort

[b] Summary of harvest from all effort

Table 4.2.3. Summary of walleye and white bass angler interviews for the 2015 spring fishery on the Sandusky and Maumee rivers.

			Interviews				Harvest Rate[a]	
River	Target Species	Month	Type	N	Anglers	Angler Hours	Walleye	White Bass
Sandusky	Walleye	March	Shore	77	141	402	0.07	
		April	Shore	109	202	649	0.10	
		May	Shore	2	6	17	0.08	
		All		188	349	1,068	0.09	
	White Bass	March	Shore	0	0	0		-
		April	Shore	31	62	206		0.44
		May	Shore	224	444	2,138		4.18
		All		255	506	2,344		3.83
Maumee	Walleye	March	Shore	101	187	626	0.18	
		April	Shore	275	497	2,178	0.34	
		May	Shore	15	28	122	0.09	
		All		391	712	2,926	0.31	
	White Bass	March	Shore	0	0	0		-
		April	Shore	2	3	3		0.00
		May	Shore	93	194	735		1.55
		All		95	197	738		1.54

[a] Targeted effort harvest rate (fish harvested per hour)

Table 4.2.4. Walleye sport harvest (numbers), year class composition (% comp), mean length (mm) by age, and mean age (yr), by sex, for the Maumee River, March, April, and May 2015.

Sex	Year Class / Age	2013 / 2	2012 / 3	2011 / 4	2010 / 5	2009 / 6	2008 / 7	2007 / 8	2006 / 9	2005 / 10	2004 / 11	2003 / 12	*Continued below*
Males	Numbers	95	2,002	9,954	10,421	2,756	2,005	2,751	0	1,184	0	5,637	
	% Comp	0.25%	5.34%	26.54%	27.79%	7.35%	5.34%	7.33%	0.00%	3.16%	0.00%	15.03%	
	Length	383	435	478	497	498	549	544	-	585	-	579	
Females	Numbers	0	0	333	371	362	349	95	0	78	0	599	
	% Comp	0.00%	0.00%	14.41%	16.05%	15.67%	15.10%	4.10%	0.00%	3.39%	0.00%	25.92%	
	Length	-	-	526	559	595	627	589	-	687	-	676	
All[a]	Numbers	95	2,002	10,287	10,792	3,118	2,353	2,845	0	1,263	0	6,235	
	% Comp	0.24%	5.03%	25.84%	27.11%	7.83%	5.91%	7.15%	0.00%	3.17%	0.00%	15.66%	
	Length	383	435	479	500	511	561	545	-	591	-	589	

Sex	Year Class / Age	2002 / 13	2001 / 14	2000 / 15	1999 / 16	1998 / 17	1997 / 18	1996 / 19	Total[a]	Mean	Sample (N)	
Males	Numbers	0	0	0	95	0	0	603	37,504	6.48 yrs	85	ages
	% Comp	0.00%	0.00%	0.00%	0.25%	0.00%	0.00%	1.61%	94.2%			
	Length	-	-	-	667	-	-	534		512 mm	452	lengths
Females	Numbers	0	95	0	0	29	0		2,310	7.94 yrs	62	ages
	% Comp	0.00%	4.11%	0.00%	0.00%	1.26%	0.00%	0.00%	5.8%			
	Length	-	735	-	-	717	-	-		619 mm	32	lengths
All[a]	Numbers	0	95	0	95	29	0	603	39,814	6.57 yrs	147	ages
	% Comp	0.00%	0.24%	0.00%	0.24%	0.07%	0.00%	1.51%	100.0%			
	Length	-	735	-	667	717	-	534		519 mm	484	lengths

[a] Totals may differ due to rounding.

Table 4.2.5. Walleye sport harvest (numbers), year class composition (% comp), mean length (mm) by age, and mean age (yr), by sex, for the Sandusky River, March, April, and May 2015.

Sex	Year Class / Age	2011 / 4	2010 / 5	2009 / 6	2008 / 7	2007 / 8	2006 / 9	2005 / 10	*Continued below*
Males	Numbers	124	166	220	0	82	170	0	
	% Comp	15.16%	20.22%	26.83%	0.00%	10.02%	20.72%	0.00%	
	Length	479	516	526		538	592		
Females	Numbers	98	81	122	60	95	77	53	
	% Comp	14.84%	12.38%	18.48%	9.17%	14.40%	11.68%	8.02%	
	Length	525	574	587	644	637	655	667	
All[a]	Numbers	222	247	342	60	177	247	53	
	% Comp	15.02%	16.73%	23.11%	4.08%	11.97%	16.70%	3.57%	
	Length	496	533	545	644	588	611	667	

Sex	Year Class / Age	2004 / 11	2003 / 12	2002 / 13	2001 / 14	Total[a]	Mean	Sample (N)	
Males	Numbers	19	19	0	21	820	6.77 yrs	52	ages
	% Comp	2.26%	2.26%	0.00%	2.53%	55.5%			
	Length	595	582		560		534 mm	47	lengths
Females	Numbers	61	12	0	0	658	7.20 yrs	85	ages
	% Comp	9.20%	1.82%	0.00%	0.00%	44.5%			
	Length	688	704				619 mm	33	lengths
All[a]	Numbers	79	31	0	21	1,478	6.96 yrs	137	ages
	% Comp	5.35%	2.06%	0.00%	1.40%	100.0%			
	Length	665	643		560		569 mm	80	lengths

[a] Totals may differ due to rounding.

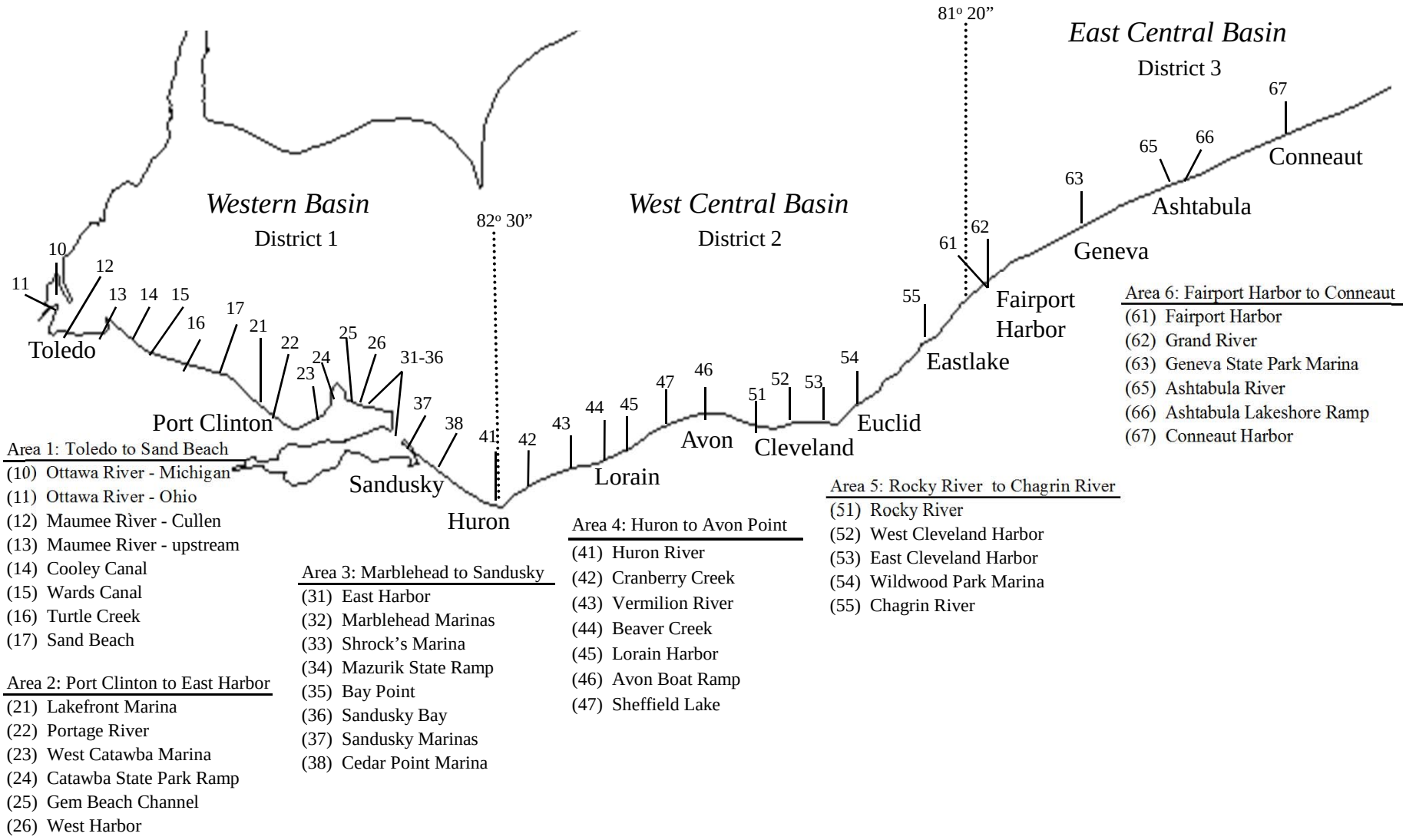


Figure 4.1.1. Creel survey areas and major boat harbor count locations for Ohio’s Lake Erie open water creel survey.

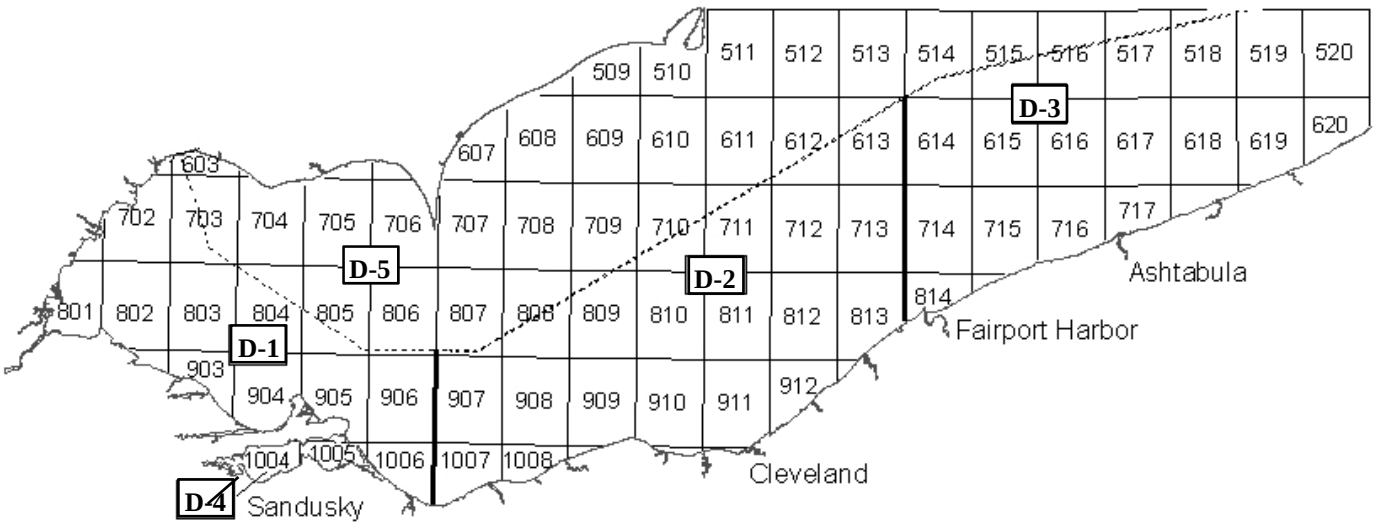


Figure 4.1.2. Catch reporting system of grids (10 minute latitude x 10 minute longitude) and districts for the Ohio waters of Lake Erie.

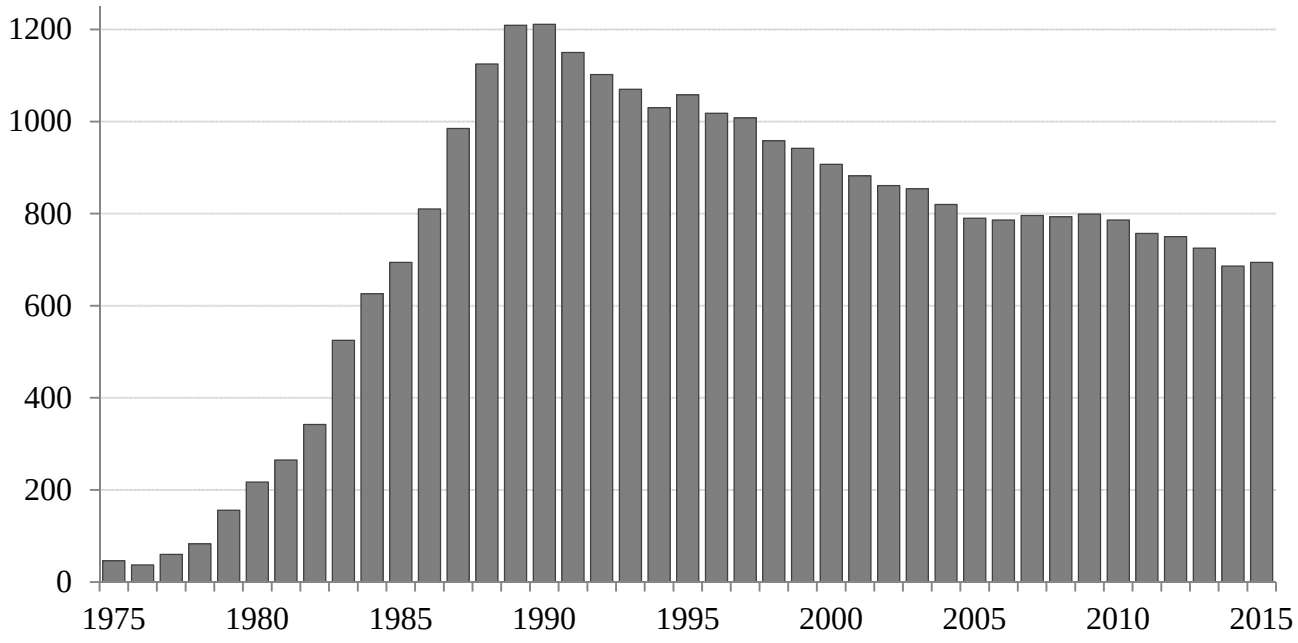


Figure 4.1.3. Number of licensed charter boat operators in the Ohio waters of Lake Erie, 1975-2015.

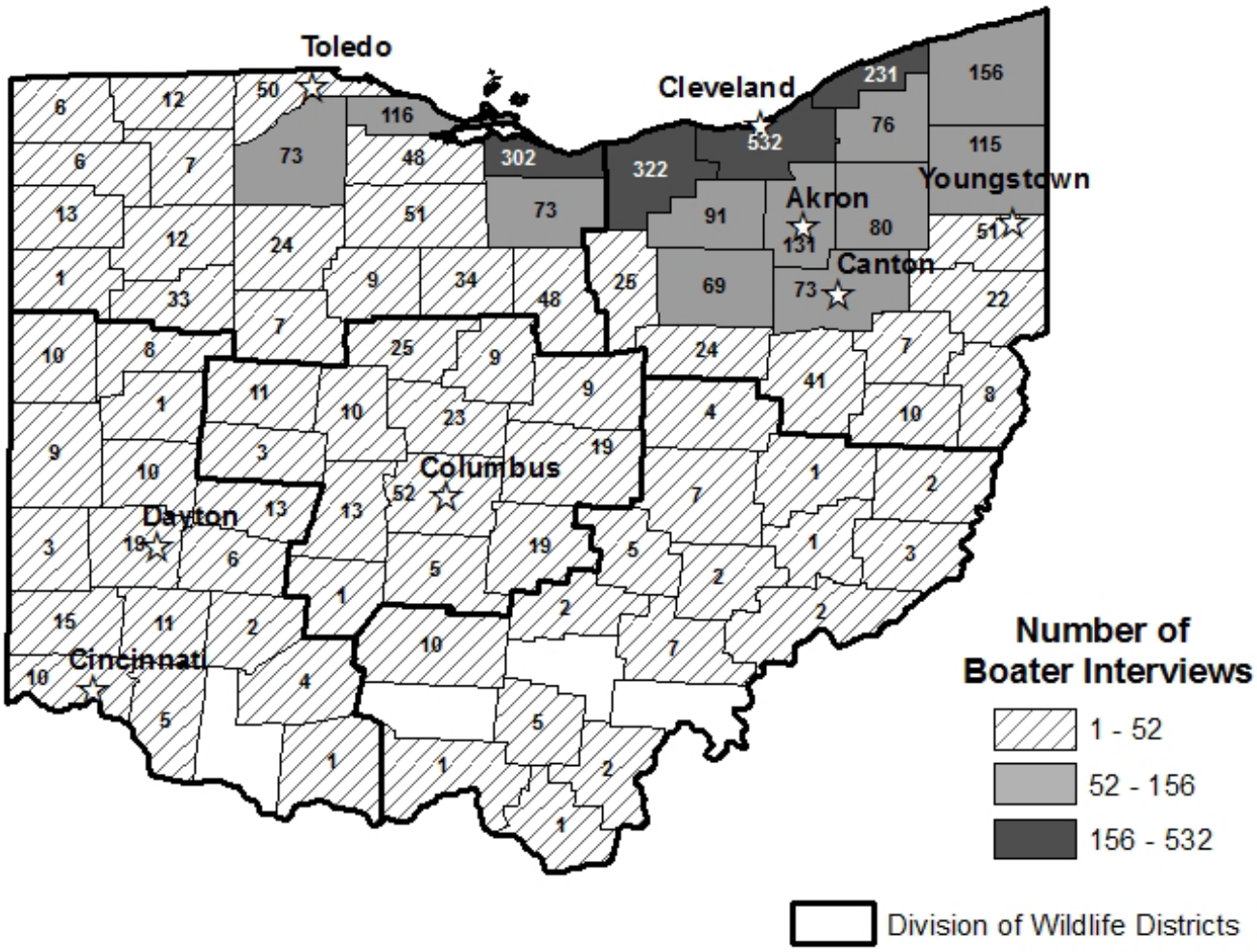
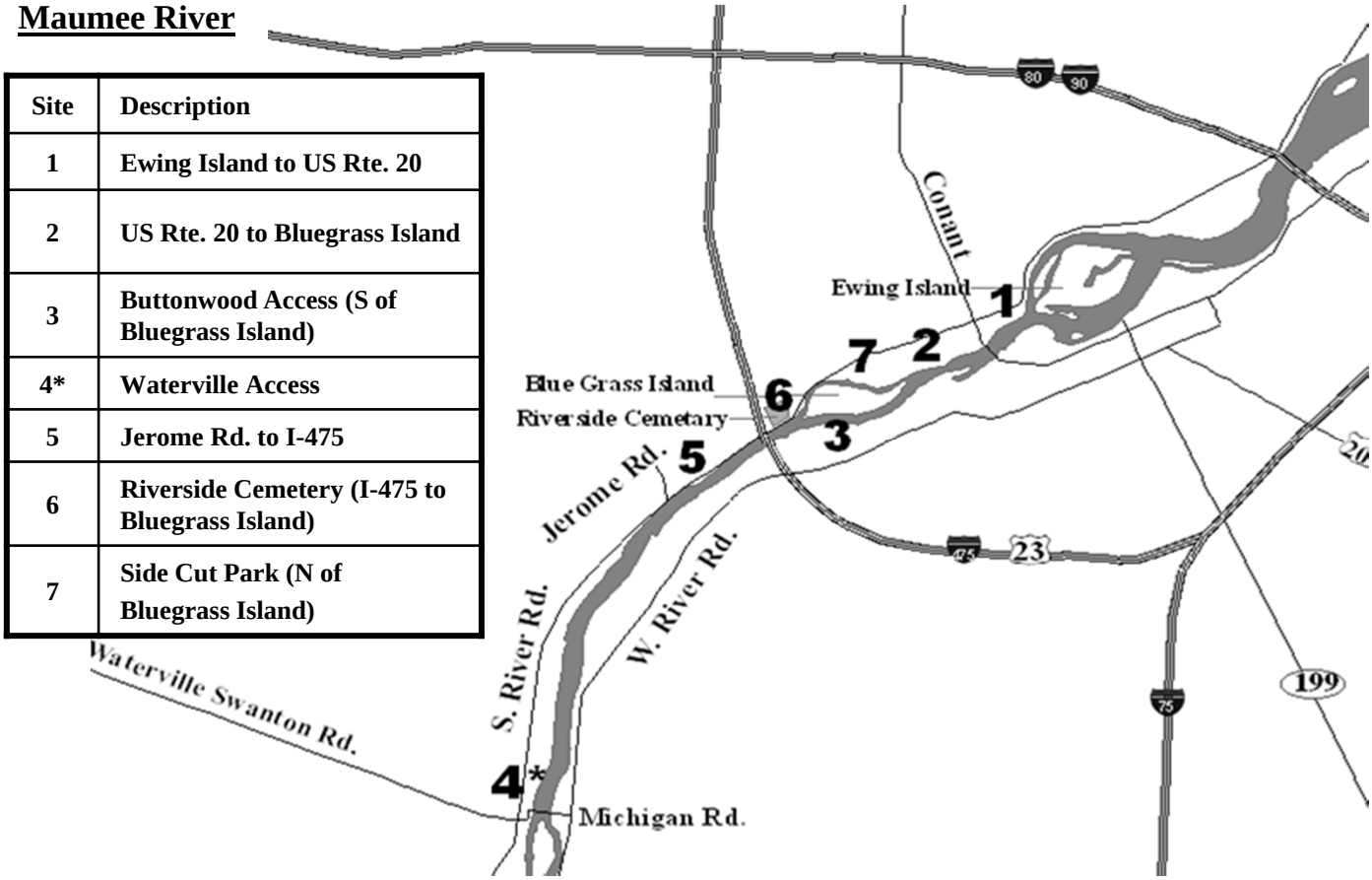


Figure 4.1.4. Zip code distribution for Ohio Lake Erie anglers and non-angling boaters by Ohio county during 2015. Numbers indicate the number of interviews per county collected during the angler survey (counties with no value had no anglers surveyed).

Maumee River

Site	Description
1	Ewing Island to US Rte. 20
2	US Rte. 20 to Bluegrass Island
3	Buttonwood Access (S of Bluegrass Island)
4*	Waterville Access
5	Jerome Rd. to I-475
6	Riverside Cemetery (I-475 to Bluegrass Island)
7	Side Cut Park (N of Bluegrass Island)



Sandusky River

Site	Description
1	Brady Island to State St. (US Rte. 20)
2	State St. to Hayes Ave.
3	Hayes Ave. to Railroad bridge
4	Railroad bridge to Rodger Young Park
5**	Rodger Young Park to Tiffin Rd. Access
6**	Tiffin Rd. Access to Ballville Dam

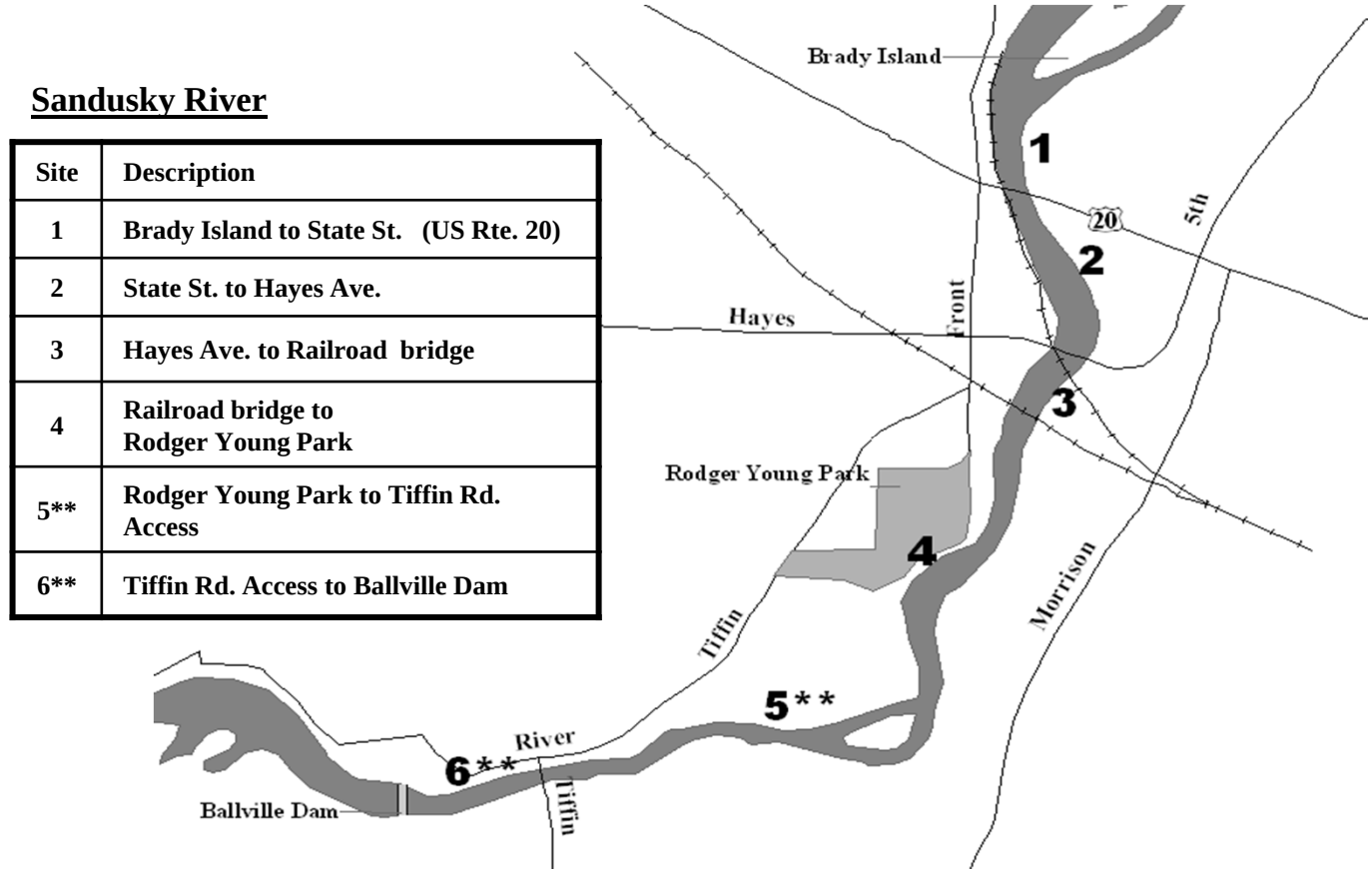


Figure 4.2.1. Creel survey locations on the Maumee River (top) and the Sandusky River (bottom). Sites with (*) are no longer sampled and those with (**) are only sampled during the white bass spawning run.

5.0 Commercial Fishery Summary *(FSNS01)*

In 2015, licensed commercial trap net operators submitted electronic catch reports to track harvest and fishing effort. These data were summarized to determine total harvest (in pounds) and fishing effort for all species by month, statistical grid, and district (Figure 4.1.2). The dollar value of Ohio's commercial fish harvest was estimated based on average weekly prices reported by cooperating processing facilities and applied to weekly reported landings. Lake Erie and inland district seine and trotline effort and harvest were summarized based on paper reports submitted monthly by license holders.

Yellow perch landings were sampled in spring and fall at peak harvest areas to determine mean length, weight, and age composition of the commercial harvest. Age distributions (from otoliths), length data, and length-weight regression equations (Table 4.1.2) were used to estimate harvested age groups in pounds and numbers.

Lake Whitefish landings were sampled in November 2015 during peak harvest. Length, weight and sex were sampled to characterize male and female length distributions and length-weight relationships.

The reported 2015 commercial harvest from Ohio's Lake Erie waters totaled 4.59 million pounds (Appendix A), up slightly from 2014 and the ten-year average (Table 5.0.1). Trap nets (3.26 million pounds) accounted for 71.1% of the harvest (Table 5.0.2). District 1 (39.7%) led all statistical areas in total landings. Peak harvest (33.0%) occurred during May (Table 5.0.3), and the total dockside value was estimated at 4.9 million dollars (Table 5.0.4). Overall trap net effort (9,988 total lifts) peaked in May (2,552 lifts), followed by June and August (Tables 5.0.5 and 5.0.6), and effort was below the 10-year average number of lifts. Sandusky Bay seine effort was highest during April and May.

Yellow Perch

The total 2015 allocation of yellow perch to Ohio's licensed commercial trap net fishery was 1.577 million pounds, with a District 2 (west-central basin) quota of 1.311 million pounds, and a District 3 (east-central basin) quota of 0.266 million pounds. There was no District 1 (western basin) commercial yellow perch quota in 2015. A harvest of 1,005,061 lbs was reported by commercial operations in District 2, with 266,030 lbs landed in District 3 (Table 5.0.7). Dockside value of the yellow perch harvest increased to $3,494,286 (Table 5.0.4), slightly above the ten-year average. The trap net harvest of yellow perch was below the ten-year average. The trap net yellow perch catch rate in Ohio waters of Lake Erie was 172.3 lbs/lift (Table 5.0.8), slightly below to the 10-year average. The estimated number of yellow perch harvested from District 2 (3.0 million fish) accounted for 80% of the total (Table 5.0.9). The 2012 and 2010 cohorts, combined, accounted for 70% of the total harvest.

District 2 trap net harvest came primarily from grids 908, 907, and 813 (45%, 18%, and 14%, respectively; Table 5.0.10). A total of 447,807 pounds was harvested from grid 908, again leading all Ohio grids. Yellow perch trap net harvest in District 3 was primarily from grids 617 and 715 (38% and 29%, respectively; Table 5.0.10).

White Bass

White bass reported harvest, 801,601 pounds in 2015, was the second highest in the past 10 years (Table 5.0.1). District 1 trap nets annually account for the bulk (91% in 2015) of the harvest (Table 5.0.2). Dockside value of the white bass harvest was $572,157 (Table 5.0.4), the second highest of the past ten years. The catch rates in trap nets (206.0 lbs/lift) and seines (147.6 lbs/1000 ft, Table 5.0.8) were both well above their 10 year means.

Most (98%) of the white bass trap net harvest came from District 1 with 79% of this coming from grid 1006 (Table 5.0.10). The remainder came primarily from grids 905 and 904 (14% and 5%, respectively). In District 2, grid 1008 provided 94% of the white bass trap net harvest.

White Perch

White perch landings totaled 634,378 pounds, slightly above the ten-year average (Table 5.0.1). Most white perch (79%) were harvested in District 1 trap nets, primarily during April and May (Tables 5.0.2 and 5.0.3). The reported dockside value of white perch decreased to $287,471, just above the ten-year average (Table 5.0.4). The trap net catch rate was 107.8 lbs/lift, similar to the past three years (Table 5.0.8). The majority (82%) of the white perch trap net harvest came from District 1 with 90% of the district harvest coming from just east of Cedar Point in grid 1006 (Table 5.0.10). The remaining harvest in district 1 came primarily from grids 904 and 905 (10% combined). In District 2 two grids (908 and 907) provided 54% of the harvest combined.

Lake Whitefish

Reported lake whitefish harvest increased to 51,066 pounds, well below the ten-year average (Table 5.0.1). The lake whitefish catch rate of 36.3 lbs/lift was also well below the 10-year average (Table 5.0.8). Typical of other years, 91% of the 2015 lake whitefish harvest was taken in November (Table 5.0.3) with 98.0% of the total harvest coming from District 1 trap nets (Table 5.0.2). In District 1, most lake whitefish trap net harvest (98%) came from grid 801 (Table 5.0.10). During sampling from grid 801 harvest females averaged 608 mm in length and 2,502 g in weight while males averaged 583 mm in length and 2,001 g in weight (Table 5.0.11). Lake whitefish harvests in Districts 2 and 3 are typically incidental, with District 2 grid 908 and District 3 grid 617 providing the most at 173 pounds and 498 pounds, respectively.

