

Lake Erie Fisheries Status and Trends Report 2007

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Report to the Lake Erie Committee

Pennsylvania Fish and Boat Commission

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Pennsylvania Fish and Boat Commission
Lake Erie Research Unit

LAKE ERIE FISHERIES STATUS AND TRENDS REPORT

2007

**Commercial Fishery
Summary and Status**

Pennsylvania's commercial trapnet fishery is currently comprised of one licensed fisherman. Trapnet gear replaced gillnets in 1996. The transition from gillnets to trapnets resulted in significant decreases in commercial fishing effort and harvest in Pennsylvania waters of Lake Erie as is shown in Table C-1.

Within Pennsylvania, the commercial harvest of yellow perch and walleye are controlled through a compulsory quota system, as established by the PFBC. Other commercially caught species are not restricted by harvest quotas in Pennsylvania.

Total trapnet landings for 2007 was 42,468 pounds of fish of various species. This was the highest recorded harvest for the commercial trapnet fishery since its inception in 1996. It represents a 97% increase from the long-term average harvest of 21,534 pounds harvested between 1996 and 2006, and a 7% increase in total landings from 2006. The catch rate (lbs/lift) has also increased for most species, with burbot being the only exception.

Although commercial trapnet harvest has steadily increased over that last four years, and achieved record harvest levels for this gear in 2007, it is insignificant relative to the historical gillnet harvest that averaged 445,000 pounds of fish between 1991 and 1995.

The majority of the 2007 commercial harvest consisted of yellow perch (55%) and white perch (16%). Other species included in the commercial harvest were freshwater drum (8%), white suckers (5%), redhorse suckers (4%), walleye (4%), burbot (3%), white bass (2%), lake whitefish (2%), bullhead catfish (1%), and a small amount (<1%) of channel catfish, smelt and common carp. As shown in Table C-2, most of the harvest took place in June (15%), July (16%) and August (20%)

Yellow Perch

Yellow perch are managed and allocated through a quota system directed by the Lake Erie Committee (LEC). All five members of the LEC are given a share of a Total Allowable Catch (TAC) based on the surface area of their respective jurisdictions (YPTG, 2008). Although the agency TAC for Pennsylvania for perch fell by 14 % from 2006 to 2007, internally, the Pennsylvania trapnet fishery was allocated the same quota for 2007 (35,000 lbs) as was awarded in 2006. This is based on the relatively low impact of this fishery on local perch stocks under the current fishery.

Yellow perch accounted for the bulk (55%) of the commercial trapnet harvest. A record trapnet harvest for yellow perch was attained in 2007, when 23,471 pounds of perch were landed. This represented 67% of the 35,000 pound TAC allocated to the Pennsylvania commercial trapnet fishery. Monthly harvest peaked in August, when 5,147 pounds of perch were landed.

Trapnet CPE (lbs/lift) for yellow perch has steadily increased since 2002, and demonstrated a sharp increase in 2007 (Figure C-1). This is a function of the increase in the number of yellow perch, as well as increased fishing efficiency.

Walleye

The 2007 PFBC-TAC for the Pennsylvania commercial trapnet fishery was maintained at 4,000 pounds for 2007. Total reported commercial trapnet walleye harvest for 2007 was 1,880 pounds, or 47% of the PA commercial trapnet quota.

The reported walleye trapnet harvest of 1,880 pounds represented less than 5% of total pounds landed for all species. Harvest decreased 33% from 2006, but remained well above the average historical (1996-2006) trapnet harvest of 500 pounds (Figure C-2). The harvest should decrease again in 2008 with fewer walleye in the population, and a dominant, but diminishing 2003 cohort.

The 2007 trapnet catch rate (21.4 lbs/lift) decreased slightly from the 2006 record catch rate (22.7 lbs/lift), but remained well above the 1996-2006 average of 4lbs/lift (Figure C-2).

Lake whitefish

Whitefish are a challenge to capture in trapnets in Pennsylvania, as substantiated by the diminutive harvests since the trapnet fishery was established in 1996 (Figure C-3). Average annual gillnet harvest of whitefish from 1987-1995 was 163,000 pounds. Average annual trapnet harvest since 1996 has been 636 pounds. A total of 684 pounds of whitefish were harvested in 2007, up 88% from 2006, but only up 8% from the long-term average. The most promising trend in commercial harvests has been

an increasing trend in catch rate. The 2007 CPE for whitefish was 7.8 LWF/lift, the second highest CPE in the 12 year time series (Figure C-3).

Burbot

Burbot harvest totaled 1,088 pounds in 2007. Although burbot harvest increased 75% from 2006, it remained well below the long-term average of 4,400 lbs/year since 1996. Catch rates have been steadily declining from a record high catch rate (60 lbs/lift) in 2002 (Figure C-4). The 2007 catch rate of 12.3 lbs/lift was the lowest catch rate for burbot since 1996, the first year of the trapnet fishery.

White Perch / White bass

In 2007, 6,618 pounds of white perch were harvested which accounted for the second highest (16%) poundage among all species commercially harvested in 2007. This was the highest recorded harvest of this species since the beginning of the trap net fishery. The prominence of this species in the trapnet fishery has been especially evident over the last three years (Figure C-5).

As with harvest, trapnet catch rates have increased dramatically since 2004. The 2007 CPE values (75 lbs/lift) doubled from 2006 (37 lbs/lift), when harvests averaged over 75 lbs of white perch per trapnet lift.

The white bass represent a small fraction (2%) of the total commercial landings in Pennsylvania. The harvest in 2007 was only 771 pounds, the highest recorded trapnet harvest for this species. As shown in Figure C-6, catch rate for white bass also increased to record values in 2007.

Fish Stock Assessment and Trends

Percid Assessment:

June and September gillnet and October trawl surveys are conducted annually to provide an index of perch and walleye populations in Pennsylvania waters of Lake Erie. In addition to catch rate, these assessment surveys provide information on recruitment, age, length, weight, sex, maturity and diet of the assessment catch.

Yellow Perch

The 2007 yellow perch catch rate from gill net surveys was over 218 perch/1000 ft net, the third highest catch rate since 1989 (Figure A-1). The catch was dominated by the 2003 year-class (31.5%), but also had good representation from the 2001 year-class (21.6%), and the 2005 year class (19.5%) (Table A-1).

Fall trawl assessment caught very high numbers (1,000+ and 2,000+) of YOY perch in two trawls (out of ten trawls). This resulted in a relatively high (315.5) YOY index for yellow perch in 2007 (Figure A-2). If these trawls are excluded from the assessment series as outliers, the YOY index is a more realistic 22.4. Even this conservative estimation suggests that a moderately good year class of yellow perch was produced in 2007, and also represents the best year class since 2003.

The age 2++ yellow perch index (17.3 YP/10min tow) from fall trawl assessment remained stable in 2007, and was slightly above the average of 13.1 yp/10min tow since 1985 (Figure A-3).

Catch curve analysis shows that total mortality has been relatively low for yellow perch, and has been near or below target levels for most years since

1985 (Figure A-4). Although the mortality estimates have been increasing, and were slightly above the target level (0.5) in 2005 (0.52) and 2006 (0.52), mortality dropped below the target level in 2007 (0.47).

Walleye

Walleye are infrequently caught in the bottom oriented gill net assessment targeting yellow perch. Based on the modest catch from the summer yellow perch surveys, the walleye population is in decline. Catch rates from the 2006 and 2007 summer gillnet surveys were 4.3 and 4.0 walleye/1000 ft GN respectively, a 7% decrease catch rate.

The age distribution of the walleye assessment catch is shown in Figure A-5. The 2003 year class (age 4) is the dominant cohort, but the catch was also well represented by the 2001 and 1998 year classes (Figure A-5).

Coldwater Assessment

The primary target for August coldwater gill net assessment is lake trout. Other species frequently caught during this assessment are burbot and to a lesser degree, whitefish. Figure A-6 shows the catch rate (# fish/standard lift) for lake trout, burbot and lake whitefish from 1989 – 2007. The catch rate for all three species were above the long-term average (18 years) in 2007.

Burbot remain the most frequently caught fish in the August gill net assessment. Lake trout catch has steadily increased since a recent low (1.0 LT/lift) in 2000. The 2007 catch rate of 2.77 LT/lift is the second highest catch rate in the 19 year time series. The majority (58%) of lake trout were Klondike strain, followed by Finger Lakes (35%) and Superior strain (6%). Based on the age distribution of the assessment catch, the population is

dominated by young fish. Mean age of the catch was 4.0 years and no fish that were caught were older than age 7 (Figure A-7).

Lake whitefish catch rates have also have demonstrated a recovery over sustained lows over the last two decades. A catch rate of 1.33 LWF/lift is the highest recorded catch rate over time series. The population was dominated by the 2003 (35%), 2001 (20%) and 1998 (10%) year classes (Figure A-8).

Forage Fish Assessment.

Based on fall trawl assessment in 2007, there has been an increase in the abundance and diversity of forage fish. Total forage fish density was over 5,700 fish/hectare, 32% higher than the average (4,358 fish/hectare) of the last 20 years (Figure A-9).

The majority of the trawl catch was comprised of emerald shiners (48%), round gobies (20%), yellow perch (14%) and rainbow smelt (11%). The increased diversity seen in the trawl catches can be attributed to increases in emerald shiners and YOY yellow perch, and a decrease in the amount of exotic species; primarily round gobies and rainbow smelt (Table A-2). There were record high catches of yearling-and-older (YAO) emerald shiners in both the eastern and central basin assessment trawls.

Round goby densities fell to about half of their historical abundance in central basin waters, but increased almost threefold in the eastern basin trawls. In eastern basin areas, YAO rainbow smelt abundance increased to the highest index value in 15 years. Smelt abundance remained well below the long-term average in the central basin areas.

Sport Fishing Summary

Introduction

Comprehensive analysis of sport fishing in Pennsylvania waters of Lake Erie has been limited. Historical data on angling activity was provided through synoptic creel surveys in 1981 and 1993. An extensive survey on tributary fishing was conducted in 2004 (Murray and Shields, 2004), and provided an updated overview of the steelhead fishery.

In 1996, the LERU initiated an annual boat angling creel survey that could provide accurate estimates of the angling activity for the most frequently targeted fish species on the open lake portion of Lake Erie. Summary information from the Lake Erie Boat Angler Survey (LEBAS) is used to describe the status and trends of the most frequently targeted, caught and harvested sport fish in Pennsylvania waters of Lake Erie.

Lake Erie Boat Angling Survey (LEBAS)

Materials and Methods

Beginning in 1996, the LERU initiated an annual creel survey of the open lake waters of Lake Erie. Extensive creel survey analysis in 1993 provided information on the most frequently used launch facilities by anglers fishing the open lake. Sites were selected from the 1993 comprehensive analysis that demonstrated the highest angler effort, catch and harvest of yellow perch and walleye.

A bus route design was employed to estimate the effort, catch and harvest of walleye, yellow perch, smallmouth bass and steelhead trout on the open lake. Based on the 1993 Lake Erie Angler Survey, the majority of the open lake

angling activity directed at percids was concentrated at four public launch sites: Walnut Creek Access Area; North East Access Area; Lampe Marina, and East Avenue boat launch.

The relative survey intensity at each site was weighted based on anticipated use at these sites. A day type stratification had creel clerks afield two randomly selected weekday days and one randomly selected weekend day each week. Holidays, if occurring on a weekday, were randomly chosen by computer generation and considered a weekend day type. A time of day stratification was used; each day was divided into two sampling periods of 7.5 hours each, one early (7:00) and one late (14:30), so that all daylight hours were surveyed. The night fishery was not sampled.

The 2007 LEBAS began May 1 and was completed on October 31. A route was constructed containing four (Walnut Creek Access Area, Lampe Marina, East Avenue Boat Launch and North East Access Area) heavily used boat angler launch facilities. Routes were followed progressively in a "circular" manner. By this design, a creel clerk was randomly assigned, without replacement, a starting point on the route each survey day. Because of the randomization of the survey design, data obtained by the creel clerks was expected to reflect angling activity throughout all times of the daylight angling day.

First priority for a clerk on-site was angler counts. Boat counts were tallied as a boat crossed the shore/water interface. Exiting and entering boats were counted. This provided an independent estimate of precision (launching boats should equal landing boats). As boats entered or exited the water, they were characterized as

angling or non-angling, based on responses by people on board.

Second priority for clerks on site was angler interviews. Data was obtained from all cooperative anglers, as time would allow. A variety of information was solicited from interviews including: number of rods fished, group size, amount of time spent fishing, species sought (up to 3), the number of species caught and harvested, if the trip had been chartered and the geographic area of species targeted, caught and harvested. If time was available, clerks were responsible for collecting length measurements and scales from creel fish. These biological measurements were used to construct length frequencies, and age composition of the harvest.

For the purposes of the open lake analysis, statistics of interest were sometimes separated by basin (central v. eastern) to better describe the use, catch and harvest of open lake fish stocks. The effort, catch and harvest estimates for yellow perch, walleye, smallmouth bass and steelhead trout were expanded from estimates derived from 2007 LEBAS sites to lake-wide estimates (PA waters) based on the proportion that these sites represented relative to all sites surveyed during the expansive 1993 Lake Erie Angler Survey.

Results:

In 2007, creel clerks collected 573 completed trip interviews from boat anglers landing at Walnut Creek Access Area (349), North East Access Area (94), East Avenue Boat Launch (78) and Lampe Marina (57). The information provided by cooperative anglers, and counts of launching and landing boats at these areas were used to provide estimates of effort, catch, harvest,

angler success, and catch and harvest rates.

Total open lake boat angler effort at the four survey sites was 336,863 hours, up 8% from 2006 (Figure S-1). Most (79%) of the angler effort was in central basin waters.

Information collected in 2007 showed that boat anglers targeted walleye, yellow perch, smallmouth bass, steelhead, “anything that bites”, white bass and largemouth bass. Most of the open lake boat effort was directed at walleye (51%), yellow perch (35%), smallmouth bass (6%), and steelhead trout (5%) (Table S-1).

Boat anglers also caught 13 different “species” and harvested 9 different “species” (Table S-2). Most of the catch was comprised of yellow perch (61%), white bass (13%), walleye (11%), sheepshead (6%), white perch (5%), round goby (1%), and smallmouth bass (1%). Most of the fish harvest was comprised of yellow perch (82%) and walleye (16%). The following sections expand on the key species that make up the core of the fishery use, catch and harvest in Pennsylvania waters of Lake Erie.

Walleye

The quality of the walleye fishery had been on a steady decline since 1998 in response to a declining walleye population. Catch rate dropped to a record low (0.13 walleye/ hour) in 2002. After 2002, the fishery began showing signs of recovery and angler success and catch rates improved. A declining trend in targeted effort reversed itself, and, walleye angler effort increased in 2005 as the 2001 and 2003 year classes recruited into the sport fishery.

Walleye Angler Effort:

Walleye fishing remained very good in 2007, and it was reflected by angler participation. Although walleye angler effort decreased slightly (3%) from 2006, it still attracted over half of the angler effort by open lake boat anglers. Angler effort totaled 231,505 hours in 2007, about 5% below the 12 year average. (Figure S-2). As usual, the majority of the effort was concentrated in the central basin, although in 2007, there appeared to be a disproportionate (82%) amount of walleye effort in the central basin waters. Walleye angler effort increased 14% in central basin waters but decrease 43% in eastern basin waters from 2006. A monthly analysis of walleye fishing effort showed that walleye fishing peaked in June, and continued to attract a moderate number of anglers through August (Figure S-3).

Walleye Catch and Harvest:

In 2007, walleye anglers caught an estimated 125,638 walleye and harvested 116,098 walleye. This was the third highest recorded walleye catch and harvest in the 12-year history of the LEBAS. This was a 23 % decrease in catch and a 22% decrease in harvest from the record catch and harvest estimates of 2006 (Figure S-2). Anglers kept 92% of the walleye they caught, indicative of few young fish (age 2) in the population.

Coincident with targeted effort, the majority (87%) of the catch and harvest was in the central basin. Walleye catch decreased 16% in central basin waters and decreased 50% in eastern basin waters from 2006. Similarly, walleye harvest decreased 15% in central basin waters and decreased 50% in eastern waters from 2006.

Walleye Angler Success and Catch Rate:

The walleye angler catch and harvest rates from the 2007 LEBAS walleye assessment declined from record levels in 2006, but remained well above the long-term average (Figure S-4). Overall catch rate (0.46 walleye/angler hour) and harvest rate (0.42 walleye/angler hour) in 2007, was the third highest catch rate and second highest harvest rate since the inception of the LEBAS in 1996. The best walleye fishing continues to be in central basin waters (Table S-4). As expected, the catch rates were much higher in central basin waters (0.51 walleye/angler hour) than in the eastern basin (0.28 walleye/angler hour), but both areas remained [DAMI]above the 12-year average in both areas.

Smallmouth Bass

Lake Erie has been renowned as one of the best smallmouth bass fisheries in the country. Pennsylvania's portion of Erie is no exception. The Pennsylvania Lake Erie smallmouth bass fishery accounted for the 5 largest smallmouth bass caught in Pennsylvania in 2007, as reported by the PFBC Angler Award Program. Although total angler effort has declined over the last decade, the Lake Erie smallmouth bass fishery still attracts a small, but dedicated group of anglers, that demonstrate a high catch and release ethic. As the following section shows, the angler catch rate of smallmouth bass fishing appears to be in decline since 2003, but can be very sporadic. Near record catch rates were achieved in 2006, but declined to record lows in 2007.

