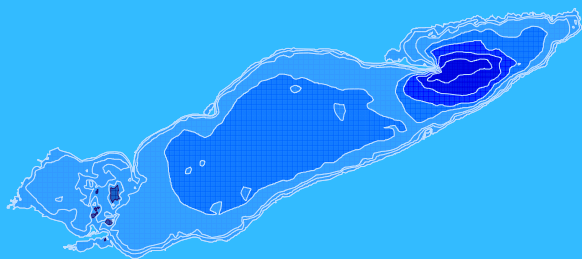


Natural. Valued. Protected.



2010 Status of Major Stocks

Lake Erie Management Unit
March 2011



The Lake Erie Management Unit of the Ontario Ministry of Natural Resources is responsible for managing the fishery resources of the Ontario waters of Lake Erie, as well as the upper Niagara River, the Detroit River, Lake St. Clair, and the St. Clair River.

Ontario has been responsible for managing the fishery resources of these waters since 1898. In 1992, the Lake Erie Management Unit was created to improve Ontario's ability to manage these important resources. The Unit is based in London with field offices in Port Dover and Wheatley.

VISION: The Lake Erie Management Unit will contribute to the environmental, social, and economic well-being of the people of Ontario through the sustainable development of fishery resources within the Lake Erie basin.

MISSION: To ensure the long-term health of the Lake Erie ecosystem and to promote the sustainable harvest and development of its fishery resource through sound science, assessment, regulation, and advocacy.

GOAL: To foster and encourage the understanding of all users and partners on the complexity of managing the fishery resource of Lake Erie, to minimize conflict, and to endorse sound fishery management practices.

Lake Erie's fishery resources are managed cooperatively by Ontario and the four U.S. states – New York, Pennsylvania, Ohio and Michigan - bordering the lake through a process set out by the Great Lakes Fishery Commission and the Joint Strategic Plan for Management of Great Lakes Fisheries.

Lake St. Clair's fishery resources are managed cooperatively by Ontario and Michigan under the same process.

Cover Photo:

- MNR Fisheries Technician, Tyler Genereaux and students sample fish from Interagency Trawl Program; (left to right) Joey Battaglia, Tyler Genereaux, Sean Yardley, Michael Boser

2010 Status of Major Stocks

Lake Erie Management Unit
March 2011

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FORWARD

The mission of the Lake Erie Management Unit (LEMU) is to provide leadership and direction on sustainable resource management for Lake Erie, by maintaining and, where possible enhancing the social, economic, cultural and environmental benefits of the lake's rich aquatic resources. The LEMU works to achieve this through its annual fisheries assessment, Port Officer program and management activities on the Canadian waters of Lake Erie, Lake St. Clair and connecting waters. Presently the LEMU maintains facilities in Wheatley, Port Dover, and London. The Unit also provides a coordination function for commercial fish management across the province of Ontario.

The Province of Ontario and four U.S. States share the responsibility of managing Lake Erie's fishery resource. Since fish populations do not recognize borders, international cooperation is essential to the sustainable management of Lake Erie's fisheries. This cooperation is achieved via the Lake Erie Committee (LEC), which is comprised of representatives from state and provincial fisheries management agencies under the auspices of the Great Lakes Fishery Commission (GLFC). On a rotational basis, Ontario's Lake Erie Manager either chairs or vice-chairs this committee. Lake Erie Management Unit staff make key contributions to all of the LEC Task Groups, which jointly pursue scientific objectives, evaluate international fisheries management strategies, and sets harvest levels for the lake.

The Lake Erie Management Unit consults regularly with resource management partners, namely the sport and commercial fish interests on Lake Erie and Lake St. Clair. The principal venue for this consultation process is the Fisheries Management Zone 19 Council. Within this group, representatives from the sport and commercial bait and food fisheries discuss emergent and long-term fisheries issues, with the Lake Erie Manager acting as chair and facilitator. This year LEMU and LEC initiated a facilitated stakeholder workshop to help re-define fishery management objectives for Lake Erie. It is anticipated that this workshop is the first in a series of stakeholder meetings that will guide future walleye and yellow perch management on Lake Erie.

The purpose of the LEMU Status of Stocks report is to summarize and present fisheries assessment, and commercial fishery data that is directly pertinent to the allocation process for lake whitefish, walleye, yellow perch, and rainbow smelt in Lake Erie. This data is incorporated with similar information from the U.S. jurisdictions and analyses are performed by various task groups to determine population status, and recommend harvest levels that are consistent with LEC objectives.

The LEMU Team is pleased to present this report to our stakeholders and colleagues, and welcome any questions or comments you may have on its content.

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1. STATUS OF MAJOR SPECIES

The following is an overview of the status of major species in Ontario waters of Lake Erie for 2010. Lakewide perspectives are available in the following reports of the Lake Erie Committee (LEC) of the Great Lakes Fishery Commission:

Walleye Task Group Report
 Yellow Perch Task Group Report
 Forage Task Group Report
 Cold Water Task Group Report
 Habitat Task Group

Walleye

In 2010, the fishery was maintained by the strong 2003 year class and the moderate 2007 year class. Lakewide fall surveys also indicated a strong presence of age 3 and age 7 fish in 2010, suggesting the 2007 and 2003 year classes will contribute the most to spawner biomass in 2011. The 2007 year class will also contribute strongly to fisheries in 2011 along with the 2003 year class. Interagency trawling conducted in August indicated a moderate 2010 year class, which will not recruit to fisheries until 2012. According to trawl and gill net survey data, the 2008 and 2009 year classes were relatively weak and are not expected to strongly influence fishery performance in 2011.

The LEC and the Lake Erie Management Unit continued to implement the Walleye Management Plan (WMP) to determine total allowable catch (TAC) for Lake Erie. Under this framework the exploitation policy for 2010 was consistent with a rehabilitation level fishery. Population abundance continues to decline due to lower recruitment following the 2003 year class. The policies and exploitation rates described within the WMP are currently undergoing a 5 year review process by the LEC. In 2010, this process included facilitated stakeholder consultation on objectives and exploitation policies that will continue in 2011. In addition to continued research and improvements to the population model, an updated WMP will help to support fisheries management on Lake Erie and promote quality and sustainability of the sport and commercial fisheries well into the future.

The walleye population in eastern Lake Erie consists of mixed stocks including those originating from east basin shoals, the Grand River, and immigrants from the rest of the lake. Representation of older walleye is typically greater in eastern Lake Erie compared to other regions of the lake. The greater average age of walleye in the eastern basin is due in part to the contribution of older migratory individuals originating from the western basin. In 2010, the strong 2003 year class at age 7 represented 53% of the commercial harvest in Ontario statistical districts 4 and 5 combined (Figure 2.1). Age 7 walleye also comprised the largest fraction of the walleye caught in the east basin partnership gill net survey in 2010, however, it was followed closely by the 2007 year class. The survey suggests the 2007 and 2003 year classes will continue to contribute to east basin fisheries in 2011.

Yellow Perch

Yellow perch populations in Lake Erie have undergone large fluctuations in recruitment and survival over the last several decades. High harvest levels during the 1980s could not be sustained through the early 1990s due to low recruitment and low survival rates. A series of strong year classes have been observed periodically since the mid 1990s, culminating with the 2003 cohort. Recent moderate to strong year classes include the 2007 year class in the western and central basins (statistical districts 1, 2 and 3) and the 2008 year class in the east (statistical districts 4 and 5).

The 2007 year class dominated the west and west central basin (statistical districts 1 and 2) fisheries in 2010, while the 2003 and the 2006 cohorts were better represented in the east central basin (statistical district 3). The 2006 and 2007 year classes were also strongly represented in east (statistical districts 4 and 5) basin harvest. Fisheries in 2011 will benefit from the 2007 year class in the west and central basins, and from the 2008 and 2003 year classes in the central and east basins.

Interagency trawling conducted in August indicated a weak 2009 year class, which will not contribute much to fisheries in 2011. The 2010 year class, recruiting to the fishery in 2012, was moderate in the central and eastern basins; however it was poor in the western basin. As for walleye, the LEC yellow perch management plan in development will incorporate input from 2010 and continued stakeholder consultation into 2011.

Lake Whitefish

While harvest trends help to describe the status of lake whitefish stocks, fishery effort is of marginal assessment value since much of the harvest is incidental from walleye effort and targeted effort varies considerably between years. General measures of year class strength come from partnership gill net surveys. In 2010, the 2003 year class (age 7 fish) still dominated index catches; however, the 2005 year class (age 5 fish) was also caught in moderate numbers. In 2010, the majority of the commercial harvest also came from these year classes. The 2003 and 2005 year classes will continue to contribute to fisheries in 2011. Older lake whitefish were observed in the 2010 Ontario fisheries (up to age 18) and population assessment (up to age 21), reflecting the survival of older year classes.

2. COMMERCIAL FISHERY

In 2010, total commercial landings from Ontario waters of Lake Erie were 19.8 million pounds, a decrease of 4.2 million pounds (17%) from 2009 (Table 2.1). The landings, lowest in the time series, were the result of a significant reduction of rainbow smelt harvest following the dissolution of Great Lakes Fish Corporation in 2010. The value of the total commercial landings in 2010 was \$25.6 million, an increase of \$4.2 million (20%) from 2009 (Table 2.1). The increase in value of landings is due to the increase of yellow perch quota and dollars per pound paid for the fish. Harvest and landed value in 2010 are presented for each species by statistical district (Ontario Erie or OE, Figure 2.1) in Table 2.2.

Rainbow Smelt

The total landings of rainbow smelt decreased 60% to 3.3 million pounds in 2010 (Tables 2.2 and 2.3, Figure 2.4). The harvest was taken from OE-2 (53%), OE-3 (29%) and OE-4 (18%). Summer harvest in OE-2 was primarily age 2 (55%) and age 3 (35%) fish. Age 1 and Age 2 comprised over 84% of OE-3 and OE-4 harvests throughout the year (Table 2.4). The commercial fishery harvested 20% of the quota allocated for 2010. The landed value of rainbow smelt was \$0.7 million, a decrease of 60% from 2009 (Tables 2.2 and 2.3). Rainbow smelt are not native to Lake Erie.

Yellow Perch

Yellow perch landings increased 12% to 6.6 million pounds in 2010 (Tables 2.2 and 2.3, Figure 2.4). The commercial fishery harvested 99% of allocated quota in 2010. Spring fisheries were characterized by harvest from a broad range of ages with age 7, the strong 2003 year class, still making a significant contribution to the harvest in OE-1 to OE-4 (21 to 42%). In the summer and fall harvest in OE-1, OE-2, OE-4 and OE-5 ages 3 and 4 were the major contributors (>67% combined). Ages 4 and 5 fish combined contributed over 57% of OE-3's summer and fall harvest. The landed value of yellow perch increased by \$5.0 million (56%), from 2009 to \$14.0 million in 2010 (Tables 2.2 and 2.3).

Walleye

Walleye landings decreased 7% to 3.3 million pounds (Tables 2.2 and 2.3, Figure 2.4). Ninety-nine percent of the 2010 quota was harvested. Lakewide harvest by walleye size category was: Jumbo (46%), and Number 1 (51%) (see Table 2.6 for description of size categories). In the Number 1

category the 2007 year class, age 3, was a significant portion of the harvest in OE-1 to OE-3 (30 to 66%). Age 2 fish of the Number 1 category became a significant part of the fall harvest in OE-1 to OE-3 (24 to 57%). The 2003 year class at age 7 was the major contributor to the jumbo harvest throughout the year (Table 2.6). The landed value of walleye increased 8% from 2009 to \$6.8 million in 2010 (Tables 2.2 and 2.3).