Other Species

A total of 1.83 million pounds of “other species” were landed in addition to the species characterized above. This accounts for 40% of the total commercial harvest from the Ohio waters of Lake Erie. Freshwater drum led the “other species” category with 903,341 pounds landed (Table 5.0.1). Seine effort accounted for 67% of “other species” harvest (Table 5.0.2).

Table 5.0.1. Annual commercial harvest (pounds) from the Ohio waters of Lake Erie, by species, 2005-2015.

Year	Buffalo	Bullhead	Burbot[a]	Carp	Channel Catfish	Freshwater Drum	Gizzard Shad	Goldfish	Quillback	Suckers	White Bass	White Perch	Whitefish	Yellow Perch[bc]	Total
2005	230,426	17,012	363	340,399	310,115	438,589	219,800	35,396	263,818	41,763	347,657	428,822	4,613	1,563,200	4,241,973
2006	263,396	25,118	305	271,190	385,134	411,840	195	58,812	250,052	33,233	483,314	655,551	29,795	1,050,614	3,918,549
2007	268,884	25,790	47	322,323	341,843	320,747	55,259	29,148	211,208	17,165	334,721	573,996	41,554	1,950,661	4,493,346
2008	226,574	26,881	4	198,616	447,232	423,705	38,272	32,941	197,378	23,971	424,225	545,138	82,914	1,515,666	4,183,517
2009	371,632	32,197	0	249,417	407,386	543,409	9,850	62,087	211,422	36,738	671,151	680,125	288,299	1,450,646	5,014,359
2010	343,962	33,401	0	255,991	452,637	491,999	14,745	59,681	183,093	22,076	357,083	551,042	83,303	1,284,404	4,133,417
2011	374,730	50,182	0	208,262	520,811	438,581	5,921	69,925	181,300	33,724	386,397	542,746	82,805	1,554,858	4,450,242
2012	308,828	24,140	153	199,653	372,242	514,310	30,215	42,032	138,053	20,168	489,364	798,759	119,887	1,754,737	4,812,541
2013	214,739	42,196	82	146,319	461,658	453,731	659	75,539	145,327	18,480	553,930	625,564	63,940	1,530,595	4,332,759
2014	255,454	19,799	110	84,935	419,853	371,623	2,874	33,874	132,892	5,978	942,460	652,359	34,731	1,546,147	4,503,089
2015	224,515	14,636	238	81,241	419,732	903,341	24,293	25,133	129,521	4,603	801,601	634,378	51,066	1,271,091	4,585,389
Mean	285,863	29,672	106	227,711	411,891	440,853	37,779	49,944	191,454	25,330	499,030	605,410	83,184	1,520,153	4,408,379

[a] The commercial harvest of burbot was reinstated in 1995 following a 1971 closure.

[b] A spring (March - April) closure on commercial yellow perch harvest was enacted in 1993.

[c] Management Unit 1 (the western basin) was closed to commercial yellow perch harvest in 2008, 2009, 2012, 2013, 2014, and 2015.

Table 5.0.2. Commercial harvest (pounds), from the Ohio waters of Lake Erie, by species, gear, and district in 2015.

Gear	District	Buffalo	Bullhead	Burbot	Carp	Channel Catfish	Freshwater Drum	Gizzard Shad	Goldfish	Quillback	Suckers	White Bass	White Perch	Whitefish	Yellow Perch	Total
Trap Net	1	51,394	689	0	22,640	188,101	180,711	870	262	80,519	3,182	732,967	502,022	50,057	0	1,813,414
	2	0	6	32	183	36,370	9,136	2	0	973	48	13,619	110,255	285	1,005,061	1,175,970
	3	0	0	206	8	726	0	0	0	0	0	26	2,953	724	266,030	270,673
	Total	51,394	695	238	22,831	225,197	189,847	872	262	81,492	3,230	746,612	615,230	51,066	1,271,091	3,260,057
Seines	1	50	0	0	0	3,000	3,000	0	0	1,000	0	450	0	0	0	7,500
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sandusky Bay	125,478	10,848	0	14,360	150,795	701,064	23,421	17,309	44,008	720	54,235	18,875	0	0	1,161,113
	Inland	47,552	3,090	0	43,300	21,180	9,311	0	7,419	3,015	653	304	267	0	0	136,091
	Total	173,080	13,938	0	57,660	174,975	713,375	23,421	24,728	48,023	1,373	54,989	19,142	0	0	1,304,704
Trotlines	1															0
	Sandusky Bay	41	3	0	33	17,338	105	0	1	0	0	0	1	0	0	17,522
	Inland	0	0	0	717	2,222	14	0	142	6	0	0	5	0	0	3,106
	Total	41	3	0	750	19,560	119	0	143	6	0	0	6	0	0	20,628
Carp Aprons	Inland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	51,444	689	0	22,640	191,101	183,711	870	262	81,519	3,182	733,417	502,022	50,057	0	1,820,914
	2	0	6	32	183	36,370	9,136	2	0	973	48	13,619	110,255	285	1,005,061	1,175,970
	3	0	0	206	8	726	0	0	0	0	0	26	2,953	724	266,030	270,673
	Sandusky Bay	125,519	10,851	0	14,393	168,133	701,169	23,421	17,310	44,008	720	54,235	18,876	0	0	1,178,635
	Inland	47,552	3,090	0	44,017	23,402	9,325	0	7,561	3,021	653	304	272	0	0	139,197
	Total	224,515	14,636	238	81,241	419,732	903,341	24,293	25,133	129,521	4,603	801,601	634,378	51,066	1,271,091	4,585,389

Table 5.0.3. Monthly commercial harvest (pounds) from the Ohio waters of Lake Erie in 2015.

Species	March	April	May	June	July	August	September	October	November	December	Total
Buffalo	43,800	81,226	21,305	26,516	4,320	5,749	17,918	15,242	7,880	559	224,515
Bullhead	890	9,066	1,080	267	0	1	2,878	56	398	0	14,636
Burbot	0	0	0	41	99	72	7	0	19	0	238
Carp	4,469	15,849	9,829	10,999	665	2,243	20,793	6,178	8,207	2,009	81,241
Channel Catfish	605	152,827	42,979	45,651	21,625	29,666	43,234	45,390	37,498	257	419,732
Freshwater Drum	299	261,453	303,430	222,819	12,731	21,422	32,405	34,953	13,819	10	903,341
Gizzard Shad	0	10,422	7,383	5,912	102	205	122	124	23	0	24,293
Goldfish	853	10,364	4,189	1,497	30	3	6,353	1,101	368	375	25,133
Quillback	1,343	57,816	19,169	13,728	9,616	8,578	4,198	4,597	9,598	878	129,521
Suckers	398	2,014	26	0	48	0	5	1,079	1,033	0	4,603
White Bass	20	239,092	196,957	70,928	10,959	29,311	57,084	83,274	112,985	991	801,601
White Perch	109	226,459	257,621	59,982	8,407	12,864	17,420	35,180	15,983	353	634,378
Whitefish	0	219	271	603	45	53	10	258	46,659	2,948	51,066
Yellow Perch [a]	0	0	649,500	130,987	117,678	225,971	126,974	12,177	7,804	0	1,271,091
Total	52,786	1,066,807	1,513,739	589,930	186,325	336,138	329,401	239,609	262,274	8,380	4,585,389

[a] A spring (March - April) closure on commercial yellow perch harvest was enacted in 1993.

Table 5.0.4. Dockside value[a], in dollars, of the commercial harvest in the Ohio waters of Lake Erie, 2005-2015.

Year	Carp	Channel Catfish	Freshwater Drum	White Bass	White Perch	Yellow Perch	Others	Total Value
2005	51,060	124,046	59,070	253,125	170,732	3,361,983	148,127	4,168,143
2006	38,461	125,292	56,299	330,057	253,741	2,379,749	193,947	3,377,546
2007	38,439	102,546	56,141	242,477	209,920	4,452,605	200,028	5,302,156
2008	39,723	146,908	71,788	229,414	219,335	2,469,539	241,640	3,418,347
2009	51,411	133,650	101,198	505,042	284,669	2,403,468	530,027	4,009,465
2010	51,198	154,857	84,952	285,099	232,458	3,006,679	300,359	4,115,602
2011	43,128	156,243	87,716	386,397	301,845	3,846,030	358,306	5,179,665
2012	49,913	130,285	128,578	373,753	361,198	4,453,583	333,678	5,830,988
2013	36,650	176,078	102,911	316,323	211,230	2,940,753	297,126	4,081,071
2014	21,234	170,247	97,280	630,418	313,519	3,384,875	256,048	4,873,621
2015	20,267	151,668	188,861	572,157	287,471	3,494,286	209,649	4,924,359
Mean	42,122	142,015	84,593	355,211	255,865	3,269,926	285,929	4,435,660

[a] Estimated value based on average weekly dockside prices and weekly landings, in pounds, by species.

Table 5.0.5. Annual commercial fishing effort[a] in the Ohio waters of Lake Erie, by district and gear, 2005-2015.

	District 1		District 2		District 3	Sandusky Bay	Inland	Total	
Year	Trap Net	Seine	Trap Net	Seine	Trap Net	Seine	Seine	Trap Net	Seine
2005	4,565	264.2	9,132	0	947	433.1	84.3	14,644	781.6
2006	4,788	77.9	7,711	0	881	646.0	215.4	13,380	939.2
2007	4,088	61.9	9,299	0	713	451.9	237.3	14,100	751.0
2008	2,183	69.6	4,049	0	1,288	437.9	251.1	7,520	758.7
2009	3,360	44.6	6,467	0	482	520.9	481.1	10,309	1046.6
2010	4,278	92.9	6,799	0	972	486.5	295.2	12,049	874.6
2011	4,685	59.4	5,777	0	1,108	588.7	291.1	11,570	939.2
2012	2,862	33.8	7,018	0	2,074	520.4	305.9	11,954	860.1
2013	2,678	14.9	5,898	0	1,014	555.4	101.1	9,590	671.4
2014	2,498	0.0	5,729	0	581	478.6	62.0	8,808	540.6
2015	2,558	2.5	6,363	2	1,067	341.7	175.0	9,988	520.7
Mean	3,599	72	6,788	0	1,006	512	232	11,392	816

Table 5.0.6. Monthly commercial fishing effort[a] in the Ohio waters of Lake Erie, by district and gear, in 2015.

	District 1		District 2		District 3	Sandusky Bay	Inland	Total	
Month	Trap Net	Seine[b]	Trap Net	Seine[b]	Trap Net	Seine[b]	Seine[c]	Trap Net	Seine
March	0	0.0	0	0.0	0	11.5	18.5	0	29.9
April	338	2.5	32	0.0	0	158.0	51.0	370	211.4
May	375	0.0	2169	0.0	8	85.2	14.9	2,552	100.1
June	260	0.0	1127	0.0	224	58.1	19.5	1,611	77.6
July	99	0.0	757	0.0	416	0.0	2.3	1,272	2.3
August	226	0.0	812	0.0	350	0.0	9.2	1,388	9.2
September	338	0.0	843	0.0	69	11.9	50.4	1,250	62.3
October	298	0.0	404	1.5	0	8.7	0.0	702	10.2
November	545	0.0	219	0.0	0	8.3	0.0	764	8.3
December	79	0.0	0	0.0	0	0.0	9.2	79	9.2
Total	2,558	2.5	6,363	1.5	1,067	341.7	175.0	9,988	520.7

[a] Trap net lifts; thousands of feet of seine.

[b] Seine season closed from June 15 to September 15, except for carp aprons and inland seines.

[c] Inland district not subject to summer closure.

Table 5.0.7. Ohio's yellow perch TAC, commercial harvest, sport harvest, and combined harvest (millions of pounds), by Management Unit (MU) .

	Ohio's TAC			Ohio's Commercial Harvest			Ohio's Sport Harvest			Ohio's Combined Harvest		
Year[a]	MU 1	MU 2	MU 3	MU 1[b]	MU 2	MU 3	MU 1	MU 2	MU 3	MU 1	MU 2	MU 3
1996	0.619	0.720	0.188	0.200	0.323	0.103	0.925	0.500	0.083	1.126	0.823	0.187
1997	1.080	1.426	0.299	0.212	0.499	0.055	0.859	0.581	0.165	1.071	1.080	0.220
1998	1.191	1.406	0.365	0.184	0.305	0.090	0.785	0.323	0.185	0.969	0.628	0.275
1999	1.070	1.368	0.299	0.201	0.390	0.106	0.708	0.584	0.246	0.909	0.974	0.353
2000	1.041	1.457	0.369	0.241	0.565	0.157	0.798	0.604	0.287	1.039	1.169	0.443
2001	0.851	1.699	0.491	0.179	0.905	0.004	0.736	0.842	0.460	0.916	1.747	0.465
2002	1.466	1.991	0.568	0.338	1.100	0.000	0.979	0.887	0.640	1.317	1.987	0.640
2003	1.258	2.167	0.858	0.250	1.255	0.000	1.156	0.858	0.482	1.406	2.113	0.482
2004	1.929	2.418	0.768	0.289	1.288	0.000	0.802	0.959	0.659	1.091	2.246	0.659
2005	1.843	2.523	1.066	0.357	1.163	0.043	0.608	0.680	0.414	0.965	1.843	0.458
2006	1.516	4.040	1.930	0.236	0.744	0.070	0.820	0.649	0.201	1.055	1.394	0.271
2007	0.833	2.418	1.670	0.201	1.702	0.048	0.782	0.543	0.343	0.983	2.245	0.391
2008	0.708	2.300	1.380	0.000	1.377	0.139	0.410	0.628	0.490	0.410	2.005	0.629
2009	1.026	2.890	1.361	0.000	1.339	0.112	0.464	0.463	0.485	0.464	1.802	0.597
2010	1.053	2.176	2.025	0.196	0.936	0.153	0.694	0.522	0.324	0.890	1.458	0.477
2011	1.042	1.924	2.025	0.156	1.071	0.328	0.640	0.329	0.309	0.796	1.400	0.637
2012	0.905	2.176	2.268	0.000	1.285	0.469	0.883	0.567	0.278	0.883	1.852	0.747
2013	0.905	2.176	1.814	0.000	1.230	0.300	0.789	0.491	0.496	0.789	1.721	0.796
2014	0.801	2.012	1.605	0.000	1.280	0.266	0.391	0.263	0.714	0.391	1.543	0.980
2015	0.801	2.421	1.284	0.000	1.005	0.266	0.486	0.127	0.307	0.486	1.132	0.573

[a] From 1996 through 2007, MU 2 and MU 3 were combined into a "central basin" quota in Ohio waters.

[b] Management Unit 1 (the western basin) was closed to commercial yellow perch harvest in 2008, 2009, 2012, 2013, 2014, and 2015.

Table 5.0.8. Annual harvest rates[a] of major commercial species in the Ohio waters of Lake Erie, by gear, 2005-2015.

	Yellow Perch	White Bass		White Perch		Channel Catfish		Whitefish
Year	Trap Net	Trap Net	Seine	Trap Net	Seine	Trap Net	Seine	Trap Net
2005	119.3	80.7	168.8	60.2	26.4	28.1	276.9	3.6
2006	88.0	107.1	69.9	76.3	14.7	36.5	182.6	24.0
2007	152.1	82.9	90.5	98.3	25.1	49.1	275.4	29.1
2008	287.5	144.9	93.3	144.0	12.2	93.7	299.2	67.1
2009	213.4	131.5	150.9	97.9	18.7	58.2	243.6	156.7
2010	124.9	71.6	69.0	65.2	24.2	59.5	311.8	44.2
2011	155.0	89.4	80.9	73.6	15.1	57.3	348.8	31.5
2012	195.1	104.4	46.5	111.7	10.1	44.5	311.5	94.2
2013	223.0	134.7	124.0	115.8	49.6	51.7	461.7	42.9
2014	245.7	222.3	169.8	118.4	41.4	52.9	516.2	26.1
2015	172.3	206.0	147.6	107.8	52.6	61.3	459.9	36.3
Mean	180.4	117.0	106.4	96.2	23.7	53.1	322.8	51.9

[a] Pounds per trap net lift, pounds per 1,000 feet of seine haul.

Table 5.0.9. Yellow perch commercial harvest (numbers), year class composition (% comp.), mean length (mm), mean weight (g), and mean age (yr), by district, in 2015

District	Year Class / Age	2013 / 2	2012 / 3	2011 / 4	2010 / 5	2009 / 6	2008 / 7	2007 / 8	2006 / 9	2005 / 10	2004 / 11	2003 / 12	Total	Mean	Sample (N)
1[a]	Numbers	0	0	0	0	0	0	0	0	0	0		0		
	% Comp	-	-	-	-	-	-	-	-	-	-			yr	-
	Length	-	-	-	-	-	-	-	-	-	-			mm	-
	Weight	-	-	-	-	-	-	-	-	-	-			g	
2	Numbers	70,883	1,385,769	471,688	735,254	27,482	228,388	119,383	2,729	0	0	8,186	3,049,763		
	% Comp	2.32%	45.44%	15.47%	24.11%	0.90%	7.49%	3.91%	0.09%	0.00%	0.00%	0.27%		4.17 yr	324
	Length	219	223	224	231	261	249	266	325	-	-	271		229 mm	1,863
	Weight	134	136	134	151	237	199	245	510	-	-	241		149 g	
3	Numbers	12,068	343,269	139,970	163,277	5,153	69,177	30,548	1,207	3,064	0	13,789	781,522		
	% Comp	1.54%	43.92%	17.91%	20.89%	0.66%	8.85%	3.91%	0.15%	0.39%	0.00%	1.76%		4.35 yr	229
	Length	211	219	228	242	216	247	259	296	253	-	249		230 mm	574
	Weight	120	131	147	177	125	193	225	343	202	-	194		154 g	
Total	Numbers	82,951	1,729,038	611,657	898,531	32,635	297,565	149,932	3,936	3,064	0	21,976	3,831,285		
	% Comp	2.17%	45.13%	15.96%	23.45%	0.85%	7.77%	3.91%	0.10%	0.08%	0.00%	0.57%		4.20 yr	553
	Length	218	222	225	233	254	249	264	316	253	-	257		229 mm	2,437
	Weight	132	135	137	156	219	197	241	459	202	-	212		150 g	

[a] District 1 was closed to commercial yellow perch harvest in 2015.

Table 5.0.10. Summary of 2015 commercial trap net effort, harvest, percent of basin harvest, and catch rate, by interagency 10-minute grids, for selected species.

			Yellow Perch			White Bass			White Perch			Whitefish		
District	Grid[a]	Effort[b]	Pounds	%	Catch Rate[c]	Pounds	%	Catch Rate[c]	Pounds	%	Catch Rate[c]	Pounds	%	Catch Rate[c]
1[d]	801	316	0	-	-	10,595	1.4%	33.53	1,892	0.4%	5.99	49,180	98.2%	155.63
	904	154	0	-	-	36,784	5.0%	238.86	27,994	5.6%	181.78	299	0.6%	1.94
	905	269	0	-	-	99,485	13.6%	369.83	21,859	4.4%	81.26	70	0.1%	0.26
	906	3	0	-	-	4,987	0.7%	1662.33	755	0.2%	251.67	4	0.0%	1.33
	1006	1,816	0	-	-	581,116	79.3%	320.00	449,522	89.5%	247.53	504	1.0%	0.28
	Total	2,558	0		-	732,967		286.54	502,022		196.26	50,057		19.57
2	808	252	53,880	5.4%	213.81	240	1.8%	0.95	15,257	13.8%	60.54	2	0.7%	0.01
	811	5	1,075	0.1%	215.00	0	0.0%	0.00	0	0.0%	0.00	0	0.0%	0.00
	812	183	19,487	1.9%	106.49	17	0.1%	0.09	690	0.6%	3.77	5	1.8%	0.03
	813	907	139,661	13.9%	153.98	55	0.4%	0.06	823	0.7%	0.91	7	2.5%	0.01
	907	1,653	184,468	18.4%	111.60	235	1.7%	0.14	25,307	23.0%	15.31	34	11.9%	0.02
	908	1,990	447,807	44.6%	225.03	144	1.1%	0.07	34,602	31.4%	17.39	173	60.7%	0.09
	909	377	60,395	6.0%	160.20	0	0.0%	0.00	6,859	6.2%	18.19	7	2.5%	0.02
	910	354	45,635	4.5%	128.91	86	0.6%	0.24	2,874	2.6%	8.12	0	0.0%	0.00
	911	128	17,822	1.8%	139.23	2	0.0%	0.02	2,594	2.4%	20.27	0	0.0%	0.00
	912	262	27,629	2.7%	105.45	13	0.1%	0.05	1,536	1.4%	5.86	13	4.6%	0.05
	1008	252	7,202	0.7%	28.58	12,827	94.2%	50.90	19,713	17.9%	78.23	44	15.4%	0.17
	Total	6,363	1,005,061		157.95	13,619		2.14	110,255		17.33	285		0.04
3	617	402	101,644	38.2%	252.85	18	69.2%	0.04	1,024	34.7%	2.55	498	68.8%	1.24
	715	339	78,014	29.3%	230.13	6	23.1%	0.02	1,101	37.3%	3.25	204	28.2%	0.60
	716	50	33,558	12.6%	671.16	0	0.0%	0.00	630	21.3%	12.60	0	0.0%	0.00
	717	45	29,397	11.1%	653.27	2	7.7%	0.04	198	6.7%	4.40	22	3.0%	0.49
	814	231	23,417	8.8%	101.37	0	0.0%	0.00	0	0.0%	0.00	0	0.0%	0.00
	Total	1,067	266,030		249.33	26		0.02	2,953		2.77	724		0.68

[a] Interagency 10-minute grid system

[b] Trap net lifts, grid total for season

[c] Pounds per lift for all lifts in grid (not targeted effort, includes all trap net effort)

[d] District 1 was closed to commercial yellow perch harvest in 2015.

Table 5.0.11. Whitefish commercial harvest samples of length (mm), weight (g), and sex, and sex specific length-weight regression equations, November 2015.

Sex	Number	Minimum Length	Mean Length	Maximum Length	Minimum Weight	Mean Weight	Maximum Weight	Regression Equation[a]	SE[b] Intercept	SE[b] Slope
Male	66	499	583	627	1,207	2,001	2,895	log W= -6.52740+3.55164 log TL	0.58142	0.21028
Female	79	508	608	667	1,427	2,502	3,783	log W= -5.80097+3.30298 log TL	0.69776	0.25070
All	145	499	596	667	1,207	2,274	3,783	log W= -7.07507+3.75576 log TL	0.44626	0.16082

[a] Log values are $\log_{10}$

[b] SE = standard error

6.0 Population Assessments *(FSDS01)*

In 2015, trawl and gill net surveys were conducted to assess the relative abundance and growth of major predator (walleye, yellow perch, white bass, smallmouth bass) and forage fish (white perch, gizzard shad, emerald shiners, rainbow smelt, round gobies) species in the Ohio waters of Lake Erie. This information is collected for interagency (Lake Erie Committee) population modeling purposes and to assess temporal and spatial changes in the Lake Erie fish community.

6.1 Western and Central Basin Trawl Surveys

Western basin August and September bottom trawl surveys were conducted as scheduled in 2015 while only September surveys were conducted in the central basin. In the western basin, trawl surveys were conducted with the Research Vessel (R/V) *Explorer,* docked in Sandusky, and in the central basin with the R/V *Grandon,* docked in Fairport Harbor.

All bottom trawl relative abundance indices were computed as arithmetic mean catch-per-hectare-trawled (CPHT). Indices have been recalculated using fishing power correction (FPC) factors derived from a comparative trawling exercise conducted during the summer of 2003. The FPCs were developed to correct for differences in the catchability of targeted species between research vessels due to differences in net/vessel configurations (Ohio Division of Wildlife 2007). The derived FPC's were species and age group specific and were applied to those groups for which there were adequate samples to determine statistical differences based upon an *a priori* decision rule (Monro 1998, Tyson et al. 2006). Further, all index values were converted to CPHT based on the sample-specific area swept by the trawl. This increases sample comparability by taking into account variability in vessel speed and distance towed at different sites instead of just using a fixed amount of time, as previously calculated.

Any reference to average length or weight of fish refers to mean total length in millimeters (mm) and mean wet weight in grams (g). Selected fish species were also analyzed for sex and maturity. A sub-sample of selected species were sampled for age and diet composition through laboratory examination. Fish were aged using otoliths removed from a length-stratified random subsample of each of the primary-reported species. Before 2003, age estimates for walleye older than age-4 should be used with caution, as those ages were based on scales. Since 2003, ages for walleye have been estimated with sagittal otoliths. Length-age keys were used to assign ages to non-subsampled fish based on length and age distributions for each species, month, and district.

Using a stratified random subsample for selected species, diet samples were taken by removing the stomach contents of the fish and examining the mouth, throat, and digestive tract for any ingested items. Fish with inverted or empty stomachs were not included in the diet analyses. Samples were identified to species, for fish and plankton, and order for insects. Counts, or wet weight of diet items, were converted to dry weights for caloric value of fish consumption by using in-house developed conversion tables for prey number or wet weight to dry weight. Diet analysis summaries are reported as percent dry weight except where noted.

Western Basin Trawl Survey

Trawling was stratified over four depth strata (0-3 m, 3-6 m, 6-9 m, and >9 m) with effort allocated in proportion to the number of available sampling units (2.5 minute grids) per strata. One 10-minute tow was conducted at each site using a flat-bottom semi-balloon otter trawl with a 10.7-m head rope and 13-mm bar mesh in the cod end. The August interagency survey and the September survey sample up to 38 District 1 stations annually (Figure 6.1.1). For the trawls conducted from May through July, the number of sites surveyed has been reduced to 22 due to the logistic constraints

imposed by other field projects. The results of the reduced survey will be analyzed to make sure sample sizes provide adequate estimates of relative abundance.

Central Basin Trawl Survey

Monthly bottom trawl surveys are conducted, by district, from May through October across four depth strata (5-10 m, 10-15 m, 15-20 m, and >20 m). From 1990-1992, the survey consisted of twenty-four randomly selected trawls, per district, from Vermilion to the Pennsylvania state line. In 1993, Chagrin and Perry were the only sites sampled (N=16; 4 per site per depth strata). In 1994, transects were established every 20 km (District 2: Vermilion, Lorain, Avon, Cleveland, and Chagrin; District 3: Perry and Ashtabula; Figure 6.1.1). The trawl survey was expanded from Avon to Conneaut, from 1994 to 1997, and was further expanded west to Berlin Heights from 1998 to 2003. Historically, catch rates from the established transects have demonstrated that three trawls per depth stratum can substantially improve precision and reduce bias (Knight et al. 1993). In 2004, a similar trend in catch rates between the Ashtabula and Conneaut transects was noted, so these sites were combined to increase sample size (from two to three samples per depth strata) and improve estimates of abundance. In 2005, the Cleveland transect was combined with the Avon transect and the Lorain transect was combined with the Vermilion transect. In 2006, District lines were moved to reflect Lake Erie Committee Management Unit boundaries and Berlin Heights became an eastern District 1 site.

Bottom trawling was conducted before, during, and after lake stratification at three stations per depth strata per transect. A 10-minute tow was conducted at sites that had depths greater than 10 m using a Yankee two-seam bottom trawl with a 10.4-m head rope, 25-mm bar mesh in the cod end, 13-mm stretched mesh liner, and 25.4-cm roller gear. Five-minute tows were conducted at sites with depths less than 10 m. Trawl indices prior to 1995 were adjusted with FPCs to account for catchability differences between old Biloxi trawls and new Yankee trawls (Ohio Division of Wildlife 2007). Since 2005, indices have been weighted to account for uneven sampling by site and station depth.

In 2014 and 2015, trawling in the central basin was not completed accordingly to the sampling design protocol. Because of the re-powering of the research vessel in 2014-15, trawling was only performed in August and September of 2014. No August trawls were conducted in 2105 and the entire fall trawl survey was completed in November. Further assessment of the trawling program will be completed in FY 2017.

6.2 Western and Central Basin Gill Net Surveys

A fall gill net survey designed to assess adult abundance of walleye and white bass in Lake Erie began in 1978. The survey design has changed through the years in terms of effort expended, but the same sampling gear has been utilized through the years. While the initial survey focused on the western basin, the survey was expanded in 1983 to include the central basin due to the migratory nature of walleye in Lake Erie and to get broader spatial coverage of walleye habitat.

In 2015, 38 gill net sites were sampled from Toledo to Perry (Figure 6.2.1). In Districts 2 and 3, sites were selected by 5-m depth strata (< 5, 5-10, 10-15, 15-20, and >20 m) from transects that correspond with the trawl survey. Overnight sets of nylon multifilament gill nets were fished (canned) 1.8 m below the surface at each station. Each net consisted of a gang of 13 randomly-ordered panels, each 30.5 m (length) by 1.8 m (height) and ranging from 51 to 127 mm stretched mesh in 6-mm increments. Additionally, bottom gill nets were fished at ten sites using modified interagency community monofilament gill nets (Figure 6.2.1). These nets consisted of a gang of 12 randomly ordered sections, each 15.2 m (length) by 1.8 m (height), ranging from 32 to 76 mm

stretched mesh by 6-mm increments and from 76 to 127 mm by 12-mm increments. For each gill net type, effort was expressed as number of nets set.

Relative abundance indices of age-1 and older walleye and white bass were calculated from fall gill net catches as the arithmetic mean of the catch per gill net set. Catch rates were reported as the number of fish, by species and age, caught in each district, by the number of nets, and by type and set.

6.3 Relative Abundance, Growth, Maturity, and Diet of Selected Species

Walleye

Relative Abundance

Abundance of age-0 walleye increased relative to 2014, in both the August and September District 1 trawl surveys, with both August and September values well above their long-term means (Tables 6.3.1 and 6.3.2). The District 2 and 3 September trawl abundances increased from last year and were well above the long-term mean. The yearling abundances in all surveys increased relative to 2014 and were above the mean (Tables 6.3.3 and 6.3.4). Fall District 1 gill net catch rates for age-1 and older walleye were similar to 2014, but were lower than the long-term mean (Table 6.3.5). In District 2, age-1 and older relative abundance increased from 2014. Indices from Districts 2 and 3 were below the long-term mean.

Growth

The mean length of age-0 walleye observed in the District 1 (174 mm) and District 3 (210 mm) fall trawl surveys were nearly identical to 2014, but the lengths in District 2 (197 mm) decreased (Table 6.3.6). Compared to the long term average, mean length of age-0 walleye were lower in District 1, similar in District 2, and higher in District 3. Mean length-at-age was calculated for all age classes collected during the fall gill net survey (Table 6.3.7). In Districts 2 and 3, the mean length-at-age values for age-1 walleye collected in fall gill nets were below the long-term mean for the first time since 2005. In general, length-at-age continued to be higher in the central basin than the western basin.

Maturity

Of the age-1 walleye examined in 2015, 22% of District 1 and 34% of central basin males were sexually mature, while less than 1% of females were mature across basins (Table 6.3.8), which was lower than values observed in 2014. For age-2 females, 6% in the west basin and 22% in the central basin were sexually mature. These values were lower than what was observed in 2014 for the west basin and similar for the central basin. In 2015, most of the female walleye were mature by age-3 (western 77%, central 91%), while males were mature by age-2 (western 100%, central 94%; Table 6.3.8). As expected, males are maturing at a smaller size (> 95% at 375 mm) than females (>90% at 500 mm; Table 6.3.9). Percent of mature female walleye ages 2-4 has remained relatively constant (Table 6.3.10).

Diet

Diet information was collected from age-1 and age-2+ walleye caught in the fall gill net survey (Figure 6.3.1). Diets for all walleye that had food (N=262) were dominated by gizzard shad across Districts (85% dry weight). The percent composition of emerald shiners decreased in age-1 diets but were similar in age-2+ diets compared to 2014. The remaining notable prey item was rainbow smelt (<4% in District 2 and 17% in District 3).