Spring weather can have a large influence on the overall catch rate for open lake smallmouth bass on any given year. Cool, windy springs can severely limit access to the early bass

fishery, resulting in poor fishing, but if conditions are favorable, the quality of the fishery can be outstanding.

Smallmouth Bass Angler Effort:

In 2007, anglers spent an estimated 32,535 hours fishing for smallmouth bass in open lake waters of Lake Erie (Table S-5). Smallmouth bass angler effort increased 57% from 2006, but was 53% below the average of the last 12-years (Figure S-5). Most anglers continue to target smallmouth bass in the spring. Monthly effort estimates show that May accounted for 59% of the total monthly effort. After May, targeted bass trips remained fairly low throughout the season, although there was a small but notable increase in October smallmouth bass fishing effort (Figure S-6). Anglers directed an estimated 1,430 hours at smallmouth bass in October 2007, the highest amount of October fishing effort directed at smallmouth since 1999.

Most anglers continue to fish for smallmouth bass in eastern basin waters. About 68% of the effort directed at smallmouth bass was in eastern basin waters and about 32% of the effort was in central basin waters.

Smallmouth Bass Catch and Harvest:

Total lake-wide estimated smallmouth catch in PA waters was 16,637 bass, with an estimated harvest of 560 bass (Table S-5). 2007 smallmouth catch estimates decreased 35% when compared with the 2006-angling season, and declined 83% from the 12-year average (Figure S-6). Catch and release fishing continues to dominate the fishery as 97% of the bass that were caught were released.

Temporal distribution of catch in 2007 showed that May (36%) , June (26%), and July (30%) accounted for most of

the smallmouth catch, and a small boost in October (7%) coinciding with a rise in fall smallmouth fishing effort. (Figure S-6). Although overall harvest was insignificant, it is interesting to note that 92% of the smallmouth bass harvest occurred in July. The remaining 8% of the harvest occurred in October.

Smallmouth Angler Success and Catch Rate:

Most anglers targeting smallmouth bass on Lake Erie are successful in catching at least one bass. In 2007, LEBAS anglers were successful on 69% of their trips. Concern of a declining smallmouth bass fishery remains as the trend of a declining catch rate for smallmouth bass seems to have returned in 2007. Although catch rates improved considerably in 2006, the 2007 catch rate (0.32 SMB/ah) was the lowest in the 12-year time series (Figure S-7). Average catch rate over the last 12 years has been about 1 bass per hour (0.99 SMB/ah).

Yellow Perch

Yellow perch fishing remained very good in 2007. Directed effort, catch and harvest of yellow perch were well above average in 2007. The catch and harvest rates also increased in 2007. Perch fishing has been excellent since 2002; sustained high catch rates and large fish continued to make this an attractive fishery for Lake Erie anglers.

Yellow Perch Angler Effort:

Angler effort directed at perch increased for the first time in three years (Figure S-8). Anglers directed an estimated 167,157 hours at yellow perch in 2007 (Table S-5). This was a 43% increase from the long-term average, and a 53% increase from 2006. Perch angling effort was highest in September (30%), but anglers also targeted perch heavily

in June (26%). Effort decreased slightly in July as anglers switched from perch to walleye to perch (Figure S-9). The majority (81%) of the perch angler effort was concentrated in central basin waters.

Yellow Perch Catch and Harvest:

During the 2007 fishing season anglers caught and harvested an estimated 510,858 perch and 445,555 perch respectively (Table S-5). Most of the catch was harvested, as the 87% retention rate was the highest catch and harvest rate in the 12-year history of the LEBAS. The 2007 estimate represented a 28% increase in catch and a 48% increase in harvest from the catch and harvest estimates in 2006. Relative to the average over the last 12 years, catch has increased 61% and harvest increased 81% (Figure S-8). About 88% of the total yellow perch catch and 87% of the total harvest was concentrated in central basin waters. Catch and harvest were highest in September, followed by July, August and October (Figure S-9).

Yellow Perch Angler Success and Catch Rate:

Although 2007 yellow perch angler catch rate (4.09 YP/ah) decreased slightly from 2006, perch fishing remained well above average (3.14 YP/ah). Anglers success increased slightly as perch anglers caught fish on 91% of the trips in which they targeted perch (Figure S-10). Catch rate increased in both the central and eastern basins in 2006 (Table S-4).

Steelhead Trout

Stocking

The steelhead fishery in Pennsylvania is maintained exclusively through tributary stocking programs. 2007 stocking

numbers for trout stocked in the Lake Erie drainage are summarized in Table S-8 (PFBC stocking) and Table S-9 (Cooperative Nursery stocking).

Baseline target stocking in Pennsylvania tributaries to Lake Erie is 1 million yearling steelhead per year. This target was met in 2007 when the PFBC stocked 1,004,938 steelhead, and was supplemented by sportsman's cooperative nursery stocking of 111,525 steelhead, resulting in total stockings of 1,116,463 steelhead yearlings. Steelhead were stocked in 11 Lake Erie tributaries, as well as Presque Isle Bay. Stream/location stocking allocations are based on angler use and public access.

Most steelhead are stocked in Elk Creek, Walnut Creek, Twentymile Creek (Figure S-14). Trout Run and Godfrey Run, nursery streams which supply broodstock for Pennsylvania's steelhead hatchery program, received about 18% of all steelhead stocked in 2007. This represented about 10% of the steelhead stocked by the PFBC and 86% of the steelhead stocked by the sportsman's cooperative nurseries. A summary of all trout and salmon species stocked by the PFBC since 1987 is shown in Figure S-15.

Steelhead Fishery

Based on a tributary angler survey conducted from October 2003 through April 2004, the vast majority of the steelhead fishing occurs in the tributaries. This analysis is described in detail under a separate report (Murray and Shields, 2004). The information in this report is derived exclusively from the 2007 LEBAS.

Steelhead Angler Effort:

Total boat angler effort directed at steelhead trout is insignificant relative to the angling effort expended by shore anglers, but the LEBAS data shows

annual trends that provide valuable insight into Pennsylvania's steelhead fishery. Results from the 2007 LEBAS estimated the open lake steelhead effort by boat anglers at 29,779 hours (Table S-5). This was an 80% increase from 2006 estimates but only a 1% increase from the 12-year average of 29,591 hours (Figure S-11). In 2007, 86% of the steelhead effort was concentrated in central basin waters. Monthly distribution of steelhead boat angler effort was highest in September (44%) and October (43%). The late season peak in steelhead angler effort is typical of anglers intercepting steelhead as they stage for the annual tributary runs off of Trout and Godfrey Runs. (Figure S-12).

Steelhead Angler Catch and Harvest:

Boat anglers caught an estimated 9,037 steelhead and harvested an estimated 4,936 steelhead in 2007, harvesting about 55% of the steelhead that they caught (Table S-5). Catch and harvest increased over 140% from 2006 estimates, with the catch 29% higher and harvest 14% higher than the long-term average. A monthly distribution of catch and harvest is depicted in Figure S-12, and shows that most of the steelhead harvest occurred during the second half of the boating season. Although most of the harvest took place in September (33%) and October (30%), an appreciable number of steelhead were incidentally caught and harvested in August (25%) by walleye anglers. Although boat anglers tend to harvest a greater percentage of the steelhead that they catch relative to stream anglers, the total harvest by boat anglers remains insignificant.

Steelhead Angler Success and Catch Rate:

Based on the results of the LEBAS data, 39% of the boat anglers targeting steelhead were successful in catching at

least one steelhead and landed about one steelhead for every 10 angler hours fished (0.10 STH/ah) steelhead/angler hour). The 2007 catch rate increased from 2006, when anglers landed a steelhead for every 12.5 fishing hours fished (Figure S-13). Table S-4 shows that the catch rate was much (3X) better in central basin waters (0.12 steelhead/angler hour) than eastern basin waters (0.04 steelhead/angler hour).

Reference:

Murray, C., and M. Shields. 2004. Creel analysis and economic impact of Pennsylvania's Lake Erie tributary fisheries in Erie County, Pennsylvania, with special emphasis on landlocked steelhead trout (*Oncorhynchus mykiss*). Pennsylvania Fish and Boat Commission. Lake Erie Research Unit. Fairview, Pennsylvania, USA.

Yellow Perch Task Group Report (YPTG) 2007. Report of the Yellow Perch Task Group, March 2008. Presented to the Standing Technical Committee, Lake Erie Committee of the Great Lakes Fishery Commission. Ann Arbor, Michigan, US.

Year	Walleye	Smelt	Yellow perch	White sucker	Redhorse	Carp	Catfish	Bullhead	Drum	Burbot	White perch	White bass	Lake whitefish	TOTAL
1991	10,296	86	159,352	9,211	3,409	10	60	10	13,733	33,382	52,638	895	300,882	584,100
1992	14,548	46	77,267	5,014	2,540	45	52	15	21,866	22,210	25,701	620	205,133	375,057
1993	29,990	11	28,976	10,557	1,105	0	76	16	11,535	4,197	16,879	834	269,080	373,256
1994	28,205	1	58,765	15,945	3,529	0	476	210	25,316	12,059	47,937	686	350,309	543,438
1995	42,138	0	30,754	12,719	1,717	75	351	23	22,774	30,945	32,892	4,461	169,747	348,596
1996	81	0	5,340	4,125	1,580	0	6,848	872	234	2,262	235	96	2	21,771
1997	193	0	7,398	3,223	766	96	3,806	626	1,117	8,910	1,628	386	1,597	29,696
1998	417	0	5,281	3,544	1,283	132	2,125	972	628	8,963	701	113	3,496	27,655
1999	229	-	2,905	1,864	566	-	1,877	619	677	7,943	201	670	670	20,220
2000	183	-	5,950	862	436	-	1,269	861	567	3,529	379	338	-	20,214
2001	73	-	2,702	755	287	-	601	594	381	4,359	427	43	-	10,222
2002	43	-	2,030	508	142	-	452	18	389	5,177	489	19	25	9,292
2003	129	-	5,050	856	467	-	73	30	936	1,821	408	88	93	9,951
2004	501	-	7,753	1,402	348	-	72	286	1,486	2,401	459	110	91	14,909
2005	830		15,228	3,461	2,111		880	868	3,050	2,238	3,844	154	563	33,227
2006	2,818		20,517	3,091	2,734		292	617	2,775	1,723	4,565	221	363	39,716
2007	1,880		23,471	2,052	1,897		159	362	3,486	1,088	6,618	771	684	42,468
MEAN	8,167	10	27,204	4,821	1,439	26	1,207	415	6,717	9,507	11,836	608	81,378	161,873

Table C-1: Annual commercial harvest in pounds, Pennsylvania waters of Lake Erie (Trap net landings in bold).

Month	Walleye	Yellow perch	White sucker	Redhorse	Catfish	Bullhead	Drum	Burbot	White perch	White bass	Lake whitefish	TOTAL
January	-	-	-	-	-	-	-	-	-	-	-	0
February	-	-	-	-	-	-	-	-	-	-	-	0
March	-	-	-	-	-	-	-	-	-	-	-	0
April	219	545	222	176	100	230	665	98	865	260	1	3,381
May	295	1559	110	160	10	76	250	50	2,130	225	0	4,865
June	182	4795	436	263	4	28	294	64	465	33	10	6,574
July	101	4351	503	644	29	5	703	36	227	91	166	6,856
August	402	5147	288	279	16	23	405	215	1,459	10	200	8,444
September	160	2875	148	143	0	0	678	262	970	67	79	5,382
October	60	2884	157	95	0	0	190	176	353	12	170	4,097
November	288	1110	75	57	0	0	175	53	83	72	57	1,970
December	173	205	113	80	0	0	126	134	66	1	1	899
Total	1,880	23,471	2,052	1,897	159	362	3,486	1,088	6,618	771	684	42,468

Table C-2: Monthly commercial landings in pounds, Pennsylvania waters of Lake Erie, 2007.

Year Class	Age	CPE	Percent	Average Length (mm)	Average Weight (g)
2006	1	10.5	4.8%	151	41
2005	2	42.6	19.5%	182	78
2004	3	16.4	7.5%	214	132
2003	4	68.7	31.5%	232	169
2002	5	12.7	5.8%	241	196
2001	6	47.0	21.6%	256	238
2000	7	7.5	3.4%	283	324
1999	8	5.2	2.4%	279	310
1998	9	3.7	1.7%	291	452
1997	10	1.5	0.7%	285	295
1996	11	2.2	1.0%	300	391
mean age:	4.27	218.0			

CPE in number per 1000 gillnet ft.

Table A1: Yellow perch population year class structure and relative abundance based upon 2007 fall stock assessment.

Central Basin	Alewife		Gizzard Shad		Lake Whitefish		Round Goby		Smelt		Trout Perch		White Bass		Emerald Shiner		Spottail Shiner		Yellow Perch		White Perch	
	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO
1990	0.0	0.0	40.9	0.6	0.0	0.0	0.0	0.0	1,128.2	43.1	0.0	64.2	16.6	5.0	365.5	2.8	0.0	18.2	8.6	50.9	1,527.6	42.0
1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992	174.3	61.1	0.0	0.0	0.0	0.0	0.0	0.0	8,205.0	540.6	214.1	132.7	0.0	0.4	33.6	240.7	0.0	0.0	124.8	57.5	887.5	61.5
1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1994	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	952.9	4.4	1.1	7.2	6.6	2.8	0.0	0.6	0.0	0.0	567.4	2.2	76.3	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.7	506.0	24.9	53.1	4.4	0.0	53.6	17.7	19.9	17.7	52.0	191.9	136.0	1.7
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	5,422.1	29.9	7.1	0.0	0.0	0.0	3.5	0.0	0.0	0.0	354.1	12.4	331.5	1.8
1997	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	10.3	26.5	0.0	8.8	0.0	0.0	0.0	7.4	0.0	0.0	0.0	14.7	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	743.6	113.1	29.9	1.3	23.1	1.0	0.0	0.0	5.8	0.0	0.0	0.4	13.7	2.5	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	1,114.4	55.3	1.8	0.0	10.0	0.9	0.0	6.0	0.0	0.0	0.7	0.0	7.2	7.9	8.5	1.9
2000	0.0	0.0	0.0	0.0	0.0	0.0	781.1	126.5	15.3	75.8	23.0	11.5	96.4	1.0	0.0	0.0	0.0	0.0	15.7	3.9	75.9	0.6
2001	0.0	0.0	0.0	0.0	0.0	0.0	1,577.8	55.2	377.4	0.0	7.8	0.6	12.1	57.6	8.5	0.0	0.0	0.0	388.4	41.3	26.6	2.4
2002	0.4	1.3	0.0	0.0	0.0	0.0	289.3	238.3	152.9	6.2	45.6	81.2	0.0	0.4	38.1	107.4	0.0	2.2	11.9	37.5	80.7	38.5
2003	0.0	0.5	0.0	0.0	3.2	0.0	75.3	59.1	177.6	22.1	78.0	50.9	0.0	0.0	81.8	217.5	0.0	0.0	788.0	75.6	173.8	28.6
2004	0.0	0.0	0.0	0.0	0.0	0.0	1,011.3	767.0	20.9	9.9	6.7	5.2	0.0	0.0	0.0	0.0	0.0	0.0	2.4	18.3	2.4	6.2
2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2007	0.0	0.0	0.0	0.0	0.0	1.7	227.8	361.1	35.1	10.7	10.9	16.0	0.0	1.2	0.8	769.5	0.0	0.0	10.0	27.4	17.8	0.8
Average 1990 - 2007	12.5	4.5	3.1	0.0	0.2	0.1	415.9	126.8	1,188.3	91.2	32.3	31.0	9.7	5.3	42.2	97.4	1.5	2.8	167.4	38.9	238.9	13.3

Eastern Basin	Alewife		Gizzard Shad		Lake Whitefish		Round Goby		Smelt		Trout Perch		White Bass		Emerald Shiner		Spottail Shiner		Yellow Perch		White Perch	
	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO	YOY	YAO
1990	2.7	1.8	0.9	0.0	0.0	0.0	0.0	0.0	1,731.6	1,053.8	0.0	5.3	46.9	7.1	1.8	39.4	0.0	10.6	0.4	19.0	72.1	43.8
1991	54.0	7.1	8.4	0.9	0.0	0.0	0.0	0.0	64.2	1,522.8	3.5	14.2	2.2	0.0	3.5	15.9	0.0	12.4	6.2	7.5	10.6	0.4
1992	19.5	31.5	0.0	0.0	0.0	0.0	0.0	0.0	600.4	513.2	8.7	106.4	0.0	0.0	151.2	17.9	1.8	2.8	45.9	16.6	227.3	10.9
1993	0.6	0.0	0.0	6.1	0.0	0.0	0.0	0.0	193.6	536.4	18.2	31.5	26.5	17.7	5.5	8.8	12.2	44.2	71.3	14.4	311.9	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,066.1	54.7	27.7	0.0	19.4	0.0	1.7	48.1	0.0	0.0	9.4	1.1	55.3	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.5	37.6	5.9	15.5	0.0	0.0	0.7	0.7	2.2	7.4	11.1	19.9	32.4	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	130.3	54.1	1.7	1.9	0.0	1.0	132.6	4.3	0.0	0.0	17.9	0.0	16.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.5	85.5	0.0	85.5	0.0	1.5	2.9	10.3	0.0	2.9	0.0	25.1	1.5	1.5
1998	0.7	0.1	0.0	0.0	0.0	0.2	131.4	72.1	641.5	42.2	165.5	16.6	8.0	3.2	108.2	8.6	23.9	10.0	107.2	3.5	281.4	0.4
1999	0.0	0.0	0.0	0.0	0.0	0.0	171.7	11.9	35.6	14.1	0.8	0.6	0.9	9.5	1.4	0.0	0.3	0.3	16.6	110.1	2.4	2.1
2000	0.0	0.0	0.0	0.0	0.0	0.0	1,350.6	27.2	136.1	0.0	9.7	0.0	1.0	0.0	0.0	0.0	0.0	0.0	4.9	0.5	7.8	0.0
2001	0.0	0.0	0.0	0.0	9.2	0.0	2,159.3	1,259.8	34.6	13.9	15.9	11.7	4.6	32.4	0.0	4.6	0.0	0.0	443.8	66.2	677.4	49.5
2002	0.8	4.5	0.8	0.0	0.0	0.0	18.2	25.7	98.0	6.5	0.0	0.0	0.0	0.0	74.4	105.6	0.0	0.8	3.3	16.5	0.0	0.0
2003	2.5	0.0	0.0	0.0	1.8	0.0	323.5	63.8	592.2	32.4	230.6	26.0	0.0	0.6	1,163.4	157.6	0.0	0.0	572.8	40.7	523.9	70.4
2004	0.0	0.0	0.0	0.0	15.0	11.0	560.9	366.6	12.3	12.3	46.2	114.1	0.0	0.8	0.0	0.0	0.0	0.0	5.0	89.0	0.0	0.0
2005	0.0	0.0	0.0	1.0	0.0	0.0	497.7	390.2	47.9	0.0	27.4	171.2	11.9	8.3	0.5	52.5	0.0	0.0	9.7	22.7	51.2	1.9
2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2007	8.0	0.0	0.0	0.4	0.0	0.0	1,092.3	951.5	260.2	1,006.3	46.2	110.6	0.0	2.4	81.7	4,713.1	0.0	0.0	1,558.0	67.5	444.6	2.8
Average 1990 - 2007	5.4	2.7	0.6	0.5	1.6	0.8	394.1	198.0	309.9	245.8	38.0	44.1	4.7	4.8	108.0	321.8	2.5	5.1	180.2	31.3	165.2	8.7

Table A-2: Trawl indices of abundance (# / hectare) for age 0, yearling and older forage fishes, Pennsylvania waters of Lake Erie.