White Bass

The total landings of white bass increased 0.5 million pounds (16%) to 3.6 million pounds in 2010 (Tables 2.2 and 2.3, Figure 2.4). The majority of harvest occurred in statistical districts OE-2 (54%) and OE-1 (35%). Age 5 fish dominated spring harvest in OE-1 (43%) and OE-2 (72%). Age 3 and 4 fish were also significant contributors to OE-1 spring (27 and 20%) and OE-2 summer harvest (16 and 39%) (Table 2.7). White bass have not been regulated by quota since 1993. The landed value of white bass increased 3% to \$2.2 million in 2010 (Tables 2.2 and 2.3).

White Perch

The total landings of white perch decreased 4% to 2.2 million pounds in 2010 (Tables 2.2 and 2.3, Figure 2.4). The majority of harvest occurred in statistical district OE-2 60% with 20% of harvest in each of OE-1 and OE-3. In OE-1 and OE-2, the spring harvest consisted of a broad range of ages (2 to 8 year olds) with age 5 the major contributor in OE-1 (41%) and OE-2 (31%) (Table 2.8). White perch are an invasive species and not regulated by quota. The total landed value of white perch increased 4% to \$1.2 million in 2010 (Tables 2.2 and 2.3).

Lake Whitefish

The total landings of lake whitefish decreased 0.2 million pounds (26%) to 0.6 million pounds in 2010 (Tables 2.2 and 2.3, Figure 2.4). The commercial fishery harvested 53% of the quota allocated for 2010. Of the total harvest, 65% came from OE-1 and OE-2 in equal proportions and 22% was harvested from OE-5. The harvest was dominated by age 7 fish (53 to 59%) and age 5 fish (21 to 24%) throughout the year (Table 2.9). The landed value of lake whitefish decreased \$0.2 million (26%) to \$0.6 million in 2010 (Tables 2.2 and 2.3).

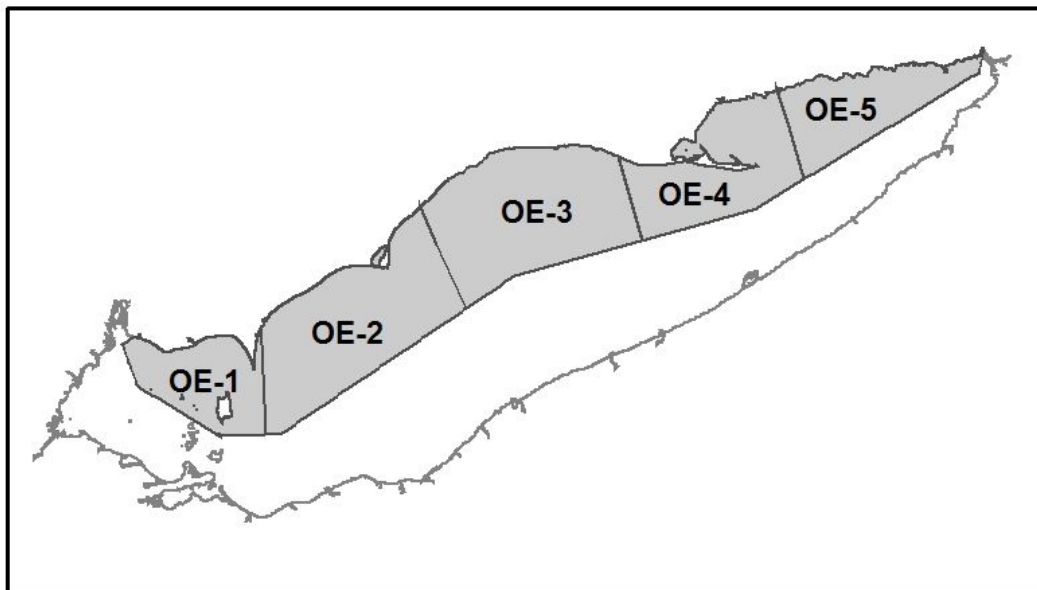


Figure 2.1 - Spatial location of statistical districts in the Canadian waters of Lake Erie

Table 2.1 Total annual commercial fishery landings (pounds) and value (\$ CDN) from the Canadian waters of Lake Erie, 1960-2010.

Year	Total Pounds	Total Value	Year	Total Pounds	Total Value
1960	28,181,000	2,033,000	1986	39,112,618	34,961,819
1961	36,350,000	2,516,000	1987	47,542,123	36,458,014
1962	43,296,419	2,296,635	1988	45,333,210	42,069,940
1963	34,069,000	2,523,635	1989	42,225,415	36,642,716
1964	25,391,428	2,377,284	1990	42,533,681	31,191,417
1965	35,096,120	3,319,307	1991	42,447,098	28,198,998
1966	41,435,283	3,104,813	1992	32,814,073	28,888,799
1967	37,775,009	3,339,460	1993	35,524,282	27,545,957
1968	39,415,250	2,973,814	1994	28,306,102	29,957,675
1969	48,025,996	4,244,149	1995	27,788,500	32,158,827
1970	31,755,446	3,770,281	1996	27,566,700	31,406,644
1971	29,075,559	4,254,692	1997	32,912,134	33,640,390
1972	29,978,000	5,324,000	1998	34,731,109	38,144,985
1973	39,829,000	7,038,000	1999	30,540,383	34,114,272
1974	38,686,000	5,634,000	2000	22,871,377	30,872,107
1975	30,548,620	6,009,093	2001	22,096,515	26,612,420
1976	25,729,080	6,000,970	2002	25,237,063	30,349,232
1977	35,853,556	7,736,701	2003	21,702,507	25,414,340
1978	40,159,610	9,883,626	2004	27,106,068	23,688,955
1979	40,839,668	17,555,598	2005	25,065,670	30,237,098
1980	42,849,000	14,207,000	2006	22,847,529	30,750,957
1981	44,711,277	20,279,830	2007	28,224,615	27,584,280
1982	59,500,000	26,183,000	2008	25,824,134	21,698,647
1983	45,682,046	17,613,206	2009	23,969,575	21,373,889
1984	36,305,219	26,349,853	2010	19,789,394	25,617,325
1985	43,367,069	20,255,403			

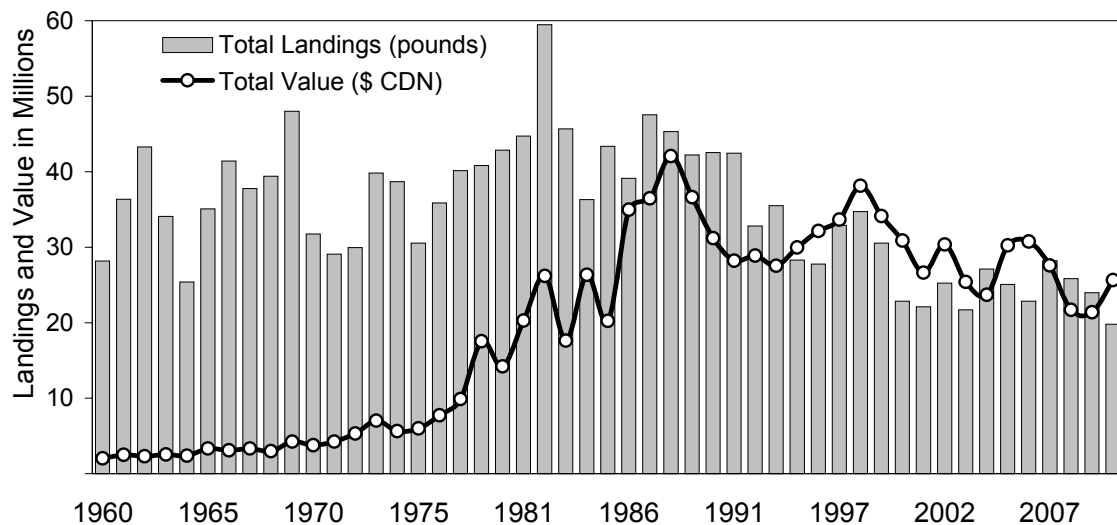


Figure 2.2 Commercial fishery landings (pounds) and value (\$ CDN) from the Canadian waters of Lake Erie, 1960-2010.

Table 2.2 Total annual commercial fishery landings (landed weight in pounds) and value dollars by fish species and statistical district for the Canadian waters of Lake Erie, 2010.

Species	Landings by Statistical District					Total Landing	Total Value
	OE-1	OE-2	OE-3	OE-4 ^a	OE-5		
Brown bullhead							
Burbot				322	1,428	1,750	39
Carp	2,224	67				2,291	267
Catfish	9,375	2,914	236	42	249	12,816	3,617
Freshwater drum	54,396	86,686	22,482		700	164,264	13,148
Gizzard shad	13,571	17,560				31,131	1,425
Lake whitefish	219,249	226,929	13,322	9,401	131,171	600,072	642,183
Rainbow smelt	10	1,727,236	950,810	574,964	754	3,253,774	732,678
Rock bass	203	1		10		214	58
Suckers	25,532	3,977				29,509	5,680
Walleye	1,822,637	683,858	650,793	11,343	104,005	3,272,636	6,826,931
White bass	1,260,455	1,947,296	389,358	7,867	1,539	3,606,515	2,221,683
White perch	431,736	1,325,779	443,234	7,054	277	2,208,080	1,181,509
Yellow perch	879,358	1,888,876	3,224,083	260,835	352,793	6,605,945	13,988,064
Mixed ^b	286				111	397	45
Total Landing (lbs)	4,719,032	7,911,179	5,694,318	871,838	593,027	19,789,394	
Total Value (\$)	6,958,638	7,917,475	9,005,763	690,471	1,044,979		25,617,325

^a Excludes Inner Long Point Bay.

Preliminary February 3, 2011

^b A variety of incidentally caught species of little or no value, plus species with total landings less than 50 pounds.

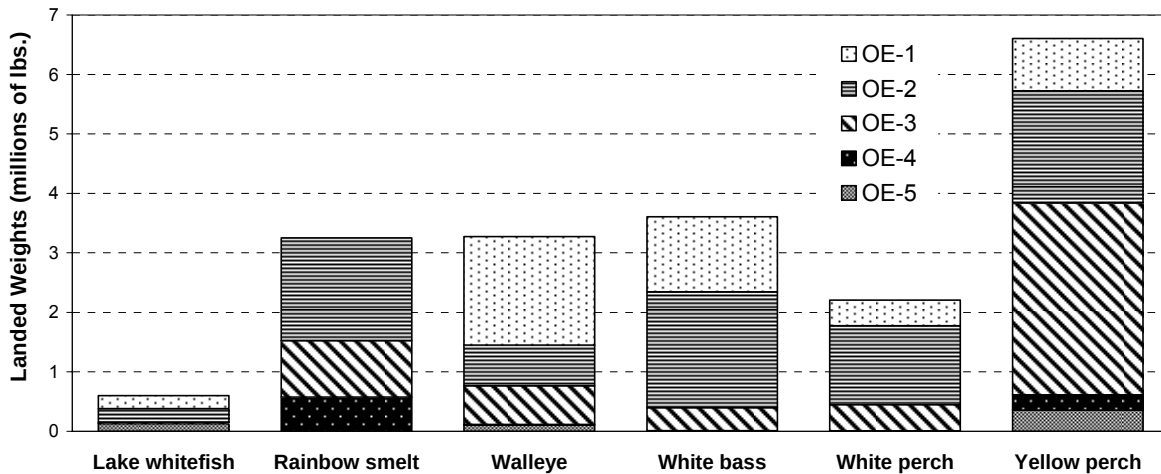


Figure 2.3 Total annual commercial fishery landed weights (millions of lbs.) for principle species by statistical district, Lake Erie 2010.