Yellow Perch

Relative Abundance

In District 1, August and September age-0 yellow perch trawl indices were lower than in 2014 (Tables 6.3.1 and 6.3.2). In Districts 2 and 3, age-0 yellow perch abundances in September decreased from 2014. Age-0 indices were below or at the historic average in all surveys. Indices for yearling yellow perch increased in all surveys relative to 2014 and were above the historic mean except in September in District 3 (Tables 6.3.3 and 6.3.4). District 1 fall trawl catch rates for age-2+ yellow perch increased from 2014 but decreased in Districts 2 and 3 and were below the long-term averages in all surveys (Table 6.3.11). These catch rates were the lowest since 2010 in District 2 and since 2001 in District 3.

Growth

Lengths of age-0 yellow perch, observed in fall bottom trawl surveys, were lower than 2014 and slightly below the long-term means in District 1 (Table 6.3.6). In District 2, age-0 lengths were similar to 2014 and the long-term mean value. In District 3, age-0 lengths were above the 2014 mean and the long-term mean. In District 1, age-1 length decreased from 2014 and was similar to last year in Districts 2 and 3 (Table 6.3.12). Length of age-1 yellow perch was above the historic mean in all Districts. Mean length of age 3 and older fish were generally higher in District 2 and 3 compared to District 1. In all Districts, mean lengths of ages 1-4 are above the historic mean.

Maturity

Percent maturity of age 2-4 female yellow perch collected in fall trawl surveys was similar to previous years, although the percent mature was variable for age-2 (Table 6.3.13). Of the yearling fish, 100% of males were mature in the western basin, while 89% of males were mature in the central basin. Only 18% of yearling females were mature in the western basin. Similarly, 52% of yearling females were mature in the central basin. Female age-2+ yellow perch collected in the western and central basin during the 2015 fall gill net survey were 100% mature (Table 6.3.14). Most (> 80%) age-1 males sampled from both basins were mature. Males reached nearly 100% maturity by 130 mm in the western basin and 150 mm in the central basin. Most females (> 90%) were mature by 170 mm in the west basin and 190 mm in the central basin (Table 6.3.15).

Diet

Diet information was collected from age-1 and older yellow perch caught in summer and fall bottom trawl surveys in the central basin (Figure 6.3.2). Of the age-1 and older yellow perch in Districts 2 and 3 (N=47), 40% had empty stomachs. In District 2 and 3, the diets were comprised of predominantly *Bythotrephes* (56-70%), benthos (6-30%), and mollusks (2-16%). Other prey items included other zooplankton, round gobies, and gizzard shad. Some additional diets were collected in gill nets in District 1 (N=3), which were equally divided between goby, gizzard shad and unidentifiable fish.

White Bass

Relative Abundance

Compared to 2014, trawl survey catch rates for age-0 white bass increased in District 1 in both August and September and in District 3 in September. White bass catch rates were lower in 2015 compared to 2014 for September in District 2 (Tables 6.3.1 and 6.3.2). All survey indices were well below their long-term means. White bass yearlings were only collected in September trawls in District 3 and were well below the 10-yr mean (Tables 6.3.3 and 6.3.4). Gill net indices for age-1+

white bass declined in District 1 and increased in District 2 from 2014. Across all Districts, the 2015 fall gill net indices for age-1+ white bass were the second highest in the time series (Table 6.3.16).

Growth

Fall age-0 white bass lengths were higher in District 1 compared to 2014 but remained well below the historic mean. Age-0 white bass lengths decreased from 2014 in Districts 2 and 3, but are still above the long-term means (Table 6.3.6). Mean length-at-age for age-1 and 2 white bass decrease from west to east but are above their respective long term means (Table 6.3.17). Analyzing trends over the complete time series is difficult because aging with otoliths has shown a greater contribution of older fish (ages 6+) in the samples since 2003. Whether the abundances of older fish are due to reduced exploitation, improved aging techniques, or large cohorts requires further investigation.

Maturity

Based on gill net surveys, nearly all male and female white bass were mature by age-1 (Table 6.3.18). More than 99% of white bass greater than 220 mm were mature (Table 6.3.19).

Diet

Diet information was collected from age-1 and older white bass caught in September trawl surveys and in the fall gill net surveys (Figure 6.3.3). Diets for all white bass that had food (N=162) were dominated by *Bythotrephes* (32-56%) and gizzard shad (29-51%) across Districts. Other prey items consisted of emerald shiners (2-16%).

White Perch

Relative Abundance

Age-0 white perch trawl indices declined in District 1 compared to 2014 but increased in Districts 2 and 3. Age-0 District 1 August indices and District 2 September indices were below the historic mean, whereas indices District 1 and 3 in September were above the historic means (Tables 6.3.1 and 6.3.2). District 1 yearling abundance indices for white perch showed an increase from 2014 and are at or below the long-term mean (Tables 6.3.3 and 6.3.4). The September trawl yearling indices for District 2 and 3 were lower than last year and well below the historic mean.

Growth

The mean lengths for age-0 white perch from the 2015 fall bottom trawl surveys across Districts were similar to 2014 values and to long-term means (Table 6.3.6).

Maturity

The majority (>95%) of male and female white perch from the 2015 fall gill net survey were sexually mature by age-2 in the both basins (Table 6.3.20). In both basins, males were 100% mature by 180mm, while females reached > 99% maturity by 200 mm (Table 6.3.21).

Smallmouth Bass

Standard annual gill net and bottom trawl surveys have not historically captured sufficient numbers of smallmouth bass to describe population dynamics. Catch and harvest information from creel surveys indicate that smallmouth bass are recruited to the fishery (i.e., over the 14" minimum size limit) by age-4, thus a reliable population estimate of younger bass would be useful as a recruitment index. Furthermore, the majority of smallmouth bass (~90%) caught by anglers are released and are not available to sample for biological (length-weight, age, and growth) information. In both basins, bottom trawl surveys have only sporadically collected age-0 smallmouth bass and

have been inadequate to predict recruitment to the fishery. A pilot gill netting project was initiated in the central basin in 2003 and continued through 2005 to explore survey techniques for assessing younger cohorts (Ohio Division of Wildlife 2006).

In 2006, a coordinated smallmouth bass assessment gill net survey was initiated during the first two weeks of September. Sub-adult and adult smallmouth bass were sampled to obtain data on recruitment, length, weight, age, gender, growth, and diet. Eight sites were sampled in each basin. Sample sites were spread among Kelley's and the Bass islands in the western basin, and at random transects within the central basin that had hard bottom substrate and depths less than 10 m. Substrate types were identified from existing NOAA substrate maps for Lake Erie. We sampled optimal (hard) and suboptimal (soft) substrates in 2006. Since smallmouth bass were not caught in suboptimal substrate, subsequent sampling was only conducted in optimal substrate. Since 2006, depths have not been sampled consistently. Prior to 2011, we sampled eight locations in District 1 and four locations in both District 2 and District 3. Since 2011, a total of eight locations were sampled per district. Four extra nets were set in 2015 in District 3 to increase sample sizes (Figure 6.3.4). Throughout the survey, each site was sampled with an experimental monofilament gill net set overnight and perpendicular to shore whenever possible. Each net consisted of a gang of 13 randomly-ordered sections, each 15.2 m (length) by 2.4 m (height) with stretched mesh sizes from 25-178 mm, in 13-mm increments. Catch rates (CPE) are expressed in number of fish caught per net per night fished.

The consequences of fish aggregating at (or avoiding) hypoxic areas have been well documented (Kraus et al. 2015). Effects of hypoxia may have biased estimates of the bass survey in 2015 because low dissolved oxygen values (1.4 ppm) were documented in the District 2 sampling area. These biases can result in inflated catch rates. High catches of smallmouth bass and extremely high bycatch of other fish species suggest that 2015 values may have been influenced by hypoxia.

Relative Abundance

From 2006-2015, we have caught a total of 1,461 smallmouth bass (Table 6.3.22). In 2015, the total number of fish caught in District 1 (N=36) was lower than 2014. In Districts 2 and 3 there were a total of 30 and 64 caught, respectively. Catch rates of age-1 fish decreased from 2014 index values in District 1, while none were caught in Districts 2 and 3 in 2015. The mean age of smallmouth bass caught was the highest in District 2 (8.2 yr) compared to District 1 (6.6 yr) and District 3 (6.2 yr). The oldest smallmouth bass in the time series (19 yr) was sampled in District 2 in 2015.

Maturity

In 2015, a majority of females were mature by age-3, and all males age-1 and older were mature. All fish were mature by 325mm.

Diet

Diet information was collected from age-1 and older smallmouth bass caught in September gill net surveys. Of all smallmouth bass analyzed in Districts 2 and 3 (N=94), approximately 44% had empty stomachs. The predominant prey across Districts was round gobies (35-100%). In District 3 gizzard shad comprised 49% of the diets while emerald shiner represented 14% (Figure 6.3.5).

Forage Fish

In 2015, District 1 August trawl indices for age-0 forage fishes increased for rainbow smelt, trout-perch, emerald shiner, gizzard shad, freshwater drum, and silver chub but declined for spottail shiner (Table 6.3.1). Age-0 August forage indices were below their long-term means for all species except freshwater drum. Fall age-0 forage index values increased, relative to 2014, for trout-perch, freshwater drum, and silver chub (Table 6.3.2). Mean total length for age-0 forage species in September trawls increased for trout-perch from 2014 to 2015 and most species exceeded their long-

term means (Table 6.3.6). Most age-1 forage species showed annual decreases in indices during both months, with none above the long-term average (Table 6.3.3 and 6.3.4). Only spottail shiners in both months and silver chubs in September increased in abundance relative to 2014 and all were below long-term means.

In District 2 and 3 September trawl surveys, age-0 indices for gizzard shad, freshwater drum, and trout-perch increased from 2014, while the emerald shiner and rainbow smelt decreased (Table 6.3.2). In the time series, the emerald shiner indices were the lowest in District 2 and the sixth lowest in District 3, while gizzard shad indices were some of the highest seen in both districts. The round goby indices were mixed, with densities increasing in District 2, and decreasing in District 3. Spottail shiners were caught in District 3 for the first time since 2011, but were not caught in District 2. In District 2, all age-0 forage indices were below the long-term mean, except for rainbow smelt, round goby and gizzard shad. In District 3, only gizzard shad were above the long-term man. Age-0 alewives were not caught in either district in 2015 and have not been caught since 2013. This decrease in age-0 alewife is most likely due to the colder than average winters of 2013-2014 and 2014-2015.

The September age-1 and older rainbow smelt and trout perch indices increased from 2014 in both districts, while emerald shiners and freshwater drum decreased (Table 6.3.4). The emerald shiner indices in District 2 and 3 were the lowest and 3rd lowest in the time series, respectively. Similar to age-0 round goby, age-1+ indices were mixed, with District 2 densities increasing and District 3 densities decreasing relative to 2014. Age-1+ gizzard shad have not been caught in District 2 since 2011. Age-1 and older spottail shiners and alewives were once again not caught in 2015. All age-1 and older forage index values were below the long-term mean in both districts, except for rainbow smelt in District 2.

6.4 Hydroacoustic Surveys

Hydroacoustic surveys have been conducted in the eastern basin of Lake Erie since 1993 as part of an interagency forage assessment program under the Great Lakes Fishery Commission's Lake Erie Committee. In 2000, the Lake Erie acoustic survey was expanded to include the central basin and the western basin was incorporated into the lakewide survey in 2004.

Western Basin Survey

Methods

Three fixed cross basin transects were planned for survey in 2015. All transects were surveyed using an older, BioSonics DE-X surface unit belonging to the Michigan Department of Natural Resources' (MIDNR) Lake St. Clair Fisheries Research Station. The continued issues with the Lake Erie BioSonics DT-X surface unit remains troubling. Plans to test the unit on the Inland Research unit acoustic survey boat (to determine whether the Lake Erie survey vessel is generating electrical interference) during the fall were postponed due to scheduling issues; we intend on re-scheduling this test in the spring. As of now, the surface unit has been replaced by BioSonics, so further testing will focus on the transducers and cables. Regardless of the outcome of this testing, it is encouraging to have access to functional hydroacoustic survey equipment, and we thank the MIDNR for the loan of their equipment and will plan on using it for surveys in the future.

Data was collected in 2015 using a single, downward-facing, 7.5-degree, 123-kHz split-beam transducer, a Garmin global positioning system, and a Panasonic CF-30 laptop computer. The acoustic system was calibrated before the survey with a tungsten carbide reference sphere of known acoustic size. The mobile survey, conducted aboard the ODNR's *RV Almar*, was initiated 0.5 h after sunset and completed by 0.5 h prior to sunrise. Transects were navigated with waypoints programmed in a Lowrance GPS, and speed was maintained at 8-9 kph using the GPS. The

transducer was mounted 1-m below the surface on a fixed pole located amidships on the port side of the boat. Data were collected using BioSonics Visual Acquisition 5.0.4 software. Collection settings during the survey were 10 pings/second, a pulse length of 0.2 msec, and a minimum threshold of -70 dB. The sampling environment (water temperature) was set at the temperature 2 m deep on the evening of sampling. Data were written to file and named by the date and time the file was collected. Files were automatically collected every 30 minutes. Latitude and longitude coordinates were written to the file as the data were collected to identify sample location.

Data were analyzed using the Myriax software Echoview 4.5 using a modified process developed by the Ohio Division of Wildlife Inland Fisheries Research Unit. Target strength range was estimated using Love's dorsal aspect equation (Love 1971):

$$\text{Total length} = 10^{((\text{Target Strength} + 26.1)/19.1) * 1000}$$

Biomass estimates were based on average target length as determined by the above equation.

Results

In 2015, three cross-basin transects were surveyed July 13, 20 and 22, 2015, with the southern half of the middle transect missed due to declining sea state (Figure 6.4.1). One hundred twenty-one km of Lake Erie were surveyed, resulting in the collection of 1.4 gb of data. Western basin forage fish density and biomass estimates were high in 2015, averaging 54,309 fish per hectare and 22 kg per hectare, respectively (Figure 6.4.2). Forage fish densities were highest along the eastern transect. Statistical testing (ANOVA) indicated that density in 2015 was significantly higher than in previous surveys ($F_{8, 985} = 66.4$, $P < 0.0001$). Biomass in 2015 was higher than in 2005, 2011, and 2008, while lower than in 2007 and 2013 ($F_{8, 985} = 40.2$, $P < 0.0001$). Fish were small in 2015, with nearly all (99%) forage fish in the survey estimated to be between 20-109 mm.

Central Basin Survey

The Ontario Ministry of Natural Resources (OMNR), Ohio Department of Natural Resources (ODNR), and the U.S. Geological Survey (USGS) have collaborated to conduct joint hydroacoustic and midwater trawl surveys in central Lake Erie since 2004. We were not able to follow the established protocol and sample design (Forage Task Group 2005) in July of 2014 and 2015 due to hull and engine repairs to the ODNR R/V *Grandon.* In 2014 we were presented with an opportunity to run acoustic transects with the United States Environmental Protection Agency (USEPA) research vessel R/V *Lake Guardian*. After consultation with Forage Task Group members and participating agencies, it was decided that a comparison of acoustic data collections be made from three different sized vessels. The comparison was designed to assess fish avoidance of vessels during the acoustic data collection process. The three vessels conducting the exercise were USEPA R/V *Lake Guardian* (53x12 m), USGS R/V *Muskie* (23x6 m) and ODNR R/V *North River* (8x3 m). Each vessel collected data simultaneously along three parallel transects 0.5 to 1 km apart on two consecutive nights. In 2015 we continued the vessel comparison exercise with the ODNR R/V *North River* and USGS R/V *Muskie*. Data are currently being analyzed and will be reported out when completed and peer reviewed.

6.5 Lower Trophic and Limnological Sampling

Lower trophic and limnological samples are collected in a cooperative effort between ODNR, The Ohio State University, and the Forage Task Group of the Great Lakes Fishery Commission's Lake Erie Committee. As part of this effort, sixteen sites are sampled bi-weekly from May through

October. Lower trophic sampling sites have been selected to represent the range of physical and chemical processes within each of the districts. There are eight sites in District 1, four sites in District 2, and four sites in District 3. Data collected at each site include water temperature (surface and bottom), dissolved oxygen (surface and bottom), and water clarity as measured by Secchi disk. Water samples are collected for several purposes. A 1000-ml water sample is collected for measuring chlorophyll-*a* (chl-*a*); the water sample is filtered after sampling, and the frozen filter is sent to the Ohio State University for chl-*a* processing. Another water sample is fixed with Lugol's solution and sent to the Ohio State University for phytoplankton species identification. Lastly, water samples at four sites (two sites each in District 1 and District 2) are collected, frozen, and transported to the National Center for Water Quality Research at Heidelberg University for phosphorus analysis. Finally, a vertical tow with a zooplankton net is conducted at each site, with samples preserved and sent to the Ohio State University for abundance estimates and species identification.

Western Basin

Western basin sites are located within the Maumee River plume, the Detroit river plume, between the islands, and east of the islands near the central basin (Figure 6.5.1). Site depths range from 5.8 - 13.2 m.

Ninety-four lower trophic level samples were collected from May 8 - October 5, 2015, in District 1. Average basin-wide surface water temperature for Ohio waters was 20.1°C, slightly warmer than the previous year (19.5°C), with peak surface temperature (26.7°C) recorded on July 28. Spring warming rate (May 8 to June 5, to correspond with previous years) was 0.22°C per day, similar to 2014 (0.23°C). Seasonally-averaged basin wide Secchi depth was less than in 2014, averaging 1.6 m [range: 0.2m (August 10) to 4.9m (July 27)]. Western basin bottom dissolved oxygen levels averaged 8.3 mg/l [range: 0.9 (July 28) to 11.8 mg/l (May 8)], slightly less than the previous year.

Chlorophyll-*a* levels ranged from 0.1 to 201.3 ug/l, with an annual mean of 13.04 ug/l. The highest chlorophyll-*a* levels were during August, and were located nearshore around the Maumee River plume. Total Phosphorus (TP) was collected at two sites, one near Middle Sister Island, and one near the Toledo Water Intake near Bono, Ohio. Phosphorus levels ranged from 12.8 µg/l to 165.8 µg/l, with an annual mean of 52.5 µg/l. Most of the highest TP levels were recorded at the Bono site, which is influenced by the Maumee River plume.

Central Basin

Central basin sites are located west (District 2) and east (District 3) of the Grand River (Figure 6.5.2). In both districts, one site is located in each of four depth strata that correspond to the depth strata used in the central basin bottom trawl surveys (5-10 m, 10-15 m, 15-20 m, >20 m). In 2015, 44 samples were collected from each District from May 7 to October 6.

The peak surface temperatures for District 2 and 3 were 25.3°C and 25.6°C, respectively, and both occurred on August 18. Bottom (hypolimnetic) dissolved oxygen levels from offshore sites (>14 m) dropped below 2.0 mg/l at the 20 m sites for each District in 2014, a threshold deemed stressful to fish. In District 2, the bottom dissolved oxygen levels were below 2.0 mg/l from August 18 to September 16 and ranged from 1.89 mg/l to 1.92 mg/l. In District 3, the bottom dissolved oxygen levels were below 2.0 mg/l from August 18 to September 23 and ranged from 0.78 mg/l to 1.84 mg/l. In 2014 there were zero locations that recorded DO levels below 2.0 mg/l. The average dissolved oxygen levels for nearshore sites in District 2 and 3 were 9.0 mg/l and 8.9 mg/l, respectively. For the offshore sites in District 2 and 3, the average dissolved oxygen levels were 8.0 mg/l and 8.2 mg/l, respectively. The average dissolved oxygen levels for both Districts were lower in 2015 compared to 2014.

In District 2 and 3, seasonally averaged Secchi depths were shallower in 2015 compared to 2014. The 2015 annual mean Secchi depth in District 2 was 2.1 m and in District 3 it was 2.6 m. Secchi depth in District 2 peaked on July 29 (6.3 m), while District 3 peaked on May 7 (6.7 m).

Chlorophyll-a levels in District 2 ranged from 0.19 µg/l to 8.86 µg/l, with an annual mean of 3.5µg/l. The highest chlorophyll-a level in District 2 occurred during September 23 at the 10 m location off Fairport Harbor, Ohio. District 3 chlorophyll-a levels ranged from 0.21 µg/l to 7.15 µg/l, with an annual mean of 2.7 µg/l. The highest chlorophyll-a level in District 3 occurred September 16 at the 10 m location off Perry, Ohio. The annual mean of chlorophyll-a levels for both Districts increased from 2014.

Phosphorus levels in District 2 ranged from 4.9 µg/l to 34.8 µg/l, with an annual mean of 14.7 µg/l. The annual mean of phosphorus levels increased only slightly from 2014. The highest phosphorus level occurred July 2, at the nearshore location off Fairport Harbor, Ohio. Phosphorus samples are not collected in District 3.

6.6 Assessment of the Nearshore Fish Community (*FSGR02)*

The fish community of the Lake Erie western basin nearshore zone historically contained many common phytophilic fish species (e.g., centrarchids, esocids), and even provided a valuable component to the commercial fishery (Baldwin et al. 1995). From the early 1900s until the 1970s, these species have suffered the impacts of increased anthropogenic activity (shoreline development, wetland loss and reduced water quality and clarity) in the Lake Erie watershed (Casselman and Lewis 1996), leading to a severe community decline in the lake. Following the 1972 signing of the Great Lakes Water Quality Agreement, water quality, and especially clarity, in Lake Erie generally improved, as influenced by reductions in phosphorus and, later, the introduction of exotic Dreissenid mussels (Charlton et al. 1999). Improved water clarity and recent low to moderate water levels have stimulated an increase in the production of aquatic macrophytes along the shoreline of the western basin. This has led to increases in the occurrence of phytophilic fish species in ODNR trawling catches at some standardized sites (Division of Wildlife, unpublished data). However, the design of the current trawling program is not extensive enough in nearshore habitat to properly assess this community.

In 2007, Division of Wildlife personnel from the Sandusky office began an annual survey in the western basin to assess the composition and abundance of the fish community in the nearshore habitats of Lake Erie. Twelve sites that represent a gradient of geomorphologic and anthropogenic influences to nearshore Lake Erie were selected using the Lake Erie GIS. Trawling was used in 2007 and 2008, but was abandoned due to difficulty caused by sampling in shallow water with debris. During 2009 and 2010, daytime electrofishing was used to gain better access to nearshore areas and to sample more fish.

During 2011 and 2012, the University of Toledo's Lake Erie Center undertook a cooperative project (FSGR02) with the Sandusky office of the Ohio Division of Wildlife to develop an optimal survey design for the nearshore fish community of western Lake Erie. The project objectives included a focus on sampling method, duration and timing of sampling, and number and location of survey sites. The recommendations generated by this project have been incorporated into the Division of Wildlife nearshore survey since 2013. The methods described below reflect these changes. More information on FSGR02 can be found in the Ross (2013) publication.

Sites were selected from 20 sites used by Ross (2013), which included a mix of sites sampled by the DOW in previous years and new sites. Twelve sites were targeted for sampling each year; 10 set sites to be sampled annually, and 2 additional sites. The additional sites were selected from the remaining sites established by Ross (2013), and rotated so that all sites will be sampled every five years. Each site consists of five, 100-m shoreline transects, with sampling beginning ½ hour after

sunset. Two netters using fine-mesh dip nets were located on the bow of the electrofishing boat, and all fish were netted. Low range (50-500 volts), DC settings were used on the Smith-Root control box, and every effort was made to maintain 6 amps of current. Other equipment and methods followed Ohio EPA standards (Thoma 1999) to allow data sharing.

At each site, fish were processed after each 100-m transect. Catches of most species were enumerated by species and age class, and lengths and weights recorded. Small-bodies species and species of interest were preserved by site and transect, and transported to the laboratory for processing; other species were processed in the field. This allowed the collection of length and weight with higher precision than field conditions allow and reduced field time.

In 2015, a total of 10 sites between Toledo and Huron were sampled using night electrofishing from June 9th through July 1st (Figure 6.6.1). These sites represent 9 base sites plus one additional site. Two other sites were planned in 2015 (one base site, one additional) were not sampled due to weather. Catches were lower in 2015 than in 2014. Thirty-four species were collected, down from 40 in 2014. Of the 1,661 individual fish collected (4,802 in 2014), 192 were centrarchids, mostly bluegills and largemouth bass [n = 61 and 80, respectively]. Electrofishing catch of legal-size (14", 355 mm) largemouth bass was 9.4/hour, similar to the previous year (9.3/hr). Stock density indices were calculated for bluegills and largemouth bass (Willis et al. 1993); the relative stock densities for quality length bluegill and largemouth bass in the Lake Erie nearshore were 46 and 79, respectively. In addition, twenty-two percent of stock-length (200 mm) largemouth bass were preferred-length (380 mm) or larger. The availability of suitable largemouth bass in the nearshore likely contributes to the increased targeted effort by recreational anglers.

Two different indices of biotic integrity (IBI) were calculated to help describe the relative habitat quality using the characteristics of the fish community present at each site. The first IBI was developed for Great Lakes coastal areas by Minns et al. (1994), and has been used to in this survey since 2009. Reported on a scale from 0 to 100 (with the higher score indicating the best quality fish community), 2015 Minns IBI scores ranged from 47.5 to 84.4 across sites, with a mean score of 72.4, similar to the mean calculated in 2014 (69.3; Figure 6.6.1).

The second IBI calculated is one used by the Ohio Environmental Protection Agency in Lake Erie lacustrine habitats (Thoma 1999). Used for the first time in 2014 to describe the sites in this survey, this IBI uses a scale to assign a relative measure of habitat quality based on the calculated numeric value for each site (0-17 = very poor, 17-31 = poor, 31-42 = fair, 42-50 = good, and >50 = exceptional). Scores ranged from 16 (poor) to 38 (fair) in 2014, with a combined score of 38 (fair) across all sites (Figure 6.6.1). These represent values similar to 2014.

6.7 Yellow Perch Tagging (FFDR09)

Originally, Lake Erie Committee quota management units for Lake Erie yellow perch were to be based on lakewide tagging studies, but initial tagging studies were plagued by the inability to determine the number of tags-at-large due to tag loss, high non-reporting rates, and distress from handling and barotrauma. More recent tagging methods alleviated tag loss and non-reporting rates by using PIT tags, but the number of tags-at-large was unknown. Our focus this year was to get a better estimate of tags-at-large. We tagged 6,889 yellow perch at three locations in Lake Erie in 2013 using trawls (4-19m) and trap nets (9m) in 2013. Trawls had a considerably higher handling mortality (35%) compared to trap nets (2%), yet barotrauma mortality affected both methods. Shallow trap net tagging (6m) in 2014 alleviated barotrauma, resulted in high survival (mortality cages experiments), and allowed for a better estimate of tags-at-large. Using the 2014 recapture rates, from 652 fish tagged in 2014, we estimated a tagging mortality rate which allowed us to determine the number of tags-at-large in 2013. We found tagging mortality to be at about 59% in 2014, which was similar to mortality cage experiments from 2013. These experiments support more accurate accounting of the

number of tags at large, which in turn facilitates evaluation of the scanning effort and development of exploitation estimates. We continued tagging shallow water in 2015, doubled the effort, and tagged 1452 fish, which was more than twice the prior year. Continued mortality cage experiments resulted in total survival and accurate number of tags-at-large. Totaling the three years of tagging and adjusting 2013 tagging mortality, we put 4404 tags-at-large. From the 2300 tags-at-large in 2013, we recaptured 50 in 2013, 26 in 2014, and 20 in 2015. Of the 652 tags-at-large in 2014, 12 were recaptured in 2014 and 1 in 2015. In 2015, we recaptured 52 of the 1452 tagged.

To increase our scanning capabilities of the recreational fishery, we placed scanners at cleaning houses from 2013-15. Additionally, in 2015, not only did we increase scanning to more facilities but included Ohio Sea Grant into the project to promote our scanning locations and increase citizen participation. We continually scanned commercial fishers at the dock. In the three years, we scanned 4,121,613 yellow perch and eventually achieved our goal of 1 million a year commercially (926,020 in 2013, 1,268,390 in 2014, and 1,303,314 in 2015) and 100,000 a year recreationally (152,833 in 2013, 329,647 in 2014, and 141,409 in 2015).

Table 6.3.1. Arithmetic mean catch-per-hectare of age-0 fish for selected species during August trawls in the Ohio waters of Lake Erie, 1995-2015.