Numbers per ten-minute tow							
Survey year	Age Group						
	2	3	4	5	6	7	8+
1982	16.9	10.6	1.7	0.4	0.0	0.0	0.0
1983	3.7	0.7	0.7	0.2	0.1	0.1	0.0
1984	4.6	5.8	1.5	0.5	0.0	0.0	0.0
1985	1.8	29.2	6.4	0.9	1.4	0.0	0.0
1986	26.7	0.5	2.1	1.0	0.8	0.5	0.0
1987	0.6	12.8	1.6	0.3	0.1	0.0	0.0
1988	4.0	2.9	11.6	1.1	1.6	0.2	0.2
1989	2.9	6.4	1.4	5.8	1.1	0.9	0.2
1990	1.6	0.6	2.3	0.3	1.6	0.1	0.1
1991	0.5	1.5	1.0	4.5	1.1	2.0	0.0
1992	1.4	2.0	3.6	1.7	1.7	1.4	2.2
1993	2.0	4.0	0.0	1.5	2.5	2.5	1.5
1994	0.8	0.1	0.0	0.0	0.0	0.0	0.0
1995	3.6	3.4	1.2	0.2	0.0	0.2	0.4
1996	0.1	0.0	0.5	0.2	0.3	0.2	0.3
1997	0.0	3.5	3.5	2.5	1.5	1.0	0.5
1998	0.1	0.1	0.2	0.4	0.2	0.0	0.1
1999	2.3	2.5	2.4	0.9	0.5	0.2	0.6
2000	0.1	0.1	0.1	0.0	0.0	0.0	0.0
2001	1.2	1.2	5.8	4.0	1.6	1.4	2.5
2002	0.9	1.1	0.7	0.5	0.6	0.0	0.0
2003	5.6	2.5	0.5	0.5	0.5	0.5	0.6
2004	0.8	2.5	1.0	0.4	2.1	0.3	1.0
2005	2.1	0.2	1.1	0.1	0.1	0.4	0.2
2006	-	-	-	-	-	-	-
2007	8.1	1.3	3.8	1.3	1.6	0.4	0.7

Table A-3: Fall trawl assessment values for Lake Erie yellow perch stock; trawl mean CPE. No trawling was conducted in Fall 2006

	Central Basin Effort	East Basin Effort	Total Effort
# of Interviews	462	111	573
Effort	266,653	70,210	336,863
Walleye	142,423	30,511	172,934
Yellow Perch	96,013	22,334	118,347
Smallmouth Bass	6,265	13,028	19,293
Steelhead	15,309	2,559	17,867
Anything That Biites	4,083	1,226	5,310
White Bass	133	551	684
Largemouth Bass	75	0	75

Table S-1: Estimated angler hours directed at various fish species in central basin, eastern basin and total open lake waters of Lake Erie in Pennsylvania by anglers landing at Walnut Creek Access Area, Lampe marina, East Avenue Boat Launch and North East Access Area during 2007.

Interview N Effort	Central Basin 462 266,653		East Basin 111 70,210		Total Open Lake 573 336,863	
	Catch	Harvest	Catch	Harvest	Catch	Harvest
Yellow Perch	407,940	355,677	56,941	54,233	464,881	409,910
White Bass	71,712	2,290	28,202	396	99,915	2,686
Walleye	74,332	68,700	11,102	10,247	85,434	78,946
Sheepshead	36,346	0	6,674	0	43,020	0
White Perch	26,936	2,565	11,791	1,408	38,727	3,972
Round Goby	10,243	0	7,803	400	18,046	400
Smallmouth Bass	5,639	82	4,177	259	9,816	341
Steelhead	4,893	2,879	529	83	5,422	2,962
Rock Bass	1,395	0	764	173	2,159	173
Channel Catfish	314	0	0	0	314	0
Largemouth Bass	256	0	0	0	256	0
Rainbow Smelt	151	25	0	0	151	25
Lake Trout	0	0	38	0	38	0

Table S-2: Estimated Catch and harvest of various fish species in central basin, eastern basin and total open lake waters of Lake Erie in Pennsylvania by anglers landing at Walnut Creek Access Area, Lampe marina, East Avenue Boat Launch and North East Access Area during 2007.

		Central Basin Waters			Eastern Basin Waters			Total Open Lake Waters		
		Effort	Catch	Harvest	Effort	Catch	Harvest	Effort	Catch	Harvest
Walleye	May	6,097	586	421	2,914	371	387	9,011	957	808
	June	63,797	36,387	33,053	11,402	5,298	4,095	75,199	41,685	37,148
	July	53,656	24,944	23,740	15,448	5,630	5,625	69,104	30,575	29,365
	Aug	42,746	32,700	29,715	9,301	4,445	4,355	52,047	37,145	34,070
	Sept	21,244	14,220	13,627	1,780	582	607	23,024	14,803	14,234
	Oct	3,121	474	472	0	0	0	3,121	474	472
	Total	190,660	109,312	101,029	40,845	16,326	15,069	231,505	125,638	116,098
Smallmouth Bass	May	7,417	3,196	0	11,765	2,779	0	19,182	5,976	0
	June	782	2,142	0	3,789	2,133	0	4,571	4,275	0
	July	936	2,999	90	4,259	1,920	425	5,195	4,919	515
	Aug	0	0	0	2,157	248	0	2,157	248	0
	Sept	0	63	0	0	0	0	0	63	0
	Oct	1,430	1,157	44	0	0	0	1,430	1,157	44
	Total	10,565	9,557	135	21,970	7,080	425	32,535	16,637	560
Yellow Perch	May	10,861	3,975	3,444	674	0	0	11,534	3,975	3,444
	June	16,002	26,684	21,297	1,153	444	313	17,154	27,128	21,609
	July	35,189	116,718	91,952	7,828	20,210	19,743	43,017	136,929	111,694
	Aug	25,109	88,840	79,319	2,387	7,946	7,186	27,496	96,786	86,506
	Sept	34,871	158,917	144,539	15,284	20,910	18,837	50,155	179,827	163,375
	Oct	13,580	53,151	46,055	4,219	13,062	12,870	17,799	66,213	58,926
	Total	135,611	448,285	386,606	31,545	62,573	58,949	167,157	510,858	445,555
Steelhead Trout	May	0	0	0	2,005	0	0	2,005	0	0
	June	455	732	306	0	178	104	455	910	409
	July	0	1,162	203	0	0	0	0	1,162	203
	Aug	1,607	1,845	1,178	0	42	35	1,607	1,887	1,213
	Sept	10,943	1,666	1,642	2,045	660	0	12,989	2,326	1,642
	Oct	12,509	2,751	1,469	214	0	0	12,723	2,751	1,469
	Total	25,514	8,156	4,798	4,265	881	139	29,779	9,037	4,936

Table S-3: Monthly and total open lake effort (angler hours), catch and harvest for walleye, smallmouth bass, yellow perch and steelhead in central basin, eastern basin and total open lake waters of Lake Erie in Pennsylvania as estimated through the results of the 2007 Lake Erie Boat Angler Survey.

	Central Basin Waters				East Basin Waters				Total Open Lake				
	N	% Success	CUE	HUE	N	% Success	CUE	HUE	N	% Success	CUE	HUE	
Walleye	1996	313	69%	0.37	0.30	155	50%	0.15	0.12	468	62%	0.30	0.24
	1997	276	75%	0.37	0.34	138	43%	0.15	0.14	414	64%	0.30	0.27
	1998	367	76%	0.39	0.31	146	51%	0.20	0.16	513	69%	0.35	0.27
	1999	272	72%	0.31	0.29	144	39%	0.13	0.12	416	60%	0.24	0.23
	2000	145	65%	0.31	0.29	101	59%	0.23	0.21	246	63%	0.27	0.26
	2001	147	61%	0.21	0.17	68	50%	0.14	0.13	215	58%	0.19	0.16
	2002	176	64%	0.15	0.15	65	43%	0.09	0.08	241	58%	0.13	0.13
	2003	171	74%	0.31	0.25	54	48%	0.21	0.19	225	68%	0.28	0.24
	2004	166	65%	0.29	0.20	41	34%	0.10	0.07	207	59%	0.25	0.17
	2005	143	75%	0.56	0.17	81	69%	0.37	0.09	224	73%	0.49	0.14
	2006	259	85%	0.76	0.67	119	71%	0.36	0.31	359	81%	0.65	0.57
	2007	247	79%	0.51	0.47	67	64%	0.28	0.24	314	75%	0.46	0.42
Smallmouth Bass	1996	41	85%	1.14	0.07	78	82%	0.87	0.09	119	83%	0.96	0.09
	1997	41	76%	0.85	0.06	79	89%	1.18	0.07	120	84%	1.07	0.07
	1998	18	83%	1.12	0.11	87	84%	1.31	0.04	105	83%	1.27	0.05
	1999	21	52%	0.55	0.02	93	73%	0.58	0.07	114	69%	0.57	0.06
	2000	14	64%	0.25	0.01	49	86%	0.86	0.06	63	81%	0.72	0.05
	2001	14	71%	0.54	0.04	46	78%	1.25	0.00	60	77%	1.08	0.01
	2002	16	81%	1.21	0.08	50	92%	1.36	0.08	66	89%	1.32	0.08
	2003	11	82%	0.93	0.00	48	98%	1.87	0.04	59	95%	1.69	0.04
	2004	11	82%	0.76	0.01	62	79%	0.86	0.01	73	79%	0.84	0.01
	2005	13	38%	0.21	0.04	47	85%	0.69	0.03	60	75%	0.59	0.03
	2006	4	50%	0.22	0.00	27	81%	1.38	0.02	27	78%	1.39	0.02
	2007	18	61%	0.22	0.00	18	78%	0.41	0.00	36	69%	0.32	0.00
Yellow Perch	1996	44	52%	0.99	0.81	33	52%	0.76	0.60	77	52%	0.89	0.72
	1997	54	72%	1.08	0.94	21	72%	1.86	0.98	75	72%	1.30	0.96
	1998	59	69%	1.46	1.40	19	42%	0.74	0.29	78	63%	1.29	1.13
	1999	33	76%	1.75	1.28	16	43%	0.56	0.40	49	65%	1.36	0.99
	2000	33	79%	2.52	1.89	32	78%	2.72	1.68	65	78%	2.62	1.78
	2001	160	95%	4.35	3.76	36	69%	2.60	1.45	196	90%	4.03	3.34
	2002	307	90%	4.29	3.61	100	86%	3.00	2.35	407	89%	3.98	3.30
	2003	267	96%	6.23	5.28	66	88%	2.11	1.94	333	94%	5.42	4.62
	2004	389	97%	5.28	3.94	135	85%	2.58	1.71	524	94%	4.58	3.36
	2005	258	96%	4.28	2.93	141	84%	2.61	1.76	399	91%	3.69	2.52
	2006	132	95%	4.65	3.71	90	87%	4.02	2.88	168	91%	4.40	3.38
	2007	208	91%	4.37	3.75	23	70%	1.56	1.50	231	89%	4.09	3.52
Steelhead Trout	1996	36	17%	0.05	0.03	11	18%	0.02	0.01	47	17%	0.04	0.03
	1997	45	22%	0.03	0.02	4	0%	0.00	0.00	49	20%	0.03	0.02
	1998	52	40%	0.12	0.08	6	33%	0.05	0.05	58	40%	0.11	0.08
	1999	39	44%	0.14	0.14	14	29%	0.07	0.06	53	40%	0.12	0.12
	2000	37	63%	0.58	0.37	3	67%	0.02	0.02	40	62%	0.54	0.34
	2001	18	50%	0.30	0.13	12	42%	0.09	0.05	30	47%	0.22	0.10
	2002	49	57%	0.18	0.12	13	38%	0.02	0.01	62	53%	0.14	0.10
	2003	33	48%	0.13	0.07	5	20%	0.00	0.00	38	45%	0.11	0.06
	2004	42	55%	0.16	0.10	16	38%	0.16	0.05	58	50%	0.16	0.08
	2005	15	53%	0.17	0.10	11	18%	0.02	0.02	26	38%	0.10	0.07
	2006	29	41%	0.08	0.07	5	20%	0.10	0.00	34	38%	0.08	0.06
	2007	42	43%	0.12	0.08	9	22%	0.04	0.00	51	39%	0.10	0.06

Table S-4: Number of interviews (N), number of successful trips (% success), catch per angler hour (CUE), and harvest per angler hour (HUE) in central basin, eastern basin and total open lake waters of Lake Erie in Pennsylvania for walleye, smallmouth bass, yellow perch and steelhead for the 1996 – 2007 Lake Erie Boat Angler Surveys.

	Central Basin Waters			East Basin Waters			Total Open Lake			
	Effort (hours)	Catch	Harvest	Effort (hours)	Catch	Harvest	Effort (hours)	Catch	Harvest	
Walleye	1996	208,246	86,954	72,040	107,910	21,256	17,047	316,157	108,210	89,087
	1997	241,237	78,259	72,357	147,258	17,394	16,325	388,494	95,653	88,682
	1998	297,680	132,603	105,627	92,067	24,458	19,187	389,747	157,060	124,814
	1999	295,418	79,663	76,512	101,091	12,805	12,526	396,509	92,467	89,038
	2000	140,822	63,670	58,310	103,294	20,740	19,205	244,116	84,410	77,515
	2001	158,025	45,339	40,618	83,221	16,702	12,072	241,246	62,041	52,690
	2002	87,626	17,808	16,979	42,818	5,377	5,102	130,444	23,186	22,081
	2003	110,840	40,885	32,767	48,199	11,403	10,814	159,039	52,289	43,581
	2004	72,855	24,180	17,791	15,592	3,195	2,177	88,446	27,375	19,969
	2005	64,452	43,075	13,928	44,680	20,183	6,388	109,132	63,258	20,316
2006	166,986	129,849	118,353	71,781	32,881	30,289	238,767	162,730	148,642	
2007	190,660	109,312	101,029	40,845	16,326	15,069	231,505	125,638	116,098	
Smallmouth Bass	1996	49,430	81,846	5,561	97,688	159,000	16,002	147,118	240,846	21,562
	1997	45,148	69,079	10,621	106,611	168,455	12,825	151,760	237,534	23,445
	1998	12,054	20,357	2,767	60,480	101,001	4,613	72,534	121,358	7,381
	1999	18,907	20,070	1,091	103,028	74,285	14,195	121,934	94,356	15,285
	2000	19,968	8,649	913	65,906	43,857	4,089	85,874	52,506	5,003
	2001	9,057	9,066	974	33,780	71,331	1,508	42,837	80,397	2,483
	2002	6,279	18,912	1,133	26,189	43,292	1,507	32,468	62,205	2,640
	2003	6,527	8,453	518	42,890	70,547	2,245	49,417	79,000	2,763
	2004	5,278	11,304	259	36,822	32,510	648	42,100	43,814	907
	2005	6,031	3,007	202	34,126	30,611	1,315	40,157	33,618	1,517
2006	1,699	2,261	121	19,028	23,321	544	20,727	25,582	665	
2007	10,565	9,557	135	21,970	7,080	425	32,535	16,637	560	
Yellow Perch	1996	18,148	15,284	12,433	10,299	10,546	7,667	28,448	25,830	20,100
	1997	43,377	32,955	28,891	13,744	13,492	5,516	57,121	46,447	34,408
	1998	30,613	37,929	35,174	4,084	4,370	1,779	34,697	42,299	36,953
	1999	28,486	53,804	35,542	13,623	8,564	5,566	42,109	62,368	41,108
	2000	48,561	117,633	80,050	21,146	52,190	32,852	69,707	169,824	112,902
	2001	77,686	240,921	202,913	12,450	30,140	19,093	90,136	271,061	222,006
	2002	123,287	374,252	308,057	61,735	126,775	104,023	185,022	501,027	412,080
	2003	138,721	393,484	336,396	49,048	85,196	77,654	187,770	478,681	414,050
	2004	175,596	623,783	461,538	62,639	126,348	90,514	238,235	750,132	552,052
	2005	127,462	377,101	259,416	70,921	166,784	101,343	198,382	543,885	360,759
2006	60,612	230,267	181,697	60,612	230,267	181,697	107,886	400,013	300,748	
2007	135,611	448,285	386,606	31,545	62,573	58,949	167,157	510,858	445,555	
Steelhead Trout	1996	20,071	951	381	3,826	574	499	23,897	1,525	880
	1997	41,039	2,642	1,721	4,123	110	0	45,163	2,752	1,721
	1998	36,634	6,227	4,348	2,879	947	947	39,513	7,174	5,295
	1999	45,070	8,332	6,306	21,870	1,613	1,095	66,939	9,945	7,401
	2000	27,071	14,368	9,880	1,504	1,301	1,131	28,575	15,669	11,011
	2001	9,382	8,760	4,193	21,989	4,612	2,859	31,371	13,372	7,053
	2002	21,601	7,409	4,552	8,218	1,416	676	29,819	8,825	5,229
	2003	13,079	3,321	1,430	2,456	884	287	15,535	4,205	1,717
	2004	14,605	3,146	2,041	4,546	1,743	615	19,151	4,889	2,657
	2005	6,346	2,520	1,761	2,415	598	422	8,761	3,118	2,183
2006	15,683	3,597	2,044	900	158	0	16,583	3,755	2,044	
2007	25,514	8,156	4,798	4,265	881	139	29,779	9,037	4,936	

Table S-5: Estimated angler effort (angler hours), catch and harvest in central basin, eastern basin and total open lake waters of Lake Erie in Pennsylvania for walleye, smallmouth bass, yellow perch and steelhead for the 1996 – 2007 Lake Erie Boat Angler Surveys.