Table 2.3 Change in weight of the annual commercial fishery landed weight (pounds) from 2009 to 2010 by fish species and statistical district for the Canadian waters of Lake Erie.

Species	Landings by Statistical District					Total Landing	Total Value
	OE-1	OE-2	OE-3	OE-4 ^a	OE-5		
Brown bullhead	-121	0	0	0	0	-121	-30
Burbot	0	-24	-15	-1,237	-733	-2,009	-900
Carp	-1,868	64	-20	0	-1,432	-3,256	-749
Catfish	-16,218	1,093	-628	-34	-82	-15,869	-4,222
Freshwater drum	-30,925	35,265	-31,115	0	75	-26,700	-8,335
Gizzard shad	5,158	17,560	0	0	0	22,718	699
Lake whitefish	-203,978	87,918	4,317	-17,370	-86,359	-215,472	-226,207
Rainbow smelt	10	-1,789,633	-1,451,432	-1,559,943	-12,198	-4,813,196	-1,121,867
Rock bass	25	-1	-1	-13	0	10	23
Suckers	-26,396	3,952	0	0	-57	-22,501	-12,073
Walleye	-177,579	-74,772	33,727	-18,069	-8,902	-245,595	509,174
White bass	-165,380	741,970	-33,667	-31,321	-2,022	509,580	67,090
White perch	-210,496	70,643	62,555	-3,468	-1,070	-81,836	40,213
Yellow perch	26,221	-606,735	1,093,506	32,050	172,849	717,891	5,001,000
Mixed ^b	-3,598	-94	-3	-1	-129	-3,825	-379
Total Landing (lbs.)	-805,145	-1,512,794	-322,776	-1,599,406	59,940	-4,180,181	
Total Value (\$)	401,897	257,820	3,586,588	-326,121	323,253		4,243,437

^a Excludes Inner Long Point Bay.

^b A variety of incidentally caught species of little or no value, plus species with total landings less than 50 pounds.

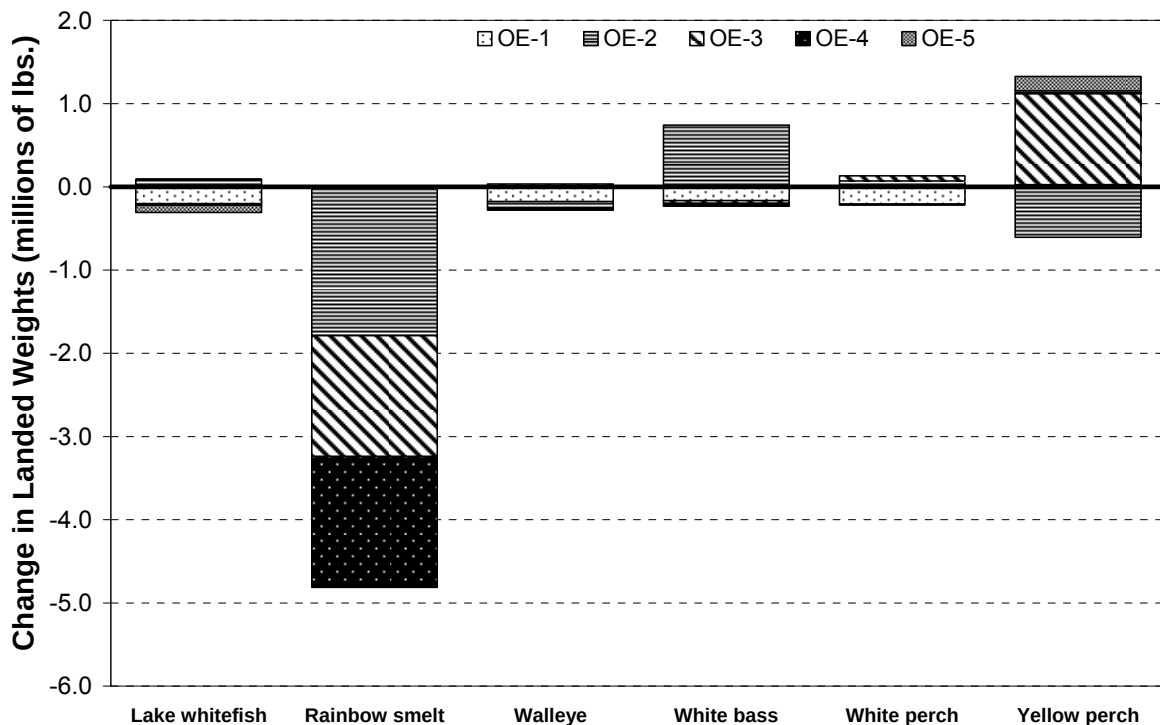


Figure 2.4 Change in weight of the annual commercial fishery landings (millions of lbs.) from 2009 to 2010 for principle species by statistical district, Lake Erie.

Table 2.4 Rainbow smelt year class composition, average total length (mm) and weight (g) from Lake Erie commercial catch samples taken from trawl nets by statistical district and season, 2010. n is sample size, sexes combined.

Stat. Dist.	Season*	Year Class and Age										All Ages	
		2010 0	2009 1	2008 2	2007 3	2006 4	2005 5	2004 6	2003 7	2002 8	2001 9	Average	n
Age Group Composition (%) **													
OE-2	Summer	-	4	55	35	4	1	-	-	-	-	2.4	69
OE-3	Summer	-	22	63	14	1	-	-	-	-	-	1.9	236
OE-4	Spring	-	44	50	3	3	-	-	-	-	-	1.7	34
	Summer	-	48	42	6	2	0	0	-	0	-	1.7	298
	Fall	8	46	41	2	1	-	1	0	-	-	1.5	244
Mean Total Length (mm)													
OE-2	Summer	-	113	121	126	122	119	-	-	-	-	122.2	69
OE-3	Summer	-	117	120	134	132	-	-	-	-	-	121.4	236
OE-4	Spring	-	115	124	121	180	-	-	-	-	-	121.5	34
	Summer	-	109	119	159	191	220	260	-	239	-	119.6	298
	Fall	84	112	121	182	238	-	224	238	-	-	117.3	244
Mean Round Weight (g)													
OE-2	Summer	-	8	10	12	10	8	-	-	-	-	10.5	69
OE-3	Summer	-	8	9	14	13	-	-	-	-	-	9.5	236
OE-4	Spring	-	8	11	10	29	-	-	-	-	-	10.1	34
	Summer	-	7	9	29	42	64	126	-	75	-	11.0	298
	Fall	3	7	9	41	86	-	73	88	-	-	10.0	244

* Season: Winter = January - March Spring = April - June Summer = July - September Fall = October - December

** A hyphen (-) indicates no fish of that age, a zero (0) indicates less than 0.5% fish of that age.

Table 2.5 Yellow perch year class composition, average total length (mm) and weight (g) from Lake Erie commercial catch samples from small mesh (<76mm) gill nets by statistical district and season, 2010. n is sample size, sexes combined.

Stat. Dist.	Season*	Year Class and Age										All Ages	
		2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Average	n
		1	2	3	4	5	6	7	8	9	10+		
Age Group Composition (%) **													
OE-1	Spring	-	-	19	36	16	2	25	0	1	-	4.8	280
	Summer	-	1	56	26	7	0	10	-	0	-	3.8	479
	Fall	-	5	67	22	3	-	3	-	-	-	3.4	317
OE-2	Spring	-	0	20	28	15	2	34	1	0	-	5.0	558
	Summer	-	3	41	27	6	3	20	0	0	-	4.3	705
	Fall	-	10	58	17	4	2	8	-	1	1	3.7	157
OE-3	Spring	-	-	2	13	18	16	42	8	1	0	6.1	992
	Summer	-	0	11	36	22	10	21	1	0	-	5.0	1062
	Fall	-	3	12	33	29	7	14	2	0	-	4.8	237
OE-4	Spring	-	-	1	17	34	25	21	2	-	-	5.6	198
	Summer	-	-	23	45	26	3	4	-	-	-	4.2	120
OE-5	Spring	-	2	40	41	13	-	5	-	-	-	3.8	120
	Summer	-	1	39	38	18	2	2	0	0	-	3.9	709
Mean Total Length (mm)													
OE-1	Spring	-	-	211	217	222	230	232	216	249	-	221	280
	Summer	-	208	217	224	233	239	242	-	262	-	222	479
	Fall	-	208	224	229	249	-	250	-	-	-	226	317
OE-2	Spring	-	216	207	212	226	226	232	215	238	-	220	558
	Summer	-	201	214	223	250	259	260	320	236	-	229	705
	Fall	-	210	223	237	244	251	248	-	289	276	228	157
OE-3	Spring	-	-	214	222	230	238	243	239	242	281	236	992
	Summer	-	204	213	218	228	232	243	256	272	-	227	1062
	Fall	-	208	217	231	234	248	245	246	198	-	232	237
OE-4	Spring	-	-	217	236	249	238	238	223	-	-	241	198
	Summer	-	-	226	227	248	281	250	-	-	-	235	120
OE-5	Spring	-	210	224	244	273	-	258	-	-	-	240	120
	Summer	-	215	230	243	261	265	253	257	218	-	242	709
Mean Round Weight (g)													
OE-1	Spring	-	-	117	126	135	142	150	123	179	-	133	280
	Summer	-	120	137	152	175	177	199	-	231	-	150	479
	Fall	-	112	138	154	198	-	210	-	-	-	144	317
OE-2	Spring	-	129	115	123	147	147	166	126	217	-	141	558
	Summer	-	111	137	158	228	269	263	505	170	-	177	705
	Fall	-	117	148	187	189	206	230	-	270	303	162	157
OE-3	Spring	-	-	130	148	163	183	188	175	171	267	175	992
	Summer	-	119	131	140	164	174	205	233	315	-	163	1062
	Fall	-	116	133	162	169	214	218	222	111	-	171	237
OE-4	Spring	-	-	108	160	186	159	164	139	-	-	169	198
	Summer	-	-	160	168	241	330	222	-	-	-	191	120
OE-5	Spring	-	116	142	183	273	-	211	-	-	-	178	120
	Summer	-	135	165	199	260	290	239	236	146	-	199	709

* Season: Winter = January-March Spring = April-June Summer = July-September Fall = October-December

** A hyphen (-) indicates no fish of that age, a zero (0) indicates less than 0.5% fish of that age.

Table 2.6 Walleye year class composition, average total length (mm) and weight (g) from Lake Erie commercial catch samples from large mesh ($\geq 76\text{mm}$) gill nets by statistical district and season, 2010. n is sample size, sexes combined.