District	Year	Walleye	Yellow Perch	White Perch	White Bass	Smallmouth Bass	Lake Whitefish	Rainbow Smelt	Round Goby*	Emerald Shiner	Spottail Shiner	Alewife	Gizzard Shad	Trout-Perch	Freshwater Drum	Silver Chub
1	1995	2.9	348.9	692.9	16.7	3.4	0.0	0.0	-	25.7	24.1	7.3	148.7	111.4	26.3	42.7
	1996	83.3	3,290.8	1,750.0	88.4	0.0	0.0	201.3	-	40.2	36.7	4.3	400.9	204.3	258.7	184.4
	1997	24.0	52.2	616.9	225.6	0.1	0.0	394.8	-	91.0	44.6	37.7	1,598.4	133.3	23.4	6.7
	1998	12.2	174.5	541.3	21.8	0.8	0.0	13.1	-	11.2	93.6	2.2	167.5	184.6	55.4	121.1
	1999	30.6	270.1	1,036.9	37.6	1.0	0.0	2.2	-	8.4	71.8	0.5	426.0	138.4	263.3	164.7
	2000	4.5	186.4	2,321.4	68.3	0.0	0.0	749.0	-	80.7	3.0	15.2	899.7	290.2	45.8	4.9
	2001	24.8	322.1	1,863.9	213.8	0.3	0.0	0.7	-	31.0	64.7	24.4	642.8	103.7	336.0	0.1
	2002	0.1	33.1	1,037.4	42.6	1.3	0.0	51.5	-	62.5	12.8	87.6	1,649.1	273.2	80.9	3.7
	2003	155.6	1,509.9	2,336.2	210.2	0.0	0.0	82.9	-	1.3	2.1	0.1	173.8	76.9	77.5	1.1
	2004	3.6	40.9	4,269.0	38.8	0.0	0.0	42.3	-	177.8	5.7	0.0	41.6	382.7	147.7	11.4
	2005	10.3	124.2	3,955.4	84.2	1.1	0.0	0.0	-	159.3	98.4	1.8	279.2	273.9	151.9	0.0
	2006	1.3	180.2	2,139.5	43.8	1.0	0.0	151.9	-	129.4	4.2	0.0	159.5	124.4	47.5	0.0
	2007	21.5	592.9	4,214.7	8.1	0.9	0.0	6.9	-	91.2	12.6	0.1	75.0	128.1	288.5	0.1
	2008	7.6	267.0	4,071.0	50.3	0.3	0.0	113.8	-	37.1	10.8	0.0	465.2	72.4	108.5	0.1
	2009	5.5	186.0	3,248.0	95.6	0.0	0.0	2,550.3	-	135.3	7.9	0.0	816.2	21.3	55.6	2.0
	2010	23.4	58.2	4,698.6	84.4	0.6	0.0	0.0	-	51.8	39.4	0.4	34.6	109.1	412.4	3.2
	2011	4.9	29.9	1,176.1	26.8	0.5	0.0	1.5	-	9.3	8.3	0.0	260.1	242.1	106.2	0.5
	2012	5.7	74.5	4,603.6	71.8	0.7	0.0	0.0	-	165.2	7.8	0.0	245.0	55.6	289.2	0.0
	2013	10.7	398.7	2,800.1	31.9	0.3	0.0	80.3	-	15.0	0.6	3.3	1,987.0	101.5	69.7	0.2
	2014	19.6	668.9	2,172.0	4.8	0.2	0.0	22.9	-	0.6	5.6	0.0	316.1	25.3	21.2	0.0
	2015	61.5	264.9	1,629.8	9.1	0.0	0.0	133.7	-	11.4	3.8	0.0	421.6	28.0	162.8	5.4
	Mean[b]	22.6	440.5	2,477.2	73.3	0.6	0.0	223.3	-	66.2	27.7	9.2	539.3	152.6	143.3	27.3
2	1995	0.0	2.8	1.1	0.0	0.0	1.4	64.6	0.9	0.0	0.0	0.1	0.0	1.4	0.0	0.0
	1996	11.1	1,059.9	710.8	32.3	0.0	5.6	271.2	0.4	8.6	0.1	0.0	79.3	3.0	0.0	0.0
	1997	0.0	29.0	0.0	0.0	0.0	0.0	85.4	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
	1998	5.1	225.4	190.7	42.9	0.0	0.2	109.0	69.9	2.6	6.6	10.6	58.7	10.3	0.4	0.0
	1999	0.0	29.5	258.3	127.3	0.0	0.1	11.0	14.4	85.7	0.4	1.4	28.2	0.0	0.0	0.0
	2000	0.0	0.6	0.2	0.0	0.0	0.0	2.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2001	3.5	341.9	2,569.8	373.4	0.0	0.0	32.8	12.0	0.0	0.3	8.5	46.8	0.2	0.0	0.0
	2002	0.0	0.3	56.9	0.0	0.0	0.1	99.2	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2003	52.0	1,180.4	863.4	54.1	0.0	0.1	140.7	4.5	59.6	0.1	0.0	110.1	1.2	0.1	0.0
	2004	0.4	32.8	2,341.7	3.1	0.0	0.0	510.9	10.8	0.0	0.0	0.0	6.1	6.6	0.3	0.0
	2005	0.3	105.2	2,342.9	75.6	0.0	0.1	6.1	38.7	33.6	0.4	0.0	15.7	0.2	0.0	0.0
	2006	0.0	4.9	74.6	3.0	0.0	0.0	4.9	2.2	0.3	0.0	0.0	0.9	0.0	0.0	0.0
	2007	0.5	245.8	999.7	24.8	0.0	0.1	117.0	20.2	17.1	0.9	0.0	68.5	0.1	0.0	0.0
	2008	1.7	210.5	3,089.3	25.2	0.0	0.0	5.2	4.5	1.5	0.7	0.0	94.9	0.0	0.0	0.0
	2009	0.0	14.2	72.5	0.0	0.0	0.0	3.2	13.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	2010[c]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2011	1.5	7.1	286.8	15.1	0.0	0.0	15.6	8.7	6.3	0.0	0.0	26.7	1.1	1.1	0.0
	2012	0.4	65.9	2,519.6	58.7	0.0	0.0	1.8	2.1	2.8	0.0	0.0	40.0	0.0	0.0	0.0
	2013	0.0	2.6	257.8	0.2	0.0	0.0	27.9	3.1	0.0	0.0	0.7	0.0	0.0	0.0	0.0
	2014	0.0	33.6	141.1	0.0	0.0	0.0	146.0	0.6	0.0	0.0	0.0	0.0	0.3	0.0	0.0
	2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mean[b]	4.0	189.1	883.0	44.0	0.0	0.4	87.1	11.1	11.5	0.5	1.1	30.3	1.4	0.1	0.0
3	1995	0.0	27.3	103.6	0.3	1.9	0.2	384.6	1.1	0.0	1.2	0.2	0.0	18.2	0.1	0.0
	1996	0.3	2,006.8	1,898.7	3.7	1.0	0.4	487.7	5.5	0.0	0.0	0.0	2.9	26.4	0.1	0.0
	1997[c]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1998	0.1	275.5	221.9	0.3	0.3	0.0	253.2	256.3	0.1	0.1	0.0	3.4	113.9	0.0	0.0
	1999	0.0	44.8	57.8	11.7	0.0	2.2	405.0	27.5	3.0	0.0	0.0	8.9	0.6	0.4	0.0
	2000	0.0	0.0	0.0	0.0	0.0	0.0	4.4	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2001	0.0	1,283.7	188.0	1.2	0.0	0.8	403.9	7.5	0.0	0.0	0.0	0.0	0.4	0.0	0.0
	2002	0.0	1.7	1.7	0.0	0.0	0.0	229.9	20.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0
	2003	1.1	1,170.2	73.8	0.6	0.0	0.0	84.4	89.9	0.0	0.0	0.0	0.0	1.2	0.0	0.0
	2004	0.0	3.6	1,891.6	0.1	0.0	0.0	954.2	37.8	0.0	0.0	0.0	0.0	0.7	0.0	0.0
	2005	0.0	278.2	493.1	4.4	0.0	3.1	19.1	4.4	0.0	0.0	0.2	0.0	0.1	0.0	0.0
	2006	0.0	60.7	5.0	0.0	8.6	0.0	51.5	9.8	0.0	0.0	0.0	0.0	0.7	0.0	0.0
	2007	0.0	237.0	699.7	3.5	0.0	0.3	936.3	66.3	1.7	0.3	0.0	7.9	0.6	0.0	0.0
	2008	0.2	558.3	253.2	0.4	0.0	0.0	0.7	0.0	0.4	0.7	0.0	53.0	0.7	0.0	0.0
	2009	0.0	0.1	36.7	0.2	0.2	0.0	68.2	60.3	0.0	0.0	0.0	0.0	0.4	0.0	0.0
	2010[c]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2011	0.0	14.1	20.3	0.5	0.0	0.0	1.1	9.7	0.0	0.0	0.0	14.7	0.9	0.0	0.0
	2012	0.0	154.3	794.1	66.1	0.0	0.0	12.2	11.6	111.5	0.1	0.9	4.2	0.0	0.0	0.0
	2013	0.0	3.5	2,384.3	0.0	0.0	0.0	130.5	43.7	0.2	0.0	53.6	0.0	0.0	0.0	0.0
	2014	0.0	45.8	29.7	0.0	0.0	0.2	117.0	2.8	0.0	0.0	0.0	0.0	0.6	0.0	0.0
	2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mean[b]	0.1	342.5	508.5	5.2	0.7	0.4	252.4	36.5	6.5	0.1	3.1	5.3	9.2	0.0	0.0

[a] Values from 1995-2001 have been scaled for differences in catchability between previous and current research vessels.

[b] Long-term mean CPH, 1995-2014.

[c] Not comparable to previous years due to limited sampling.

* Round goby values for D1 are reported in Table 6.3.19 as all ages combined. Gobies first sampled in 1994 in the central basin and 1995 in the western basin.

Table 6.3.2. Arithmetic mean catch-per-hectare of age-0 fish for selected fish species during September trawls in the Ohio waters of Lake Erie, 1995-2015.

District	Year	Walleye	Yellow Perch	White Perch	White Bass	Smallmouth Bass	Lake Whitefish	Rainbow Smelt	Round Goby*	Emerald Shiner	Spottail Shiner	Alewife	Gizzard Shad	Trout-Perch	Freshwater Drum	Silver Chub
1	1995	0.5	82.4	432.2	1.0	0.6	0.0	1.7	-	204.8	43.7	3.5	55.1	126.2	139.6	2.6
	1996	31.8	579.3	675.0	5.7	0.8	0.0	14.9	-	8.7	91.0	11.3	286.9	153.6	260.7	125.2
	1997	15.5	33.7	317.7	3.7	0.1	0.0	274.1	-	429.7	54.6	16.9	129.3	109.5	25.4	16.2
	1998	11.6	250.9	599.9	3.8	2.9	0.0	51.5	-	636.0	79.5	1.5	161.8	224.7	45.0	341.8
	1999	13.0	155.3	557.4	7.1	0.8	0.0	21.5	-	71.6	71.7	1.5	169.5	135.6	293.2	141.1
	2000	2.0	41.5	1,155.0	2.1	0.0	0.0	111.8	-	38.6	2.0	29.4	93.7	52.9	69.2	1.8
	2001	10.1	246.3	2,060.8	3.0	1.8	0.0	14.4	-	60.5	56.6	15.3	87.1	189.3	484.7	0.1
	2002	0.1	30.4	1,152.0	16.4	1.7	0.0	230.8	-	432.5	12.0	17.6	137.2	218.8	126.7	23.0
	2003	56.8	1,111.6	1,495.1	11.4	0.0	0.0	11.9	-	25.3	31.8	0.0	48.8	165.2	260.9	1.7
	2004	1.6	9.3	1,377.7	1.5	0.0	0.0	22.9	-	161.3	10.1	0.2	158.5	328.5	101.5	6.4
	2005	2.3	62.3	1,978.1	4.6	0.3	0.0	48.2	-	425.4	20.9	0.0	6.3	78.4	160.7	0.2
	2006	0.4	121.9	1,887.0	9.7	0.2	0.0	147.9	-	362.3	15.4	0.9	86.2	123.8	218.8	0.0
	2007	22.4	631.5	3,576.9	4.0	0.0	0.0	10.3	-	155.4	13.0	0.0	37.0	127.3	205.7	0.1
	2008	1.9	74.7	1,478.8	8.4	2.1	0.0	32.6	-	461.4	2.7	0.0	104.2	57.9	66.7	0.6
	2009	3.9	69.4	1,607.5	2.3	0.6	0.0	37.1	-	133.3	16.2	0.0	140.8	62.2	131.1	0.9
	2010	10.2	26.9	1,474.9	17.1	7.3	0.0	1.7	-	231.7	2.8	0.0	14.0	55.9	143.8	1.2
	2011	4.0	12.0	888.7	7.0	0.6	0.0	13.2	-	344.4	12.6	0.0	248.5	35.4	184.5	1.3
	2012	2.3	35.0	2,735.5	9.3	0.5	0.0	0.1	-	149.9	3.3	0.0	194.4	24.3	65.3	0.0
	2013	3.4	337.0	2,154.3	1.9	1.0	0.0	85.1	-	91.5	17.2	0.1	309.5	118.2	140.1	0.1
	2014	13.8	521.7	1,759.1	2.8	0.6	0.0	233.6	-	21.1	15.5	0.0	109.2	5.5	59.2	0.0
	2015	83.3	224.0	1,620.5	4.2	0.2	0.0	7.3	-	0.0	8.9	0.0	85.8	30.4	135.2	8.0
	Mean[b]	10.4	221.7	1,468.2	6.1	1.1	0.0	68.3	-	222.3	28.6	4.9	128.9	119.7	159.1	33.2
2	1995	0.0	2.8	3.1	21.9	0.0	0.0	400.8	21.4	7.1	0.3	11.2	3.8	1.1	0.7	0.0
	1996	14.1	129.6	229.3	39.6	0.2	0.1	395.6	7.8	17.5	11.5	10.9	75.2	1.3	0.8	0.0
	1997	0.7	11.6	202.3	8.1	0.1	0.0	256.2	55.9	140.2	13.3	10.6	11.5	0.0	0.8	0.0
	1998	1.0	72.6	91.5	41.2	0.2	0.0	335.0	127.1	3,682.0	1.3	8.8	30.9	0.4	5.4	0.0
	1999	4.8	68.3	293.0	137.5	0.1	0.0	101.4	95.6	350.9	5.5	29.5	88.9	5.4	9.4	0.0
	2000	0.2	18.2	475.6	18.3	0.0	0.0	160.0	24.1	129.1	0.4	62.1	113.0	0.7	0.7	0.0
	2001	6.3	119.2	710.2	163.2	0.0	0.0	2.3	40.4	47.6	5.3	45.4	51.6	1.9	75.5	0.0
	2002	0.0	3.3	204.3	24.7	0.0	0.0	370.0	43.5	20.1	0.9	57.4	19.0	0.6	12.9	0.0
	2003	41.6	136.9	289.2	112.3	0.0	0.0	2,367.7	21.5	394.1	0.0	0.1	365.7	1.7	4.5	0.0
	2004	0.0	7.7	718.7	1.2	0.0	0.0	415.9	15.0	8.1	0.0	0.0	0.5	17.6	12.9	0.1
	2005	0.6	43.9	1,047.2	69.2	0.1	0.0	8.7	40.8	630.4	0.1	0.0	13.4	0.1	1.1	0.0
	2006	0.7	8.3	388.8	21.3	0.0	0.0	69.6	13.7	656.5	0.0	3.1	36.8	0.2	6.3	0.0
	2007	0.9	151.0	1,096.2	23.4	0.1	0.0	78.4	26.8	36.3	2.1	0.0	183.8	0.9	0.2	0.0
	2008	1.2	31.5	468.1	89.0	0.1	0.0	735.7	19.0	25.0	3.4	0.0	33.2	0.3	1.1	0.0
	2009	2.9	1.6	379.0	18.7	0.0	0.0	267.8	24.5	7.5	0.4	0.0	52.6	0.5	25.5	0.0
	2010	0.2	41.1	254.8	241.8	0.4	0.0	776.2	28.4	8.8	0.0	0.0	2.6	0.7	1.3	0.0
	2011	2.2	10.3	346.6	12.7	0.0	0.0	29.8	100.8	361.7	0.6	0.0	675.8	1.3	17.9	0.0
	2012	0.8	69.2	1,709.6	112.2	0.0	0.0	84.4	18.2	951.3	0.0	0.0	98.7	0.0	5.1	0.0
	2013	2.0	8.9	174.7	5.1	0.0	0.0	126.0	17.5	2,218.5	0.0	52.1	304.2	0.1	0.9	0.0
	2014	1.4	37.7	135.0	6.1	0.0	0.3	747.8	6.3	1,369.3	2.5	0.0	33.8	0.3	1.7	0.0
	2015	31.3	19.6	371.0	3.9	0.0	0.0	447.0	56.8	3.5	0.0	0.0	568.0	0.4	2.9	0.0
	Mean[b]	4.1	48.7	460.9	58.4	0.1	0.0	386.5	37.4	553.1	2.4	14.6	109.8	1.8	9.2	0.0
3	1995	0.0	14.1	73.1	17.2	0.1	0.3	1,722.5	71.0	37.2	1.9	15.3	2.6	10.8	0.1	0.0
	1996	2.5	116.5	526.8	87.8	0.2	2.7	2,522.9	57.0	68.1	18.0	7.8	243.0	25.2	0.1	0.0
	1997	0.1	2.6	2.4	22.6	0.1	0.0	563.2	117.0	5.9	0.1	17.1	8.7	2.1	0.0	0.0
	1998	0.5	38.1	52.3	41.7	0.0	0.2	953.8	186.7	150.5	2.7	0.1	34.8	1.3	0.0	0.0
	1999	0.0	25.7	37.1	91.0	1.1	0.2	254.4	151.5	712.7	3.5	12.9	22.0	5.2	0.1	0.0
	2000	0.1	1.6	6.4	22.5	0.0	0.0	988.2	125.2	423.7	0.0	10.1	34.0	0.3	0.0	0.0
	2001	0.0	13.6	57.6	18.0	0.0	0.0	0.0	39.6	2.2	0.7	0.0	1.8	0.0	19.1	0.0
	2002	0.0	3.0	7.7	10.5	0.0	0.0	176.6	51.4	0.7	0.1	1.6	17.2	0.2	0.1	0.0
	2003	3.2	53.2	75.0	103.5	0.6	3.0	4,040.4	59.7	1,300.1	0.4	0.0	22.2	1.5	0.0	0.0
	2004	0.0	1.9	108.0	0.3	0.0	0.2	388.9	173.9	0.8	0.0	0.0	0.3	1.4	0.0	0.0
	2005	0.4	156.2	2,034.5	58.2	1.1	1.3	44.4	148.1	279.8	1.1	0.0	15.7	1.6	1.3	0.0
	2006	0.0	17.0	41.5	7.3	4.4	0.0	513.6	41.7	1,003.6	0.2	3.2	27.7	0.1	1.1	0.0
	2007	0.0	177.8	1,095.9	13.0	0.3	0.1	702.4	273.1	63.7	0.5	0.0	15.5	5.4	0.0	0.0
	2008	0.2	52.8	91.6	37.8	0.3	0.0	3,997.7	26.3	20.2	0.2	0.0	63.1	0.1	0.2	0.0
	2009	0.0	0.5	34.6	2.5	0.0	0.0	0.3	1.0	1.7	0.0	0.0	3.9	0.2	0.0	0.0
	2010	1.1	96.3	190.3	211.5	0.3	0.0	421.6	41.8	234.9	0.0	0.0	8.5	1.4	0.6	0.0
	2011	0.2	15.1	72.1	0.7	0.2	0.0	247.3	256.0	103.7	0.3	0.0	4.2	2.2	0.1	0.0
	2012	0.0	134.4	661.9	130.0	0.0	0.0	319.1	53.9	2,188.5	0.0	0.1	28.7	0.2	0.0	0.0
	2013	0.0	8.9	200.1	0.2	0.0	0.0	12.8	45.8	306.2	0.0	36.1	39.5	0.0	0.2	0.0
	2014	0.2	49.1	99.4	1.1	0.0	0.0	1,709.5	86.2	650.1	0.0	0.0	7.3	0.6	0.0	0.0
	2015	9.4	18.6	338.8	4.0	0.0	0.6	236.4	66.8	13.2	0.4	0.0	455.6	1.2	0.6	0.0
	Mean[b]	0.4	48.9	273.4	43.9	0.4	0.4	979.0	100.3	377.7	1.5	5.2	30.0	3.0	1.2	0.0

[a] Values from 1995-2001 have been scaled for differences in catchability between previous and current research vessels.

[b] Long-term mean CPH, 1995-2014.

* Round goby values for D1 are reported in Table 6.3.20 as all ages combined. Gobies first sampled in 1994 in the central basin and 1995 in the western basin.

Table 6.3.3. Arithmetic mean catch-per-hectare of age-1 and older fish for selected species during August trawls in all Ohio districts of Lake Erie, 1995-2015. White perch, white bass, walleye, and yellow perch are yearlings only. All other species are yearling and older ages.

District	Year	Walleye	Yellow Perch	White Perch	White Bass	Lake Whitefish	Rainbow Smelt	Round Goby*	Emerald Shiner	Spottail Shiner	Alewife	Gizzard Shad	Trout-Perch	Freshwater Drum	Silver Chub
1	1995	7.9	128.8	5.0	0.3	0.0	0.0	0.0	0.2	5.5	0.0	0.0	84.0	143.9	6.2
	1996	0.1	79.9	5.8	0.0	0.0	0.4	0.0	32.3	28.1	0.0	0.0	86.4	94.7	5.2
	1997	8.0	121.8	12.0	1.0	0.0	1.1	2.2	52.5	13.9	0.0	0.0	53.2	62.2	19.8
	1998	3.2	4.8	5.5	0.0	0.0	0.0	158.9	6.9	43.5	0.0	0.0	81.6	89.5	30.5
	1999	1.1	68.5	19.6	0.0	0.0	0.0	187.1	13.7	23.8	0.0	0.0	95.4	91.7	20.9
	2000	3.2	85.3	20.5	0.5	0.0	0.2	140.4	28.8	6.0	0.0	0.0	30.8	283.7	13.0
	2001	0.1	12.8	0.6	0.0	0.0	0.0	156.9	20.5	3.3	0.0	0.0	77.9	253.1	12.4
	2002	3.9	77.1	8.5	1.0	0.0	0.0	38.6	59.4	9.6	0.0	0.0	46.6	111.5	7.2
	2003	0.2	3.0	45.8	0.1	0.0	4.1	69.8	77.3	13.2	0.0	0.0	38.6	218.6	37.0
	2004	18.5	210.7	44.4	1.0	0.0	0.0	170.4	21.5	4.9	0.0	0.0	64.5	173.8	6.5
	2005	0.7	5.2	4.6	0.0	0.0	0.0	83.4	4.6	23.9	0.0	0.0	53.3	62.5	6.9
	2006	0.7	6.4	40.6	0.3	0.0	0.0	48.0	35.8	4.9	0.0	0.0	27.6	100.0	4.2
	2007	0.1	14.5	0.5	0.1	0.0	0.1	192.8	20.8	3.0	0.0	0.0	58.8	73.3	2.5
	2008	1.6	23.5	26.5	0.0	0.0	0.0	148.9	2.1	3.4	0.0	0.0	22.0	60.2	0.9
	2009	2.7	85.3	13.7	1.6	0.0	114.3	81.7	112.5	0.3	0.0	0.0	17.1	124.6	0.0
	2010	2.6	22.2	13.6	0.0	0.0	0.0	36.3	5.7	4.8	0.0	0.0	67.2	149.0	0.6
	2011	0.6	15.5	8.5	1.8	0.0	0.0	58.0	15.2	1.9	0.0	0.0	16.8	120.5	0.6
	2012	1.0	2.2	30.3	0.5	0.0	0.0	34.6	129.7	6.6	0.0	0.1	25.8	143.1	1.2
	2013	1.9	10.3	59.6	1.4	0.0	1.8	18.2	193.2	2.2	0.0	0.0	19.6	121.8	0.2
	2014	1.1	17.4	4.2	0.0	0.0	0.0	45.3	21.0	1.6	0.0	0.0	8.5	46.0	0.2
	2015	4.8	61.7	18.7	0.0	0.0	0.1	33.9	1.0	1.9	0.0	0.0	7.9	37.2	0.1
	Mean[a]	3.0	49.8	18.5	0.5	0.0	6.1	83.6	42.7	10.2	0.0	0.0	48.8	126.2	8.8
2	1995	6.8	120.5	18.1	0.4	2.7	2,936.4	18.3	0.1	0.0	0.0	0.9	3.2	10.4	0.0
	1996	0.7	12.1	312.8	0.3	0.5	2,107.4	77.1	0.1	89.6	0.0	0.4	7.1	27.7	1.0
	1997	0.4	677.7	25.7	0.0	0.0	1,986.4	174.5	0.0	0.7	0.0	0.0	14.7	5.9	0.7
	1998	3.2	3.4	6.0	0.0	0.0	6.1	318.8	4.9	37.7	1.3	0.3	10.4	16.6	3.3
	1999	0.9	19.4	52.7	1.5	0.1	8.6	366.8	60.8	0.3	0.0	1.1	2.6	20.1	0.0
	2000	0.5	86.6	151.2	0.3	0.0	29.2	287.7	0.0	0.0	0.3	0.0	0.5	24.2	0.0
	2001	0.7	6.4	84.2	1.1	0.0	70.6	149.6	3.3	72.3	0.0	0.0	20.4	26.3	0.7
	2002	3.4	191.0	373.9	1.1	0.3	2,341.3	351.0	1.9	0.3	0.0	1.4	8.1	12.2	1.1
	2003	0.1	3.8	112.7	1.3	0.0	26.4	156.3	8.3	0.9	0.0	0.0	16.2	24.1	1.8
	2004	55.2	316.2	330.3	13.5	0.0	6.4	153.9	0.4	4.0	0.0	0.3	10.7	89.1	1.5
	2005	1.3	22.3	15.3	7.4	0.0	353.6	117.7	68.9	0.8	0.0	29.4	22.3	20.6	4.8
	2006	1.4	2.2	210.7	2.4	0.0	0.0	51.4	69.6	0.0	0.0	0.6	1.5	11.5	0.0
	2007	1.3	21.3	23.1	1.4	0.0	79.1	106.2	217.3	1.4	0.0	0.0	2.3	25.8	0.1
	2008	2.7	62.6	152.8	0.5	0.0	6.2	94.9	458.6	9.0	0.0	0.4	1.6	19.0	0.0
	2009	1.5	62.7	109.4	1.3	0.0	8.9	208.5	10.7	0.0	0.0	0.2	0.5	33.0	0.0
	2010[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2011	2.0	34.5	24.0	7.4	0.0	8.4	61.1	301.4	0.3	0.0	0.0	12.9	23.0	0.1
	2012	1.2	9.2	83.8	0.9	0.0	19.4	36.1	89.4	0.1	0.0	4.6	0.6	36.1	0.0
	2013	0.2	52.2	438.1	3.7	0.0	1,512.6	74.1	69.9	0.4	0.0	0.0	0.4	17.2	5.9
	2014	0.6	2.8	15.1	0.0	0.0	91.5	10.5	0.0	0.0	0.0	0.0	0.0	9.9	0.3
	2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mean[a]	4.4	89.8	133.7	2.3	0.2	610.4	148.1	71.9	11.5	0.1	2.1	7.2	23.8	1.1
	1995	1.6	21.0	3.0	3.7	0.0	1,464.5	0.5	0.0	0.0	0.0	1.0	9.8	11.8	0.0
	1996	0.0	3.6	11.7	0.0	0.5	778.6	111.8	0.0	0.0	0.0	0.1	5.0	10.6	0.0
	1997[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1998	0.3	3.7	5.2	0.0	0.0	9.9	584.5	0.0	0.1	0.0	0.1	33.4	4.2	0.1
	1999	0.4	63.5	53.8	0.3	0.3	2,624.4	781.6	0.0	0.0	0.0	13.5	176.2	7.7	0.0
	2000	0.5	84.8	4.6	0.0	0.2	15.4	439.2	0.0	0.0	0.0	0.3	1.0	7.9	0.0
	2001	0.0	10.2	8.7	0.0	0.0	3,843.4	376.0	0.0	0.0	0.0	0.0	1.8	4.0	0.0
	2002	1.2	749.6	172.7	1.7	2.2	4,493.0	357.5	0.0	0.0	1.2	0.4	2.9	15.7	0.0
	2003	0.2	2.3	48.1	0.9	0.0	55.0	181.5	0.3	0.0	0.0	0.0	5.0	16.2	0.1
	2004	15.5	61.9	228.1	9.7	0.0	583.9	543.1	0.1	0.0	0.0	0.1	4.6	11.2	0.0
	2005	0.6	82.3	6.9	0.0	0.3	1,942.1	369.4	0.0	0.1	0.0	0.0	54.0	11.9	0.1
	2006	0.0	10.8	131.1	0.0	0.4	956.5	295.4	0.0	0.0	0.0	0.0	6.5	11.4	0.0
	2007	0.4	40.9	8.1	0.6	0.0	1,197.4	312.8	6.1	1.1	0.0	0.1	25.9	10.1	0.0
	2008	0.7	150.2	464.4	0.0	0.0	9.9	25.9	0.0	0.0	0.0	0.0	11.7	26.8	0.0
	2009	1.0	104.3	620.0	1.0	0.0	361.2	188.0	0.4	0.0	0.0	0.0	0.7	55.2	0.0
	2010[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2011	1.3	41.3	27.4	5.4	0.0	2.2	74.3	0.0	0.4	0.0	0.0	3.8	53.6	0.0
	2012	0.4	23.5	51.6	0.0	0.0	222.2	54.5	5.4	3.4	0.0	1.2	3.1	135.9	0.0
	2013	0.4	272.9	355.6	10.1	0.0	152.3	227.6	3.5	0.3	0.0	0.0	4.9	11.0	0.0
	2014	1.1	15.4	6.6	0.6	0.0	118.8	92.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0
	2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mean[a]	1.4	96.8	122.6	1.9	0.2	1,046.2	278.6	0.9	0.3	0.1	0.9	19.5	23.4	0.0

[a] Long-term mean CPH, 1995-2014.

[b] Not comparable to previous years due to limited sampling.

* District 1 round goby are all ages combined, Districts 2 and 3 are age-1 and older. Gobies were first sampled in 1994 in the central basin and in 1995 in the western basin.

Table 6.3.4. Arithmetic mean catch-per-hectare of age-1 and older fish for selected species during September trawls in all Ohio districts of Lake Erie, 1995-2015. White perch, white bass, walleye, and yellow perch are yearlings only. All other species are yearling and older ages.