Hatchery	Species / Strain	Stocking Location	Number Stocked
Fairview FCS	Steelhead Trout	Conneaut Creek	75,000
Fairview FCS	Steelhead Trout	Raccoon Creek	46,800
Fairview FCS	Steelhead Trout	Crooked Creek	56,161
Tionesta / Linesville FCS	Steelhead Trout	Elk Creek	252,725
Fairview / Linesville FCS	Steelhead Trout	Godfrey Run	37,440
Fairview / Linesville FCS	Steelhead Trout	Trout Run	70,200
Tionesta FCS	Steelhead Trout	Walnut Creek	196,584
Tionesta / Fairview FCS	Steelhead Trout	Presque Isle Bay	50,068
Fairview FCS	Steelhead Trout	Fourmile Creek	14,040
Tionesta FCS	Steelhead Trout	Sevenmile Creek	18,720
Tionesta FCS	Steelhead Trout	Twelvemile Creek	37,440
Tionesta FCS	Steelhead Trout	Twentymile Creek	149,760
			1,004,938 Total Steelhead

Hatchery	Species / Strain	Stocking Location	Number Stocked
Corry FCS	Brown Trout	Conneaut Creek	4,700
Corry FCS	Brown Trout	Crooked Creek	2,000
Corry FCS	Brown Trout	Elk Creek	11,400
Corry FCS	Brown Trout	East Basin Pond	1,550
Corry FCS	Brown Trout	West Basin Pond	1,550
Corry FCS	Brown Trout	Cascade Creek	1,200
Corry FCS	Brown Trout	Tewntymile Creek	1,400
			23,800 Total Brown Trout

Table S-6: Lake Erie drainage Steelhead Trout and Brown Trout stocking numbers in 2007 by Pennsylvania Fish and Boat Commission hatchery, by location.

Cooperative Hatchery	Species / Strain	Stocking Location	Number Stocked
Albion Sportsman's Club	Brook Trout	West Branch Conneaut Creek	1,900
Albion Sportsman's Club	Brook Trout	Taylor Run	900
Albion Sportsman's Club	Brook Trout	Temple Creek	2,450
Albion Sportsman's Club	Brook Trout	Elk Creek	250
3-CU	Brook Trout	Godfrey Run	500
Wesleyville Conservation Club	Brook Trout	Fourmile Creek	105
Wesleyville Conservation Club	Brook Trout	Sevenmile Creek	150
Wesleyville Conservation Club	Brook Trout	Twelvemile Creek	215
			970 Total Brook Trout
Albion Sportsman's Club	Brown Trout	West Branch Conneaut Creek	830
Albion Sportsman's Club	Brown Trout	Taylor Run	470
Albion Sportsman's Club	Brown Trout	Temple Creek	1,100
Albion Sportsman's Club	Brown Trout	Elk Creek	250
Wesleyville Conservation Club	Brown Trout	Fourmile Creek	320
Wesleyville Conservation Club	Brown Trout	Sevenmile Creek	375
Wesleyville Conservation Club	Brown Trout	Twelvemile Creek	570
			3,915 Total Brown Trout
Albion Sportsman's Club	Domestic Rainbow Trout	West Branch Conneaut Creek	2,300
Albion Sportsman's Club	Domestic Rainbow Trout	Taylor Run	650
Albion Sportsman's Club	Domestic Rainbow Trout	Temple Creek	3,090
Albion Sportsman's Club	Domestic Rainbow Trout	Elk Creek	150
			6,040 Total Domestic Rainbow Trout
Albion Sportsman's Club	Golden Rainbow Trout	West Branch Conneaut Creek	60
Albion Sportsman's Club	Golden Rainbow Trout	Taylor Run	55
Albion Sportsman's Club	Golden Rainbow Trout	Temple Creek	175
Albion Sportsman's Club	Golden Rainbow Trout	Elk Creek	50
Wesleyville Conservation Club	Golden Rainbow Trout	Sevenmile Creek	2
Wesleyville Conservation Club	Golden Rainbow Trout	Twelvemile Creek	1
			343 Total Golden Rainbow Trout
3-CU	Steelhead Trout	Elk Creek	8,000
3-CU	Steelhead Trout	Godfrey Run	80,000
3-CU	Steelhead Trout	Trout Run	16,000
3-CU	Steelhead Trout	Walnut Creek	1,000
Wesleyville Conservation Club	Steelhead Trout	Fourmile Creek	535
Wesleyville Conservation Club	Steelhead Trout	Sevenmile Creek	920
Wesleyville Conservation Club	Steelhead Trout	Twelvemile Creek	5,070
			111,525 Total Steelhead Trout

Table S-7: Stocking by Sportsman's Cooperative Nurseries in 2007, by hatchery, by species, by location.

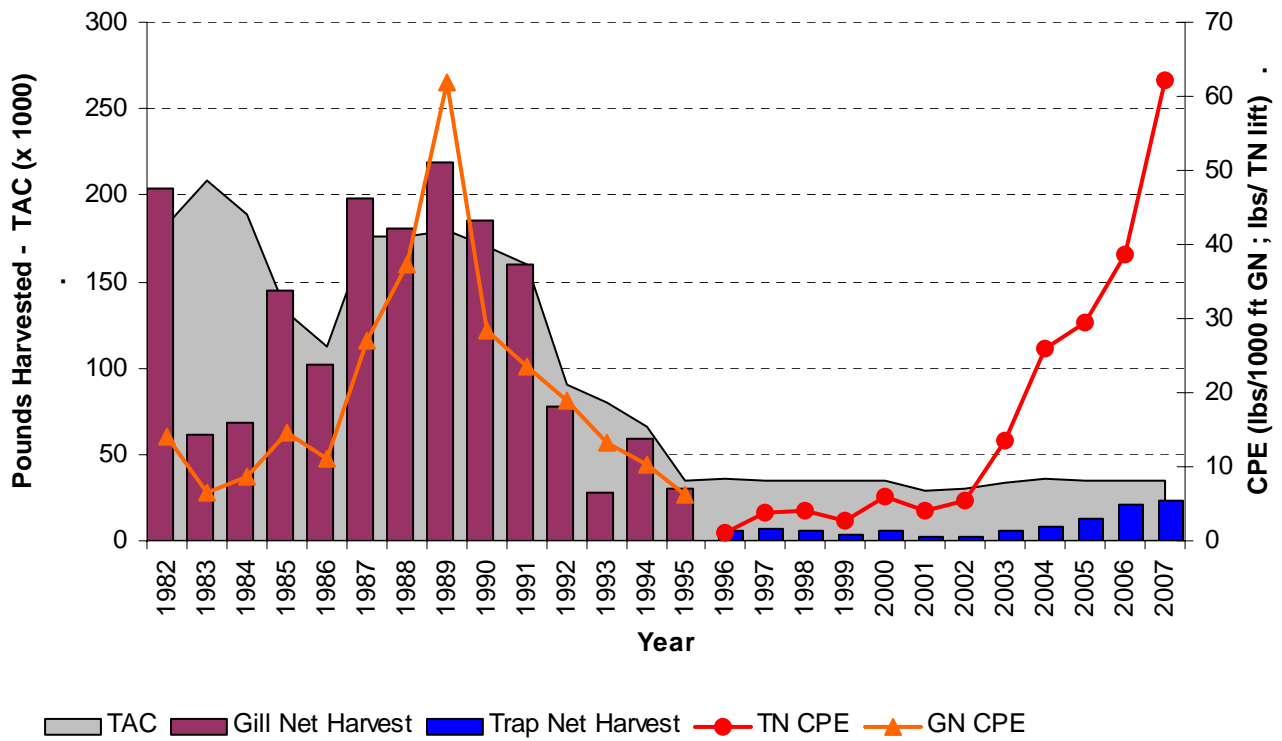


Figure C-1: Yellow perch commercial landings 1982 - 2007, Pennsylvania waters of Lake Erie.

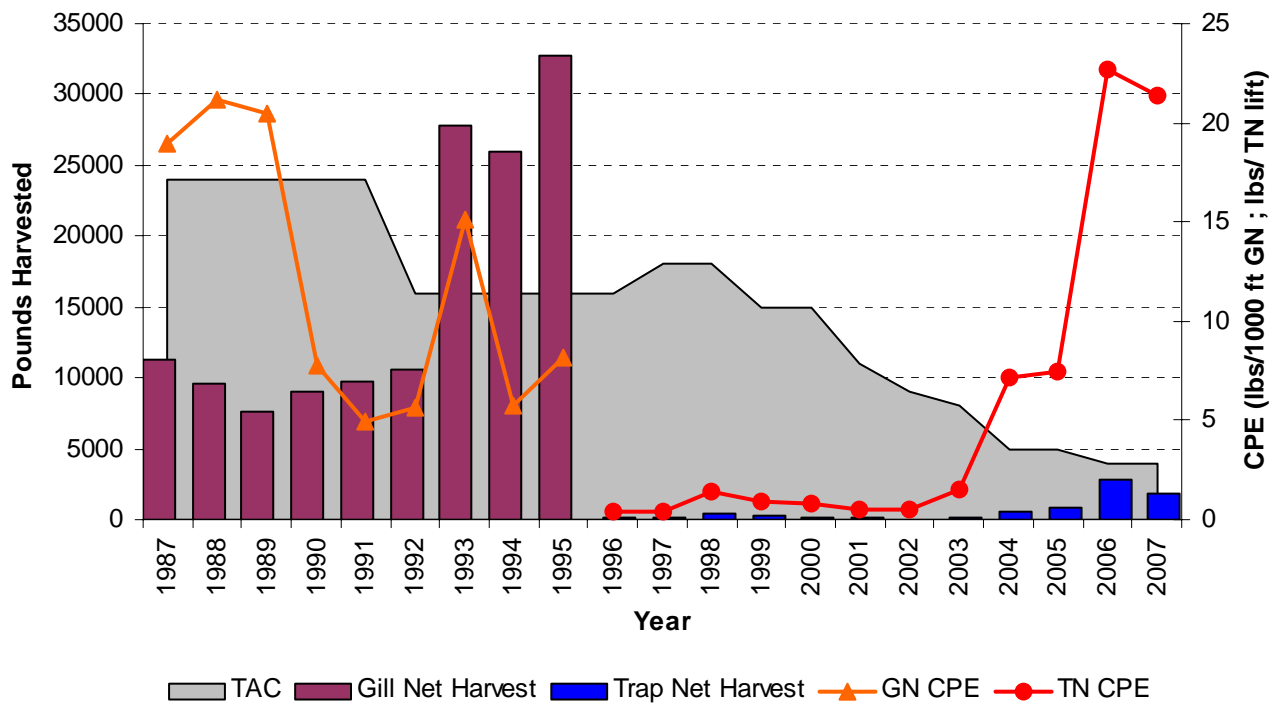


Figure C-2: Commercial walleye landings 1987 - 2007, Pennsylvania waters of Lake Erie.

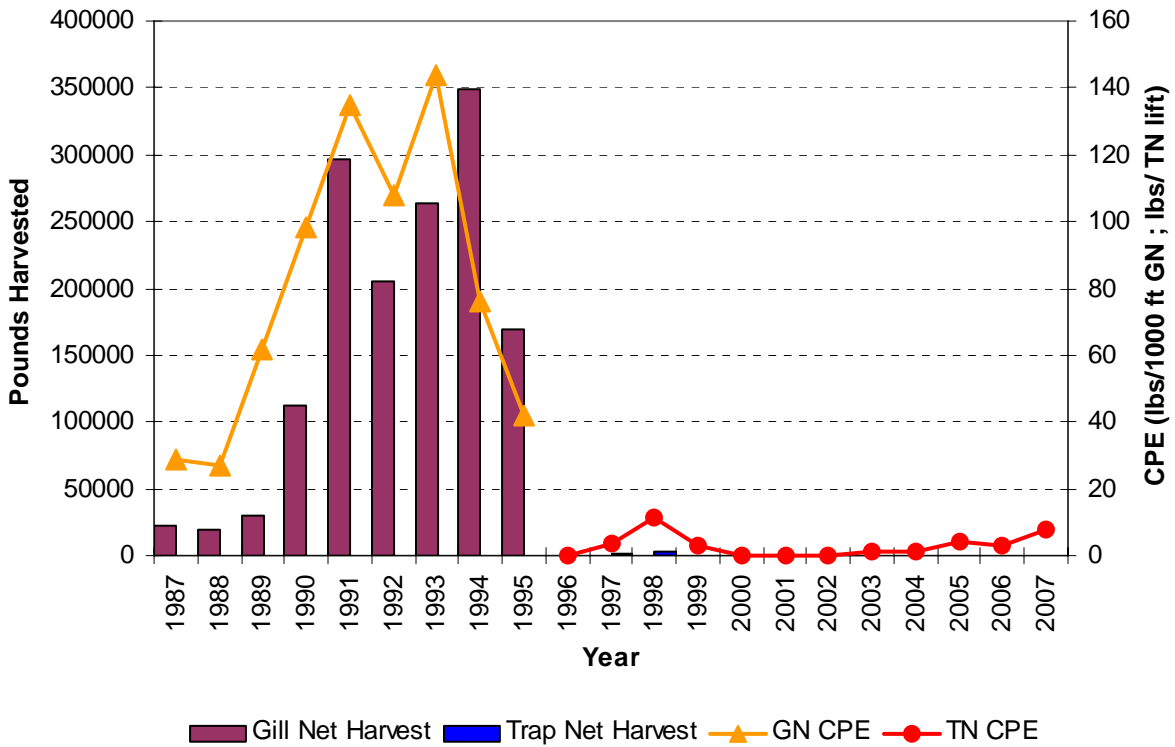


Figure C-3: Commercial whitefish landings 1987 - 2007, Pennsylvania waters of Lake Erie.

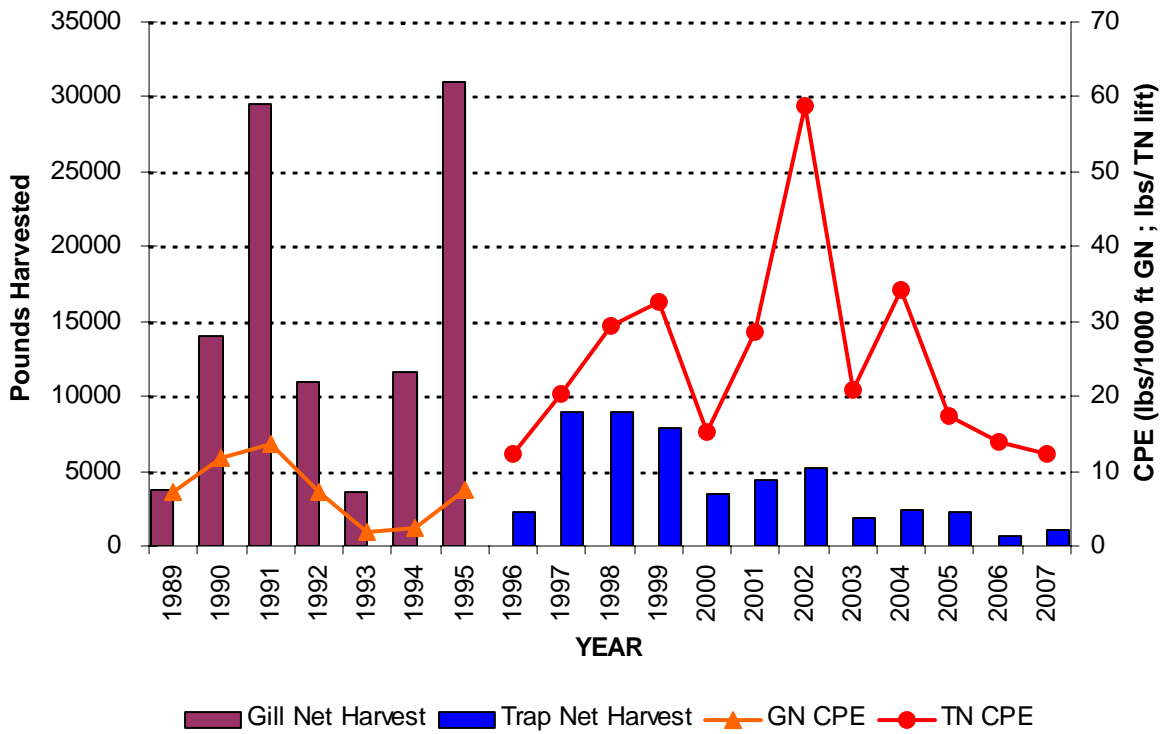


Figure C-4: Commercial burbot landings 1989 - 2007, Pennsylvania waters of Lake Erie.