Stat. Dist.	Season*	Category**	Year Class and Age										All Ages	
			2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Average	n
			1	2	3	4	5	6	7	8	9	10+		
Age Group Composition (%)***														
OE-1	Spring	Number 1	-	4	66	1	4	2	21	0	0	1	4.0	476
	Spring	Number 2	-	74	26	-	-	-	-	-	-	-	2.3	38
	Spring	Whitegill	-	-	55	-	10	5	30	-	-	-	4.6	20
	Summer	Jumbo	-	-	30	-	15	5	50	-	-	-	5.5	20
	Summer	Whitegill	-	-	55	5	-	10	25	-	-	5	4.8	20
	Fall	Number 1	2	39	47	0	1	0	10	-	-	-	3.0	217
	Fall	Jumbo	-	-	75	-	-	-	25	-	-	-	4.0	8
OE-2	Spring	Number 1	-	5	58	3	1	3	30	1	-	-	4.5	80
	Spring	Jumbo	-	-	-	-	10	3	67	-	8	13	7.4	39
	Summer	Number 1	2	22	37	1	6	3	28	-	-	2	4.2	138
	Summer	Jumbo	-	-	37	11	-	21	32	-	-	-	5.0	19
	Summer	Whitegill	-	-	15	5	10	10	55	-	-	5	6.2	20
	Fall	Number 1	5	57	37	2	-	-	-	-	-	-	2.4	60
OE-3	Spring	Number 1	-	-	40	-	3	-	55	-	-	3	5.5	40
	Spring	Jumbo	-	-	-	-	7	-	78	-	12	3	7.2	59
	Summer	Number 1	-	3	30	-	13	5	50	-	-	-	5.6	40
	Summer	Jumbo	-	-	3	2	3	3	71	-	9	8	7.3	119
	Fall	Number 1	11	24	34	5	5	1	16	-	-	3	3.6	74
	Fall	Jumbo	-	2	15	7	8	5	54	-	3	5	6.3	59
OE-4	Summer	Jumbo	-	-	-	-	-	-	74	5	-	21	8.3	19
OE-5	Spring	Jumbo	-	-	-	8	7	2	51	2	8	22	8.1	59
	Summer	Jumbo	-	-	-	3	5	3	54	3	8	26	8.7	39
Mean Total Length (mm)														
OE-1	Spring	Number 1	-	383	458	497	507	550	535	585	565	616	477.1	476
	Spring	Number 2	-	370	414	-	-	-	-	-	-	-	381.5	38
	Spring	Whitegill	-	-	464	-	512	475	522	-	-	-	486.5	20
	Summer	Jumbo	-	-	534	-	583	562	568	-	-	-	559.9	20
	Summer	Whitegill	-	-	480	545	-	532	504	-	-	568	498.7	20
	Fall	Number 1	380	452	510	500	537	513	543	-	-	-	488.8	217
	Fall	Jumbo	-	-	540	-	-	-	546	-	-	-	541.3	8
OE-2	Spring	Number 1	-	405	466	491	563	560	586	474	-	-	503.2	80
	Spring	Jumbo	-	-	-	-	571	581	606	-	650	675	613.7	39
	Summer	Number 1	328	448	491	490	556	523	540	-	-	551	497.6	138
	Summer	Jumbo	-	-	544	521	-	614	623	-	-	-	581.3	19
	Summer	Whitegill	-	-	488	567	549	566	539	-	-	574	537.9	20
	Fall	Number 1	378	454	480	472	-	-	-	-	-	-	459.8	60

... Continued ...

Table 2.6 continued...

Stat. Dist.	Season*	Category**	Year Class and Age										All Ages	
			2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Average	n
			1	2	3	4	5	6	7	8	9	10+		
Mean Total Length (mm) continued...														
OE-3	Spring	Number 1	-	-	491	-	503	-	560	-	-	573	531.5	40
	Spring	Jumbo	-	-	-	-	581	-	607	-	630	637	609.1	59
	Summer	Number 1	-	464	507	-	510	519	514	-	-	-	510.4	40
	Summer	Jumbo	-	-	493	558	573	589	609	-	627	628	606.4	119
	Fall	Number 1	371	478	517	534	489	551	533	-	-	560	495.3	74
	Fall	Jumbo	-	470	555	562	579	615	626	-	596	628	602.8	59
OE-4	Summer	Jumbo	-	-	-	-	-	-	630	652	-	682	641.8	19
OE-5	Spring	Jumbo	-	-	-	539	546	576	603	608	614	636	601.6	59
	Summer	Jumbo	-	-	-	550	575	630	611	575	641	647	618.9	39
Mean Round Weight (g)														
OE-1	Spring	Number 1	-	561	952	1224	1219	1690	1496	1963	1836	2542	1093.0	476
	Spring	Number 2	-	473	613	-	-	-	-	-	-	-	510.0	38
	Spring	Whitegill	-	-	966	-	1322	987	1260	-	-	-	1091.0	20
	Summer	Jumbo	-	-	1634	-	2145	2094	2127	-	-	-	1979.8	20
	Summer	Whitegill	-	-	1021	1613	-	1491	1245	-	-	1603	1183.0	20
	Fall	Number 1	532	951	1441	1314	1634	1442	1849	-	-	-	1276.0	217
	Fall	Jumbo	-	-	1677	-	-	-	1798	-	-	-	1707.4	8
OE-2	Spring	Number 1	-	668	1095	1308	1803	1502	2057	1015	-	-	1385.3	80
	Spring	Jumbo	-	-	-	-	2024	1878	2308	-	2912	3428	2457.8	39
	Summer	Number 1	342	930	1292	1399	1703	1560	1695	-	-	1607	1342.7	138
	Summer	Jumbo	-	-	1786	1632	-	2651	2951	-	-	-	2319.8	19
	Summer	Whitegill	-	-	1235	2130	1584	1939	1655	-	-	1978	1653.1	20
	Fall	Number 1	573	994	1229	1152	-	-	-	-	-	-	1061.7	60
OE-3	Spring	Number 1	-	-	1336	-	1285	-	1845	-	-	2006	1631.2	40
	Spring	Jumbo	-	-	-	-	2048	-	2241	-	2433	2947	2274.5	59
	Summer	Number 1	-	1110	1399	-	1464	1603	1506	-	-	-	1463.5	40
	Summer	Jumbo	-	-	1166	1629	1956	1973	2360	-	2643	2416	2322.0	119
	Fall	Number 1	545	1267	1600	1740	1520	2300	1620	-	-	1585	1420.2	74
	Fall	Jumbo	-	1084	2038	2246	2386	2970	2841	-	2514	2925	2609.6	59
OE-4	Summer	Jumbo	-	-	-	-	-	-	2621	2937	-	3247	2769.2	19
OE-5	Spring	Jumbo	-	-	-	1455	1667	1891	2256	2713	2450	2778	2281.2	59
	Summer	Jumbo	-	-	-	1776	2034	2665	2453	1980	2954	2805	2536.6	39

* Season: Winter = January - March Spring = April - June Summer = July - September Fall = October - December

** Category: Number 1 (Category 1) = generally between 381 - 533 mm in total length

Jumbo (Category 2) = generally greater than 533 mm in total length

Number 2 (Category 3) = generally less than 381 mm in total length

*** A hyphen (-) indicates no fish of that age, a zero (0) indicates less than 0.5% fish of that age.

Table 2.7 White bass year class composition and average total length (mm) from Lake Erie commercial catch samples from large mesh (≥ 76 mm) gill nets for marketable fish by statistical district and season, 2010. n is sample size, sexes combined.

Stat. Dist.	Season*	Year Class and Age										All Ages	
		2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Average	n
		1	2	3	4	5	6	7	8	9	10+		
Age Group Composition (%) **													
OE-1	Spring	-	4	27	20	43	4	2	1	-	-	4.2	197
OE-2	Spring	-	-	5	13	72	5	3	3	-	-	5.0	39
	Summer	-	7	16	39	30	3	3	-	2	-	4.3	61
Mean Total Length (mm)													
OE-1	Spring	-	275	322	339	355	363	368	372	-	-	340.6	197
OE-2	Spring	-	-	329	337	354	381	370	364	-	-	352.9	39
	Summer	-	286	309	345	352	386	387	-	388	-	340.7	61

* Season: Winter = January - March Spring = April - June Summer = July - September Fall = October - December

** A hyphen (-) indicates no fish of that age, a zero (0) indicates less than 0.5% fish of that age.

Table 2.8 White perch year class composition and average total length (mm) from Lake Erie commercial catch samples from large mesh (≥ 76 mm) gill nets for marketable fish by statistical district and season, 2010. n is sample size, sexes combined.

Stat. Dist.	Season*	Year Class and Age										All Ages	
		2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Average	n
		1	2	3	4	5	6	7	8	9	10+		
Age Group Composition (%)**													
OE-1	Spring	-	-	8	19	41	16	11	5	1	-	5.2	149
OE-2	Spring	-	-	10	13	31	26	10	10	-	-	5.4	39
Mean Total Length (mm)													
OE-1	Spring	-	-	237	254	262	276	278	283	271	-	263.8	149
OE-2	Spring	-	-	231	261	264	273	281	298	-	-	267.6	39

* Season: Winter = January - March Spring = April - June Summer = July - September Fall = October - December

** A hyphen (-) indicates no fish of that age, a zero (0) indicates less than 0.5% fish of that age.

Table 2.9 Lake whitefish year class composition, average total length (mm) and weight (g) from Lake Erie commercial catch samples from large mesh ($\geq 76\text{mm}$) gill nets by statistical district and season, 2010. n is sample size, sexes combined.

Stat. Dist.	Season*	Year Class and Age										All Ages	
		2009 1	2008 2	2007 3	2006 4	2005 5	2004 6	2003 7	2002 8	2001 9	2000 10+	Average	n
Age Group Composition (%)**													
OE-1	Fall	-	-	-	1	24	6	59	4	4	3	6.7	140
OE-2	Spring	-	-	-	-	21	5	53	5	11	5	7.4	19
OE-5	Summer	-	-	-	-	23	17	54	3	2	1	6.5	100
Mean Total Length (mm)													
OE-1	Fall	-	-	-	484	509	519	533	561	569	585	529.5	139
OE-2	Spring	-	-	-	-	481	485	510	539	558	605	514.1	19
OE-5	Summer	-	-	-	-	505	525	528	559	567	585	524.6	100
Mean Round Weight (g)													
OE-1	Fall	-	-	-	1145	1349	1437	1538	1731	1904	2082	1518.7	140
OE-2	Spring	-	-	-	-	1227	1166	1313	1581	1626	2015	1371.4	19
OE-5	Summer	-	-	-	-	1475	1510	1657	2032	2135	2348	1617.6	100

* Season: Spring = April - June Summer = July - September Fall = October - December

** A hyphen (-) indicates no fish of that age, a zero (0) indicates less than 0.5% fish of that age.

3. SPORT FISHERY

Lake Erie Angler Diary Program

The Lake Erie Sport Fishery Diary Program is an ongoing survey that allows the Lake Erie Management Unit to track general trends in catch rates and angler activity targeting a variety of fish species. Each year diarists participate in the program by filling out diaries recording fishing activity and catch. Other information such as fish health or unusual sightings of exotic species or fish disease is also recorded in the diary.

The Lake Erie Sport Fishery Diary Program entered its 27th year in 2010. The survey area covered is illustrated in Figure 3.1. In this program volunteer anglers complete a page in a diary for each trip taken. Fishing location, fishing duration, numbers of fish kept and released and biological information are also recorded. Participants are updated on diary results through a series of Angler Outreach public presentations as well as reports describing individual and combined performance.