District	Year	Walleye	Yellow Perch	White Perch	White Bass	Lake Whitefish	Rainbow Smelt	Round Goby*	Emerald Shiner	Spottail Shiner	Alewife	Gizzard Shad	Trout-Perch	Freshwater Drum	Silver Chub
1	1995	1.2	0.1	0.0	0.0	0.0	0.2	0.0	6.1	8.1	0.0	0.0	14.1	28.1	11.3
	1996	0.3	82.3	6.6	0.1	0.0	0.4	0.5	2.5	12.9	0.0	0.0	40.8	38.1	6.1
	1997	4.6	104.9	3.5	1.0	0.0	0.5	12.7	84.1	29.7	0.0	0.0	57.3	21.0	25.3
	1998	2.4	16.0	1.5	0.4	0.0	0.0	207.0	15.0	43.1	0.0	0.0	73.5	59.6	30.8
	1999	0.4	47.1	19.9	0.7	0.0	0.0	193.6	17.7	33.6	0.0	0.0	50.6	79.4	19.0
	2000	1.5	38.0	11.5	0.7	0.0	0.0	76.6	21.6	4.5	0.0	0.0	25.9	127.1	9.2
	2001	0.4	10.3	3.9	0.0	0.0	0.2	104.3	2.8	7.6	0.0	0.0	57.4	166.3	8.3
	2002	4.2	86.5	11.2	0.5	0.0	0.0	158.7	59.9	29.1	0.0	0.0	42.2	98.8	14.2
	2003	0.0	7.1	46.0	1.3	0.0	0.0	103.0	6.0	11.4	0.0	0.0	39.8	168.4	1.8
	2004	10.2	127.7	58.3	0.2	0.0	0.2	56.7	3.6	6.0	0.0	0.0	39.4	179.5	5.5
	2005	0.5	2.0	1.6	0.0	0.0	0.0	75.8	0.5	3.5	0.0	0.0	33.8	78.9	6.3
	2006	1.2	12.5	42.1	0.0	0.0	0.1	131.2	33.9	18.5	0.0	0.0	60.8	62.4	1.8
	2007	0.0	23.6	0.5	0.0	0.0	0.0	196.0	18.7	10.2	0.0	0.0	48.2	43.8	1.2
	2008	2.3	15.3	11.0	0.0	0.0	0.0	58.4	19.6	3.9	0.0	0.0	20.4	35.2	1.2
	2009	1.5	57.0	4.8	0.0	0.0	1.4	226.9	9.2	5.4	0.0	0.0	17.5	81.1	0.3
	2010	3.0	17.8	4.1	1.6	0.0	0.0	46.4	16.9	2.4	0.0	0.0	19.6	38.5	0.3
	2011	0.7	10.0	4.1	0.2	0.0	0.0	18.4	27.9	8.1	0.0	0.0	15.0	77.2	1.1
	2012	1.2	6.0	15.6	0.7	0.0	0.0	15.9	22.2	5.1	0.0	0.0	10.5	42.5	0.8
	2013	0.2	3.6	25.5	0.4	0.0	0.1	46.2	6.3	12.4	0.0	0.0	13.4	57.3	0.2
	2014	0.4	17.8	2.8	0.0	0.0	0.0	31.7	10.4	1.0	0.0	0.0	12.4	33.0	0.1
	2015	2.4	53.0	3.8	0.0	0.0	0.5	25.0	0.1	4.4	0.0	0.0	11.6	18.9	0.2
	Mean[a]	1.8	34.3	13.7	0.4	0.0	0.2	88.0	19.2	12.8	0.0	0.0	34.6	75.8	7.2
2	1995	4.3	73.5	36.3	3.7	1.3	299.6	68.4	27.0	4.4	0.0	0.2	7.4	18.3	0.3
	1996	0.0	13.2	24.7	0.4	0.3	86.6	153.6	9.7	15.0	0.0	0.0	4.9	34.9	0.4
	1997	9.2	147.3	49.5	13.7	0.7	338.4	161.9	151.8	13.4	0.0	0.1	17.2	45.2	1.1
	1998	1.1	6.0	4.6	0.3	0.2	99.8	179.8	1,518.9	25.1	0.0	0.1	17.5	32.3	0.7
	1999	1.0	41.8	39.3	5.1	0.3	212.4	102.3	436.5	6.1	0.0	0.8	9.0	77.1	1.9
	2000	5.2	56.9	77.8	24.7	0.1	81.2	35.1	127.0	7.3	1.1	3.5	13.9	21.4	2.3
	2001	0.6	5.3	18.7	0.9	0.0	67.9	52.1	89.0	2.9	0.0	0.2	3.0	17.3	0.9
	2002	3.0	46.1	94.9	4.6	0.2	48.1	53.5	221.6	6.3	2.6	1.3	26.2	14.8	2.9
	2003	0.1	2.9	26.1	6.0	0.3	29.4	27.5	61.0	1.4	0.0	0.0	10.7	22.4	1.7
	2004	19.7	224.2	93.1	5.8	0.9	320.5	31.2	1.7	5.8	0.0	0.1	10.8	21.4	1.9
	2005	1.3	19.2	34.0	0.5	0.1	108.5	38.3	266.7	0.2	0.0	0.5	17.1	18.9	2.1
	2006	0.5	4.6	66.9	5.6	0.0	20.7	15.4	500.6	0.8	1.0	58.1	7.5	32.2	0.7
	2007	0.6	20.7	24.0	0.5	0.0	43.2	26.9	300.0	1.6	0.0	0.0	4.2	39.5	0.1
	2008	2.4	53.4	78.0	1.7	0.0	10.5	63.8	561.2	2.4	0.0	0.0	3.3	27.5	0.6
	2009	1.0	20.2	45.8	1.8	0.0	528.3	60.4	127.7	1.9	0.0	0.0	0.9	9.6	0.0
	2010	1.5	11.9	32.6	0.2	0.0	18.0	44.0	51.5	0.0	0.0	0.0	0.7	10.8	0.0
	2011	1.1	6.3	25.8	14.9	0.0	28.3	68.6	138.2	20.7	0.0	0.0	3.3	37.3	0.3
	2012	0.6	7.4	45.8	0.9	0.0	12.9	11.8	998.8	0.0	0.0	0.5	1.6	38.8	0.0
	2013	0.1	34.9	195.9	22.3	0.0	17.1	24.3	298.0	0.5	0.0	0.3	3.3	23.7	0.8
	2014	0.6	15.4	5.8	2.2	0.0	34.9	6.9	55.8	1.7	0.0	0.8	0.6	8.5	0.0
	2015	4.6	41.3	1.7	0.0	0.2	340.8	35.8	0.9	0.0	0.0	0.0	0.7	7.7	0.0
	Mean[a]	2.7	40.6	51.0	5.8	0.2	120.3	61.3	297.1	5.9	0.2	3.3	8.2	27.6	0.9
3	1995	1.4	27.5	10.5	3.1	1.1	143.2	30.3	45.6	19.3	0.2	0.1	16.7	12.3	0.4
	1996	0.1	3.5	4.1	0.1	1.6	113.0	101.3	24.2	5.0	0.0	0.1	18.0	9.6	0.0
	1997	2.5	40.0	34.7	15.2	0.7	380.6	358.9	2.6	2.2	0.0	0.1	12.7	9.9	0.0
	1998	1.0	3.7	0.2	0.3	0.0	58.2	118.6	22.8	5.0	0.2	0.1	14.8	6.8	0.3
	1999	0.0	41.7	17.4	2.5	0.2	1,975.5	93.6	529.2	6.3	0.0	0.3	10.4	6.8	0.5
	2000	0.3	19.4	51.7	14.0	0.1	167.9	120.6	656.3	6.8	0.1	1.6	12.6	3.8	0.3
	2001	0.0	0.4	0.4	1.8	0.0	3.3	88.4	0.7	1.1	0.0	0.0	2.2	14.7	0.0
	2002	0.7	51.9	223.6	6.1	2.3	346.4	44.1	101.5	4.4	0.4	1.5	8.6	15.0	0.1
	2003	0.1	1.0	11.1	0.9	0.2	474.0	134.1	611.0	0.9	0.0	2.2	4.0	3.3	0.2
	2004	9.8	45.2	27.0	6.8	0.6	1,360.2	148.8	0.4	0.2	0.0	0.2	7.7	5.7	0.0
	2005	0.9	132.3	20.1	0.1	0.5	30.8	263.0	479.6	3.8	0.0	0.2	76.2	10.2	2.3
	2006	0.2	11.9	34.7	14.2	0.1	17.3	71.0	406.0	0.6	0.0	0.1	4.3	13.6	0.2
	2007	0.1	37.0	16.8	1.1	0.0	532.4	185.6	27.8	0.6	0.1	0.0	6.7	40.7	0.2
	2008	0.8	26.4	36.6	1.2	0.0	64.9	167.8	1,159.4	2.9	0.0	0.0	8.4	3.7	0.0
	2009	0.0	139.4	282.3	0.9	0.0	109.1	19.3	167.8	0.0	0.0	0.1	1.5	5.2	0.0
	2010	0.0	12.4	44.8	1.7	0.0	56.9	36.0	375.1	0.0	0.0	0.0	5.0	13.2	0.0
	2011	0.7	55.5	49.8	17.7	0.0	216.4	118.1	149.7	3.1	0.0	0.3	7.9	31.1	0.0
	2012	0.2	23.3	7.7	0.6	0.0	143.1	27.0	433.2	3.0	0.0	0.1	11.7	4.0	0.0
	2013	0.1	109.5	546.9	21.7	0.0	485.6	46.3	8.4	2.9	0.0	0.1	1.0	8.8	2.5
	2014	0.9	24.2	4.4	1.1	0.0	15.0	89.1	333.5	0.0	0.0	0.0	0.4	7.3	0.0
	2015	1.6	30.2	1.4	0.6	0.0	295.4	72.4	1.8	0.0	0.0	0.2	3.0	6.6	0.0
	Mean[a]	1.0	40.3	71.2	5.6	0.4	334.7	113.1	276.7	3.4	0.1	0.4	11.5	11.3	0.4

[a] Long-term mean CPH, 1995-2014.

* District 1 round goby are all ages combined, Districts 2 and 3 are age-1 and older. Gobies first sampled in 1994 in the central basin and 1995 in the western basin.

Table 6.3.5. Relative abundance (arithmetic mean) of age-1 and older walleye from fall multifilament canned gill net surveys in the Ohio waters of Lake Erie, 1995-2015.

			Age									
District	Year	N[a]	1	2	3	4	5	6	7	8	9+	All
1	1995	2	92.0	52.0	4.5	10.5	3.5	1.0	1.5	0.5	0.5	166.0
	1996	8	2.6	58.3	16.0	2.3	4.7	1.3	0.6	0.4	0.0	86.1
	1997	8	19.6	1.4	21.3	7.5	0.8	3.5	1.3	0.5	0.3	56.1
	1998	6	21.5	57.4	0.3	7.4	2.7	0.5	0.3	0.2	0.0	90.3
	1999	7	26.0	33.7	31.3	4.5	5.0	4.0	0.9	0.3	0.0	105.7
	2000	8	77.6	23.4	14.1	10.3	1.4	2.3	0.9	0.1	0.1	130.1
	2001	5	8.4	94.5	16.3	6.2	5.8	0.6	1.0	0.4	0.0	133.2
	2002	7	74.6	11.9	61.9	5.0	1.9	2.9	0.0	0.0	0.0	158.0
	2003	7	0.0	41.7	2.5	7.8	0.4	0.7	0.1	0.0	0.3	53.6
	2004	11	30.6	0.0	9.5	0.3	2.6	0.5	0.4	0.2	0.1	44.2
	2005	12	2.5	59.8	0.2	2.3	0.3	1.5	0.2	0.2	0.3	67.2
	2006	11	14.4	2.8	46.5	0.0	2.5	0.2	0.8	0.0	0.4	67.5
	2007	12	4.7	18.1	0.8	27.6	0.0	1.1	0.0	0.3	0.2	52.7
	2008	10	57.2	4.1	11.3	0.5	24.0	0.1	1.5	0.1	1.1	99.9
	2009	11	18.2	41.9	2.2	3.9	0.2	16.6	0.4	0.6	0.9	84.9
	2010	12	27.7	14.2	20.6	0.3	3.9	0.3	10.0	0.0	1.4	78.3
	2011	11	32.0	12.4	5.4	10.7	0.2	0.5	0.1	6.4	1.0	68.7
	2012	13	32.2	25.4	5.8	3.3	4.3	0.1	0.6	0.0	4.0	75.7
	2013	13	13.0	16.4	8.1	1.4	0.3	1.6	0.0	0.1	1.5	42.5
	2014	12	25.1	11.6	10.5	4.8	1.2	0.1	1.4	0.2	1.3	56.1
	2015	12	33.8	11.0	3.6	3.6	2.6	0.4	0.3	0.8	0.2	56.2
	Mean[b]		29.0	29.0	14.5	5.8	3.3	2.0	1.1	0.5	0.7	85.8
2	1995	6	15.1	33.7	16.5	26.4	8.1	3.4	2.5	0.3	0.3	106.3
	1996	6	3.0	90.9	24.9	4.7	9.6	3.9	0.8	1.8	0.5	140.2
	1997	6	42.0	3.0	36.9	9.6	1.3	8.8	0.8	0.2	0.3	103.0
	1998	6	10.7	37.7	0.9	9.8	2.0	1.0	1.2	0.2	0.0	63.5
	1999	7	26.5	32.7	48.2	5.2	9.9	6.8	1.1	0.3	0.3	130.9
	2000	9	26.4	7.2	2.5	4.6	0.3	1.2	0.5	0.1	0.0	42.9
	2001	3	5.3	71.0	17.5	10.1	14.1	1.3	3.7	1.3	0.7	125.0
	2002	6	38.8	3.3	33.2	8.2	4.7	3.7	0.5	0.8	0.0	93.2
	2003	10	0.1	23.5	2.2	7.5	1.7	0.7	0.9	0.0	1.2	37.9
	2004	16	16.1	0.0	4.4	0.2	1.1	0.3	0.1	0.2	0.5	22.9
	2005	22	2.9	85.8	0.3	12.1	0.5	1.8	0.4	0.1	1.6	105.5
	2006	24	12.3	5.0	91.5	0.2	6.5	0.4	1.5	0.4	1.4	119.0
	2007	13	2.3	2.5	1.3	12.3	0.0	1.1	0.0	0.3	0.4	20.2
	2008	17	14.3	2.0	3.1	1.4	16.8	0.1	2.0	0.2	2.4	42.5
	2009	22	8.7	35.1	7.6	9.5	1.4	54.1	0.0	4.7	5.0	126.2
	2010	22	18.0	19.8	34.2	1.1	2.5	0.8	21.0	0.0	2.3	99.8
	2011	17	44.1	19.4	8.9	12.3	1.5	1.4	0.9	12.4	1.7	102.6
	2012	23	14.0	12.6	3.8	2.0	2.8	0.5	0.9	0.1	3.2	39.9
	2013	23	9.8	24.3	19.0	3.0	2.2	4.2	0.6	0.4	4.1	67.6
	2014	16	5.0	3.3	5.9	2.9	0.5	0.4	1.0	0.1	0.7	19.9
	2015	24	25.2	8.3	4.9	3.4	3.5	0.8	0.5	1.2	0.3	48.1
	Mean[b]		15.8	25.6	18.1	7.1	4.4	4.8	2.0	1.2	1.3	80.4
3	2003	2	1.0	0.6	0.0	0.2	0.3	0.0	0.1	0.0	0.1	2.3
	2004	9	5.9	0.1	1.0	0.1	0.2	0.1	0.0	0.1	0.1	7.6
	2005	4	1.0	44.5	0.0	8.3	0.0	0.3	0.3	0.0	1.0	55.3
	2006	16	2.4	1.1	23.8	0.3	2.2	0.4	0.5	0.3	0.7	31.6
	2007	4	1.3	1.5	0.8	13.5	0.3	2.5	0.3	0.5	1.3	21.8
	2008	12	3.9	3.9	2.5	0.8	10.5	0.1	1.5	0.3	1.0	24.4
	2009	15	3.2	8.6	2.6	3.2	0.5	8.8	0.0	0.7	1.5	29.2
	2010	15	1.2	2.9	7.0	0.7	1.5	0.2	5.2	0.1	1.0	19.9
	2011	15	17.8	5.8	5.3	6.7	2.4	2.6	1.0	5.5	1.1	48.1
	2012	10	4.6	10.5	3.1	1.5	3.5	0.3	1.9	0.2	6.1	31.9
	2013	6	4.4	2.2	10.9	7.6	3.5	1.8	2.0	0.8	5.2	38.5
	2014	0	.	.	.	.	.	.	.	.	.	.
	2015	1	6.0	1.0	6.0	0.0	2.0	1.0	0.0	1.0	1.5	18.5
	Mean[b]		4.2	7.4	5.2	3.9	2.3	1.5	1.2	0.8	1.7	28.2

[a] N = number of stations sampled.

[b] Long-term mean catch per gill net, 1995-2014.

Table 6.3.6. Mean total length (mm) for age-0 fishes of select species during fall trawl surveys in the Ohio waters of Lake Erie, 1995-2015.

District	Year	Walleye	Yellow Perch	White Perch	White Bass	Smallmouth Bass	Lake Whitefish	Rainbow Smelt	Round Goby*	Emerald Shiner	Spottail Shiner	Alewife	Gizzard Shad	Trout-Perch	Freshwater Drum	Silver Chub
1	1995	188	87	87	111	97	-	46	-	63	80	82	112	77	97	41
	1996	166	71	69	110	89	-	43	61	51	71	92	105	71	110	43
	1997	156	74	71	91	71	-	49	59	57	64	74	95	71	103	44
	1998	170	83	77	104	122	-	48	60	63	78	77	108	72	115	38
	1999	172	81	83	113	102	-	44	42	61	77	60	112	73	121	38
	2000	192	78	68	110	-	-	52	59	60	75	71	81	73	100	61
	2001	187	80	71	127	88	-	40	60	58	77	79	108	72	116	41
	2002	170	76	78	114	101	-	48	73	59	75	65	91	69	95	55
	2003	156	82	79	91	-	-	45	63	63	81	-	108	72	109	60
	2004	174	76	64	72	-	-	53	72	53	65	77	96	71	96	59
	2005	183	78	80	106	96	-	40	51	59	76	-	113	66	110	66
	2006	217	89	73	95	83	-	53	47	61	75	38	80	72	104	-
	2007	191	82	74	114	-	-	47	55	57	75	-	105	71	124	43
	2008	170	86	73	88	97	-	50	78	60	71	-	93	66	91	64
	2009	188	85	73	79	79	-	53	55	59	73	-	105	74	105	67
	2010	197	93	86	108	100	-	48	61	64	86	-	100	77	126	79
	2011	185	80	81	111	89	-	40	57	59	75	-	78	70	110	69
	2012	229	82	76	116	120	-	49	75	57	82	-	109	74	123	-
	2013	189	86	75	79	110	-	46	72	55	80	67	86	76	110	54
	2014	174	86	79	65	103	-	48	80	60	78	-	105	74	128	-
	2015	174	78	79	87	100	-	48	72	-	70	-	105	78	112	66
	Mean[a]	183	82	76	100	97	-	47	62	59	76	71	100	72	110	54
2	1995	-	56	60	121	50	106	48	49	61	62	99	129	43	51	-
	1996	157	59	64	110	111	95	50	39	52	69	119	110	58	34	-
	1997	186	75	76	80	60	-	59	40	55	54	92	106	55	63	-
	1998	114	78	88	121	114	86	54	49	66	63	112	114	56	77	-
	1999	188	84	85	117	108	86	50	46	61	71	119	123	76	43	-
	2000	189	89	84	116	-	-	65	52	61	61	106	106	73	53	-
	2001	184	76	73	110	-	101	44	50	73	77	124	119	76	129	-
	2002	-	79	82	148	132	76	51	54	63	74	101	109	78	129	-
	2003	134	57	70	102	-	73	54	43	61	54	120	113	69	93	-
	2004	166	63	55	89	-	79	51	42	58	-	-	82	67	95	77
	2005	202	81	84	129	139	62	43	47	66	43	-	135	67	163	-
	2006	226	62	92	120	-	98	49	48	62	-	98	133	75	59	-
	2007	229	67	79	123	123	-	44	41	47	78	-	117	66	34	-
	2008	192	71	79	119	102	-	47	37	37	34	-	89	75	152	-
	2009	211	73	75	108	93	-	59	42	65	79	-	124	62	132	-
	2010	240	81	100	158	146	-	52	50	68	-	-	140	72	146	-
	2011	191	68	89	120	-	-	45	44	62	36	-	117	63	81	-
	2012	239	74	78	133	96	-	57	45	62	-	-	124	-	113	-
	2013	216	72	91	144	-	-	48	48	58	-	117	102	78	133	-
	2014	225	70	76	155	-	-	54	45	61	-	-	142	42	146	-
	2015	197	71	76	142	-	152	63	51	69	-	-	114	81	147	-
	Mean[a]	194	72	79	121	106	86	51	46	60	61	110	117	66	96	77
3	1995	113	51	46	124	79	95	48	47	58	49	114	109	46	44	-
	1996	181	56	58	115	68	128	48	38	53	62	102	97	61	79	-
	1997	113	56	66	82	95	-	58	40	56	-	102	110	42	-	-
	1998	155	72	82	128	132	75	55	49	68	76	131	116	49	-	-
	1999	178	68	70	125	109	107	58	48	64	66	116	120	68	50	-
	2000	220	74	87	116	-	-	67	53	64	-	91	102	73	-	-
	2001	92	50	55	102	-	107	44	41	68	77	100	114	37	139	-
	2002	-	79	78	159	-	-	49	51	60	73	81	103	61	104	-
	2003	167	53	61	112	131	123	55	46	63	58	-	106	57	-	-
	2004	-	65	58	115	-	97	51	45	49	-	-	107	65	-	-
	2005	193	73	76	130	141	95	40	51	67	77	82	138	68	163	47
	2006	-	57	91	121	95	61	47	44	64	77	111	134	48	36	-
	2007	-	56	71	124	128	96	45	41	54	50	-	106	55	-	-
	2008	209	68	75	126	120	-	48	38	58	35	-	114	54	162	-
	2009	-	91	54	120	88	-	45	29	52	-	-	91	46	-	-
	2010	228	84	102	143	119	-	56	46	65	-	-	138	75	118	-
	2011	192	66	76	143	134	-	46	45	54	71	-	108	62	106	-
	2012	251	70	81	140	127	-	56	45	62	65	99	113	65	-	-
	2013	230	54	83	110	-	-	42	49	55	-	102	84	-	144	-
	2014	207	64	68	134	-	100	50	44	62	67	-	129	47	144	-
	2015	210	76	76	130	-	165	65	51	68	74	-	108	80	123	-
	Mean[a]	182	65	72	123	112	99	51	44	60	64	103	112	57	107	-

[a] Long-term mean length, 1995-2014.

* District 1 round goby lengths include all ages.

Table 6.3.7. Mean length (mm) at age[a] for walleye collected in October gill nets, 1995-2015.

		Age										
District	Year	1	2	3	4	5	6	7	8	9	10	11+
1	1995	307	394	450	476	528	527	550	563	592	-	-
	1996	332	408	451	490	498	557	560	554	-	-	-
	1997	317	409	457	491	511	532	578	615	630	-	736
	1998	322	404	441	488	505	499	539	565	-	-	-
	1999	347	424	474	505	527	540	561	569	585	-	-
	2000	331	421	467	487	517	534	560	555	672	-	-
	2001	352	420	476	509	542	571	621	591	-	-	-
	2002	339	424	470	499	516	533	-	-	-	-	-
	2003	-	412	456	495	546	508	452	-	-	620	601
	2004	296	430	462	497	523	521	543	565	511	668	-
	2005	329	397	427	482	521	554	587	537	642	-	587
	2006	335	426	448	-	513	530	550	-	-	546	610
	2007	382	432	478	496	-	537	544	585	557	588	639
	2008	356	452	480	509	521	548	549	612	605	585	581
	2009	345	427	466	498	595	527	541	551	527	565	591
	2010	352	444	483	547	527	534	558	-	555	-	579
	2011	354	439	490	509	539	597	613	562	-	570	596
	2012	364	442	483	511	526	522	553	571	563	536	562
	2013	358	428	465	499	565	534	-	637	-	577	579
	2014	362	446	484	505	517	521	563	604	673	-	581
	2015	334	439	476	494	511	529	504	534	-	546	580
	Mean[b]	341	424	465	500	528	536	557	577	593	584	604
2	1995	332	420	480	505	537	566	586	618	636	-	-
	1996	362	424	476	510	525	546	599	583	617	-	-
	1997	322	427	476	503	523	553	564	591	686	-	681
	1998	339	427	482	504	539	558	566	594	-	-	714
	1999	363	439	495	520	551	565	564	608	-	674	726
	2000	340	440	495	530	529	574	601	593	-	-	676
	2001	367	443	491	526	551	576	577	632	676	697	-
	2002	350	447	489	531	553	583	606	645	-	-	-
	2003	344	427	468	507	511	547	565	616	590	563	602
	2004	313	431	478	520	540	553	563	571	-	606	604
	2005	340	416	385	476	547	568	584	600	599	-	564
	2006	356	439	470	516	527	577	585	567	605	567	657
	2007	381	433	475	499	510	530	553	579	601	622	612
	2008	371	446	487	505	527	561	560	558	596	607	610
	2009	360	449	501	488	556	544	680	565	606	586	611
	2010	370	457	509	570	560	568	577	561	612	715	627
	2011	368	452	511	527	555	573	617	585	-	617	612
	2012	375	462	503	545	565	572	564	557	603	-	613
	2013	375	449	497	546	573	577	596	601	685	599	604
	2014	358	450	494	527	524	518	584	661	618	533	642
	2015	346	444	500	515	536	549	575	562	597	597	597
	Mean[b]	354	439	483	518	540	560	585	594	624	616	635
3	1998	-	446	443	-	-	-	638	-	-	-	-
	1999	391	369	-	-	-	571	-	-	-	-	-
	2000	341	-	475	-	582	513	-	-	-	-	-
	2003	352	446	498	543	550	-	564	-	605	538	535
	2004	339	434	506	528	572	590	649	650	-	631	629
	2005	329	423	-	468	-	523	535	-	624	-	562
	2006	363	440	491	528	552	549	609	592	-	572	703
	2007	362	434	479	520	534	562	646	544	-	602	592
	2008	383	454	490	504	542	539	581	581	605	588	633
	2009	373	465	504	518	531	565	-	599	625	647	611
	2010	378	456	520	554	567	607	579	679	612	-	592
	2011	381	465	505	554	567	573	624	621	-	596	601
	2012	382	468	501	561	565	588	624	512	620	558	616
	2013	380	466	502	510	542	563	570	567	-	577	623
	2014	-	-	-	-	-	-	-	-	-	-	-
	2015	348	433	514	-	536	595	-	584	-	-	624
	Mean[b]	366	444	493	526	555	562	602	594	615	590	609

[a] Scales were used to age fish prior to 2003, otoliths from 2003 to present

[b] Long-term mean length (1995-2014).

Table 6.3.8. Percent mature at age for male and female walleye collected during the 2015 fall gill net survey in the western and central basins of Lake Erie. Number of fish examined for maturity in parentheses.

		Age (years)																
Sex	Basin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Male	Western	22	100	100	100	100	100	100	100	-	100	100	100	-	-	-	-	-
		(171)	(82)	(30)	(30)	(26)	(5)	(3)	(10)	(0)	(2)	(1)	(18)	(0)	(0)	(0)	(0)	(0)
	Central	34	94	100	98	98	100	100	100	100	100	100	100	-	100	100	-	100
		(299)	(107)	(63)	(44)	(49)	(13)	(8)	(21)	(2)	(4)	(1)	(31)	(0)	(4)	(1)	(0)	(1)
Female	Western	0	6	77	100	100	-	-	-	-	-	-	100	-	-	-	-	
		(251)	(50)	(13)	(12)	(4)	(0)	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	
	Central	< 1	22	91	97	100	100	100	100	100	100	-	94	-	-	-	-	-
		(334)	(91)	(53)	(34)	(35)	(6)	(5)	(7)	(1)	(2)	(0)	(17)	(0)	(0)	(0)	(0)	(0)

Table 6.3.9. Percent mature, by 25-mm length group, for male and female walleye collected during the 2015 fall gill net survey in the western and central basins of Lake Erie. Number of fish examined for maturity in parentheses.

		Total Length (mm)																						
Sex	Basin	≤ 200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700	725	750
Male	Western	0	-	-	0	3	26	54	100	100	100	100	100	100	100	100	100	-	100	-	-	-	-	-
		(6)	(0)	(0)	(6)	(63)	(74)	(26)	(5)	(27)	(49)	(36)	(34)	(28)	(13)	(12)	(3)	0	(2)	(0)	(0)	(0)	(0)	(0)
	Central	0	14	0	0	0	31	51	57	97	100	98	99	100	100	100	100	100	100	100	-	-	-	-
		(6)	(7)	(1)	(5)	(47)	(140)	(102)	(14)	(38)	(52)	(52)	(67)	(46)	(37)	(23)	(11)	(11)	(3)	(2)	(0)	(0)	(0)	(0)
Female	Western	0	-	-	0	0	0	0	0	0	6	11	9	93	100	100	100	100	-	-	-	-	-	100
		(2)	(0)	(0)	(6)	(64)	(128)	(47)	(5)	(9)	(16)	(18)	(11)	(15)	(4)	(4)	(2)	(1)	(0)	(0)	(0)	(0)	(0)	(1)
	Central	0	0	0	0	4	0	0	0	0	8	10	52	85	94	100	100	100	100	100	100	100	67	-
		(3)	(3)	(4)	(4)	(23)	(141)	(135)	(26)	(7)	(25)	(39)	(23)	(27)	(38)	(32)	(25)	(14)	(11)	(5)	(6)	(1)	(3)	(1)

Table 6.3.10. Percent of female walleye mature for ages 2-4 sampled from fall gill net surveys in the western and central basins of Lake Erie, 1995-2015.

		Year																				
Basin	Age	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Western	2	5	22	*	5	9	15	25	15	25	*	6	43	39	23	29	30	16	43	24	54	6
	3	60	100	94	100	100	91	95	94	100	97	100	85	83	100	56	98	94	86	82	92	77
	4	100	100	100	100	100	100	100	100	100	*	89	*	98	100	100	100	100	79	100	100	100
Central	2	5	12	10	7	12	14	13	*	20	100	7	33	34	37	33	31	26	45	25	21	28
	3	73	90	95	100	97	95	95	95	100	92	*	88	89	89	82	92	99	92	83	90	91
	4	100	100	100	100	100	100	100	95	100	100	62	100	99	88	96	100	99	100	100	100	97

* Indicates low sample size or no fish.

Table 6.3.11. Relative abundance[a] of age-1 and older yellow perch from fall trawl surveys in the Ohio waters of Lake Erie, 1995-2015.

			Age								
District	Year	N	1	2	3	4	5	6	7	8+	All 2+
1	1995	10	83.2	15.7	0.9	0.0	0.9	0.0	0.0	0.0	17.5
	1996	10	136.4	113.5	26.5	1.2	0.0	0.0	0.0	0.0	141.3
	1997	10	102.4	50.2	36.3	6.2	0.0	0.4	0.0	0.0	93.1
	1998	10	17.5	99.0	26.1	10.2	0.0	0.0	0.0	0.0	135.2
	1999	10	77.0	17.8	41.2	7.1	1.6	0.0	0.0	0.0	67.8
	2000	9	50.1	55.7	15.6	12.8	0.6	0.0	0.0	0.0	84.7
	2001	8	21.7	49.4	36.3	8.9	11.7	0.5	0.0	0.0	106.8
	2002	8	119.3	25.4	53.9	10.8	3.6	3.8	0.0	0.0	97.5
	2003	16	4.1	71.2	4.3	13.9	8.1	1.9	1.1	0.8	101.3
	2004	7	261.4	19.1	27.8	0.6	5.3	3.4	0.0	1.7	57.7
	2005	8	0.5	24.8	0.5	5.8	0.2	0.0	0.0	0.0	31.3
	2006	30	21.0	0.9	27.0	0.4	2.8	0.0	0.0	0.0	31.1
	2007	29	28.5	17.0	0.1	9.7	0.0	1.0	0.0	0.0	27.8
	2008	32	44.6	16.7	3.8	0.5	3.3	0.0	0.1	0.0	24.4
	2009	31	54.0	34.0	4.4	1.0	0.4	2.0	0.0	0.3	42.1
	2010	31	15.6	27.8	13.0	0.6	0.5	0.1	0.1	0.0	42.2
	2011	37	12.9	10.6	10.6	7.8	1.4	0.0	0.0	0.0	30.4
	2012	34	5.8	13.3	10.4	6.5	3.7	0.0	0.0	0.0	33.9
	2013	35	13.4	3.1	9.2	3.8	4.1	0.4	0.0	0.0	20.6
	2014	33	50.0	7.6	1.9	1.6	0.7	0.8	0.3	0.0	12.8
	2015	34	63.1	21.6	0.6	0.0	0.4	0.1	0.1	0.0	22.8
	Mean[c]		56.0	33.6	17.5	5.5	2.4	0.7	0.1	0.1	60.0
2	1995	37	66.6	28.2	16.6	12.4	6.3	1.9	0.2	0.1	65.7
	1996	37	13.2	38.5	15.1	2.6	0.3	0.7	0.1	0.1	57.4
	1997	47	168.2	20.6	22.5	4.3	0.0	0.2	0.0	0.0	47.6
	1998	40	5.3	38.8	18.7	7.4	1.7	0.1	0.0	0.1	66.8
	1999	42	39.1	12.3	40.2	2.8	1.2	0.4	0.3	0.0	57.2
	2000	42	64.5	59.5	11.6	20.8	3.0	2.7	0.2	0.1	97.9
	2001	42	5.4	18.8	17.2	3.5	3.5	0.3	0.1	0.1	43.4
	2002	42	47.4	5.9	24.4	12.1	1.0	0.9	0.1	0.1	44.5
	2003	38	3.1	36.1	2.1	4.7	3.9	0.6	0.4	0.5	48.3
	2004	29	208.3	7.8	43.0	1.1	0.6	1.3	0.0	0.3	54.2
	2005	33	5.0	92.8	6.7	25.7	0.9	1.6	0.5	0.0	128.2
	2006	32	7.7	7.6	56.3	3.1	8.5	0.6	0.4	0.1	76.6
	2007	32	27.6	29.6	11.1	81.2	1.2	3.7	0.6	0.5	127.9
	2008	33	124.9	17.6	14.1	2.1	20.3	0.5	1.4	0.0	56.1
	2009	32	30.9	18.4	3.9	3.0	0.4	2.8	0.5	0.3	29.1
	2010	10	11.4	9.9	8.3	1.1	0.4	0.2	0.4	0.0	20.5
	2011	32	4.9	10.4	17.2	29.6	5.9	0.6	0.2	3.8	67.7
	2012	33	7.4	16.3	7.1	10.7	3.3	0.7	0.4	0.1	38.6
	2013	33	41.7	8.6	6.7	1.5	2.6	1.8	0.0	0.5	21.8
	2014	8	14.3	48.4	18.7	6.6	0.8	3.3	1.4	0.6	79.8
	2015	12	41.1	3.3	12.5	3.9	0.9	0.0	0.7	0.4	21.7
	Mean[c]		44.9	26.3	18.1	11.8	3.3	1.3	0.4	0.4	61.5
3	1995	24	10.2	25.1	5.0	1.9	1.0	0.3	0.2	0.0	33.5
	1996	30	3.1	9.8	3.3	0.8	0.1	0.1	0.1	0.2	14.5
	1997	29	53.8	10.6	15.0	2.7	0.7	0.0	0.2	0.0	29.2
	1998	18	1.5	19.3	7.2	2.2	1.2	0.8	0.1	0.2	31.0
	1999	33	41.2	9.1	21.6	2.5	1.6	0.6	0.8	0.1	36.2
	2000	31	19.5	51.5	10.2	27.5	3.1	1.7	1.4	0.3	95.6
	2001	5	0.4	5.5	10.1	0.9	2.3	0.0	0.0	0.5	19.4
	2002	33	48.8	10.4	42.1	59.6	10.9	3.8	0.0	0.0	126.8
	2003	33	0.8	14.1	1.9	5.9	10.4	1.8	1.4	0.2	35.7
	2004	25	44.5	2.7	59.2	2.1	4.7	5.9	0.3	2.3	77.2
	2005	25	27.9	278.8	7.7	37.9	5.1	5.4	8.4	3.5	346.8
	2006	25	15.1	9.4	45.0	1.9	6.5	0.6	0.8	2.8	67.0
	2007	25	24.3	38.2	5.5	46.6	1.2	5.6	0.2	2.6	99.8
	2008	24	51.3	15.0	7.6	0.6	11.5	0.2	2.2	1.0	38.1
	2009	23	178.0	116.1	84.4	21.5	3.0	8.1	0.9	0.2	234.2
	2010	8	8.0	17.3	12.1	1.1	0.3	0.0	2.5	0.0	33.3
	2011	24	35.8	50.0	76.9	64.3	21.1	2.3	0.6	1.8	217.0
	2012	24	27.2	32.3	15.0	13.1	14.3	3.0	0.6	0.9	79.3
	2013	24	122.4	38.8	28.2	10.3	7.9	10.9	1.8	2.3	100.2
	2014	12	34.6	29.2	6.1	3.9	2.8	3.5	0.9	0.4	46.6
	2015	11	29.2	4.0	7.8	3.4	1.2	0.2	1.8	1.6	20.0
	Mean[c]		37.4	39.2	23.2	15.4	5.5	2.7	1.2	1.0	88.1

[a] Arithmetic mean of catch per hectare.