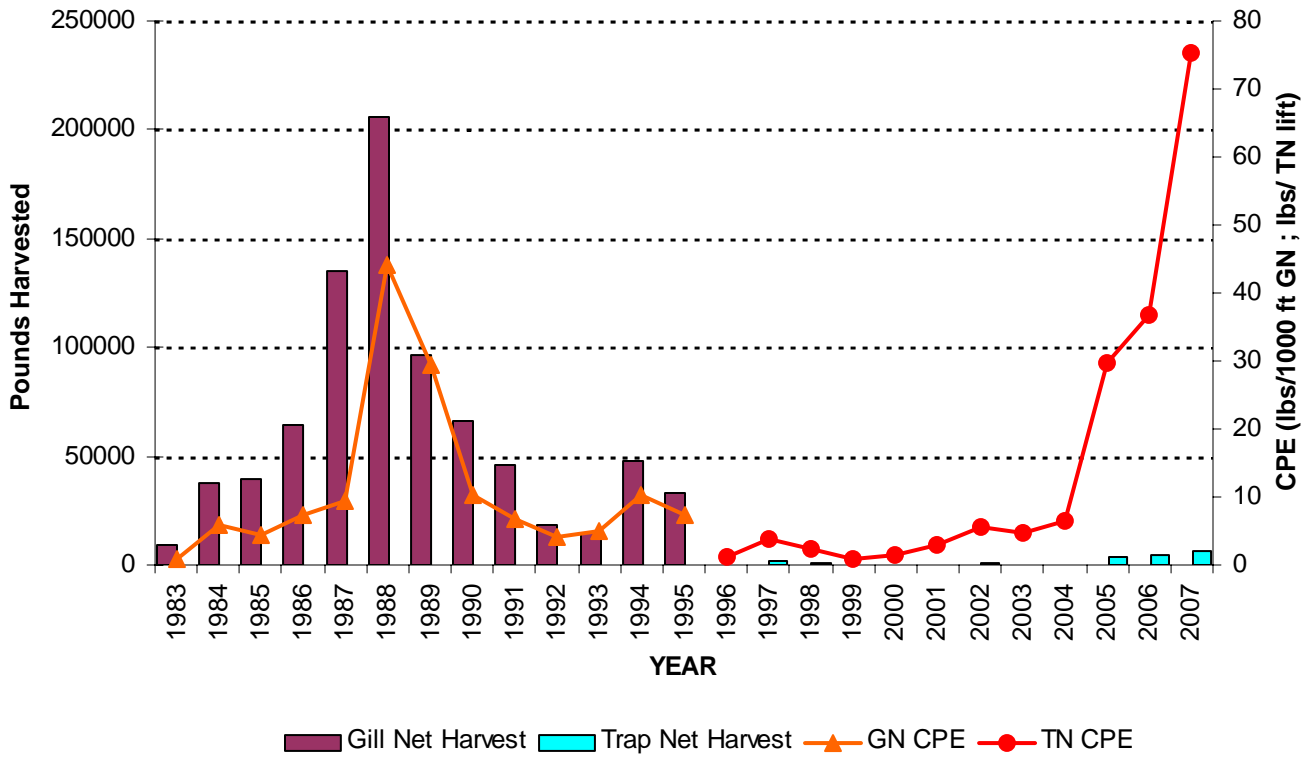


Figure C-5: Commercial white perch landings 1983 – 2007, Pennsylvania waters of Lake Erie.

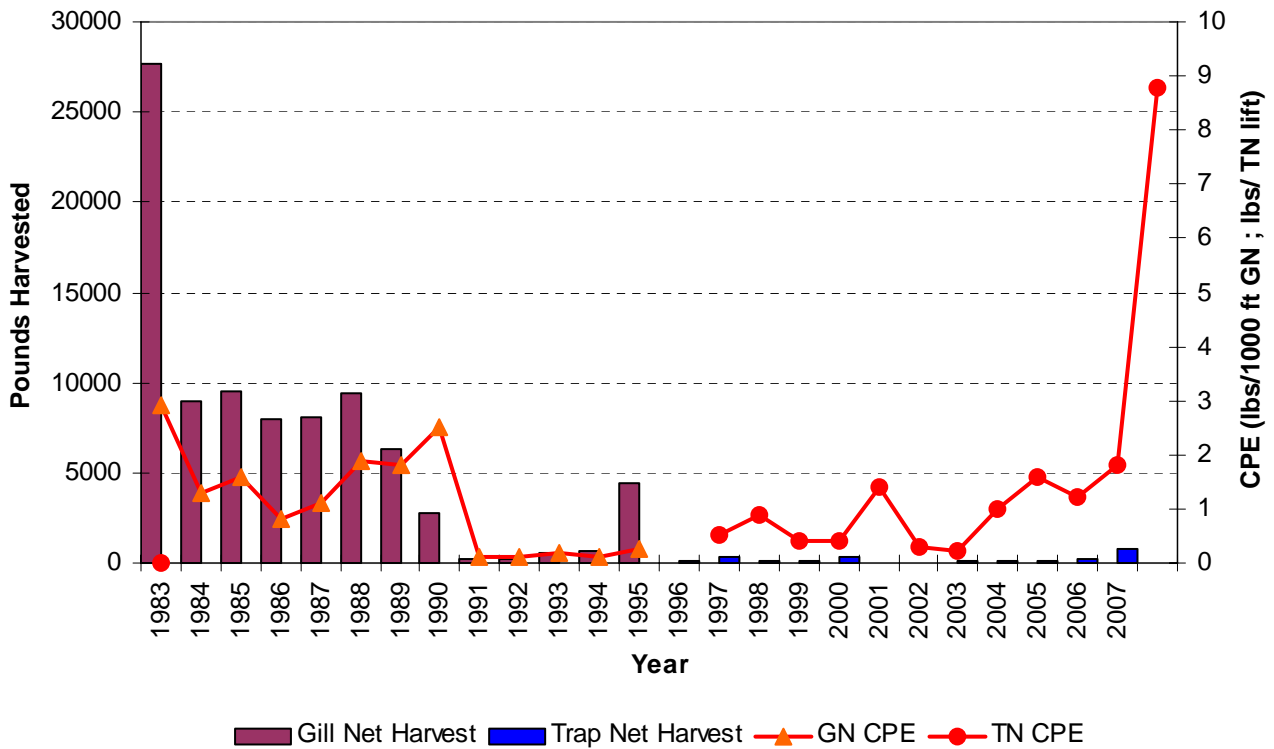


Figure C-6: Commercial white bass landings 1983 – 2007, Pennsylvania waters of Lake Erie.

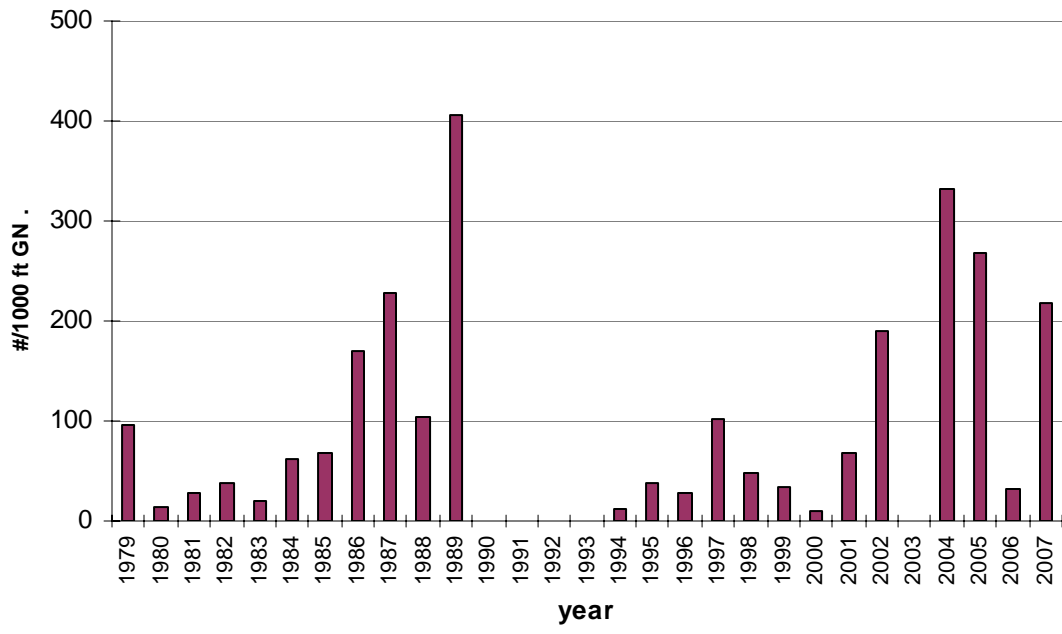


Figure A-1: Yellow perch abundance indices for assessment gill net surveys.

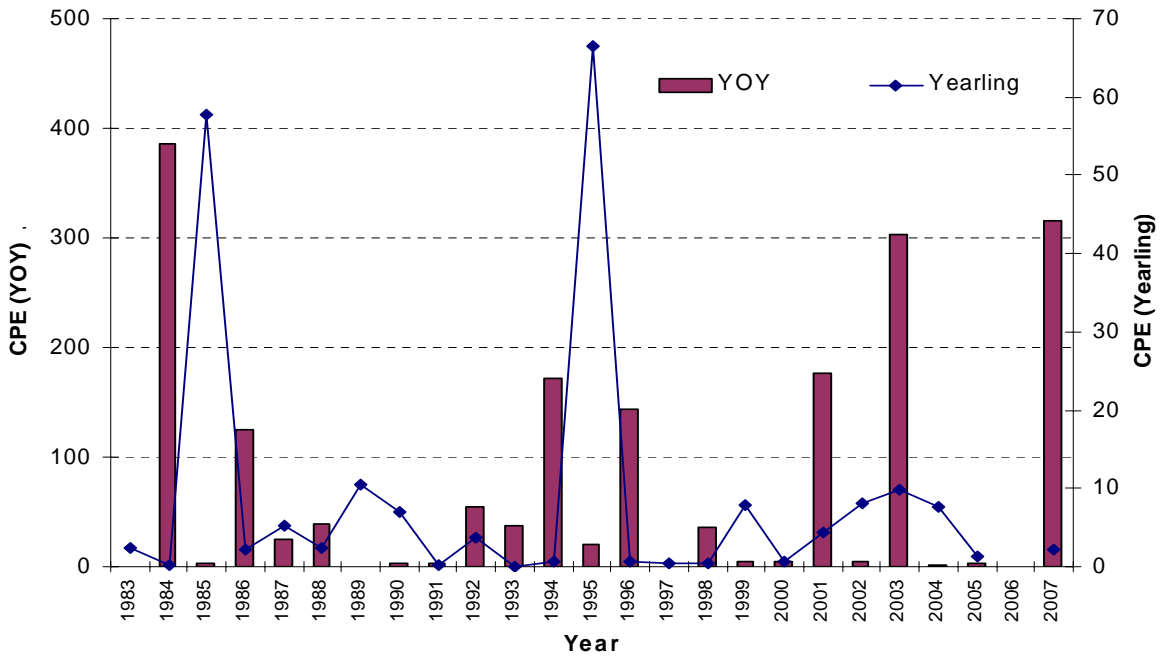


Figure A-2: Yellow Perch fall trawl indices for young-of-the-year (YOY) and yearling age groups. No trawling was conducted in Fall 2006.

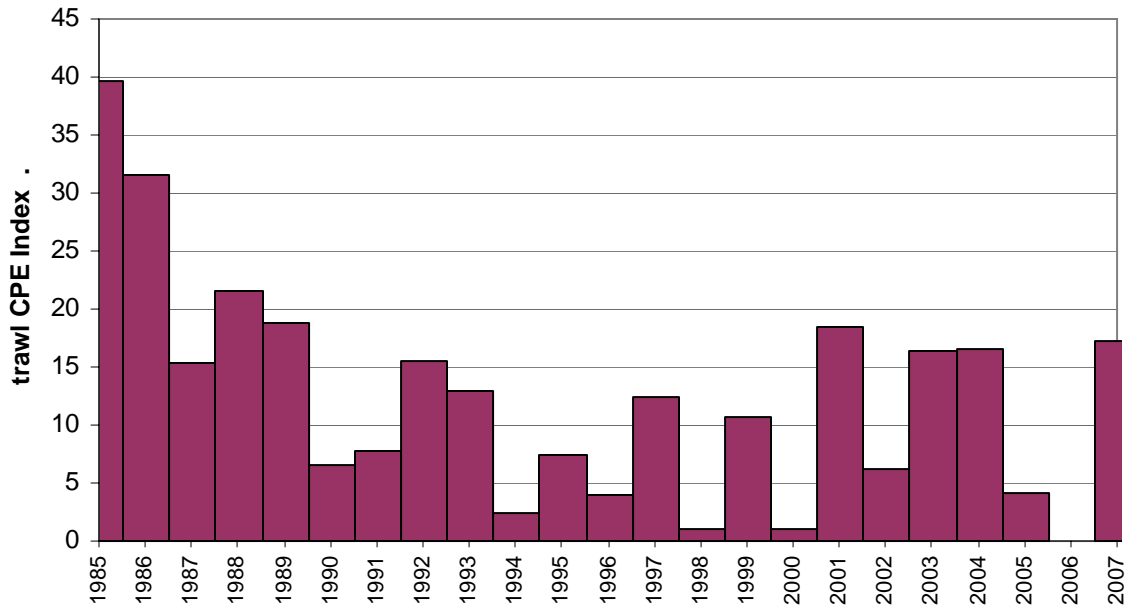


Figure A-3: Yellow Perch indices of abundance (number of 2++ YP/10 minute tow) for age 2 and older fall stock. No trawling was conducted in Fall 2006