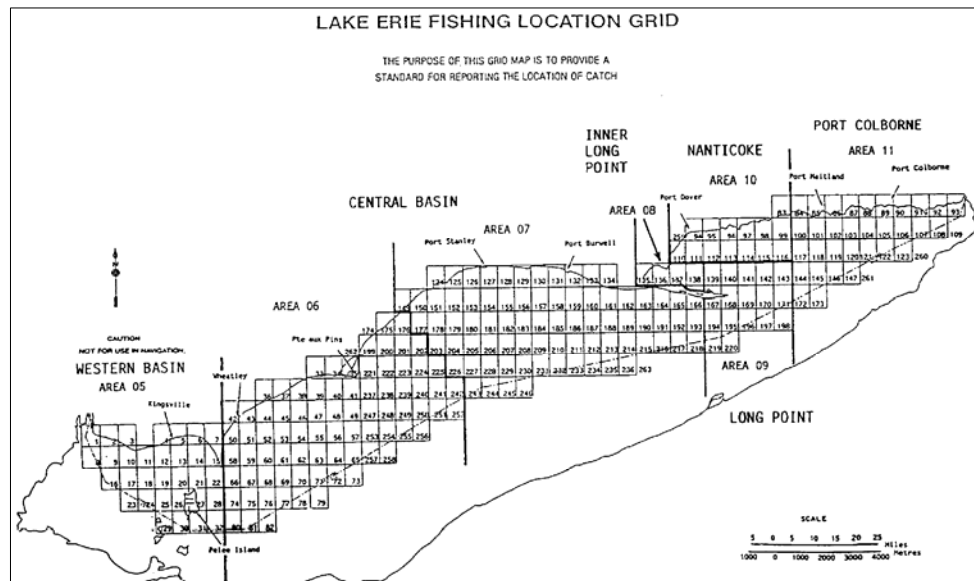


Figure 3.1 Lake Erie Sport Fishery Diary Survey Areas, 2010.

In 2010, 60 volunteers completed diaries. There were twenty-four less participants than in 2009. Of these volunteers, 50 (83%) have been participating in the program for three years or more. Thirty six participants (60%) have been involved in the program for twelve years or more and 18 participants (30%) have been involved in the program for twenty or more years. Results of the report are limited to non-charter boat anglers due to the small sample size of charter boat operator participants.

In the Sport Fishery Diary Program, Lake Erie is divided into seven areas, Western Basin (area 05), West-Central Basin (area 06), East-Central Basin (area 07), Inner Long Point Bay (area 08), Long Point Bay (area 09), Nanticoke (area 10) and Port Colborne (area 11). Angler catches are reported by 5 minute grid location within these areas (Figure 3.1).

Total diarist effort and catch for each area is presented in Tables 3.1, 3.2 and 3.3. Observed catch rates of selected preferred species by area, for the years 1990 to 2010, are presented in Table 3.4 and Table 3.5. Effort may be directed at multiple species simultaneously, therefore, the percentages of annual effort directed at species may total more than 100% in figures 3.2 to 3.10.

Western Basin

Sixty-seven percent of diary participant effort in the Western Basin was directed towards walleye, while 38% was directed towards yellow perch (Table 3.4). Walleye and yellow perch were the main species sought by diarists in the Western Basin during the 2010 season (Table 3.4).

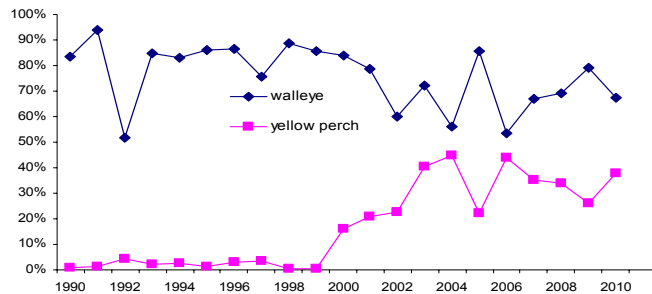


Figure 3.2 Western Basin Angler Percent Area Effort, L. Erie, Sport Diary Program, 1990-2010

The proportion of effort directed at yellow perch increased in 2010 (Figure 3.2).

Yellow perch catch rates decreased from 6.5 fish per rod hour in 2009 to 6.0 in 2010 (Table 3.4).

The percentage of diarist effort directed at walleye decreased in 2010 (Figure 3.2). Walleye catch rates decreased from 0.519 fish per rod hour in 2009 to 0.340 in 2010 (Table 3.4).

Diary participants submitted 23 walleye scale samples and 55 total lengths from their catches in the Western Basin. This was insufficient data to calculate age group composition of the catch. The mean total length was 21.18 inches (53.8 cm, 55 fish).

Diary participants submitted 29 yellow perch scale samples and 631 total lengths from their catches in the Western Basin. This was insufficient data to calculate age group composition of the catch. The mean total length was 8.5 inches (21.6 cm, 631 fish).

West-Central Basin

The majority of angling effort recorded by diarists in the West-Central Basin was directed towards rainbow trout (85%), walleye (82%) and yellow perch (12%), (Table 3.4). Rainbow trout and walleye effort were essentially the same in 2010. Rainbow trout and walleye are often targeted simultaneously. Yellow perch percentage of angler effort had been increasing since 2006 but decreased in 2010 slightly (Figure 3.3).

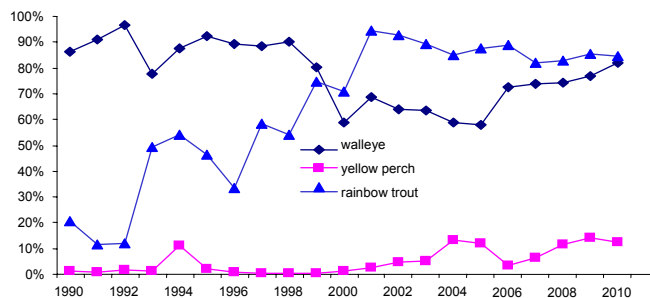


Figure 3.3 West-Central Basin Angler Percent Area Effort, L. Erie, Sport Diary Program, 1990-2010

In 2010 catch rates for walleye decreased by 25%, rainbow trout increased 84% and yellow perch increased 114% (Table 3.4).

East-Central Basin

The majority of diary angling effort in the East-Central Basin was directed towards walleye (55%), rainbow trout (41%) and yellow perch (50%), (Table 3.4). Walleye and rainbow trout percentage of angler effort had been following a similar trend since 1998. Rainbow trout increased while the fraction of effort directed at walleye decreased in 2010. Yellow perch percent effort decreased slightly in 2010, but remains high (Figure 3.4).

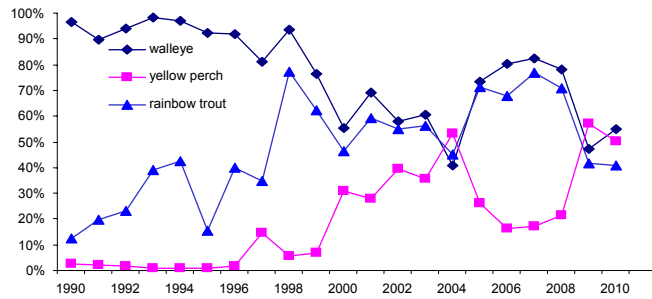


Figure 3.4 East-Central Basin Angler Percent Area Effort, L. Erie, Sport Diary Program, 1990-2010

Walleye catch rates increased by 85% in 2010 (Table 3.4). Rainbow trout catch rates decreased by 28% in 2010. Yellow perch catch rates decreased by 50% in 2010.

Central Basin

(West-Central and East-Central Basins Combined)

Diary participants submitted 109 walleye scale samples and 144 total lengths from their catches in the Central Basin for 2010. All fish were combined in a Length Age Composition Key (L.A.C.K.) for age distribution. The mean age was 6.9 (109 fish) and the mean total length was 23.0 inches (58.5 cm, 114 fish). Age 7 (2003 year class) represented 45% of sampled fish from the Central Basin of Lake Erie, (Figure 3.5).

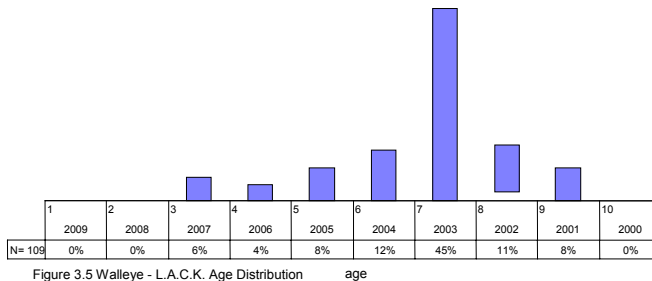


Figure 3.5 Walleye - L.A.C.K. Age Distribution Central Basin, L. Erie Sport Diary, 2010

Diary participants submitted 12 rainbow trout scale samples and 100 total lengths from their catches in the Central Basin. The mean total length was 24.7 inches (62.7 cm, 100 fish).

Seventy-two yellow perch scale samples and 535 total lengths were submitted. All fish were combined in a L.A.C.K. for age distribution. The mean age was 4.9 (516 fish) and the mean total length was 9.0 inches (22.9 cm, 535 fish). Age 4 (2006 year class) represented 35% of sampled fish, age 5 (2005 year class) represented 19% of sampled fish from the Central Basin of Lake Erie, (Figure 3.6).

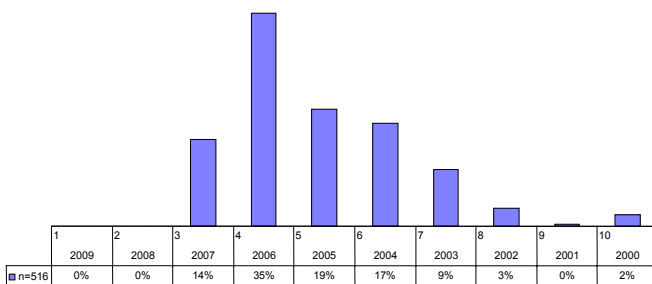


Figure 3.6 Y Perch - L.A.C.K. Age Distribution, Central Basin, L. Erie Sport Diary Program, 2010

Inner Long Point Bay

The majority of diary angling effort in the Inner Long Point Bay was directed towards smallmouth bass (51%), yellow perch (46%), largemouth bass (14%), and northern pike (5%), (Table 3.5).

Smallmouth bass and northern pike 2010 percent angler effort decreased, while yellow perch and largemouth bass percent angler effort increased (Figure 3.7).

Smallmouth bass 2010 catch rates increased slightly from those in 2009 (Table 3.5). Yellow perch 2010 catch rates increased by 33% from 2009. Largemouth bass 2010 catch rates decreased by 20% from those in 2009. Northern pike 2010 catch rates decreased by 41% from those in 2009 (Table 3.5).

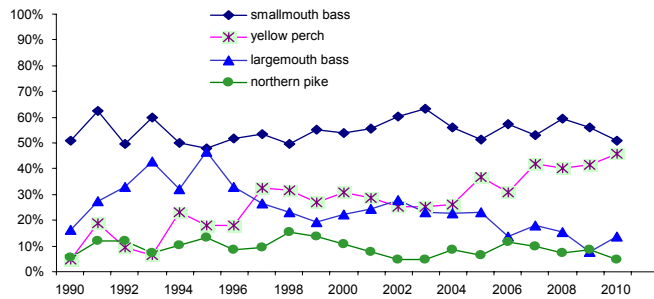


Figure 3.7 Inner Long Point Bay Angler Percent Area Effort, L. Erie, Sport Diary Program, 1990-2010

Long Point Bay

The majority of diary angling effort in Long Point Bay was directed at northern pike (40%), and smallmouth bass (60%), (Table 3.5). Rainbow trout and walleye were not sought in 2010, while preference for smallmouth bass and northern pike increased (Figure 3.8).

Smallmouth bass catch rates increased by 53% from those in 2009. Northern pike catch rates from 2009 (Table 3.5) were almost 4 times catch rates in 2009.