[b] Values from 1995-2001 have been scaled for differences in catchability between old and new research vessels.

[c] Long-term mean CPH, 1995-2014.

Table 6.3.12. Mean total length (mm) at age for yellow perch collected in fall assessment surveys, 1995-2015.

		Age							
District	Year	1	2	3	4	5	6	7	8+
1	1995	145	179	199	225	235	274	274	315
	1996	137	175	-	231	-	-	-	-
	1997	124	163	189	209	-	-	-	-
	1998	129	160	185	195	-	-	-	-
	1999	134	156	183	203	-	-	-	-
	2000	132	166	179	198	-	-	-	-
	2001	133	167	189	196	-	-	-	-
	2002	130	166	192	208	242	220	-	-
	2003	145	177	188	200	210	213	223	216
	2004	136	176	190	200	209	218	-	241
	2005	143	174	192	201	239	212	-	-
	2006	157	183	193	203	221	247	-	219
	2007	155	200	205	216	-	244	-	-
	2008	154	175	210	213	231	-	223	-
	2009	141	188	218	268	-	251	-	-
	2010	144	174	193	215	223	-	-	-
	2011	145	171	186	207	200	-	-	-
	2012	154	180	197	212	220	-	-	-
	2013	154	178	200	211	216	211	-	-
	2014	157	200	219	236	242	252	263	267
	2015	150	184	224	241	241	267	237	-
	Mean[a]	142	175	195	212	224	234	246	252
2	1995	153	165	185	208	223	242	297	273
	1996	126	180	204	225	254	291	294	321
	1997	131	168	210	223	262	309	-	-
	1998	142	179	197	217	263	305	300	336
	1999	139	170	200	224	239	312	313	-
	2000	149	194	209	231	237	272	319	326
	2001	140	198	225	228	257	270	292	304
	2002	135	186	215	241	266	284	-	316
	2003	138	197	225	256	267	257	270	267
	2004	138	173	211	245	242	251	-	252
	2005	122	167	181	199	224	231	256	231
	2006	145	178	200	203	213	232	265	261
	2007	143	175	209	214	209	253	232	252
	2008	145	189	220	237	236	243	246	252
	2009	138	181	203	227	207	240	242	232
	2010	139	189	229	245	279	221	275	-
	2011	135	163	200	212	223	248	266	252
	2012	139	188	209	225	243	249	267	276
	2013	142	185	221	229	235	262	278	258
	2014	151	198	214	237	235	254	266	263
	2015	151	195	217	228	237	-	241	242
	Mean[a]	140	181	208	226	241	261	275	275
3	1995	138	148	192	207	222	266	277	316
	1996	122	178	199	226	247	272	314	324
	1997	126	161	201	218	266	249	293	-
	1998	134	175	195	237	263	294	276	289
	1999	141	177	206	251	270	284	312	345
	2000	142	196	208	231	255	275	292	325
	2001	144	201	234	222	268	256	-	323
	2002	125	189	219	244	263	288	287	-
	2003	134	192	230	254	264	258	267	262
	2004	131	171	215	244	266	262	239	259
	2005	127	159	180	212	209	237	247	263
	2006	138	155	193	199	227	279	254	266
	2007	133	169	189	213	213	235	243	264
	2008	142	173	231	243	247	240	266	283
	2009	140	169	173	207	225	251	254	263
	2010	144	186	220	242	266	250	263	285
	2011	133	158	193	210	219	266	262	268
	2012	137	171	207	220	226	233	264	268
	2013	139	188	211	212	234	237	243	256
	2014	140	179	206	222	228	246	240	239
	2015	139	206	223	236	269	247	272	269
	Mean[a]	136	175	205	226	244	259	268	283

[a] Long-term mean length, 1995-2013.

Table 6.3.13. Percentage of mature female yellow perch, by age, from fall trawls in the western and central basins of Lake Erie, 1995-2015.*

		Year																				
Basin	Age	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Western	2	89	65	61	50	20	67	62	30	0	53	95	100	55	83	84	86	67	100	80	66	82
	3	100	96	100	88	82	89	95	90	79	89	*	94	*	86	100	100	94	100	100	100	100
	4	100	100	100	100	100	100	100	100	100	100	100	*	100	*	*	100	100	100	100	100	*
Central	2	6	72	48	66	35	89	83	76	77	40	28	51	46	67	62	97	35	58	94	83	87
	3	53	95	91	87	86	100	100	97	100	91	71	89	75	99	63	100	85	96	98	97	97
	4	91	100	93	96	100	100	100	99	100	100	96	100	98	96	89	100	94	100	100	100	100

* Indicates low sample size or no fish.

Table 6.3.14. Percent mature at age for male and female yellow perch collected during the 2015 fall gill net survey in the western and central basins of Lake Erie. Number of fish examined for maturity in parentheses.

		Age (years)							
Sex	Basin	1	2	3	4	5	6	7	8
Male	Western	100	100	-	-	100	-	100	-
		(59)	(12)	(0)	(0)	(1)	0	(1)	(0)
	Central	89	100	100	100	100	-	100	100
		(92)	(25)	(30)	(5)	(2)	0	(2)	(1)
Female	Western	18	100	100	100	100	100	-	-
		(44)	(17)	(2)	(1)	(1)	(1)	(0)	(0)
	Central	52	100	100	100	100	-	-	-
		(58)	(19)	(19)	(4)	(2)	(0)	(0)	(0)

Table 6.3.15. Percent mature, by 10-mm length group, for male and female yellow perch collected during the 2015 fall gill net survey in the Ohio waters of Lake Erie. Number of fish examined for maturity in parentheses. Minimum length included was 110 mm.

		Total Length (mm)																				
Sex	Basin	≤130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330
Male	Western	100	100	100	100	100	100	100	100	-	100	-	100									
		(13)	(22)	(18)	(5)	(8)	(2)	(1)	(2)	(0)	(1)	(0)	(1)									
	Central	83	76	100	100	85	94	100	100	100	100	100	100	100	100							
		(6)	(17)	(17)	(22)	(26)	(16)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)							
Female	Western	0	0	25	17	100	100	100	-	100	100	100	100	-	100	-	-	-	100			
		(4)	(10)	(16)	(12)	(1)	(1)	(1)	(0)	(0)	(1)	(1)	(1)	(0)	(1)	(0)	(0)	(0)	(1)			
	Central	0	33	30	44	64	75	100	100	100	100	100	100	100	-	100	100	100	-	100	-	100
		(2)	(6)	(10)	(16)	(11)	(8)	(4)	(5)	(8)	(7)	(8)	(6)	(4)	(0)	(3)	(1)	(1)	(0)	(1)	(0)	(1)

Table 6.3.16. Relative abundance[a] of white bass from fall canned multifilament gill net surveys in the Ohio waters of Lake Erie, 1995-2015.

			Age						Sum
District	Year	N[b]	1	2	3	4	5	6+	Ages 1+
1	1995	2	4.00	0.00	0.50	1.00	0.00	0.00	5.50
	1996	7	0.00	5.29	0.14	0.00	0.00	0.00	5.43
	1997	7	0.86	0.00	1.57	0.00	0.00	0.00	2.43
	1998	4	0.00	1.50	0.25	0.25	0.00	0.00	2.50
	1999	7	5.29	0.43	4.57	0.43	1.00	0.00	12.43
	2000	7	3.14	5.71	0.29	0.43	0.00	0.00	9.57
	2001	3	2.00	18.00	4.33	0.33	0.00	0.00	25.00
	2002	7	5.00	0.57	4.14	1.00	0.29	0.14	11.86
	2003	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2004	10	3.50	4.43	1.09	0.36	0.53	0.20	10.30
	2005	11	1.27	5.71	3.39	1.73	0.00	1.36	14.64
	2006	11	17.55	1.36	4.00	1.00	0.09	0.18	24.18
	2007	14	1.99	5.37	0.26	1.75	0.23	0.51	10.63
	2008	8	7.00	2.75	6.63	0.25	2.00	2.63	21.63
	2009	14	2.27	4.62	1.00	5.54	0.14	0.50	14.21
	2010	11	1.33	10.59	3.03	0.00	2.12	1.84	19.82
	2011	12	37.75	2.42	3.33	1.67	0.17	1.17	46.67
	2012	15	6.49	37.15	0.40	1.48	0.87	1.48	48.67
	2013	13	13.00	5.24	23.91	1.01	0.62	1.62	45.39
	2014	12	1.17	44.75	1.25	20.08	1.92	2.00	71.17
	2015	12	0.58	0.00	36.17	0.67	14.17	0.23	51.81
	Mean[c]		5.68	7.79	3.20	1.91	0.50	0.68	20.10
2	1995	4	39.25	1.50	0.50	0.50	0.25	0.00	42.25
	1996	5	0.80	7.20	0.20	0.20	0.00	0.00	8.40
	1997	6	2.83	0.50	2.83	0.00	0.00	0.17	6.33
	1998	6	0.67	22.67	1.33	1.17	0.00	0.17	30.67
	1999	7	21.76	1.59	9.66	0.14	0.57	0.00	34.43
	2000	8	7.25	4.75	0.13	0.25	0.00	0.00	12.38
	2001	5	0.60	14.40	5.40	1.00	0.80	0.20	23.20
	2002	5	17.40	2.40	4.80	1.60	0.40	0.20	27.20
	2003	10	0.30	0.44	0.04	0.00	0.00	0.05	0.83
	2004	16	2.02	2.61	1.31	0.13	0.13	0.03	6.25
	2005	22	2.18	20.60	7.18	3.94	0.05	1.14	37.23
	2006	23	12.57	0.87	2.39	0.57	0.26	0.26	17.00
	2007	17	8.35	33.52	1.78	7.05	0.43	0.45	53.15
	2008	18	23.08	8.00	21.75	4.38	4.36	1.58	63.66
	2009	21	10.95	15.50	0.67	14.97	0.00	1.48	44.00
	2010	24	4.65	19.42	5.47	0.46	6.42	2.67	43.50
	2011	18	50.44	6.68	3.53	2.57	0.11	1.83	65.22
	2012	30	4.00	28.14	0.67	0.47	0.13	0.77	36.38
	2013	23	46.65	6.87	46.21	1.53	1.13	5.22	107.61
	2014	16	0.38	28.38	5.31	7.06	0.25	0.50	41.88
	2015	25	0.48	4.60	43.08	0.20	20.44	5.84	74.64
	Mean[c]		12.81	11.30	6.06	2.40	0.76	0.84	35.08
3	2003	2	1.60	0.90	0.00	0.00	0.00	0.00	2.50
	2004	8	4.54	0.59	0.48	0.02	0.06	0.01	5.70
	2005	4	0.25	11.75	3.00	7.25	0.25	0.00	23.75
	2006	16	34.94	2.50	8.38	1.56	0.69	0.38	48.56
	2007	11	4.55	31.27	1.55	4.18	0.27	0.36	43.36
	2008	15	3.53	1.53	8.60	2.00	1.60	0.87	18.40
	2009	15	3.17	1.57	1.48	3.71	0.13	1.14	11.33
	2010	15	0.67	1.51	0.47	0.00	0.76	0.20	4.73
	2011	15	42.53	3.47	0.67	1.87	0.20	1.93	50.67
	2012	10	12.31	109.69	3.70	3.60	0.50	3.00	149.30
	2013	6	26.00	0.33	8.67	0.17	0.17	0.50	35.83
	2014	0	-	-	-	-	-	-	-
	2015	1	0.00	24.00	46.00	0.00	16.00	7.00	93.00
	Mean[d]		12.19	15.01	3.36	2.21	0.42	0.76	35.83

[a] Arithmetic mean of catch per standard 1,300-ft gill net

[b] N=number of stations sampled

[c] Long-term average catch, 1995-2012.

[d] Long-term average catch, 2003-2012.

Table 6.3.17. Mean total length (mm) at age[a] for white bass collected in fall assessment surveys, 1995-2015.

		Age							
District	Year	1	2	3	4	5	6	7	8+
1	1995	251	267	346	378	-	386	-	-
	1996	267	312	323	-	-	-	-	-
	1997	241	289	323	-	-	-	-	-
	1998	270	313	364	356	-	-	-	-
	1999	276	316	339	354	370	-	-	-
	2000	260	317	336	367	-	-	-	-
	2001	266	312	347	370	395	-	-	-
	2002	257	316	338	357	365	-	388	-
	2003	259	308	-	341	-	-	-	-
	2004	245	305	336	354	352	368	-	-
	2005	272	305	332	342	-	356	367	420
	2006	263	283	323	326	346	-	367	-
	2007	255	310	329	343	361	374	356	354
	2008	273	304	331	365	341	357	347	328
	2009	259	313	326	337	352	361	381	-
	2010	272	322	337	-	352	352	368	384
	2011	259	313	333	350	374	355	375	399
	2012	283	314	342	350	364	371	368	385
	2013	244	309	328	341	368	361	-	355
	2014	258	306	332	337	355	370	368	386
	2015	280	333	324	368	340	384	333	390
	Mean[b]	262	307	335	351	361	365	369	376
2	1995	256	303	364	377	380	-	-	-
	1996	249	307	347	379	-	-	-	-
	1997	244	298	325	-	383	399	-	-
	1998	259	308	327	342	-	383	-	316
	1999	272	302	340	-	352	-	-	-
	2000	254	310	317	349	-	-	-	-
	2001	236	311	345	369	376	-	385	-
	2002	262	299	330	354	358	372	-	-
	2003	260	307	365	339	-	-	396	-
	2004	241	307	325	348	357	373	-	-
	2005	284	310	328	341	394	346	389	397
	2006	264	273	320	323	358	384	372	418
	2007	267	312	329	336	370	377	-	384
	2008	273	290	329	347	342	368	379	408
	2009	257	314	334	346	-	371	366	385
	2010	271	318	346	346	361	349	371	373
	2011	258	293	328	344	394	364	-	376
	2012	269	316	311	354	376	369	373	-
	2013	254	305	330	365	350	363	383	383
	2014	294	303	321	329	342	360	-	388
	2015	273	313	325	367	333	385	340	379
	Mean[b]	261	304	333	349	366	370	379	383
3	1995	242	-	-	-	-	-	-	-
	1996	170	293	-	-	-	-	-	-
	1997	225	287	325	-	-	-	-	-
	1998	-	303	302	343	-	-	-	-
	1999	261	-	296	-	320	-	-	-
	2000	238	313	328	362	-	-	-	-
	2001	249	309	-	-	-	-	-	-
	2002	242	288	-	342	-	-	-	-
	2003	265	301	340	324	-	388	-	-
	2004	235	304	332	358	355	369	-	375
	2005	278	318	354	315	390	-	-	-
	2006	265	281	328	324	357	-	358	389
	2007	261	309	321	331	366	369	352	333
	2008	275	287	336	347	336	351	363	-
	2009	259	306	339	342	351	353	385	412
	2010	265	320	346	-	371	-	335	420
	2011	258	305	336	359	390	385	-	376
	2012	269	315	350	351	392	393	372	414
	2013	246	313	338	385	344	368	-	-
	2014[c]	227	285	-	-	-	-	-	-
	2015	254	330	328	383	316	394	370	374
	Mean[b]	249	302	331	345	361	372	361	388

[a] Scales were used to age fish prior to 2003, otoliths from 2003-present.

[b] Long-term mean length, 1995-2013.

[c] Comprised of trawls only and are not comparable to combined gear surveys.

Table 6.3.18. Percent mature at age for male and female white bass collected in 2015 gill net surveys in the western and central basins of Lake Erie. Number of fish examined for maturity is in parentheses.

		Age										
Sex	Basin	1	2	3	4	5	6	7	8	9	10	11
Male	Western	100	-	100	-	100	-	100	-	100	100	-
		(6)	(0)	(272)	(0)	(149)	(0)	(1)	(0)	(1)	(3)	(0)
	Central	100	100	99	100	99	100	100	-	100	100	-
		(4)	(49)	(586)	(3)	(470)	(1)	(103)	(0)	(1)	(3)	(0)
Female	Western	0	-	99	100	100	100	100	-	-	100	-
		(1)	(0)	(167)	(8)	(22)	(2)	(3)	(0)	(0)	(1)	(0)
	Central	100	100	99	100	98	92	100	100	-	100	100
		(7)	(60)	(545)	(2)	(57)	(13)	(13)	(1)	(0)	(15)	(3)

Table 6.3.19. Percent mature, by 20-mm length group, for male and female white bass collected during the 2015 fall gill net survey in the western and central basins of Lake Erie. Number of fish examined is listed in parentheses.

		Total Length (mm)														
Sex	Basin	≤ 160	180	200	220	240	260	280	300	320	340	360	380	400	420	440
Male	Western	-	-	-	-	-	100	100	100	100	100	100	100	-	-	-
		(0)	(0)	(0)	(0)	(0)	(2)	(21)	(186)	(166)	(52)	(2)	(3)	(0)	(0)	(0)
	Central	0	-	-	-	100	100	100	100	99	99	100	100	100	-	-
		(1)	(0)	(0)	(0)	(5)	(5)	(40)	(554)	(491)	(135)	(16)	(3)	(1)	(0)	(0)
Female	Western	-	-	-	100	100	0	-	100	99	100	100	100	100	-	-
		(0)	(0)	(0)	(1)	(2)	(1)	(0)	(19)	(69)	(59)	(44)	(8)	(1)	(0)	(0)
	Central	0	-	-	100	100	100	100	100	99	100	99	95	100	-	100
		(1)	(0)	(0)	(1)	(4)	(9)	(3)	(50)	(300)	(245)	(76)	(22)	(5)	(0)	(1)

Table 6.3.20. Percent mature at age for male and female white perch collected in 2015 gill net surveys in the western and central basins of Lake Erie. Number of fish examined for maturity is in parentheses.

		Age										
Sex	Basin	1	2	3	4	5	6	7	8	9	10	11
Male	Western	81	100	100	100	100	100	100	100	-	100	-
		(54)	(20)	(209)	(58)	(8)	(6)	(4)	(5)	(0)	(2)	(0)
	Central	83	100	99	100	100	100	100	100	-	100	-
		(72)	(48)	(163)	(113)	(64)	(13)	(6)	(6)	(0)	(2)	(0)
Female	Western	41	100	99	100	100	100	100	100	-	100	100
		(51)	(20)	(250)	(104)	(21)	(20)	(17)	-15	(0)	(3)	(1)
	Central	29	96	99	100	100	100	100	100	-	100	-
		(76)	(27)	(190)	(185)	(148)	(24)	(12)	(24)	(0)	(1)	(0)

Table 6.3.21. Percent mature, by 10-mm length group, for male and female white perch collected during the 2015 fall gill net survey in the western and central basins of Lake Erie. Number of fish examined is listed in parentheses.

		Total Length (mm)																	
Sex	Basin	≤ 130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
Male	Western	0	-	80	64	79	100	100	100	100	100	100	100	100	100	100	100	100	100
		(2)	(0)	(5)	(14)	(14)	(7)	(5)	(19)	(37)	(71)	(51)	(42)	(45)	(30)	(14)	(5)	(2)	(2)
	Central	0	67	59	84	95	100	100	100	100	100	100	100	100	100	100	100	100	100
		(1)	(3)	(17)	(19)	(19)	(7)	(6)	(11)	(54)	(84)	(60)	(54)	(61)	(45)	(30)	(6)	(8)	(2)
Female	Western	0	-	0	8	41	57	89	100	100	100	100	100	100	100	100	100	100	100
		(1)	(0)	(6)	(12)	(17)	(7)	(9)	(8)	(31)	(84)	(80)	(48)	(58)	(50)	(47)	(25)	(12)	(3)
	Central	-	0	11	19	17	64	100	100	97	98	100	99	100	100	100	100	100	100
		(0)	(1)	(9)	(26)	(23)	(14)	(3)	(9)	(32)	(62)	(133)	(112)	(74)	(74)	(65)	(31)	(12)	(6)

Table 6.3.22. Mean catch-per-net of smallmouth bass in September gill net surveys in the Ohio waters of Lake Erie, 2006-2015.

			Age											*Continued*
District	Year	N nets	0	1	2	3	4	5	6	7	8	9	10	*below*
1	2006	5	0.38	1.13	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.13	0.13	
	2007	8	0.50	1.75	5.38	0.13	1.88	0.75	0.63	0.13	0.25	0.38	0.00	
	2008	6	0.00	0.33	1.67	3.50	0.17	1.67	0.83	1.00	0.50	0.17	0.83	
	2009	8	0.13	0.50	2.50	2.00	2.00	0.00	0.75	0.63	0.50	0.63	0.38	
	2010	8	0.38	0.63	1.25	3.25	1.25	1.88	0.25	0.75	1.00	0.75	0.25	
	2011	7	0.00	0.88	1.13	1.38	1.25	0.88	1.75	0.00	0.63	0.38	0.13	
	2012	8	0.25	0.13	0.88	0.63	0.88	0.38	1.00	1.63	0.38	0.75	0.25	
	2013	8	0.13	0.38	0.63	1.00	0.25	0.38	0.50	0.13	0.13	0.00	0.13	
	2014	8	0.13	0.75	2.63	0.63	1.88	0.38	1.00	0.50	0.25	0.38	0.13	
	2015	8	0.00	0.38	0.00	0.75	0.75	0.25	0.13	0.25	0.25	0.25	1.00	
	Mean[a]		0.21	0.72	1.79	1.42	1.06	0.70	0.75	0.53	0.40	0.40	0.25	
2	2006	4	0.00	0.75	0.00	0.50	0.50	0.75	1.25	2.50	4.75	1.00	3.75	
	2007	4	0.00	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	
	2008	4	0.00	0.25	0.50	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.25	
	2009	4	0.50	0.00	0.75	0.50	0.75	0.00	0.00	0.00	0.25	0.00	0.25	
	2010	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2011	8	0.00	0.13	0.00	0.25	0.63	0.00	0.00	0.00	0.00	0.00	0.38	
	2012	8	0.13	0.00	0.75	0.75	0.63	0.63	0.38	0.25	0.00	0.13	0.13	
	2013	8	0.00	0.25	0.38	0.38	0.13	0.00	0.13	0.25	0.13	0.00	0.00	
	2014[b]	-	-	-	-	-	-	-	-	-	-	-	-	
	2015[c]	8	0.00	0.00	0.13	0.50	0.38	0.38	1.00	0.00	0.25	0.00	0.13	
	Mean		0.08	0.20	0.36	0.39	0.33	0.17	0.22	0.38	0.64	0.14	0.63	
3	2006	4	1.25	0.00	0.00	0.50	0.00	1.75	0.00	0.50	0.75	0.75	0.00	
	2007	4	0.00	4.75	3.00	0.00	0.50	0.25	0.75	0.00	0.75	0.50	0.00	
	2008	4	0.00	1.75	6.25	4.00	0.00	0.00	0.25	2.00	1.75	1.00	1.25	
	2009	4	0.00	0.75	1.00	1.25	2.25	0.00	0.75	0.00	0.00	0.25	0.00	
	2010	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2011	8	0.00	3.50	1.00	0.38	0.75	2.25	0.50	0.00	0.00	0.00	0.00	
	2012	8	0.13	0.00	5.13	3.38	0.63	0.63	0.50	1.13	0.25	0.13	0.00	
	2013	8	0.00	0.25	1.63	1.00	0.38	0.50	1.13	0.75	0.38	0.13	0.00	
	2014	8	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.25	0.63	0.13	0.00	
	2015	12	0.00	0.00	0.00	0.17	0.08	3.00	0.42	0.17	0.42	0.75	0.33	
	Mean		0.15	1.22	2.00	1.20	0.53	0.60	0.43	0.51	0.50	0.32	0.14	

		Age									Sum	Means			
District	Year	11	12	13	14	15	16	17	18	19	N fish	Age 2+	Age	Depth (m)	Temp (°C)
1	2006	0.25	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	19	0.89	3.6	5.8	21.4
	2007	0.13	0.50	0.13	0.00	0.00	0.00	0.00	0.00	0.00	100	10.29	3.5	4.9	21.6
	2008	0.17	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	66	10.68	4.8	3.6	22.2
	2009	0.13	0.00	0.25	0.13	0.00	0.00	0.00	0.00	0.00	84	9.90	4.6	4.4	22.1
	2010	0.38	0.13	0.13	0.00	0.13	0.00	0.00	0.00	0.00	99	11.40	4.9	4.1	20.0
	2011	0.25	0.00	0.25	0.13	0.00	0.00	0.00	0.00	0.00	72	8.16	4.9	5.0	21.5
	2012	0.38	0.13	0.13	0.13	0.00	0.13	0.00	0.00	0.00	64	7.68	6.2	2.8	23.2
	2013	0.00	0.13	0.00	0.13	0.00	0.00	0.13	0.00	0.00	32	3.54	4.8	4.3	22.6
	2014	0.25	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	72	8.16	4.2	4.4	21.8
	2015	0.13	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	36	4.15	6.6	4.4	23.5
	Mean	0.22	0.10	0.15	0.06	0.01	0.01	0.01	0.00	0.00	68	7.86	4.6	4.4	21.8
2	2006	3.75	2.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	91	22.00	8.7	3.9	22.5
	2007	0.50	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00	9	2.00	8.4	9.1	23.7
	2008	0.00	0.50	0.25	0.00	0.25	0.00	0.00	0.00	0.00	11	2.50	6.9	5.8	22.0
	2009	0.00	2.00	0.25	1.25	0.25	0.25	0.25	0.00	0.00	29	6.75	9.3	5.6	21.7
	2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7	0.00	10.4	7.7	24.0
	2011	0.25	0.25	0.25	0.00	0.00	0.25	0.00	0.13	0.00	20	2.39	9.0	6.5	19.2
	2012	0.00	0.00	0.25	0.63	0.13	0.63	0.00	0.13	0.00	44	5.42	7.6	6.9	22.5
	2013	0.00	0.13	0.00	0.13	0.00	0.00	0.13	0.00	0.00	16	1.79	5.8	7.1	20.4
	2014[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2015[c]	0.00	0.13	0.00	0.00	0.13	0.25	0.25	0.13	0.13	30	3.79	8.2	6.8	24.4
	Mean	0.56	0.64	0.31	0.28	0.08	0.14	0.05	0.03	0.00	28	5.36	8.26	6.6	22.00
3	2006	0.25	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	26	5.25	5.9	3.4	22.1
	2007	0.00	0.25	0.75	0.00	0.00	0.00	0.00	0.00	0.00	46	6.75	3.6	7.7	23.7
	2008	0.00	0.00	1.00	0.75	0.25	0.00	0.00	0.00	0.00	81	18.50	5.2	6.4	21.1
	2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25	5.50	3.6	4.9	22.2
	2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87	0.00	3.7	6.6	23.5
	2011	0.13	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	69	5.14	3.2	6.8	19.1
	2012	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	96	11.91	3.5	7.2	22.2
	2013	0.25	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	53	6.41	4.9	7.4	19.4
	2014	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	13	1.64	7.0	6.6	19.3
	2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64	5.34	6.2	6.5	24.5
	Mean	0.07	0.10	0.24	0.10	0.03	0.03	0.00	0.00	0.00	55	6.79	4.5	6.3	21.4

[a] Long term means, 2006 - 2014.

[b] No fish samples due to inclement weather.

[c] Low dissolved oxygen (1.4 mg/l,4.3 mg/l, etc) readings were noted in the sampling grids and may have influenced catches.

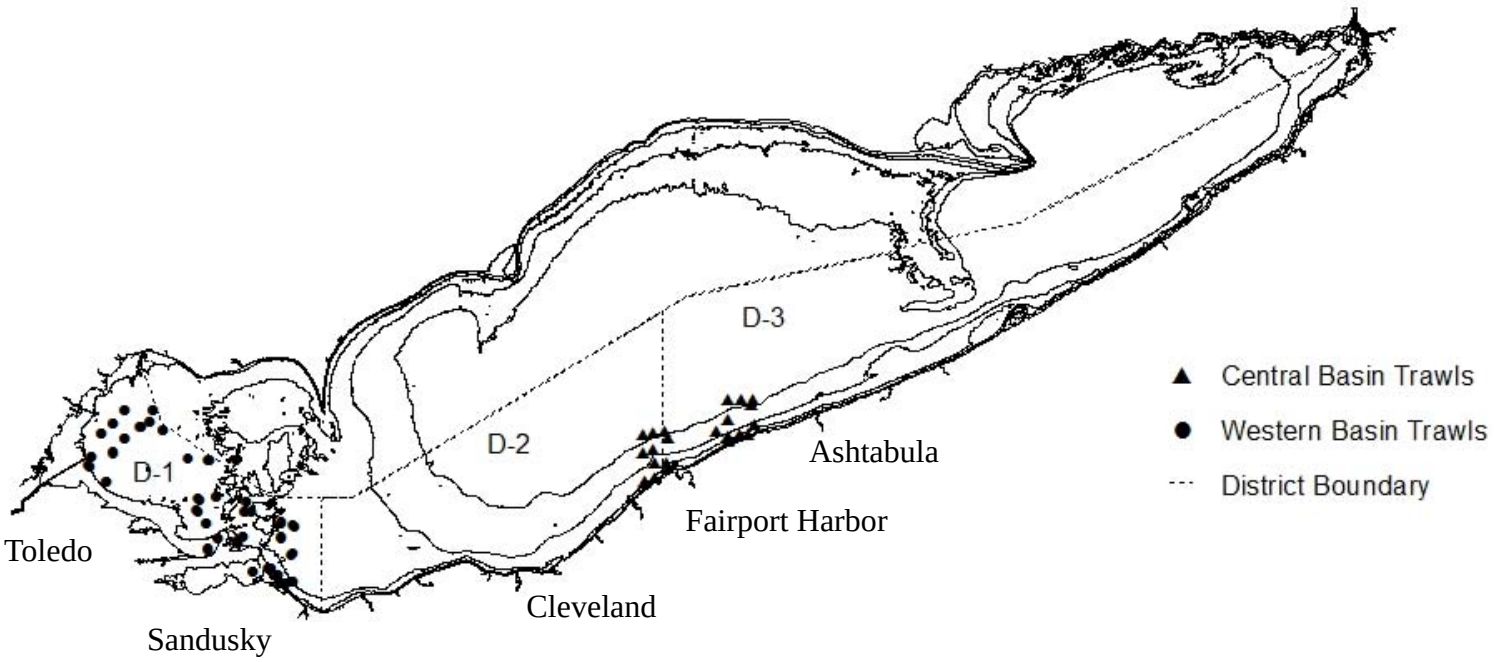


Figure 6.1.1. Stations sampled with trawls in the Ohio waters of Lake Erie during 2015. Western basin sites were sampled with a flat-bottom otter trawl and central basin sites were sampled with a two-seam Yankee trawl with a roller sweep.