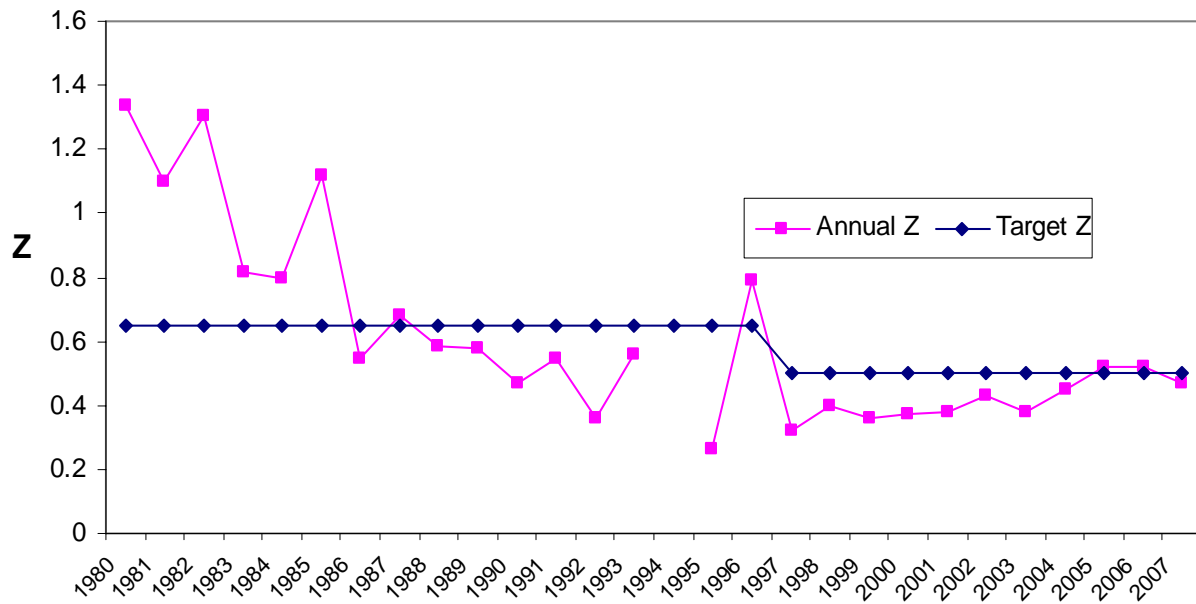


Figure A-4: Trends in yellow perch mortality

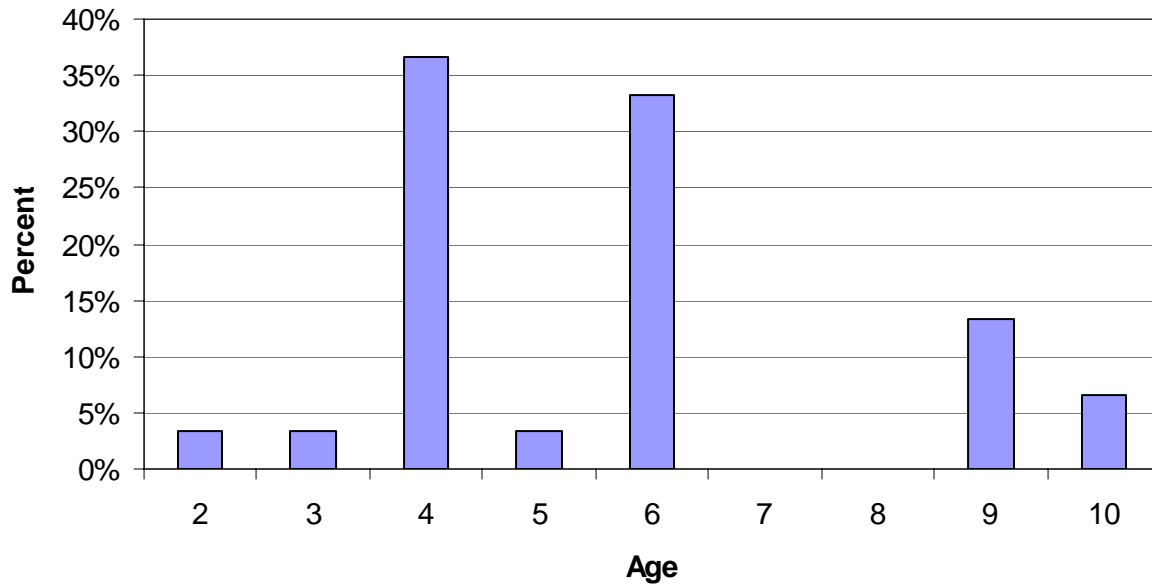


Figure A-5: Age frequency of walleye from 2007 gill net assessment

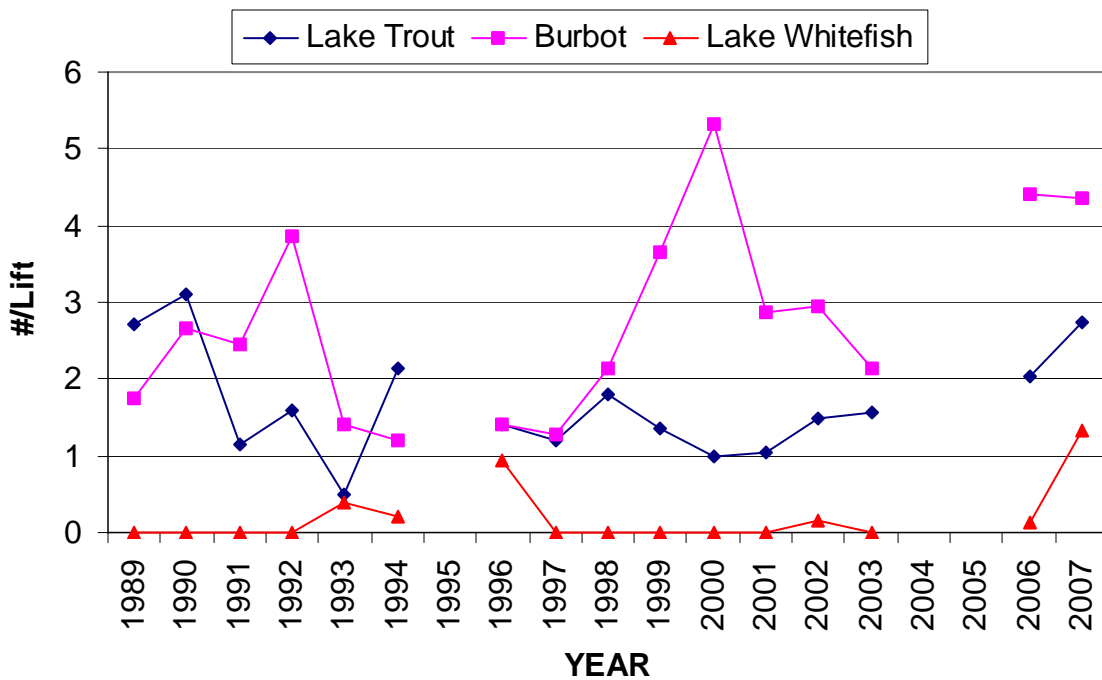


Figure A-6: Catch rate (# fish/standard lift) of lake trout, burbot and lake whitefish from August coldwater gill net assessment from 1989-2007. (no surveys were conducted in 1995, 2004 and 2005).

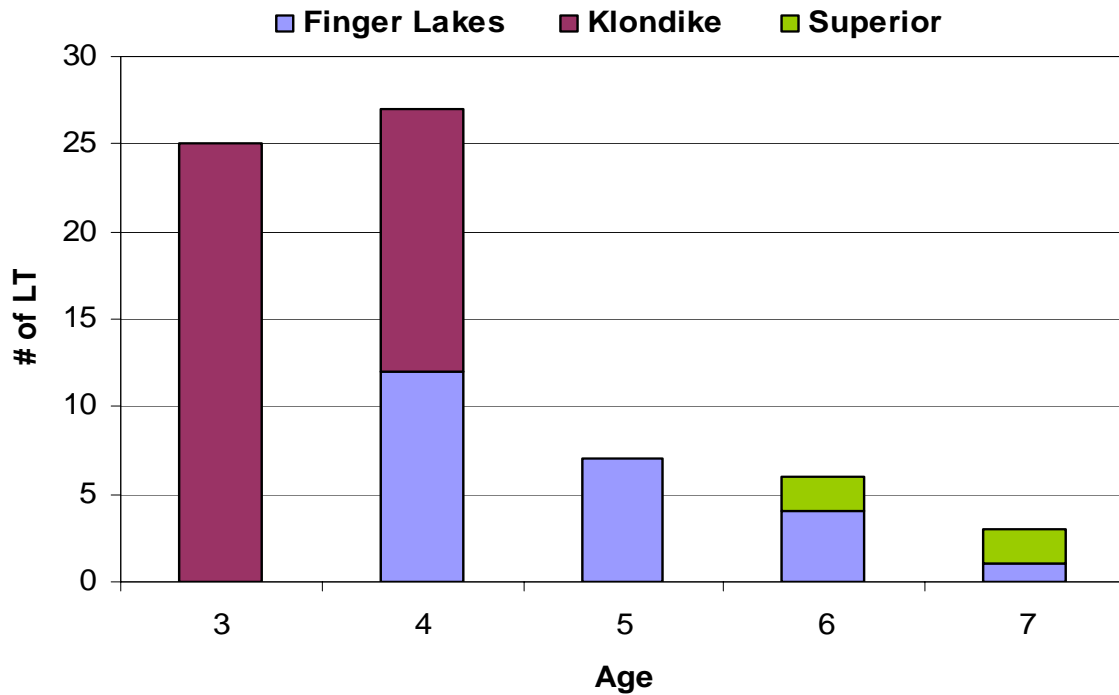


Figure A-7: Age and strain frequency from lake trout caught in August coldwater gill net assessment 2007.

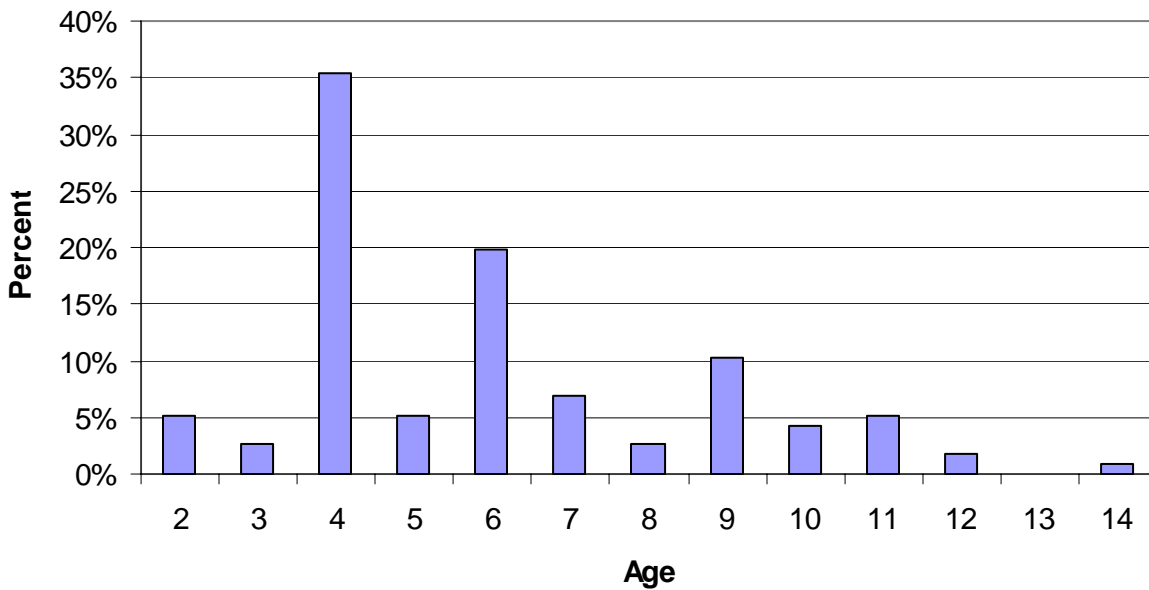


Figure A-8: Age distribution of whitefish from 2007 assessment surveys.

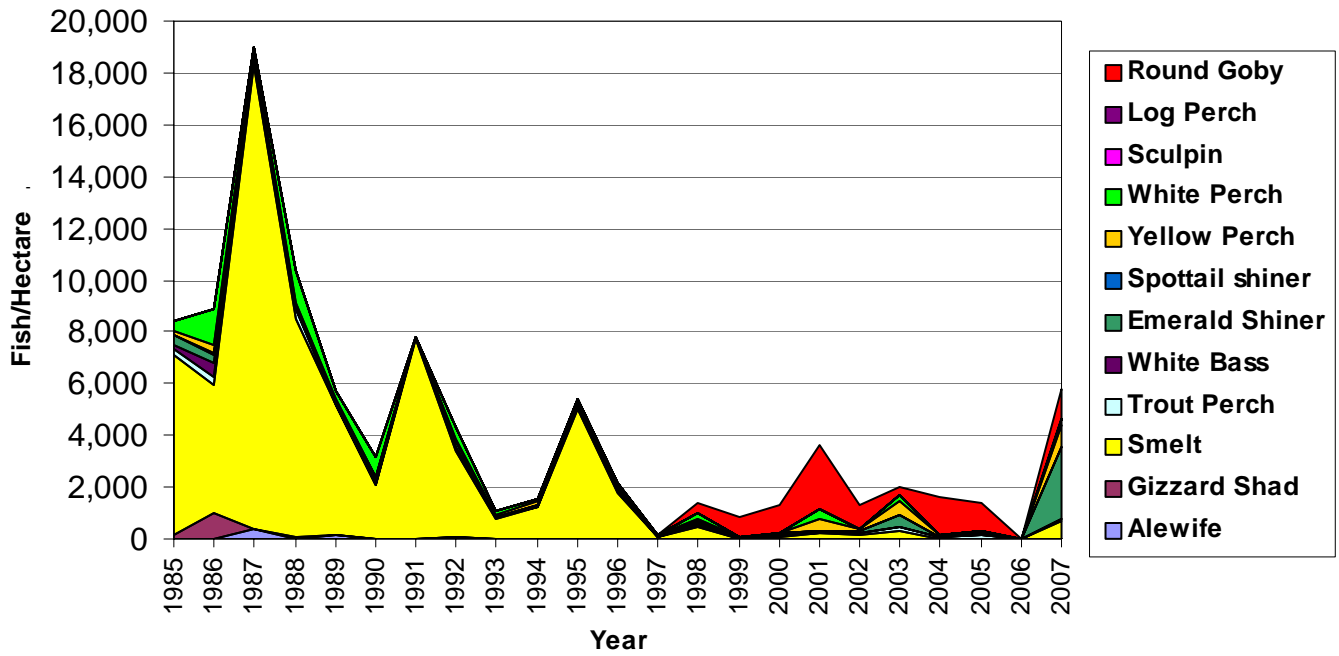


Figure A-9: Density estimates (numbers per hectare) of forage sized fish from fall trawl assessment. (no trawls were conducted in 2006).

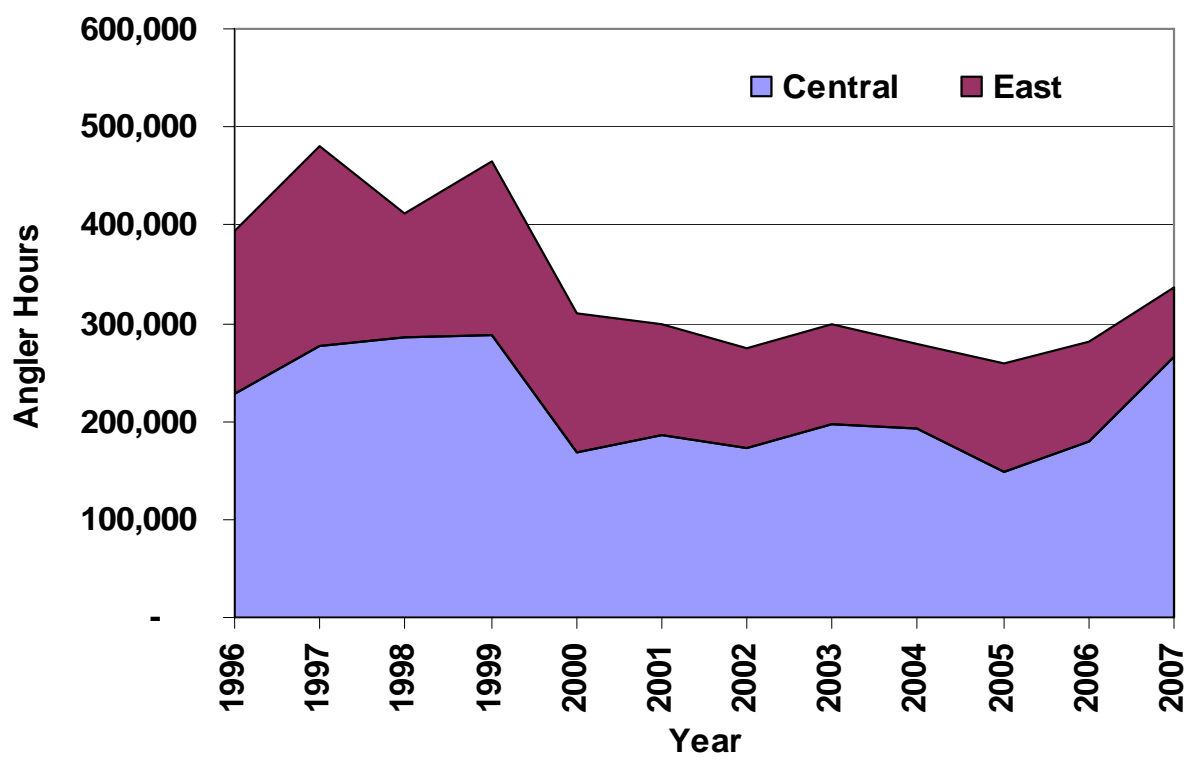


Figure S-1: Total estimated angler hours directed at all fish species in central basin, eastern basin open lake waters of Lake Erie in Pennsylvania by anglers landing at Walnut Creek Access Area, Lampe Marina, East Avenue Boat Launch and North East Access Area from 1996 – 2007.

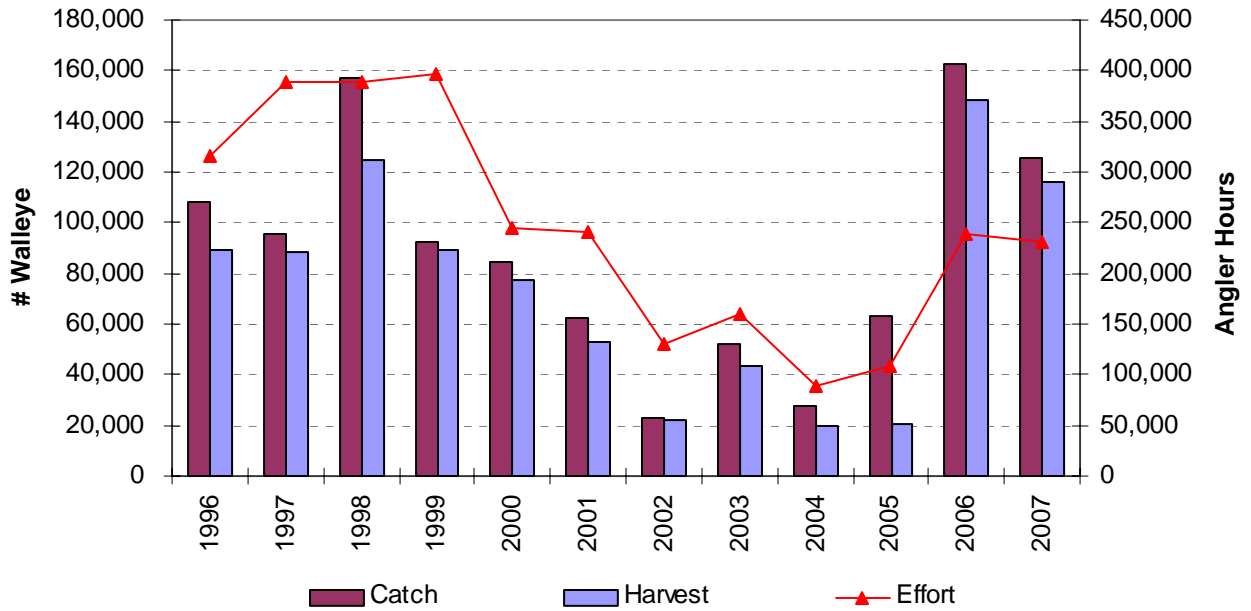


Figure S-2: Estimated walleye angler effort (hours), catch and harvest for the 1996 – 2007 Lake Erie Boat Angler Surveys.