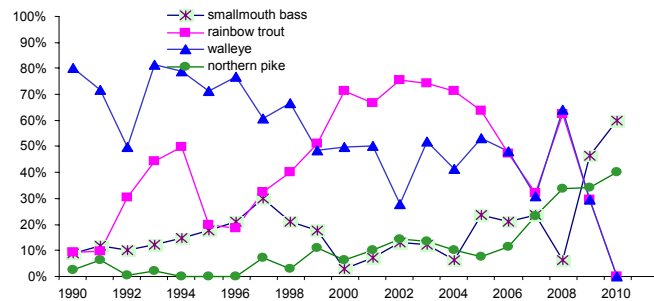


Figure 3.8 Long Point Bay Angler Percent Area Effort, L. Erie, Sport Diary Program, 1990-2010

Nanticoke

The majority of angler diary effort in Nanticoke was directed towards yellow perch (77%), smallmouth bass (15%) and walleye (4%). There was no rainbow trout effort (Table 3.5). Yellow perch and walleye angler percent effort decreased from 2009. Smallmouth bass percent effort has increased (Figure 3.9).

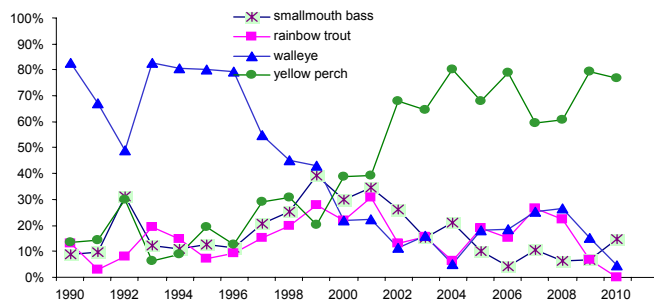


Figure 3.9 Nanticoke Angler Percent Area Effort, L. Erie, Sport Diary Program, 1990-2010

Yellow perch catch rates decreased by 36% from those in 2009, while smallmouth bass decreased by 23%. Walleye catch rates were almost 4 times the 2009 CPUE from those in 2009, (Table 3.5). Rainbow trout was not sought in 2010.

Port Colborne

The majority of diary angling effort in the Port Colborne area continued to be directed towards walleye (73%), while smallmouth bass (21%) and yellow perch (7%) were the next most sought species in this area (Table 3.5). Angler effort decreased for walleye and yellow perch, while preference for smallmouth bass increased (Figure 3.10).

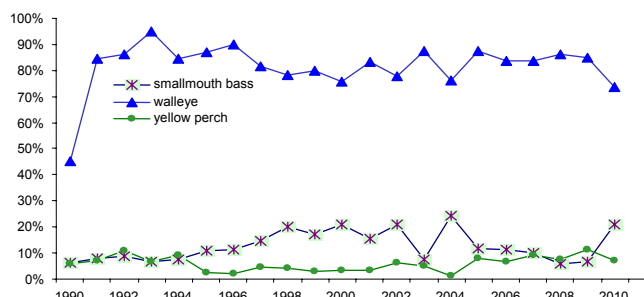


Figure 3.10 Port Colborne Angler Percent Area Effort, L. Erie, Sport Diary Program, 1990-2010

Walleye catch rates decreased by 60% from those in 2009 (Table 3.5). Smallmouth bass catch rates increased by 79% from those in 2009. Yellow perch catch rates increased by 36% from those in 2009.

Eastern Basin

(Inner Long Point Bay, Long Point Bay, Nanticoke and Port Colborne Combined)

Diary participants submitted 2 walleye scale samples and 6 total lengths from their catches in the Eastern Basin. The mean total length was 25.3 inches (64.3 cm, 6 fish).

Diary participants submitted 5 smallmouth bass scale samples and 223 total lengths from their catches in the East Basin. The mean total length was 11.9 inches (30.2cm, 223 fish).

Diary participants submitted 5 yellow perch scale samples and 15 total lengths from their catches in the East Basin. The mean total length was 10.4 inches (26.4cm, 15 fish).

Table 3.1 Total effort by survey area, reported by Sport Fishery Diary Program non-charter boat participants, 2010.

Survey Area	Number of Diarists	Number of Trips	Number of Rods per Trip	Total Rod Hours
Western Basin	11	74	3.0	955
West Central Basin	14	121	4.8	2,990
East Central Basin	19	116	4.5	2,561
Inner Long Point Bay	25	149	2.7	1,475
Long Point Bay	6	22	3.8	265
Nanticoke	15	106	2.2	757
Port Colborne	8	35	2.9	526
Total	60^a	623	3.4	9,529

^aDiarist may fish more than one survey area in a year.

Table 3.2 Total effort by survey area, reported by Sport Fishery Diary Program non-charter boat participants, 1986-2010.

Year	Western Basin			West-Central			East-Central			Inner Long Point Bay		
	No. of Diarists	Total Effort		No. of Diarists	Total Effort		No. of Diarists	Total Effort		No. of Diarists	Total Effort	
		Trips	Rod Hours		Trips	Rod Hours		Trips	Rod Hours		Trips	Rod Hours
1986	13	123	1,234	18	228	3,176	20	306	4,078	14	97	864
1987	10	118	1,272	30	392	5,323	34	355	4,794	18	150	1,462
1988	26	280	2,886	36	422	7,100	58	748	10,781	33	226	2,439
1989	33	244	2,175	33	421	4,883	45	444	4,412	49	229	2,139
1990	38	231	2,068	45	388	5,020	51	404	4,195	59	265	2,445
1991	34	234	2,538	38	318	3,841	60	474	5,719	50	311	2,917
1992	34	254	2,220	59	435	6,104	73	383	5,070	60	286	4,068
1993	39	306	4,428	48	428	6,537	51	407	4,995	56	331	3,347
1994	14	152	885	41	308	4,190	43	322	3,583	58	373	4,047
1995	35	157	1,209	58	382	6,248	47	267	2,762	61	442	4,798
1996	43	254	2,436	45	305	6,200	43	214	3,100	55	324	3,354
1997	29	145	1,499	40	265	6,691	37	224	3,573	80	564	5,881
1998	39	210	2,016	41	265	5,879	26	163	2,953	61	508	4,821
1999	22	112	1,066	37	208	4,826	29	176	2,767	65	383	3,809
2000	24	78	732	31	240	5,175	21	173	3,672	52	312	2,899
2001	24	88	833	28	147	3,769	20	142	2,457	53	236	2,449
2002	14	74	809	25	138	2,594	19	154	2,108	45	255	2,429
2003	20	147	1,508	26	191	3,690	21	142	2,190	45	203	1,882
2004	31	199	2,663	24	157	3,322	19	112	1,556	42	277	2,740
2005	26	204	2,638	27	174	4,351	25	186	3,669	45	200	2,121
2006	17	109	1,375	22	142	4,207	27	182	3,803	37	179	1,857
2007	12	95	929	25	158	4,374	20	166	3,960	34	176	1,932
2008	12	79	768	21	168	3,799	27	115	2,697	29	177	1,677
2009	22	150	2,618	24	138	3,322	19	107	2,198	24	174	1,803
2010	11	74	955	14	121	2,990	19	116	2,561	25	149	1,475
90-10 Avg.	26	160	1,724	34	242	4,625	33	220	3,314	49	292	2,988

Year	Long Point Bay			Nanticoke			Port Colborne			Total Lake Effort		
	No. of Diarists	Total Effort		No. of Diarists	Total Effort		No. of Diarists	Total Effort		No. of Diarists	Total Effort	
		Trips	Rod Hours		Trips	Rod Hours		Trips	Rod Hours		Trips	Rod Hours
1986	15	125	1,636	16	152	834	6	97	608	50	1,128	12,430
1987	15	65	781	15	150	572	9	172	1,499	66	1,402	15,703
1988	21	95	3,601	28	211	1,506	13	267	1,818	131	2,249	30,131
1989	45	289	3,607	46	371	3,318	12	271	2,060	146	2,269	22,594
1990	57	360	4,658	58	450	4,312	19	243	2,320	166	2,341	25,018
1991	51	239	2,961	53	377	3,787	33	392	3,966	189	2,345	25,729
1992	57	287	3,767	56	334	2,728	28	342	4,009	207	2,321	27,966
1993	54	285	3,685	55	364	3,698	24	262	3,242	185	2,383	29,933
1994	37	157	2,005	49	290	3,201	24	243	2,825	157	1,845	20,736
1995	35	132	1,949	34	177	1,737	39	361	4,849	198	1,918	23,551
1996	28	124	1,713	35	241	3,164	33	318	5,868	181	1,780	25,834
1997	30	102	1,690	98	219	2,683	56	518	9,129	203	2,037	31,145
1998	35	171	2,776	29	204	1,846	42	486	7,540	176	2,007	27,831
1999	29	138	2,488	34	203	1,765	44	397	7,319	174	1,617	24,041
2000	30	159	2,313	29	183	1,534	29	270	4,459	142	1,415	20,785
2001	29	136	1,791	27	156	1,195	27	213	4,418	132	1,118	16,913
2002	29	124	1,531	26	162	1,329	24	228	4,265	106	1,135	15,063
2003	21	78	979	26	166	1,603	24	169	3,273	113	1,096	15,125
2004	19	68	818	22	155	1,298	22	147	2,608	114	1,115	15,005
2005	21	82	1,030	23	187	1,634	19	175	3,143	113	1,208	18,585
2006	13	55	644	19	126	1,020	15	144	2,328	93	937	15,234
2007	9	33	363	19	128	1,080	17	132	2,757	82	888	15,394
2008	10	33	463	16	92	834	15	99	1,921	72	763	12,159
2009	7	33	390	14	138	1,070	18	107	1,986	84	847	13,388
2010	6	22	265	15	106	757	8	35	526	60	623	9,529
90-10 Avg.	29	134	1,823	35	212	2,013	27	251	3,941	140	1,511	20,427

Table 3.3 Total catch and harvest reported by sport fishery diary non-charter boat participants, Lake Erie Sport Fishery Diary Program, 2010.

Species	Western Basin		West-Central Basin		East-Central Basin		Inner Long Point Bay		Long Point Bay		Nanticoke		Port Colborne		Total	
	Caught	Harvested	Caught	Harvested	Caught	Harvested	Caught	Harvested	Caught	Harvested	Caught	Harvested	Caught	Harvested	Caught	Harvested
Lake sturgeon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bowfin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pink salmon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coho salmon	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1
Chinook salmon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rainbow trout	1	1	639	519	88	75	6	5	-	-	-	-	-	-	734	600
Brown trout	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1
Lake trout	-	-	-	-	1	1	-	-	-	-	-	-	-	-	1	1
Rainbow smelt	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Northern pike	-	-	13	-	-	-	32	11	143	36	-	-	2	-	190	47
Muskellunge	1	-	7	-	-	-	-	-	-	-	-	-	-	-	8	-
Common carp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brown bullhead	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Channel catfish	1	-	-	-	4	4	1	-	-	-	1	-	2	-	9	4
Burbot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
White perch	312	46	3	2	12	-	-	-	-	-	2	-	2	1	331	49
White bass	12	-	2	1	9	5	-	-	-	-	83	49	-	-	106	55
Rock bass	1	1	13	-	-	-	133	16	9	1	64	8	-	-	220	26
Pumpkinseed	-	-	16	-	-	-	9	1	-	-	25	1	-	-	50	2
Bluegill	-	-	13	-	-	-	6	2	-	-	2	-	-	-	21	2
Smallmouth bass	6	-	-	-	1	-	664	440	203	175	279	69	43	15	1,196	699
Largemouth bass	-	-	108	-	-	-	297	41	1	-	3	-	-	-	409	41
White crappie	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Black crappie	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-
Yellow perch	2,161	1,328	1,659	1,276	4,970	3,824	5,280	2,530	45	31	1,929	1,268	156	150	16,200	10,407
Walleye	218	177	134	133	322	298	1	1	-	-	2	2	27	24	704	635
Round goby	-	-	36	-	80	58	11	1	-	-	15	11	9	7	151	77
Freshwater drum	318	-	205	17	79	1	12	1	-	-	54	-	6	-	674	19
Total	3,032	1,554	2,851	1,950	5,566	4,266	6,452	3,049	401	243	2,459	1,408	247	197	21,008	12,667

Table 3.4 Angler success rates (CPUE) of non-charter boat anglers targeting particular species, Western Basin, West-Central and East-Central Basin survey areas, Lake Erie, 1990-2010^a. Effort may be directed at more than one species simultaneously.