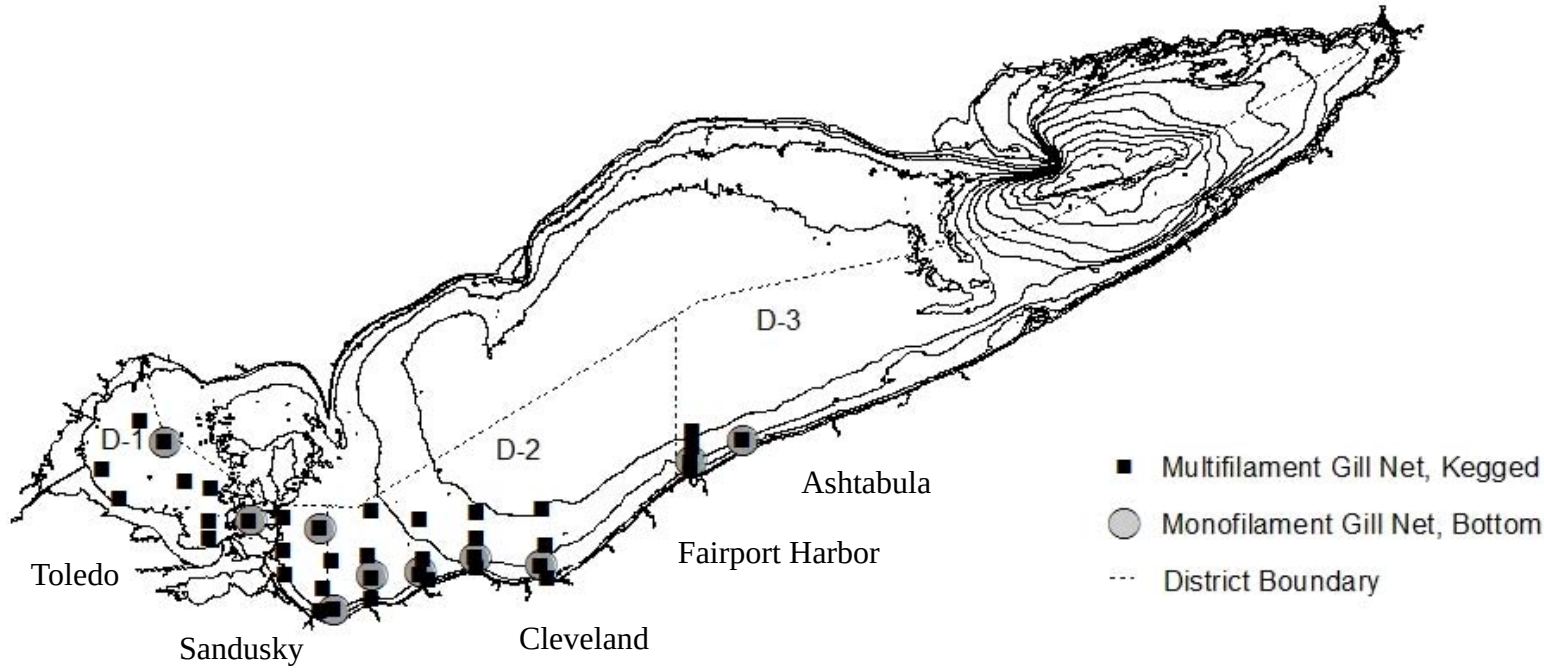


Figure 6.2.1. Stations sampled with gill nets during the fall of 2015. Ten sites were fished with both standard kegged 1,300-ft multifilament nets and 600-ft monofilament bottom nets. Auxiliary sites were sampled with standard canned 1,300-ft multifilament nets only.

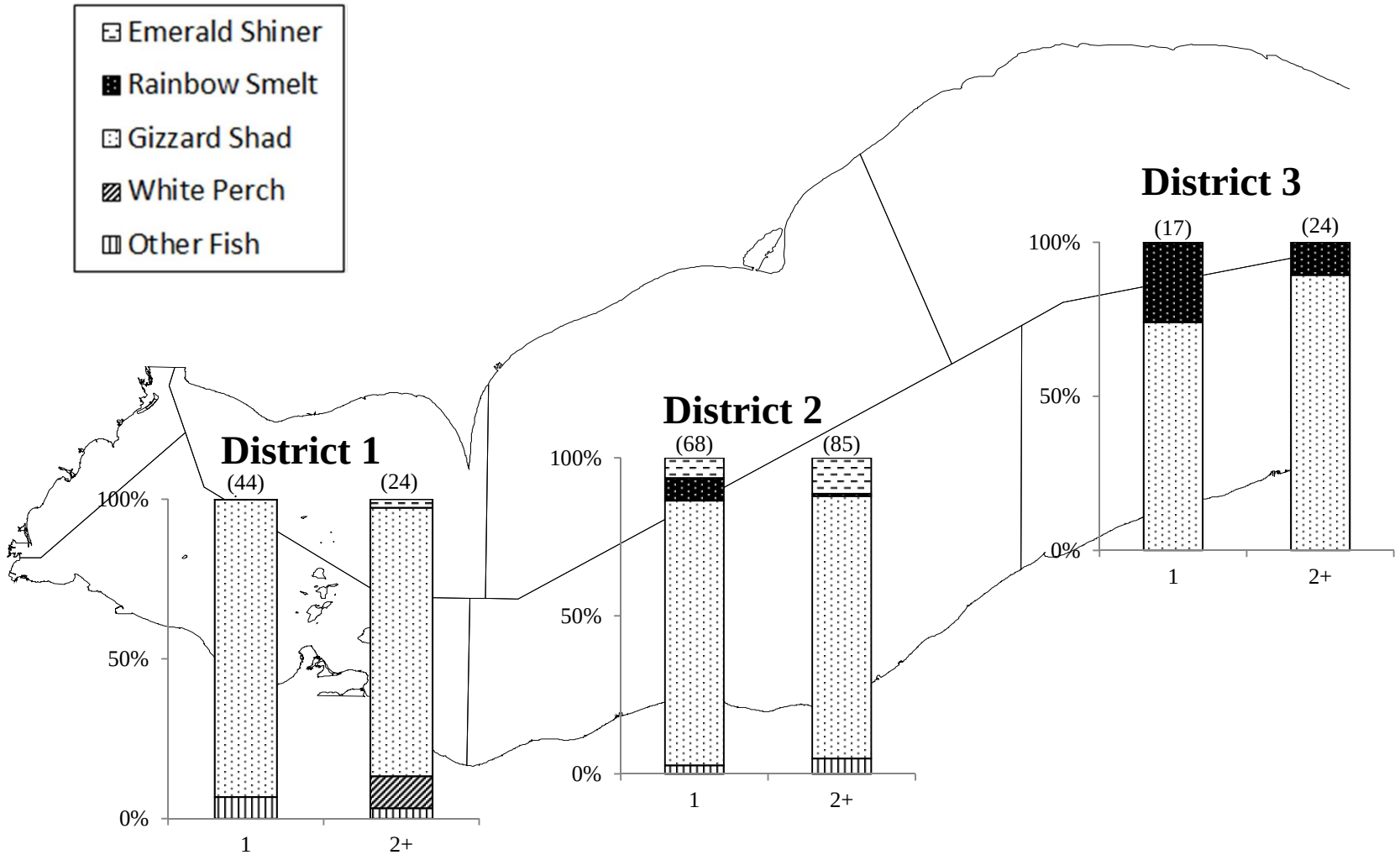


Figure 6.3.1. Diet composition (mean percent by wet weight) of age-1 and age-2+ walleye in the Lake Erie fall gill net survey during 2015. Numbers in parentheses are sample sizes.

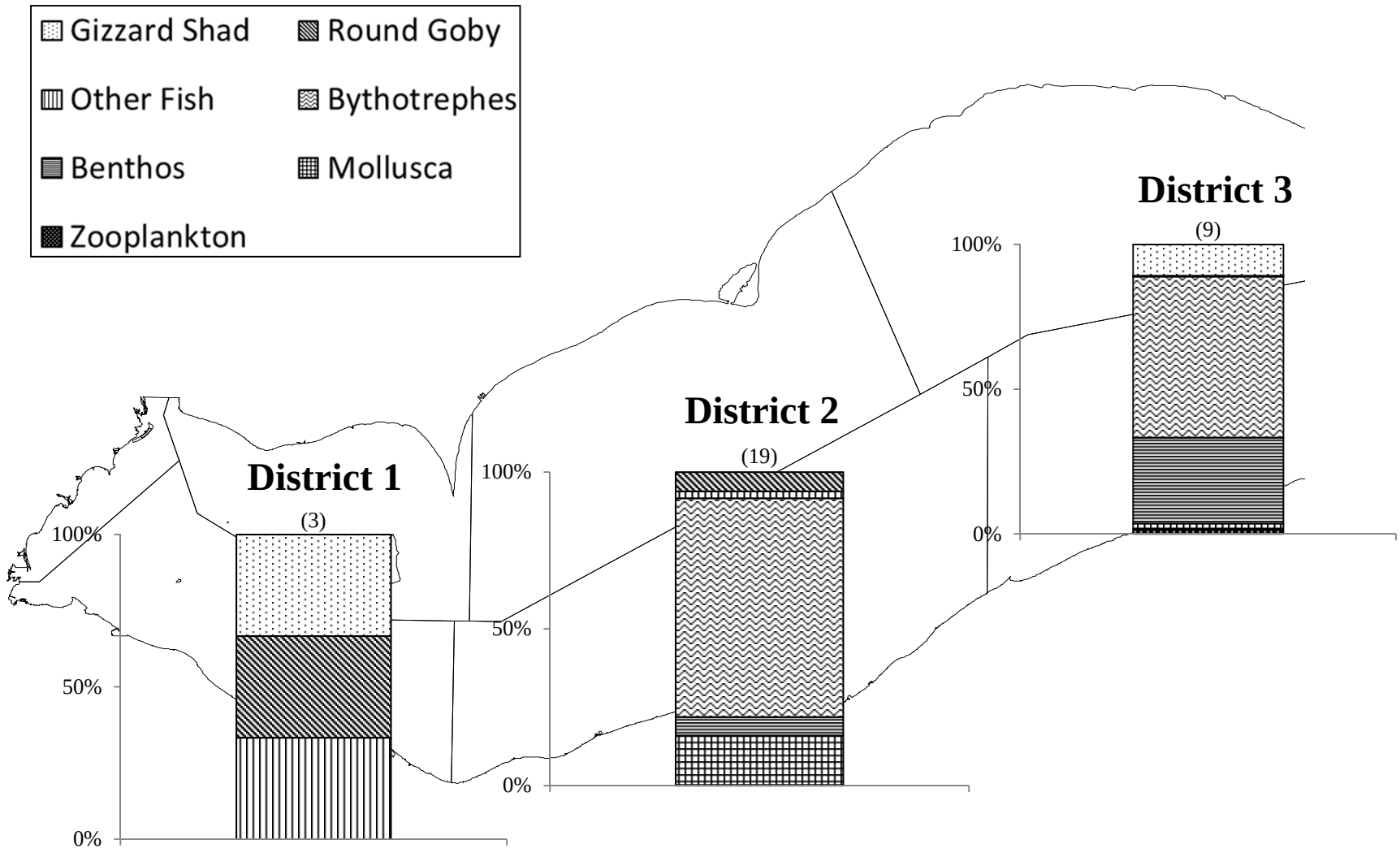


Figure 6.3.2. Diet composition (mean percent by dry weight) of yearling and older yellow perch, by district, in Lake Erie during 2015 fall central basin bottom trawl and west basin gill net surveys. Numbers in parentheses are sample sizes.

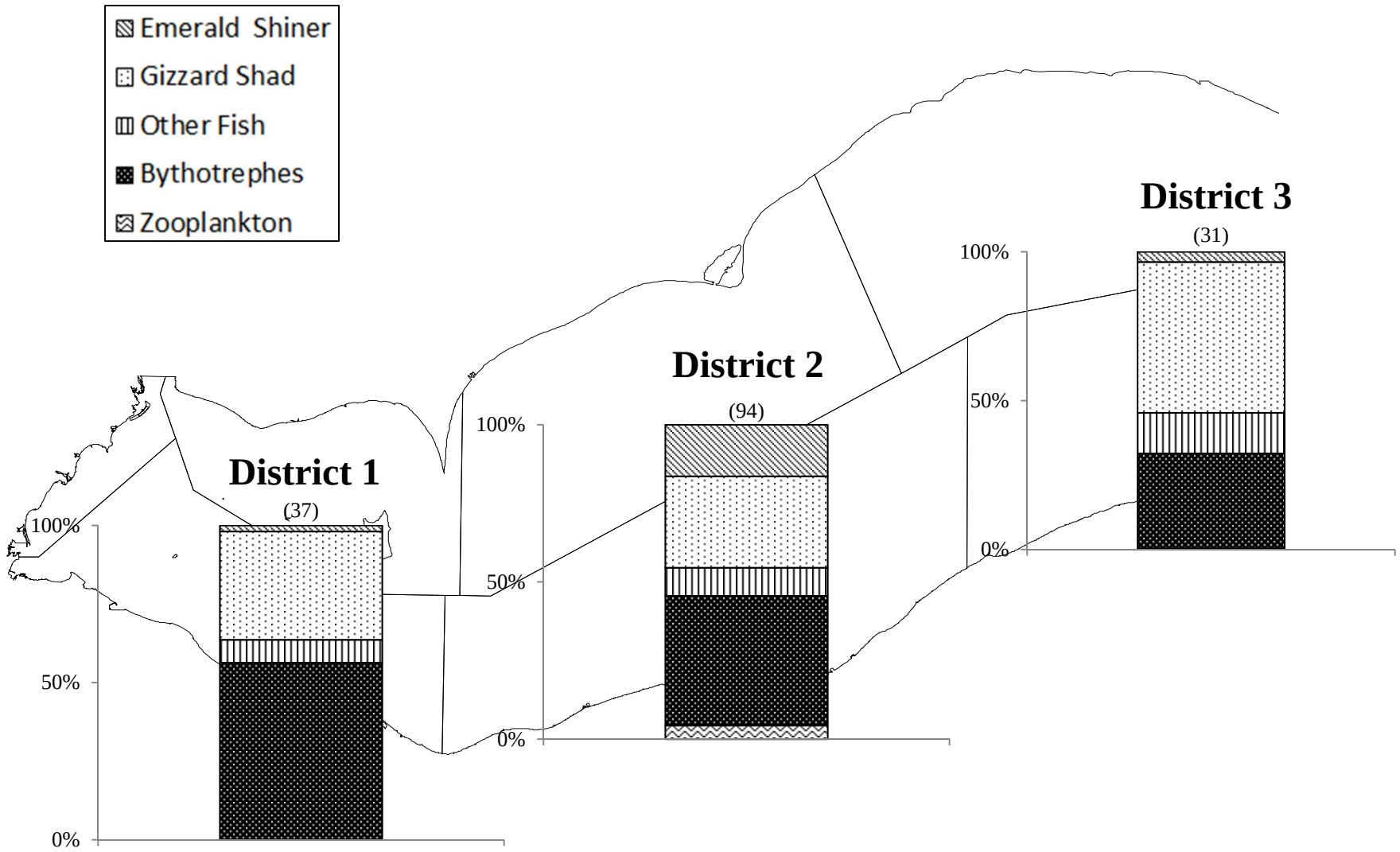


Figure 6.3.3. Diet composition (mean percent by dry weight) of age 1+ white bass, by district, in Lake Erie during fall trawl and gill net surveys in 2015. Numbers in parentheses are sample sizes.

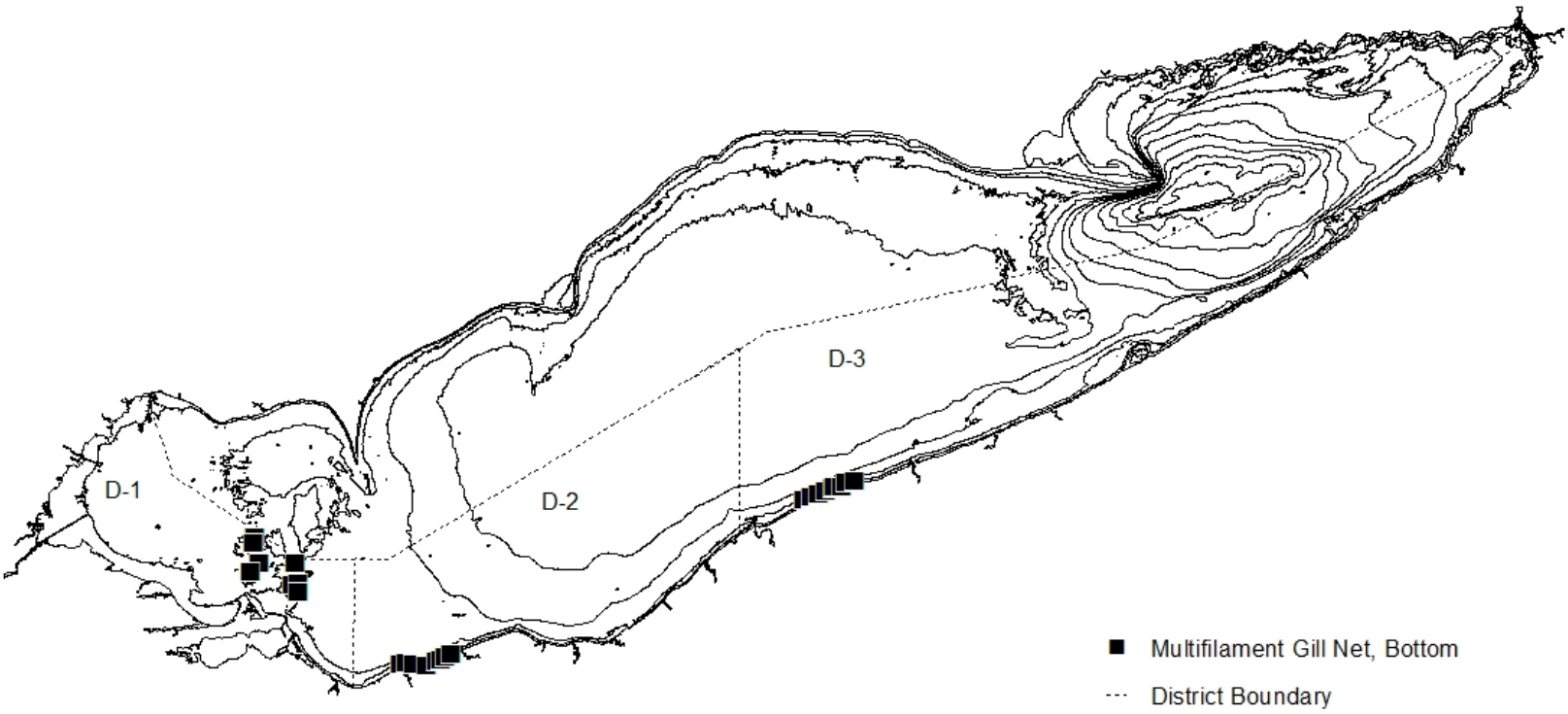


Figure 6.3.4. Locations of September smallmouth bass gill nets in 2015. Eight sites were sampled in each district, and four additional nets were set in District 3 in an attempt to obtain additional biological samples. (total N in District 3 was 12 nets). Each net consisted of a gang of 13 randomly-ordered sections, each 15.2 m (length) by 2.4 m (height) with stretched mesh sizes from 25-178 mm, in 13-mm increments.

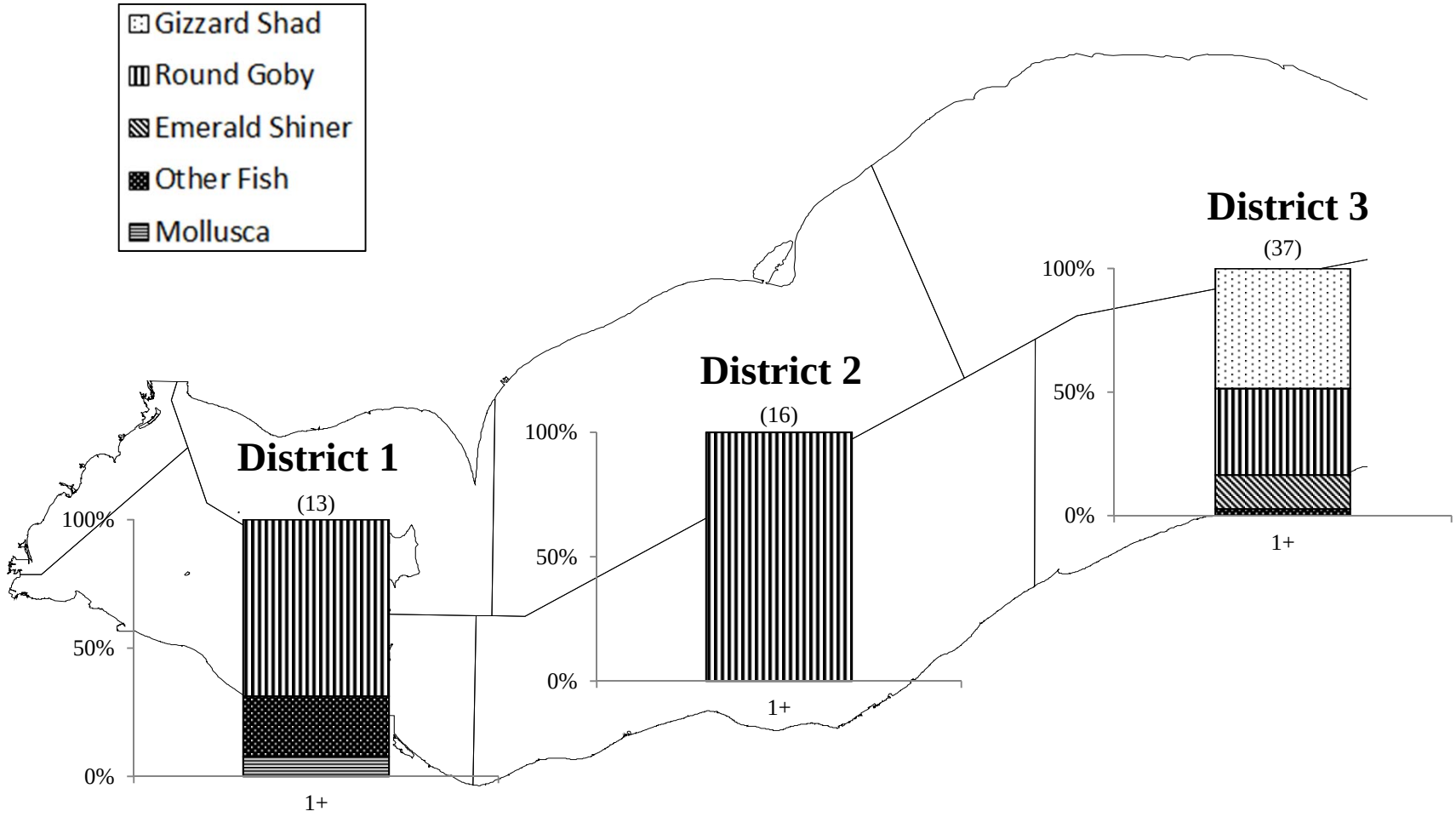


Figure 6.3.5. Diet composition (mean percent by wet weight) of yearling and older smallmouth bass, by district, in the Lake Erie September gill net survey during 2015. Numbers in parentheses are sample sizes.

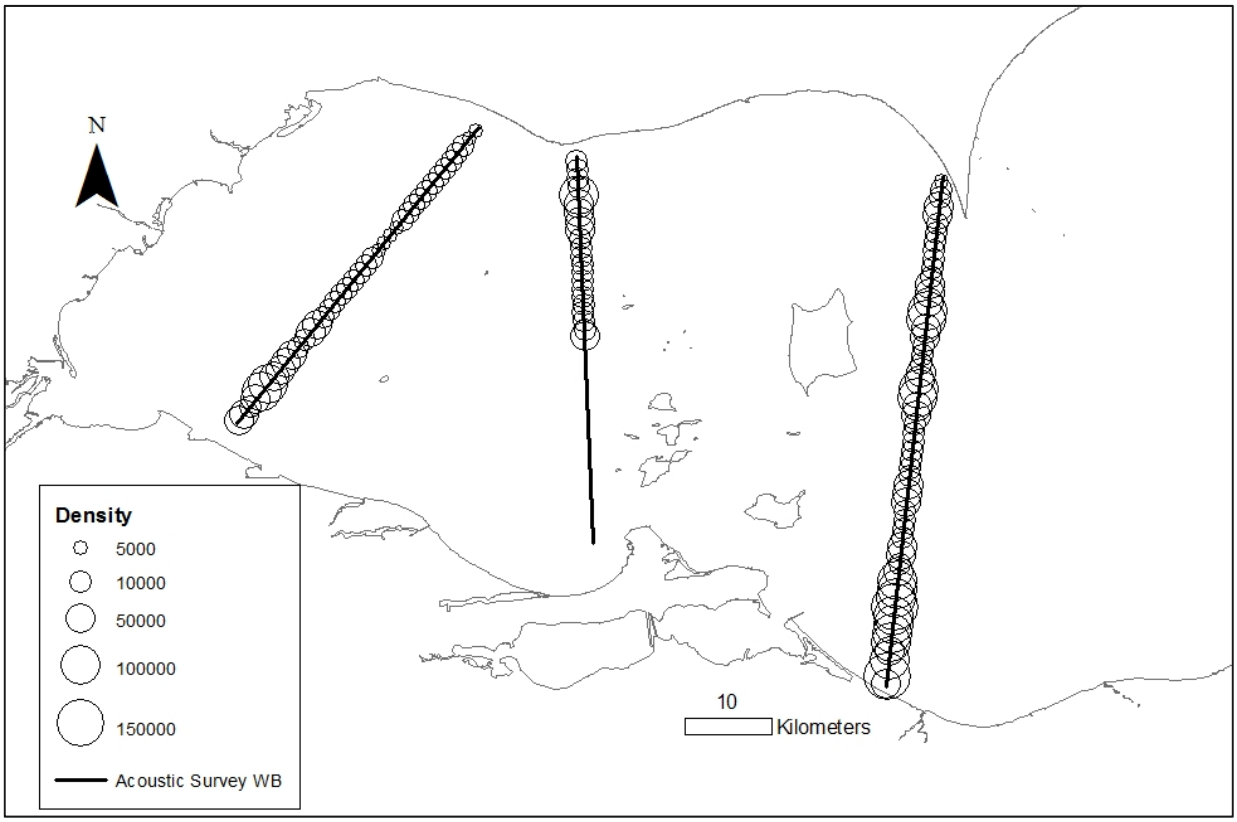


Figure 6.4.1. Acoustic survey transects and associated fish density (#/ha) for the western basin of Lake Erie, July, 2015. Middle transect was not completed due to weather.

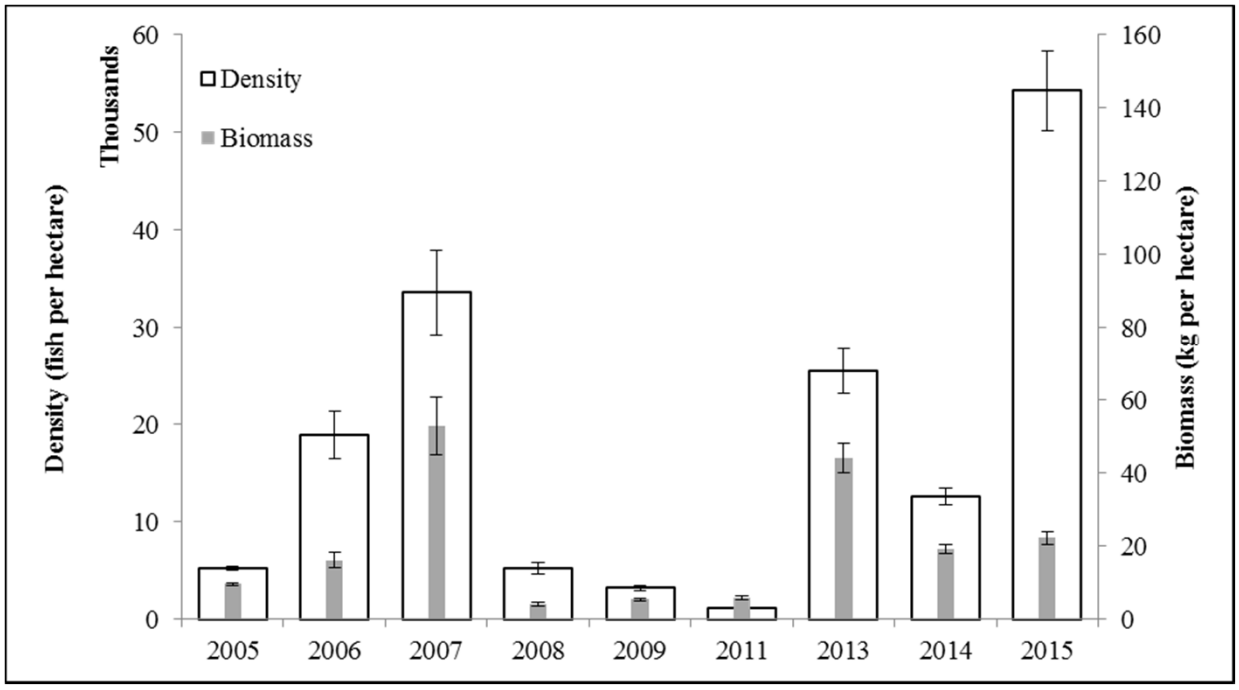


Figure 6.4.2. Mean density (#/ha) and biomass (kg/ha) estimates from the western basin acoustic survey, 2005-2015. Error bars are standard errors.

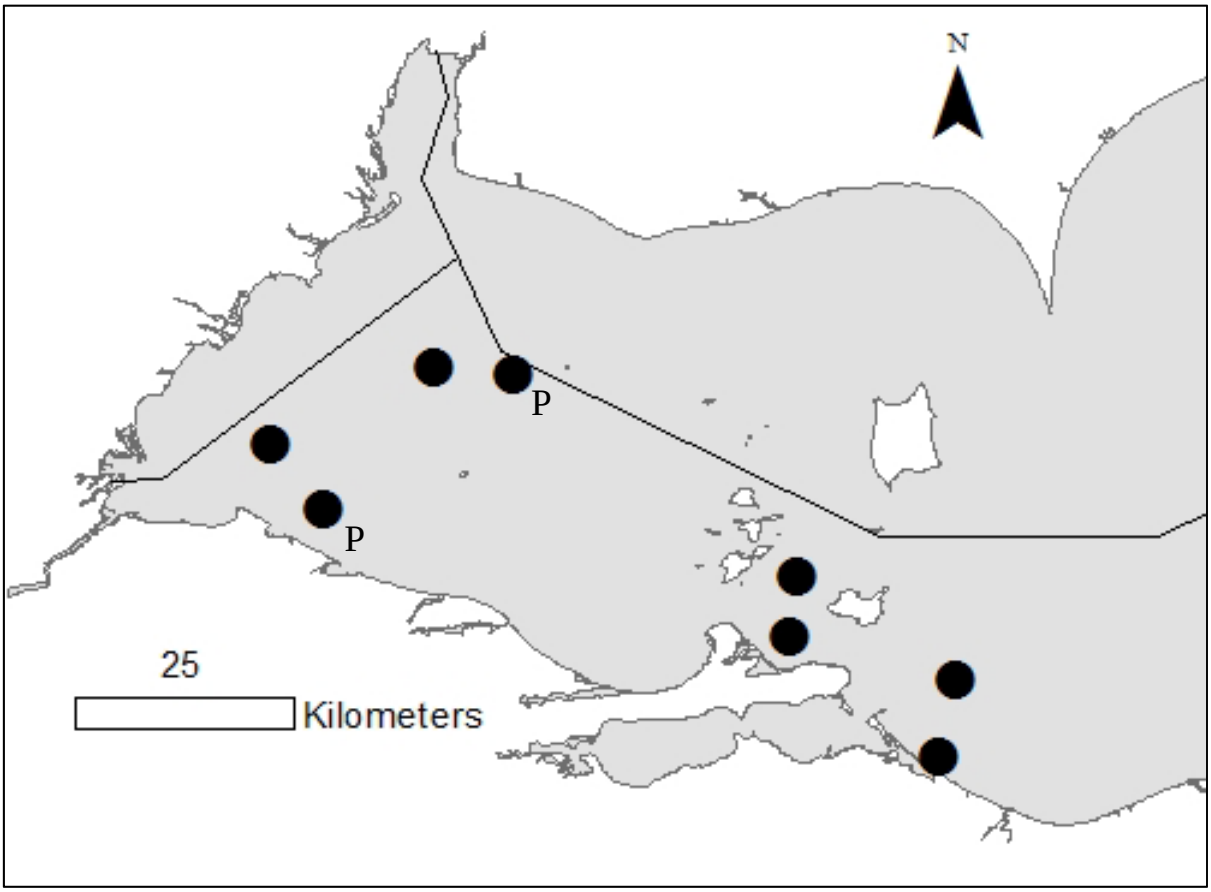


Figure 6.5.1. Lower trophic and limnological sampling sites in District 1, 2015. Sites designated with a 'P' represent sites where phosphorus samples are collected.