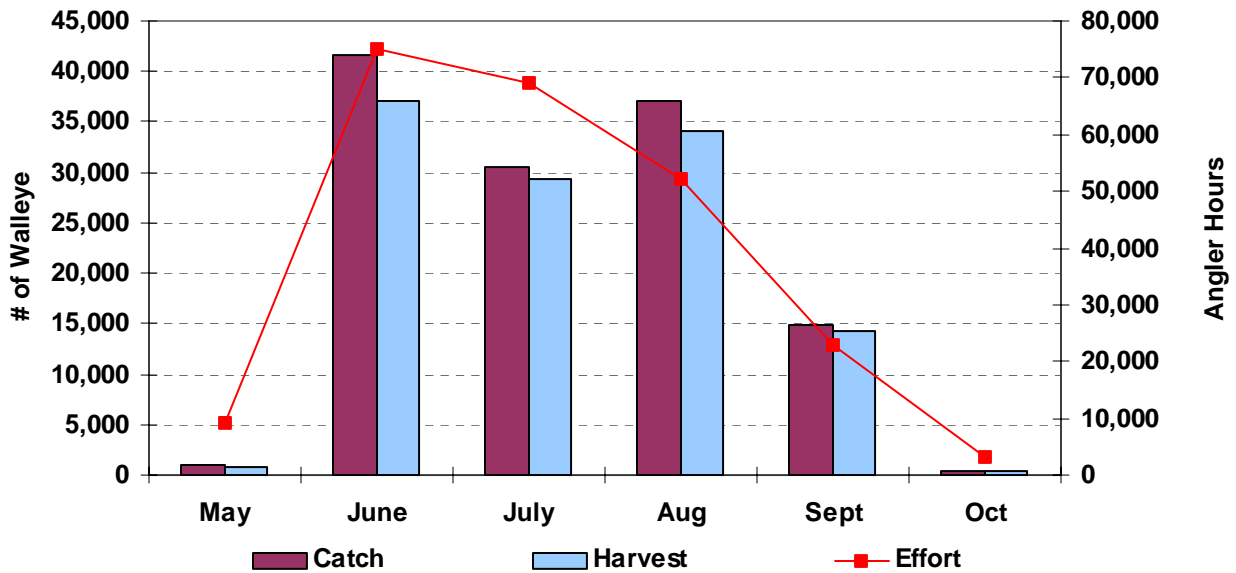


Figure S-3: Monthly estimated walleye angler effort (hours), catch and harvest for the 2007 Lake Erie Boat Angler Survey.

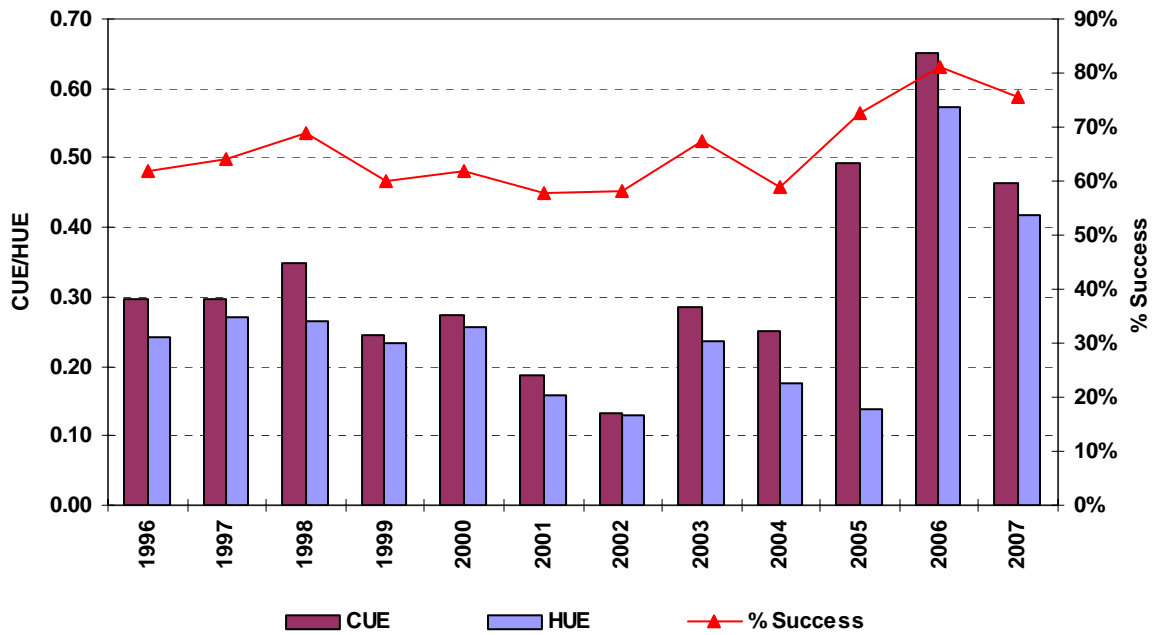


Figure S-4: Walleye angler % success, catch per angler hour (CUE) and harvest per angler hour (HUE) for the 1996 – 2007 Lake Erie Boat Angler Surveys.

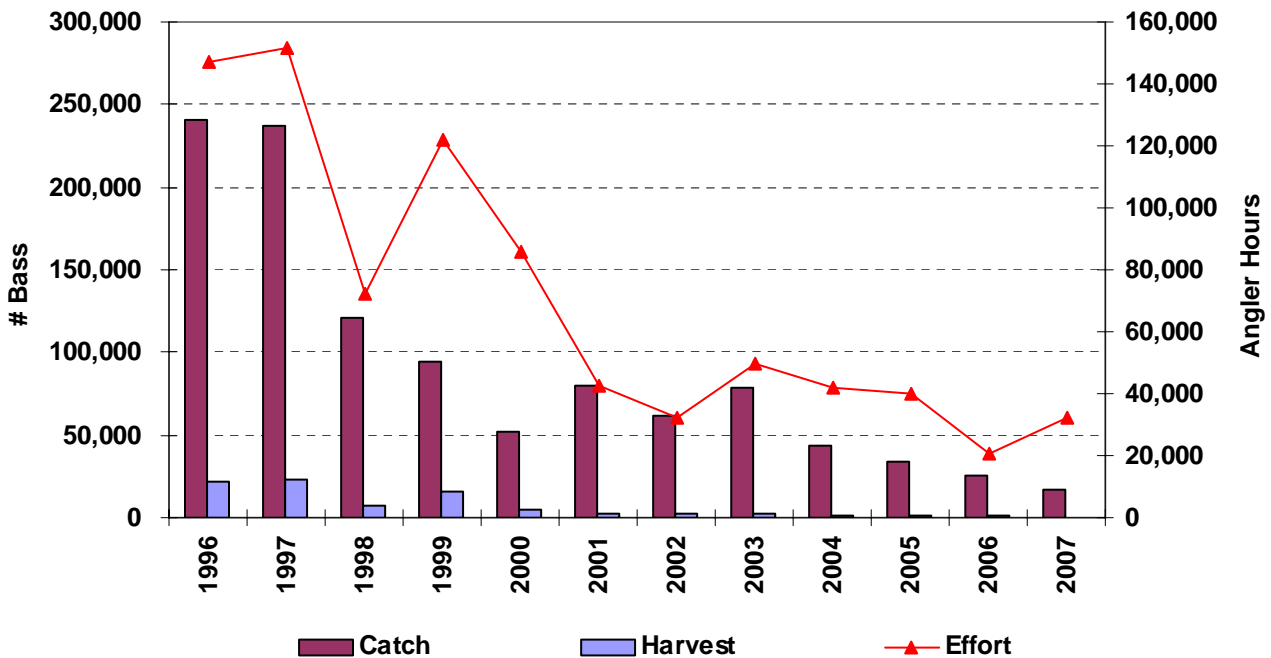


Figure S-5: Estimated smallmouth bass angler effort (hours), catch and harvest for the 1996 – 2007 Lake Erie Boat Angler Surveys.

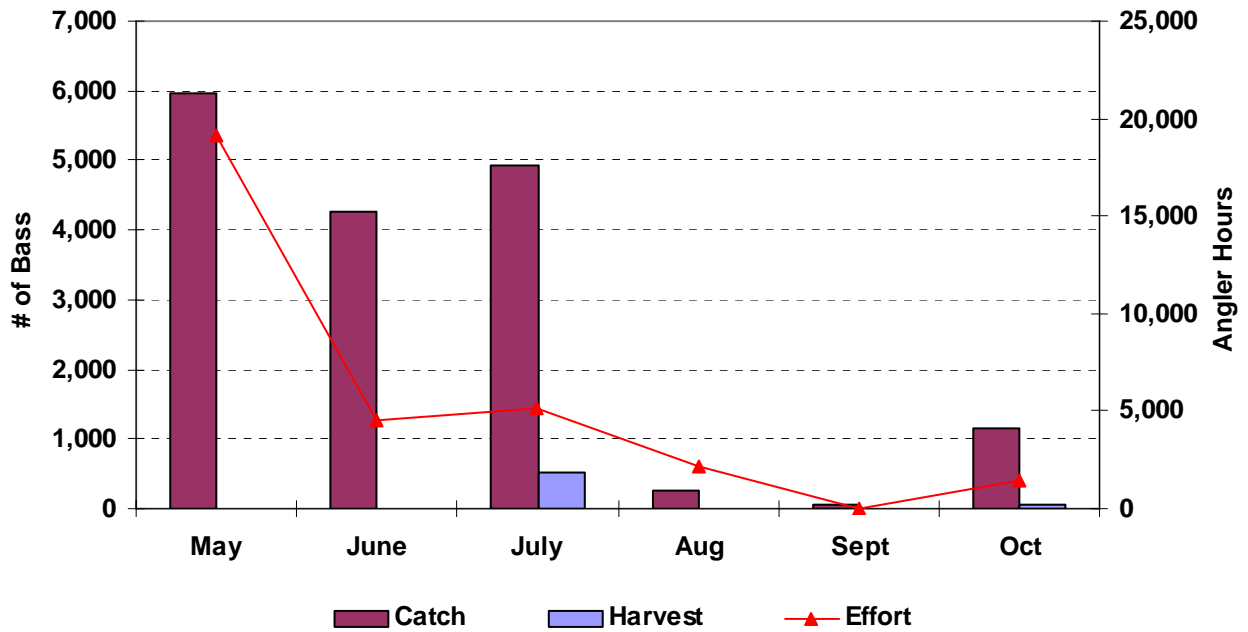


Figure S-6: Monthly estimated smallmouth bass angler effort, catch and harvest for the 2007 Lake Erie Boat Angler Survey.

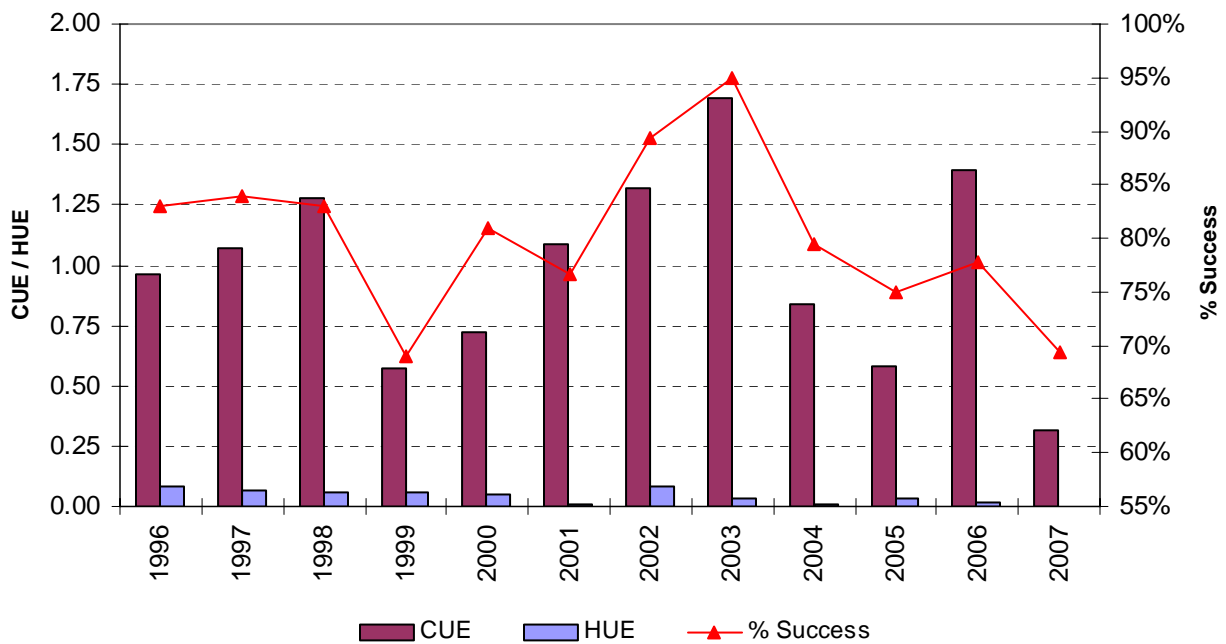


Figure S-7: Smallmouth bass angler % success, catch per angler hour (CUE) and harvest per angler hour (HUE) for the 1996 – 2007 Lake Erie Boat Angler Surveys.

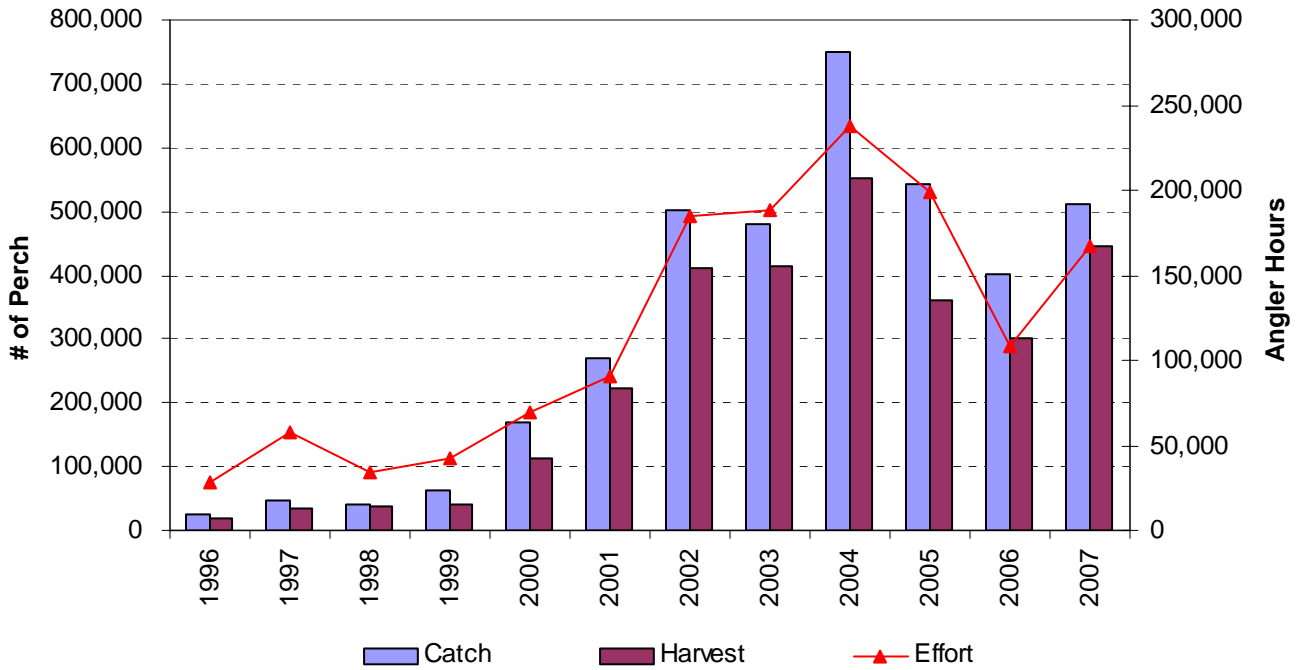


Figure S-8: Estimated yellow perch angler effort (hours), catch and harvest for the 1996 – 2007 Lake Erie Boat Angler Surveys.