Western Basin (Area 05)									
Year	Total Rod Hours	Walleye				Yellow Perch			
		Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort
1990	2,304	212	1,924	0.542	84%	5	25	6.240	1%
1991	2,405	211	2,259	0.459	94%	2	33	10.738	1%
1992	3,087	203	1,591	0.591	52%	15	135	1.574	4%
1993	2,220	279	1,887	0.510	85%	9	44	2.689	2%
1994	885	126	734	0.339	83%	4	22	0.090	2%
1995	1,204	136	1,036	0.479	86%	3	18	0.333	1%
1996	2,428	213	2,097	0.223	86%	12	71	1.275	3%
1997	1,499	91	1,131	0.189	75%	10	54	3.258	4%
1998	2,016	171	1,791	0.423	89%	2	9	1.347	0%
1999	1,071	91	919	0.457	86%	1	5	0.188	0%
2000	729	64	613	0.405	84%	8	117	3.641	16%
2001	833	66	657	0.594	79%	24	175	5.383	21%
2002	809	54	486	0.362	60%	13	183	5.197	23%
2003	1,508	102	1,087	0.534	72%	60	609	5.158	40%
2004	2,663	114	1,499	0.717	56%	93	1,187	6.325	45%
2005	2,638	173	2,254	1.020	85%	42	588	3.505	22%
2006	1,375	68	735	0.679	53%	44	604	5.082	44%
2007	929	56	624	0.954	67%	39	326	7.012	35%
2008	768	39	529	0.512	69%	42	260	10.360	34%
2009	2,618	93	2,068	0.519	79%	64	687	6.490	26%
2010	955	33	642	0.340	67%	44	362	5.963	38%
90-10 Avg.	1,508	109	1,155	0.514	76%	29	296	4.072	14%

West-Central Basin (Area 06)

Year	Total Rod Hours	Walleye				Rainbow Trout				Yellow Perch				Coho			
		Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort
1990	5,020	328	4,326	0.642	86%	54	1,031	0.010	21%	11	59	0.659	1%	154	2,274	0.013	45%
1991	3,841	287	3,488	0.366	91%	26	441	0.032	11%	4	27	0.679	1%	146	1,854	0.002	48%
1992	6,104	410	5,886	0.501	96%	54	733	0.056	12%	10	96	0.385	2%	183	2,945	0.010	48%
1993	6,537	395	5,081	0.308	78%	231	3,217	0.118	49%	14	94	1.521	1%	146	2,112	0.028	32%
1994	4,190	279	3,670	0.373	88%	172	2,271	0.086	54%	20	466	2.923	11%	69	922	0.007	22%
1995	6,248	348	5,768	0.215	92%	150	2,893	0.055	46%	11	130	6.243	2%	74	1,223	0.001	20%
1996	6,200	244	5,543	0.213	89%	89	2,070	0.049	33%	6	50	5.500	1%	29	611	0.010	10%
1997	6,691	201	5,912	0.077	88%	122	3,909	0.083	58%	4	36	9.103	1%	45	1,229	0.018	18%
1998	5,879	224	5,298	0.076	90%	138	3,191	0.117	54%	4	18	3.611	0%	52	1,172	0.012	20%
1999	4,826	146	3,865	0.033	80%	140	3,611	0.110	75%	2	20	11.150	0%	46	1,363	0.021	28%
2000	4,251	124	2,498	0.011	59%	154	3,013	0.308	71%	5	46	2.863	1%	75	1,575	0.028	37%
2001	3,769	82	2,596	0.016	69%	131	3,554	0.136	94%	9	99	5.088	3%	0	0	0.000	0%
2002	2,594	75	1,656	0.013	64%	121	2,402	0.275	93%	14	126	3.852	5%	3	88	0.182	3%
2003	3,690	126	2,343	0.046	63%	161	3,288	0.234	89%	16	186	4.047	5%	1	29	0.175	1%
2004	3,322	74	1,951	0.037	59%	118	2,827	0.187	85%	37	442	6.117	13%	2	92	0.043	3%
2005	4,351	86	2,525	0.069	58%	132	3,812	0.185	88%	38	520	4.215	12%	0	0	0.000	0%
2006	4,207	91	3,058	0.215	73%	118	3,733	0.200	89%	9	145	5.253	3%	0	0	0.000	0%
2007	4,374	95	3,220	0.149	74%	106	3,578	0.220	82%	30	274	7.935	6%	0	0	0.000	0%
2008	3,799	98	2,814	0.160	74%	110	3,149	0.254	83%	48	433	7.277	11%	0	0	0.000	0%
2009	3,322	74	2,553	0.071	77%	85	2,841	0.132	86%	46	466	2.088	14%	0	0	0.000	0%
2010	2,990	74	2,451	0.053	82%	75	2,528	0.243	85%	40	370	4.464	12%	0	0	0.000	0%
90-10 Avg.	4,581	184	3,643	0.174	78%	118	2,766	0.147	65%	18	195	4.523	5%	49	833	0.026	16%

East-Central Basin (Area 07)

Year	Total Rod Hours	Walleye				Rainbow Trout				Yellow Perch				Coho			
		Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort
1990	4,195	385	4,045	0.559	96%	40	517	0.006	12%	11	110	1.091	3%	83	938	0.016	22%
1991	5,719	415	5,133	0.367	90%	88	1,138	0.090	20%	8	134	2.111	2%	104	1,288	0.026	23%
1992	5,070	358	4,757	0.410	94%	70	1,169	0.023	23%	12	77	0.978	2%	91	1,233	0.023	24%
1993	4,995	396	4,912	0.304	98%	153	1,945	0.055	39%	7	44	0.182	1%	126	1,391	0.017	28%
1994	3,583	310	3,475	0.309	97%	131	1,521	0.007	42%	2	37	0.270	1%	67	892	0.000	25%
1995	2,762	249	2,547	0.326	92%	39	426	0.068	15%	5	27	5.704	1%	31	349	0.017	13%
1996	3,100	190	2,853	0.176	92%	72	1,231	0.059	40%	9	57	1.035	2%	29	444	0.009	14%
1997	3,573	143	2,902	0.115	81%	54	1,241	0.088	35%	69	514	3.426	14%	21	410	0.005	11%
1998	2,953	138	2,767	0.088	94%	103	2,278	0.119	77%	24	161	0.567	5%	44	774	0.001	26%
1999	3,708	133	2,825	0.069	76%	97	2,302	0.135	62%	38	252	2.803	7%	39	864	0.013	23%
2000	1,522	52	840	0.037	55%	41	708	0.072	47%	61	470	5.291	31%	12	226	0.004	15%
2001	2,457	67	1,697	0.048	69%	58	1,455	0.056	59%	70	684	4.199	28%	8	76	0.026	3%
2002	2,108	55	1,217	0.061	58%	52	1,160	0.109	55%	91	828	4.101	39%	0	0	0.000	0%
2003	2,190	65	1,329	0.110	61%	55	1,231	0.068	56%	71	784	1.534	36%	0	0	0.000	0%
2004	1,556	38	632	0.019	41%	40	698	0.119	45%	66	831	2.475	53%	0	0	0.000	0%
2005	3,669	109	2,688	0.116	73%	101	2,617	0.123	71%	76	957	2.829	26%	1	57	0.035	2%
2006	3,803	124	3,054	0.262	80%	100	2,571	0.072	68%	47	615	3.221	16%	1	27	0.037	1%
2007	3,960	115	3,255	0.170	82%	107	3,040	0.116	77%	48	680	3.722	17%	0	0	0.000	0%
2008	2,697	81	2,102	0.186	78%	72	1,913	0.056	71%	33	583	4.431	22%	0	0	0.000	0%
2009	2,198	40	1,041	0.123	47%	34	912	0.115	41%	69	1,253	7.683	57%	0	0	0.000	0%
2010	2,561	53	1,406	0.228	55%	40	1,044	0.083	41%	66	1,287	3.856	50%	0	0	0.000	0%
90-10 Avg.	3,256	167	2,642	0.194	77%	74	1,482	0.078	47%	42	494	2.929	20%	31	427	0.011	11%

^aCPUE represents observed catch divided by observed angling effort in rod-hours directed at that particular species.

Table 3.5 Angler success rates (CPUE) of non-charter boat anglers targeting particular species, Inner Long Point Bay, Long Point Bay, Nanticoke and Port Colborne survey areas, Lake Erie, 1990-2010^a. Effort may be directed at more than one species simultaneously.

Inner Long Point Bay (Area 08)																	
Year	Total Rod Hours	Smallmouth Bass				Yellow Perch				Largemouth Bass				Northern Pike			
		Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort
1990	3,409	169	1,735	0.718	51%	21	167	5.886	5%	16	554	0.806	16%	22	191	0.272	6%
1991	2,614	161	1,633	0.838	62%	46	492	5.301	19%	16	717	0.958	27%	26	312	0.183	12%
1992	4,658	214	2,304	0.708	49%	47	438	2.172	9%	17	1,534	0.633	33%	38	550	0.167	12%
1993	3,347	196	2,008	0.626	60%	27	209	1.937	6%	19	1,430	0.774	43%	28	239	0.301	7%
1994	4,047	171	2,030	0.656	50%	80	933	3.911	23%	16	1,305	0.850	32%	47	418	0.256	10%
1995	4,798	203	2,298	0.657	48%	69	859	4.714	18%	22	2,233	0.740	47%	59	626	0.241	13%
1996	3,354	156	1,735	0.788	52%	53	601	3.825	18%	11	1,111	0.678	33%	29	291	0.179	9%
1997	5,881	282	3,145	0.870	53%	176	1,903	4.045	32%	24	1,551	0.661	26%	54	542	0.266	9%
1998	4,821	235	2,391	0.858	50%	150	1,519	3.829	32%	19	1,111	0.781	23%	76	742	0.259	15%
1999	3,811	188	2,097	0.643	55%	110	1,034	4.080	27%	15	734	0.917	19%	56	517	0.330	14%
2000	2,899	148	1,563	0.826	54%	87	887	6.263	31%	14	640	0.879	22%	32	312	0.514	11%
2001	2,449	121	1,363	0.747	56%	65	698	4.081	29%	13	592	0.994	24%	24	191	0.419	8%
2002	2,429	136	1,463	0.896	60%	64	615	3.777	25%	14	676	1.241	28%	16	114	0.167	5%
2003	1,882	116	1,191	1.112	63%	40	478	3.812	25%	12	437	1.183	23%	13	85	0.495	5%
2004	2,740	125	1,528	0.624	56%	78	712	4.015	26%	83	617	1.276	23%	23	236	0.246	9%
2005	2,121	83	1,084	0.720	51%	70	779	7.923	37%	55	489	2.022	23%	12	135	1.049	6%
2006	1,857	87	1,063	1.004	57%	66	572	9.042	31%	25	255	1.838	14%	24	210	0.694	11%
2007	1,932	81	1,024	0.845	53%	75	806	4.905	42%	30	351	1.621	18%	18	191	0.470	10%
2008	1,677	85	995	1.033	59%	77	672	5.938	40%	28	260	1.468	16%	22	121	0.818	7%
2009	1,803	81	1,013	0.869	56%	71	745	5.836	41%	16	142	1.837	8%	18	158	0.501	9%
2010	1,475	62	753	0.873	51%	74	672	7.752	46%	22	200	1.464	14%	8	72	0.294	5%
90-10 Avg.	3,048	148	1,639	0.805	55%	74	752	4.907	27%	23	807	1.125	24%	31	298	0.387	9%