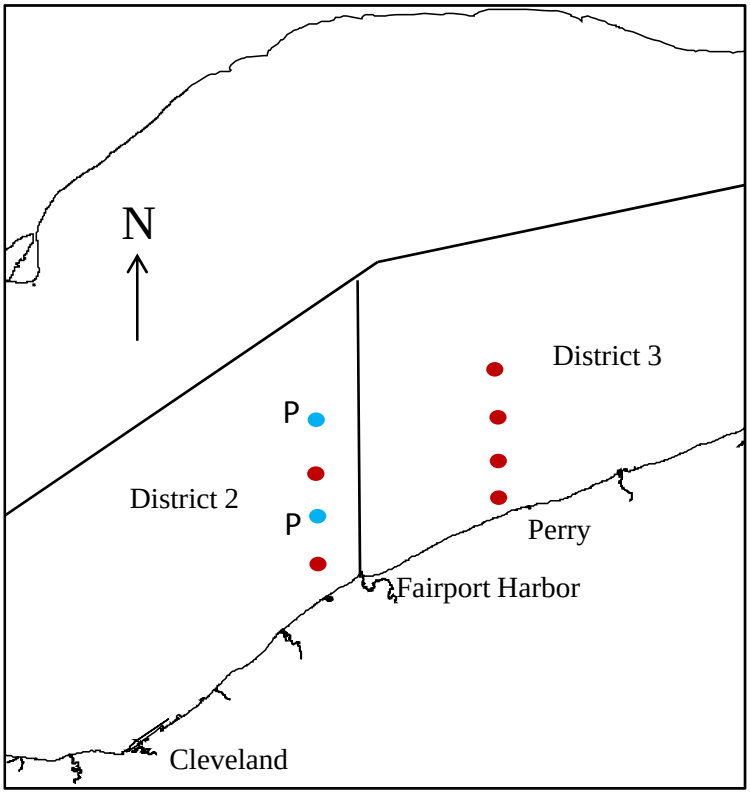


Figure 6.5.2 Lake Erie central basin lower trophic sampling sites, 2015. Sites designated with a 'P' represent sites where phosphorus samples are collected.

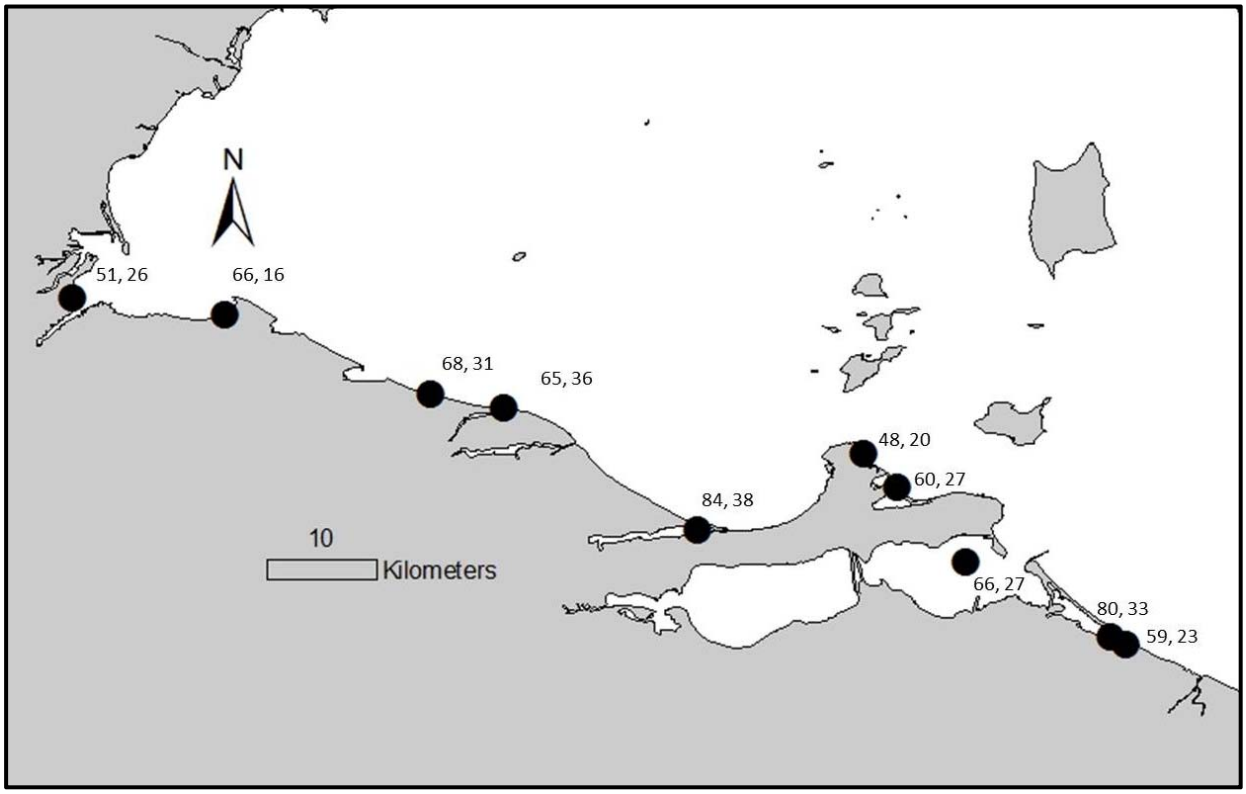


Figure 6.6.1. Location of nearshore fish community assessment sites and corresponding Index of Biotic Integrity scores (Minns, Thoma) sampled with night electrofishing during summer 2015.

7.0 Fisheries Management Strategies (*FFDX02)*

7.1 Interagency Strategy Development and Evaluation

Staff members within the Division of Wildlife's Lake Erie Fisheries Units participate in the Great Lakes Fishery Commission's (GLFC) Lake Erie Committee (LEC), its Task Groups, and the Standing Technical Committee (STC). Members contribute to task group meetings, reports and presentations that address walleye, yellow perch, forage, coldwater, habitat, fish community, and human dimension management and research issues. Annual outputs from GLFC/LEC activities include the derivation of Lake Erie walleye and yellow perch quotas, reports from all technical subcommittees, minutes from all meetings, various scientific presentations, consultation with public advisors and stakeholders, and this Ohio Status of Lake Erie Fisheries report.

One of the major activities undertaken by the LEC and member agencies during 2015 was the continuance of activities by the Lake Erie Percid Management Advisory Group (LEPMAG). The group consists of Lake Erie fisheries managers and technical staff from each of the agencies, stakeholders, including both sport and commercial fishing entities, and technical experts and facilitators (including staff from Michigan State University's Quantitative Fisheries Center). As a result of LEPMAG activities, the Lake Erie Committee formally adopted a revised Walleye Management Plan in 2015, incorporating input from LEPMAG. The next iteration of LEPMAG will address developing yellow perch harvest strategies and a management plan. The group will employ a Management Strategy Evaluation technique to evaluate outcomes and trade-offs of various harvest strategies, under various population levels, and then select a harvest strategy that will be considered by the LEC for future yellow perch management.

7.2 Strategy Development and Evaluation

Percid Management

Personnel at the Division of Wildlife's Lake Erie Fisheries Units use assessment and fisheries data to evaluate current fisheries regulations and the status of threatened, endangered, nuisance, and exotic species. Evaluations of specific implemented regulations occur after a suitable time has passed for detecting a population response. The status of key sport fish populations, and associated fisheries, is compiled and reviewed annually relative to time series trends, emerging environmental issues of concern, stakeholder requests, and any specific restoration objectives that may be in place. For sauger, pilot work is underway to establish reasonable restoration targets before management actions (e.g., stocking) commences. For walleye and yellow perch, formal Ohio Administrative Code Sections deal directly with bag limits for these species, based upon Ohio's portion of the Total Allowable Catch.

Establishment of Ohio walleye and yellow perch bag limits for sport anglers and determination of the yellow perch sport and commercial sharing formula are two important management strategies determined annually. To allow a rapid response for managing fisheries with changes in annual LEC-approved quota determinations, the Division of Wildlife continues to utilize a framework for setting walleye and yellow perch regulations. New regulations begin on May 1st, after quotas are set at the annual GLFC/LEC meeting.

Ohio's walleye quota (in number of fish) is determined by incorporating the GLFC/LEC quota and an established GLFC/LEC agency sharing formula. From this Ohio share, angler bag limits are determined within the management framework, based on safe harvest levels established through analyses of harvest, effort, and catch rate patterns over the last several decades (Table 7.0.1). The entire Ohio walleye share is allocated to sport anglers.

Ohio's yellow perch quota (in pounds of fish) is determined by incorporating the GLFC/ LEC quota in each of the three Management Units in which Ohio has jurisdiction and the established

GLFC/LEC agency sharing formulas in those units. From these Ohio shares, angler bag limits are determined within the management framework, based on safe harvest levels established through analyses of harvest, effort, and catch rate patterns over the last several decades (Table 7.0.2). Shares of yellow perch for Ohio's commercial fisheries are determined, as guided by Division of Wildlife Policy #2, and guidance from the Ohio Lake Erie Fishing Regulatory Reform Task Force based upon the remaining quota after allocation to the sport fishery in each of the management units. Individual Transferrable Quotas are then assigned to each individual license in each Management Unit based upon historic fishing activity in each of the management units.

Smallmouth Bass Population and Regulation Evaluation

During 2015, personnel at the Division of Wildlife's Lake Erie Fisheries Units collated and analyzed fishery-dependent and fishery-independent assessment surveys to characterize the status of the stocks and fisheries for smallmouth bass in Lake Erie. Targeted fishery-independent assessment surveys have been completed by staff since 2006. Surveys were initiated in response to the Catch-and-Immediate-Release Season during May-June, that was implemented in 2004 due to declining smallmouth bass fishery performance and additional risks associated with round goby egg predation. Staff characterized the status of the stocks (with uncertainty) and evaluated fishery performance during the previous decade. This information will be used to develop recommendations for smallmouth bass management/regulations into the future. Evaluations of specific implemented regulations occur after a suitable time has passed for detecting a population response. Regulation changes, additions, or deletions that may be proposed as a result of strategy development, would be considered during formal rule-making processes under Section 119 of the Ohio Revised Code.

Lake Trout Restoration

Currently, the Lake Erie Committee has established a Lake Trout Restoration plan that details specific activities for achievement of the goal of restoring self-sustaining populations of lake trout in Lake Erie. Two activities that Ohio Division of Wildlife staff were actively involved with included assisting with stocking of lake trout in alternative locations outside of the eastern basin, and providing assistance to continued sea lamprey control in 2015. After initial fall 2012 and spring 2013 stockings in Ohio waters, ODW continued the lake trout stocking program with the assistance of the Allegheny National Fish Hatchery in Warren, PA, and the Lake Erie Committee's Coldwater Task Group. A total of 82,551 yearling lake trout were stocked in April, 2015 (Table 7.0.3). Surplus fingerling lake trout (N=81,702) were available from Allegheny NFH for stocking in fall, October, 2015. All lake trout released had adipose fin clips and coded wire tags implanted so that we can track migration/return rates and the success of these stockings from future recaptures. As of 2015, 15 Ohio-released lake trout have been captured, all in the eastern basin. Eleven Fairport-released lake trout were captured in New York waters (six stocked as fall fingerlings and five April yearlings). Four lake trout released at Fairport were captured in Ontario waters of the eastern basin: three were stocked as fall fingerlings and one as a spring yearling.

Fish Production and Stocking

Lake Erie Fisheries Units personnel manage the Ohio steelhead fishery and annually request steelhead for stocking into select Ohio tributaries of Lake Erie. Steelhead are obtained as eyed-eggs from the Michigan DNR at the weir in Little Manistee River, Michigan, and are grown out at the Castalia (Ohio) State Fish Hatchery. Annual target stocking numbers for ODNR, Division of Wildlife yearling steelhead will remain at: Vermilion River, 55,000; Rocky, Chagrin, and Grand rivers; 90,000 each; and Conneaut Creek, 75,000. The Division of Wildlife has finalized capital improvements to the Castalia State Fish Hatchery to meet annual target program demands for at least

400,000 yearling steelhead trout averaging 175-225 mm in length.

In 2014, the Division of Wildlife stocked 421,888 age-1 (yearling) Little Manistee River strain steelhead trout in the Chagrin, Grand, Rocky, and Vermilion rivers, and Conneaut Creek Table (Table 7.0.4). Approximately 75,000 additional yearling steelhead trout were stocked into Conneaut Creek by the Pennsylvania Fish and Boat Commission upstream of the Ohio-Pennsylvania border. This cooperative stocking program is expected to continue with 75,000 steelhead yearlings stocked annually by each agency.

Microplastics in Lake Erie

In 2011 and 2012, Dr. Lorena Rios Mendoza of the University of Wisconsin-Superior surveyed Lake Erie along with the other Great Lakes for microplastics. The Lake Erie water samples had high concentrations of microplastics, and nearly 80% of the microplastics were microbeads. These tiny plastic particles (< 5 mm in diameter) may form as a result of the breakdown of larger plastic pieces, may be from pellets used for transport, or from microbeads in facial cleansers, toothpaste, and abrasive scrubbers. The filters on most sewage treatment systems cannot remove these small particles from waste water, so they are flushed directly from the watershed or wastewater system into the lake.

There is considerable documentation in recent years that fish and invertebrates in marine systems are ingesting microplastics – in some cases up to 35% of fish examined. These animals may be inadvertently ingesting these particles which they may mistake for food. Depending on the size of the microplastic ingested, their digestive tracts could become blocked. If fish experience a false sense of satiation, they may not continue to feed properly and may suffer malnutrition. Additional concern stems from evidence that chemical contaminants such as polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) attach to microplastics and, if plastics are ingested by forage fish, toxins may accumulate as they move up the food chain.

In 2013, staff at the Fairport Fish Station collaborated with Dr. Rios Mendoza to assess potential ingestion of microplastics by Lake Erie fish species. During standard diet assessments that year, from June through October, stomachs from the following (total N= 727) were analyzed with a microscope at the Fairport Fish Station for the presence of microplastics (number of fish assessed in parentheses): smallmouth bass (4), steelhead (2), lake whitefish (7), lake trout (1), age-0 white bass (30), age-1 white bass (189), age-2+ white bass (41), age-0 yellow perch (36), age-1 yellow perch (149), age-2+ yellow perch (174), age-0 walleye (2), age-1 walleye (13), age-2+ walleye (83), gizzard shad (20), rainbow smelt (30), and emerald shiners (37). Additional yellow perch (270) and 20-30 of each of the following species - white perch, round gobies, alewife, silver chub, and spottail shiners – were sent to the Rios Lab from the June and September trawl surveys. In 2014 and 2015, lake whitefish (1, 5), white bass (60, 26), smallmouth bass (2, 0), yellow perch (154, 36), and walleye (21, 1) were sampled at Fairport, and additional samples have been sent to the Rios Lab for inspection.

Of all the fish sampled to date, no microbeads were detected. The lab found large fibers in a few samples in 2013, but determined after further examination that the fibers were a result of contamination from a heating system filter. Other labs sampling Lake Erie fish (Mason Lab, SUNY Fredonia; Duhaime Lab, University of Michigan) have detected microplastics in fish stomachs and intestines. Dr. Rios is currently examining the 2015 samples with a modification of her methodology that is similar to those of the other labs. We plan to continue to look for microplastics in stomach content analysis in the future, as it does not add any time to our existing lab work and would provide important information about contaminant consumption should we start noting the presence of plastics in the diets of Lake Erie fish.

7.3 Habitat Evaluation and Improvement

Restoration and Reconnection of Coastal Wetlands

Staff within the Division of Wildlife's Lake Erie Fisheries Units participated in western and central basin watershed groups that focused on habitat issues in the Maumee, Sandusky, and Grand Rivers, Chagrin River, Cuyahoga River, Black River, Ashtabula River, Rocky River, and Conneaut Creek watersheds. Concerns about water levels have caused renewed interest and potential conflicts with dredging and hardening of shore lands; two main sources of nearshore and harbor habitat loss. We continue to work within the U.S. Army Corps of Engineers (USACE) and the ODNR permit review process to provide guidance on waivers to dredge operation windows to enhance and/or protect fish and wildlife species and their habitats.

Additionally, staff continued fish community assessment programs at Middle Harbor and other coastal wetlands to provide information to guide activities in the nearshore that will enhance fish production and fish community composition in these areas. Middle Harbor is 390 acres of wetland and upland area located immediately adjacent to Lake Erie in East Harbor State Park, Ottawa County, Ohio. The 350 acres of wetland habitat have almost no water exchange, fish access, or aquatic macrophytes, being impounded by park and county roads and Lake Erie beach areas. Restoring hydrological connection to Middle Harbor will result in benefits to the physical, chemical, and biological processes of Middle Harbor as well as Lake Erie. This project is a collaborative effort between Ducks Unlimited, The Nature Conservancy, and the Ohio Department of Natural Resources. Coastal wetlands along the western basin of Lake Erie have become degraded in many locations due to loss of connections to the lake, unnatural flow regimes, and introductions of exotic fish and macrophytes. Restoration of Great Lakes wetlands remains a high priority among natural resource agencies. Pre-restoration sampling from 2004-2006 demonstrated how degraded the Middle Harbor fish community is compared to neighboring East Harbor. Post-restoration activities will include further fish sampling to document fish community responses.

The dike between Middle Harbor and West Harbor was breached in 2013, and a culvert and water control structure was installed to allow for water level control and fish exclusion. During the spring of 2014 and 2015, Middle Harbor was drawn down partially to expose sediments, although not fully de-watered. Japanese millet was aerially seeded on the exposed sediment in late-spring to benefit waterfowl and to limit the spread of exotic *Phragmites*. In addition, many native species of wetland vegetation regenerated in Middle Harbor without seeding. The water level was kept low for the remainder of the summer. Manipulations of the fish passage system will begin in early 2016 while water levels remain low, allowing for the movement of fish species for spawning within Middle Harbor.

Staff also sampled the fish communities in several other Lake Erie coastal wetlands. We sampled Toussaint Marsh, where the Ottawa County Soil Conservation District reconnected a coastal marsh to the Toussaint River by installing a culvert with fish passage and water control in a wetland dike. Wildlife staff sampled the pre-connection fish community inside and outside the marsh using fyke nets in 2013 and 2014. Construction of the fish passage structure was completed in 2015, and post-restoration sampling began in November of 2015. Post-restoration sampling will continue during the spring of 2016, and data will be used to evaluate whether fish utilize the passage structure. Additional sampling occurred at the Blausey Tract, where a pool and weir fish ladder was installed in hopes to improve fish passage into a recently-flooded wetland. The Blausey Tract site was compared with other diked wetlands at Winous Point (separated hydrologically by two culverts with swing gates) and Great Egret Marsh (separated from West Harbor by a culvert). The Nature Conservancy and Ohio Sea Grant were partners on the latter project.

Other activities

We continued to support the U.S. Fish and Wildlife Service's field operations for monitoring sea lamprey abundance in Ohio's Lake Erie tributaries. We have also provided information and technical assistance to agencies in the Integrated Management of Sea Lamprey program of the Great Lakes Fishery Commission. Division of Wildlife personnel have participated in planning discussions with the USFWS, USACE, local governments, and environmental organizations to schedule replacing the imperiled barrier dam at Harpersfield on the Grand River.

Lastly, staff continued to support the U.S. Fish and Wildlife Service and the City of Fremont with National Environmental Protection Act compliance for Ballville Dam removal. During 2015, the citizens of the City of Fremont overwhelmingly approved a referendum to move forward with the Ballville Dam removal project. However, because of concerns expressed by the U.S. Army Corps of Engineers over potential sediment contaminant issues with the project, the USFWS initiated a Supplemental Environmental Impact Statement (SEIS). As a part of the SEIS, the City of Fremont will conduct additional sediment contaminant testing in the Ballville Reservoir, and report out on findings and potential impacts. The SEIS is expected to be completed by mid-2016, with dam removal scheduled to begin during the fall, 2016.

7.4 Public Communications

Success of the Lake Erie program depends on educated stakeholders. Division of Wildlife management practices need to be completed in a transparent fashion and by interacting with an informed public using direct media and electronic methods. Because of the importance of the Lake Erie fishery and fish populations to the Ohio economy, communication of environmental conditions, fish population trends, fishing success, research findings, habitat initiatives, and the need for/effect of fishery regulations is essential to sustain stakeholder support.

All public and media requests for Lake Erie fisheries and resource information or public inquiries are addressed by staff at the Fairport and Sandusky Research Stations. ODW employees present and display management, assessment, and research findings to symposia, workshops, sports shows, angler clubs, civic groups, schools, and other user groups or interested parties upon request and available scheduling. We also participate in preparing and providing Lake Erie fishery and resource information to the public though internet, media, and ODW and ODNR outlets. Our personnel develop and maintain table top displays and supporting materials and exhibit them at outdoors shows, tours, and fairs and provide technical and professional guidance and assistance to other governmental organizations, non-governmental organizations, and students interested in the fisheries profession and fishing opportunities in the Lake Erie watershed.

Table 7.0.1. Daily walleye bag limits for anglers in Ohio waters of Lake Erie and its tributaries based on the regulations framework. Estimated angler catch from regression of angler effort, catch rates, and harvest based on walleye population size and quota.

If the Ohio quota is: (numbers of walleyes)	Bag Limit		Estimated Angler Catch
	May - Feb	Mar - Apr	
more than 950,000	6	4	968,621
850,000 - <950,000	5	4	872,240
750,000 - <850,000	4	4	799,610
650,000 - <750,000	3	3	692,822
550,000 - <650,000	2	2	544,472
less than 550,000	1	1	329,960

Table 7.0.2. Daily yellow perch bag limits for anglers in Ohio waters of Lake Erie and its tributaries based on the regulations framework.

If the Ohio quota is: (pounds of yellow perch)	Bag limit		
	West	West Central	East Central
more than 800,000	30	30	30
700,000 - <800,000	25	30	30
600,000 - <700,000	20	25	30
500,000 - <600,000	15	20	30
400,000 - <500,000	10	15	25
300,000 - <400,000	5	10	20
200,000 - <300,000	5	5	15
100,000 - <200,000	5	5	10
less than 100,000	5	5	5

Table 7.0.3. Lake trout stocked in Ohio waters of Lake Erie, 2012-2015. Stocked fish were Seneca Lake strain from Allegheny National Fish Hatchery.

Year	Date	Location	Age	Number stocked
2012	5,7-Nov	Catawba ramp	Age-0	82,400
2012	6-Nov	Fairport Harbor ramp	Age-0	41,300
			2012 Total	**123,700**
2013	8,9-Apr	Catawba ramp	Age-1	40,900
2013	9,10-Apr	Fairport Harbor ramp	Age-1	41,300
			2013 Total	**82,200**
2014	14-Apr	Catawba ramp	Age-1	40,894
2014	15-Apr	Fairport Harbor ramp	Age-1	40,148
2014	14-Oct	Fairport Harbor ramp	Age-0	40,179
2014	15-Oct	Catawba ramp	Age-0	40,364
			2014 Total	**161,585**
2015	13-Apr	Catawba ramp	Age-1	41,357
2015	16-Apr	Fairport Harbor ramp	Age-1	41,194
2015	15-Oct	Catawba ramp	Age-0	40,778
2015	15-Oct	Fairport Harbor ramp	Age-0	40,924
			2015 Total	**164,253**

Table 7.0.4. Steelhead stocked in Ohio drainages of Lake Erie, 2011-2015. Steelhead were Little Manistee River strain (Michigan) reared at Castalia State Fish Hatchery.

Year	Stocking season	Location	Age	Number stocked
2011	Spring	Chagrin River	Age-1	60,537
2011	Spring	Grand River	Age-1	60,871
2011	Spring	Rocky River	Age-1	61,058
2011	Spring	Vermilion River	Age-1	38,284
2011	Spring	Conneaut Creek	Age-1	44,719
			2011 Total	**265,469**
2012	Spring	Chagrin River	Age-1	92,461
2012	Spring	Grand River	Age-1	91,288
2012	Spring	Rocky River	Age-1	106,875
2012	Spring	Vermilion River	Age-1	55,077
2012	Spring	Conneaut Creek	Age-1	75,086
2012	Fall	Ashtabula ramp	Age-0	31,564
2012	Fall	Geneva ramp	Age-0	60,202
2012	Fall	Avon ramp	Age-0	32,907
			2012 Total	**545,460**
2013	Spring	Chagrin River	Age-1	108,353
2013	Spring	Grand River	Age-1	90,149
2013	Spring	Rocky River	Age-1	106,996
2013	Spring	Vermilion River	Age-1	67,917
2013	Spring	Conneaut Creek	Age-1	75,184
2013	Fall	Ashtabula ramp	Age-0	79,039
2013	Fall	Fairport Harbor ramp	Age-0	61,326
2013	Fall	Vermilion ramp	Age-0	60,161
			2013 Total	**649,125**
2014	Spring	Chagrin River	Age-1	90,061
2014	Spring	Grand River	Age-1	108,316
2014	Spring	Rocky River	Age-1	100,073
2014	Spring	Vermilion River	Age-1	55,117
2014	Spring	Conneaut Creek	Age-1	75,040
			2014 Total	**428,607**
2015	Spring	Chagrin River	Age-1	90,085
2015	Spring	Grand River	Age-1	89,861
2015	Spring	Rocky River	Age-1	91,779
2015	Spring	Vermilion River	Age-1	65,149
2015	Spring	Conneaut Creek	Age-1	84,866
			2015 Total	**421,740**

8.0 Other Lake Erie Research and Federal Aid Projects

Lake Erie Fisheries Units personnel also participate in activities within Federal Aid projects originating in other Ohio Division of Wildlife organizational units. We report on some of these below. We also have been awarded a Great Lakes Restoration Initiative project under the guidance of USEPA in Chicago, and we provide a brief update in this section. Other projects, not included in this report, are associated indirectly with Lake Erie aquatic resources and/or are not Federal Aid related, and include projects in Data Management *(FADX18)*, Environmental Review Services *(FCFX01)*, Aquatic Invasive Species Monitoring *(FCGX02)*, and Fish Health Monitoring *(FPDS01)*.

9.0 Conclusions

The Division of Wildlife Lake Erie staff will continue to assess Lake Erie fish stocks with our standard programs, as in previous years, as well as continue to improve these assessment efforts through new gear development and evaluation, and ongoing collaborative research projects with universities. These data are essential to fisheries management, both within Ohio waters and across Lake Erie jurisdictions.

We will seek out new research and management opportunities and address continued changes in the Lake Erie ecosystem. Noxious algae blooms will be monitored and assessment work will be completed to determine their effects on fish populations and fisheries. We will examine hypoxia occurrences throughout Ohio waters of Lake Erie and determine their effects on fish populations and fisheries as well as effects in our assessment activities.

We will continue to seek opportunities to restore and enhance fish habitat in the Lake Erie basin through Lake Management Plan initiatives, develop and/or maintain partnerships with other Department of Natural Resources Divisions, and target/promote research to understand where fish species and specific spawning populations occur in the lake and how their populations can be enhanced. We will also assist in the implementation of strategic, tactical, and operational plans on specific topics.

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Appendix A. Ohio's 2015 sport and commercial harvest (pounds) of major species. District 1 commercial harvest includes Sandusky Bay and the inland fishing district.

		Sport Harvest			Commercial Harvest			
Species	District	Private Boat	Charter Boat	Sport Total	Trap Net	Seine & Trotline	Commercial Total	Grand Total
Walleye	1	2,298,599	360,636	2,659,235	0	0	0	2,659,235
	2	731,369	36,101	767,470	0	0	0	767,470
	3	519,717	221,379	741,096	0	0	0	741,096
	Total	3,549,685	618,116	4,167,801	0	0	0	4,167,801
Yellow Perch	1	459,002	26,742	485,744	0	0	0	485,744
	2	126,611	321	126,932	1,005,061	0	1,005,061	1,131,993
	3	272,485	34,221	306,706	266,030	0	266,030	572,736
	Total	858,098	61,284	919,382	1,271,091	0	1,271,091	2,190,473
White Bass	1	24,954	8,406	33,360	732,967	54,989	787,956	821,316
	2	34,116	977	35,093	13,619	0	13,619	48,712
	3	11,961	1,339	13,300	26	0	26	13,326
	Total	71,031	10,722	81,753	746,612	54,989	801,601	883,354
Smallmouth Bass	1	4,765	8,481	13,246	0	0	0	13,246
	2	324	29	353	0	0	0	353
	3	256	0	256	0	0	0	256
	Total	5,345	8,510	13,855	0	0	0	13,855
Freshwater Drum	1	6,922	562	7,484	180,711	713,494	894,205	901,689
	2	2,293	0	2,293	9,136	0	9,136	11,429
	3	495	9	504	0	0	0	504
	Total	9,710	571	10,281	189,847	713,494	903,341	913,622
Channel Catfish	1	14,328	3,018	17,346	188,101	194,535	382,636	399,982
	2	10,131	334	10,465	36,370	0	36,370	46,835
	3	2,538	131	2,669	726	0	726	3,395
	Total	26,997	3,483	30,480	225,197	194,535	419,732	450,212
White Perch	1	2,953	1,143	4,096	502,022	19,148	521,170	525,266
	2	4,356	241	4,597	110,255	0	110,255	114,852
	3	1,138	0	1,138	2,953	0	2,953	4,091
	Total	8,447	1,384	9,831	615,230	19,148	634,378	644,209
Steelhead Trout	1	592	44	636	0	0	0	636
	2	966	146	1,112	0	0	0	1,112
	3	14,926	5,901	20,827	0	0	0	20,827
	Total	16,484	6,091	22,575	0	0	0	22,575
Other Species[a]	1	--	--	--	209,613	343,166	552,779	552,779
	2	--	--	--	1,529	0	1,529	1,529
	3	--	--	--	938	0	938	938
	Total	--	--	--	212,080	343,166	555,246	555,246
All Species	Total	4,545,797	710,161	5,255,958	3,260,057	1,325,332	4,585,389	9,841,347

[a] Commercial harvest of "Other Species" includes buffalo, bullhead, burbot, carp, gizzard shad, goldfish, quillback, suckers, and lake whitefish.