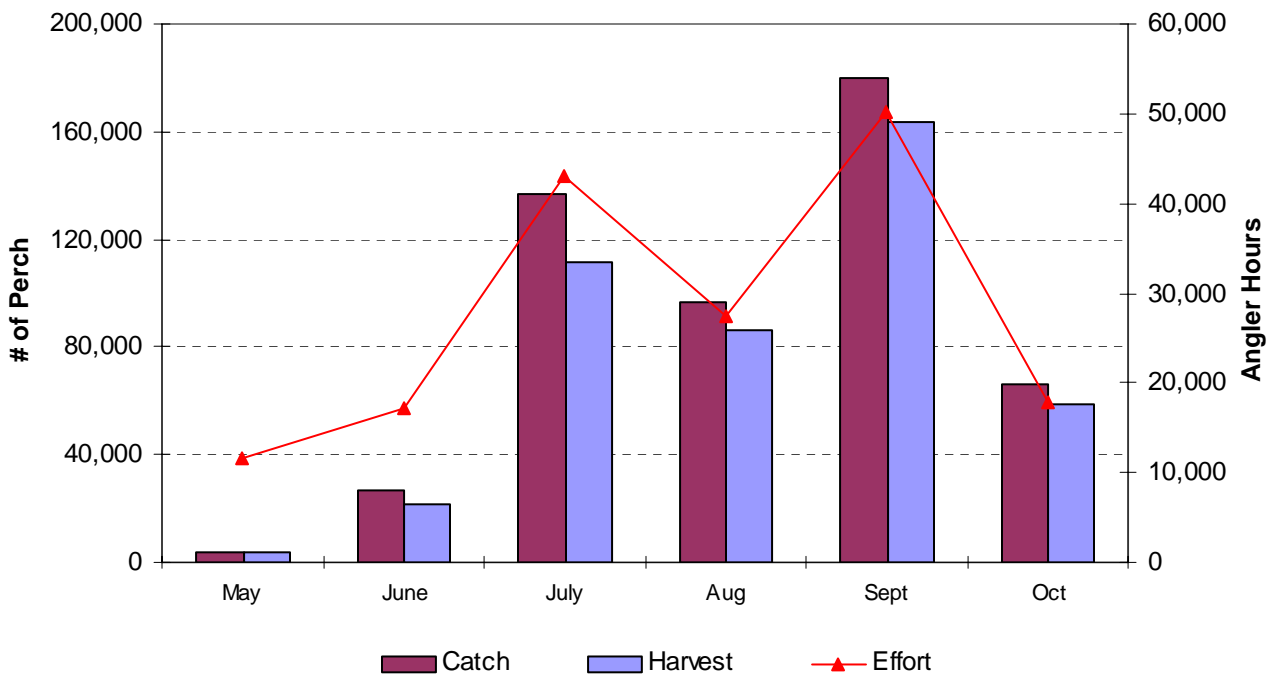


Figure S-9: Monthly estimated yellow perch angler effort, catch and harvest for the 2007 Lake Erie Boat Angler Survey.

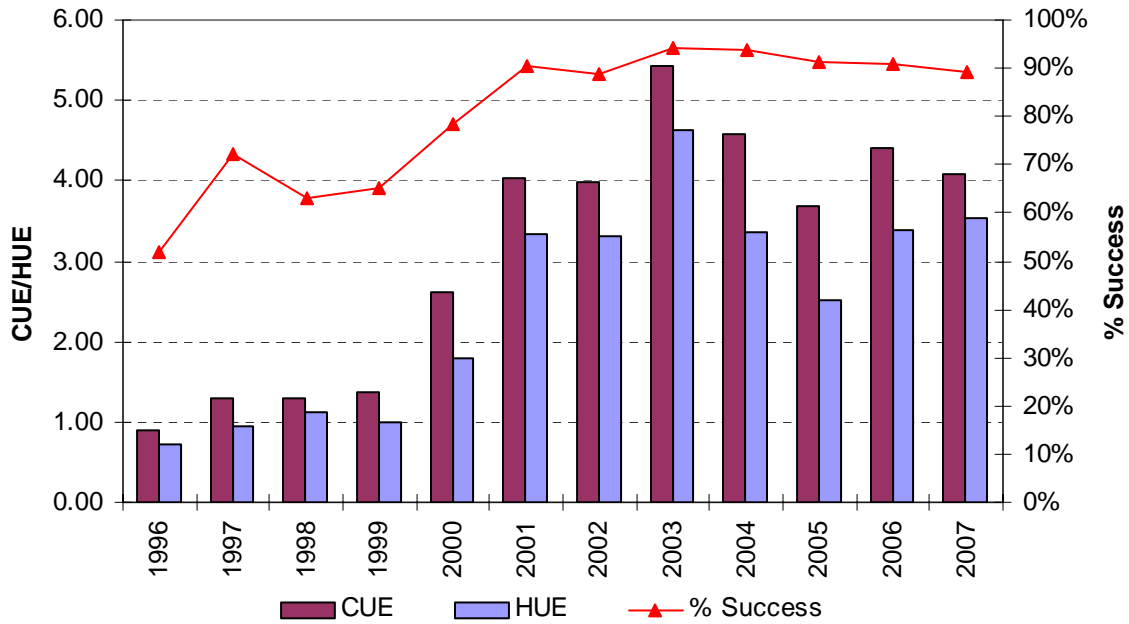


Figure S-10: Yellow perch angler % success, catch per angler hour (CUE) and harvest per angler hour (HUE) for the 1996 – 2007 Lake Erie Boat Angler Surveys.

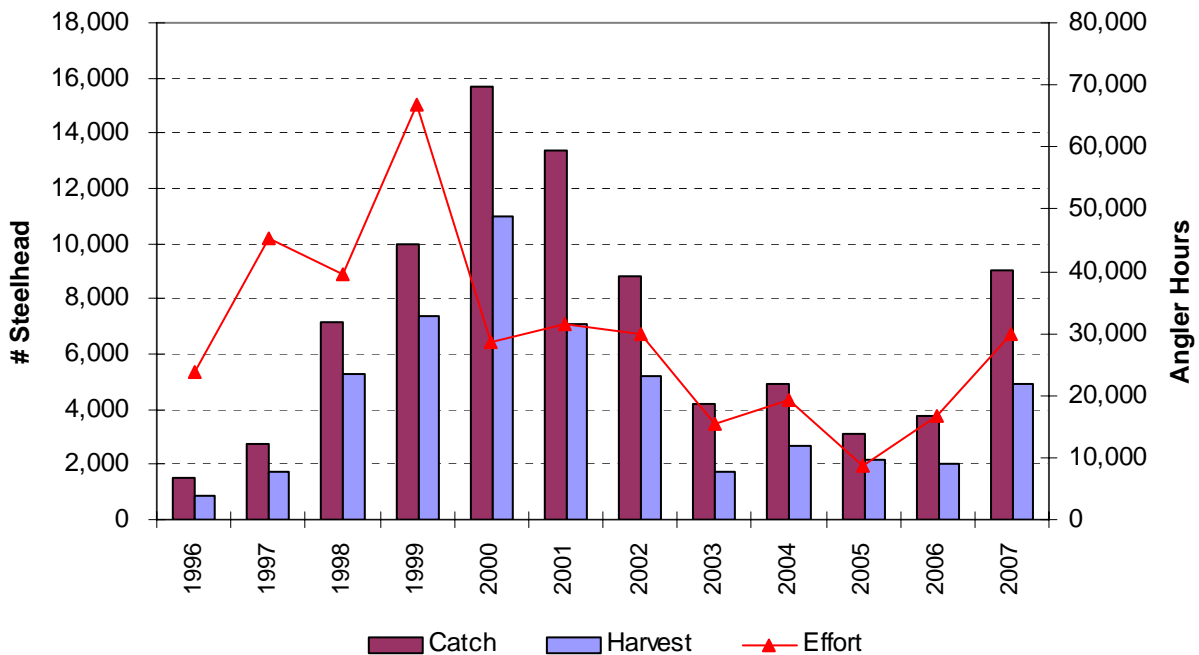


Figure S-11: Estimated steelhead angler effort (hours), catch and harvest for the 1996 – 2007 Lake Erie Boat Angler Surveys.

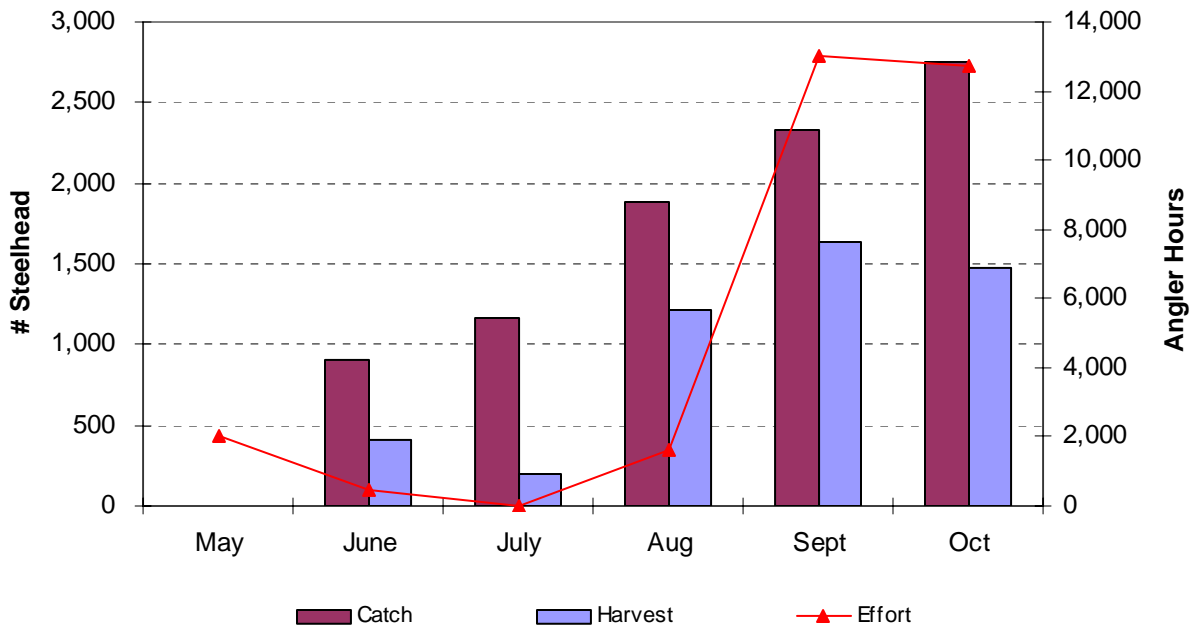


Figure S-12: Monthly estimated steelhead angler effort, catch and harvest for the 2007 Lake Erie Boat Angler Survey.

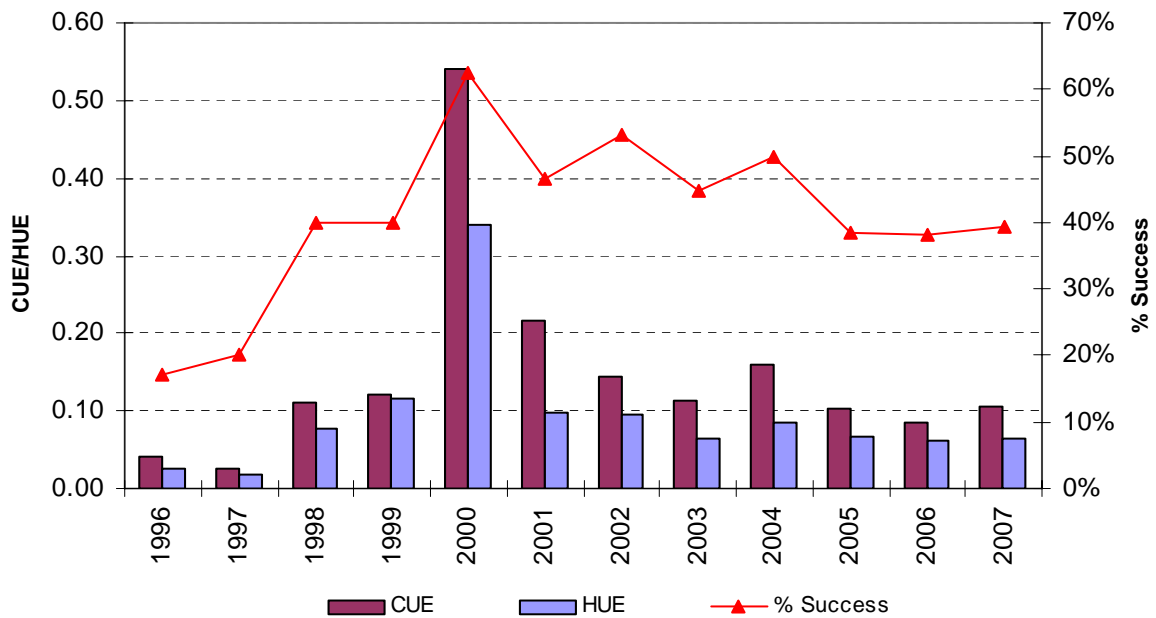


Figure S-13: steelhead angler % success, catch per angler hour (CUE) and harvest per angler hour (HUE) for the 1996 – 2007 Lake Erie Boat Angler Surveys.

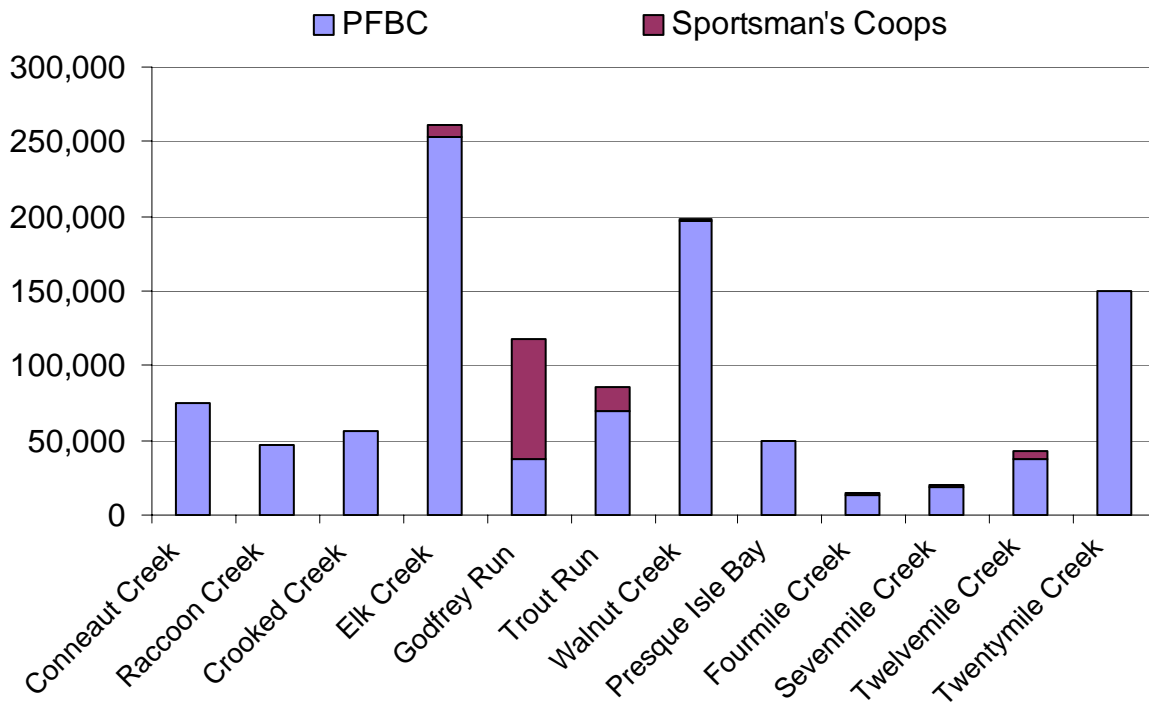


Figure S-14: Total (PFBC + Sportsman's Cooperative Nurseries) steelhead stocking by location in 2007.

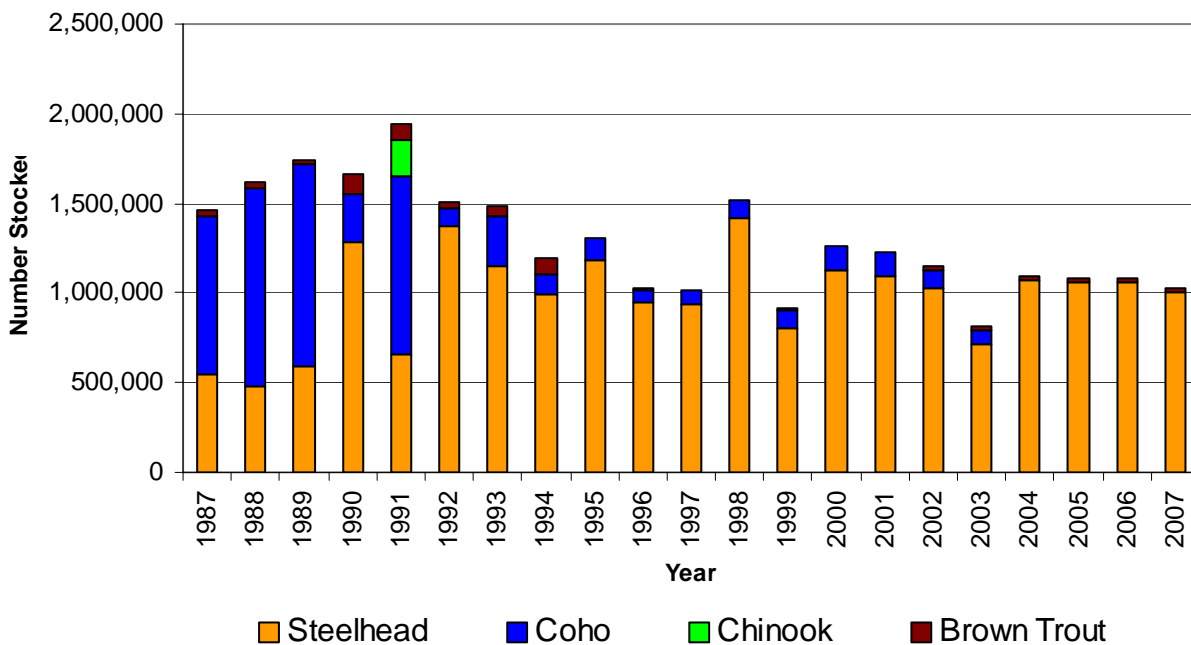


Figure S-15: Total anadromous trout and salmon stocking for Steelhead trout, Coho salmon, Chinook salmon and brown trout, 1987 – 2007. These numbers represent only PFBC hatchery plants.