Long Point Bay (Area 09)																	
Year	Total Rod Hours	Rainbow				Walleye				Northern Pike				Smallmouth Bass			
		Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort
1990	4,304	22	397	0.048	9%	265	3,456	0.205	80%	9	101	0.446	2%	32	381	0.855	9%
1991	2,793	22	266	0.098	10%	160	2,005	0.125	72%	13	174	0.189	6%	28	330	1.074	12%
1992	3,829	89	1,170	0.143	31%	141	1,909	0.046	50%	2	9	0.000	0%	28	380	0.708	10%
1993	3,685	113	1,631	0.072	44%	222	3,006	0.164	82%	6	76	0.132	2%	47	450	1.044	12%
1994	2,005	70	997	0.022	50%	112	1,581	0.089	79%	0	0	0.000	0%	29	293	1.453	15%
1995	1,949	24	390	0.067	20%	87	1,389	0.086	71%	0	0	0.000	0%	31	345	1.216	18%
1996	1,713	20	321	0.044	19%	78	1,316	0.105	77%	0	0	0.000	0%	43	361	1.528	21%
1997	1,642	24	536	0.030	33%	49	998	0.028	61%	11	116	0.586	7%	39	492	1.229	30%
1998	2,776	61	1,114	0.069	40%	101	1,849	0.051	67%	9	83	0.545	3%	40	586	0.843	21%
1999	2,008	65	1,021	0.094	51%	56	974	0.024	49%	16	224	0.869	11%	28	357	1.150	18%
2000	2,313	100	1,647	0.241	71%	73	1,148	0.017	50%	16	144	3.395	6%	8	70	0.892	3%
2001	1,791	82	1,196	0.135	67%	56	903	0.050	50%	22	182	2.764	10%	11	128	0.476	7%
2002	1,531	87	1,157	0.079	76%	35	424	0.012	28%	20	217	0.661	14%	20	200	0.802	13%
2003	979	50	729	0.064	74%	34	509	0.016	52%	16	130	0.559	13%	12	118	0.834	12%
2004	818	40	583	0.067	71%	24	338	0.012	41%	10	82	0.540	10%	8	53	1.258	7%
2005	1,030	50	658	0.059	64%	41	548	0.055	53%	8	77	0.506	7%	20	244	0.775	24%
2006	644	18	306	0.095	47%	17	310	0.132	48%	8	74	0.952	11%	16	136	1.547	21%
2007	363	8	117	0.232	32%	6	112	0.099	31%	8	84	1.485	23%	9	86	1.291	24%
2008	463	17	290	0.007	62%	15	298	0.024	64%	26	157	0.712	34%	4	29	0.655	6%
2009	390	6	115	0.000	29%	6	115	0.000	29%	11	133	0.278	34%	16	181	0.838	46%
2010	265	0	0	0.000	0%	0	0	0.000	0%	10	106	1.349	40%	12	159	1.279	60%
90-10 Avg.	1,776	46	697	0.079	43%	75	1,104	0.064	54%	11	103	0.760	11%	23	256	1.036	18%

Nanticoke (Area 10)																	
Year	Total Rod Hours	Yellow Perch				Walleye				Rainbow				Smallmouth Bass			
		Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort
1990	4,123	101	548	6.812	13%	292	3,412	0.336	83%	42	534	0.021	13%	49	357	0.745	9%
1991	3,424	62	491	4.792	14%	213	2,301	0.169	67%	11	106	0.095	3%	55	330	1.011	10%
1992	2,769	98	824	2.445	30%	155	1,359	0.098	49%	24	225	0.111	8%	116	863	1.242	31%
1993	3,698	34	232	2.660	6%	270	3,062	0.229	83%	61	720	0.071	19%	54	455	1.019	12%
1994	3,201	48	288	3.824	9%	196	2,585	0.170	81%	51	476	0.013	15%	46	348	0.844	11%
1995	1,737	57	338	5.546	19%	118	1,395	0.166	80%	7	123	0.016	7%	27	221	0.862	13%
1996	3,164	71	405	4.581	13%	155	2,513	0.144	79%	28	288	0.076	9%	32	366	0.604	12%
1997	2,683	96	778	3.082	29%	91	1,476	0.041	55%	29	405	0.027	15%	55	552	1.052	21%
1998	1,846	93	571	3.641	31%	68	836	0.059	45%	34	367	0.037	20%	54	465	1.273	25%
1999	1,765	70	354	5.601	20%	62	760	0.043	43%	35	488	0.044	28%	73	696	1.495	39%
2000	1,534	91	593	6.945	39%	27	337	0.012	22%	30	339	0.121	22%	54	458	2.900	30%
2001	1,195	67	469	4.584	39%	33	269	0.007	23%	39	368	0.076	31%	49	413	2.091	35%
2002	1,329	116	901	4.849	68%	20	152	0.000	11%	23	176	0.079	13%	24	345	1.115	26%
2003	1,603	118	1,032	4.247	64%	18	257	0.047	16%	19	251	0.064	16%	22	245	1.806	15%
2004	1,298	129	1,041	4.714	80%	4	64	0.016	5%	7	80	0.075	6%	29	273	1.504	21%
2005	1,634	140	1,107	4.093	68%	21	269	0.034	18%	26	313	0.086	19%	18	165	1.706	10%
2006	1,020	108	804	4.959	79%	14	188	0.069	18%	11	156	0.019	15%	6	44	1.545	4%
2007	1,080	90	644	3.893	60%	20	272	0.048	25%	23	287	0.153	27%	12	114	1.982	11%
2008	834	68	507	4.467	61%	13	223	0.130	27%	11	187	0.048	22%	7	53	2.110	6%
2009	1,070	119	847	5.074	79%	9	163	0.012	15%	5	74	0.054	7%	10	72	1.437	7%
2010	757	87	582	3.235	77%	3	34	0.059	4%	0	0	0.000	0%	15	113	1.113	15%
90-10 Avg.	1,989	89	636	4.478	43%	86	1,045	0.090	41%	25	284	0.061	15%	38	331	1.403	17%

Port Colborne (Area 11)													
Year	Total Rod Hours	Walleye				Smallmouth Bass				Yellow Perch			
		Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort	Trips	Rod Hours	CPUE	% Total Effort
1990	3,889	165	1,763	0.229	45%	30	250	0.556	6%	47	228	1.142	6%
1991	3,965	290	3,357	0.163	85%	48	322	0.848	8%	52	283	0.993	7%
1992	4,009	91	3,449	0.085	86%	52	352	0.727	9%	63	429	0.876	11%
1993	3,242	220	3,085	0.273	95%	24	221	0.647	7%	32	214	0.829	7%
1994	2,825	184	2,388	0.202	85%	33	217	0.852	8%	33	261	1.091	9%
1995	5,849	294	4,229	0.174	87%	60	537	1.354	11%	12	113	0.585	2%
1996	5,886	266	5,286	0.138	90%	55	668	1.072	11%	15	134	0.527	2%
1997	9,129	366	7,443	0.358	82%	135	1,329	1.311	15%	47	411	0.481	5%
1998	7,540	310	5,900	0.112	78%	150	1,526	1.361	20%	54	307	0.695	4%
1999	7,231	250	5,790	0.113	80%	117	1,232	1.365	17%	28	201	0.801	3%
2000	4,459	165	3,383	0.159	76%	91	924	1.943	21%	13	143	0.491	3%
2001	4,418	150	3,678	0.082	83%	46	675	0.911	15%	18	141	0.817	3%
2002	4,265	138	3,316	0.151	78%	78	897	0.880	21%	23	267	1.815	6%
2003	3,273	121	2,859	0.141	87%	34	243	0.944	7%	17	160	2.037	5%
2004	2,608	87	1,991	0.113	76%	61	632	1.357	24%	3	34	2.537	1%
2005	3,143	134	2,749	0.222	87%	36	373	0.981	12%	13	248	0.275	8%
2006	2,328	103	1,948	0.272	84%	25	264	1.770	11%	16	156	4.450	7%
2007	2,256	98	2,306	0.167	84%	19	277	0.766	10%	23	248	2.101	9%
2008	1,921	71	1,655	0.162	86%	17	111	1.846	6%	17	13	3.646	7%
2009	1,986	77	1,688	0.168	85%	10	133	0.211	7%	25	228	2.860	11%
2010	526	24	387	0.067	73%	9	111	0.378	21%	4	38	3.893	7%
90-10 Avg.	4,011	171	3,269	0.158	82%	54	537	1.004	13%	26	209	1.529	6%

4. INDEX FISHING PROJECTS

4.1 Partnership Index Fishing: Gill Netting

Partnership index gill netting is a cooperative fisheries assessment program with the Ontario Commercial Fisheries' Association (OCFA). It is funded primarily through the Commercial Fish Business Relationship (CFBR) between the province of Ontario and the OCFA. Initially the program relied exclusively on volunteer participation from the fishing industry to complete the field component up until 1997. This program has monitored abundance, age structure, size and species composition throughout Lake Erie since 1989. This community index is applied in catch-at-age analyses for estimating population abundance of yellow perch and walleye.

The lakewide survey was partitioned spatially into projects defined as the west, west-central, east-central, Pennsylvania Ridge, and eastern basins. In 2010, a total of 142 sites were fished across Lake Erie (Figure 4.1.1). In addition to randomly assigned east basin sites, nine (9) extra random sites were fished east of 79° 40' (referred to as the *walleye cap area*) to ensure that a minimum of 20 sites were fished in this area to monitor the effectiveness of management efforts. Unfortunately, all gear fished at site 29 in the east basin survey during 2010 was lost. Repeated efforts to locate and retrieve the nets were unsuccessful. The vessel that conducted the field work in 2010 was equipped with a GPS transponder allowing real time position monitoring on the internet. Since 2003, gill nets 110 feet in length with a mesh size of 4.75" (121 mm), 50 meshes deep were fished canned (suspended) at the same depths as canned index nets to examine the effectiveness of index gear catching suspended walleye. These nets were approximately 17 feet deep with 3.1 times the area of the 50' index nets. Mean walleye catch and size distributions in 2010 are presented for index and auxiliary gear. Again in 2010, additional 1 fathom canned index nets were fished at 12 random sites in both the west-central and east-central basin surveys. These shallow suspended gangs were intended to provide additional information describing the vertical distribution of walleye in the central basin.

The index gill nets consisted of 1,250 feet (0.38 km) panels of graded monofilament mesh including 1.25", 1.5", 1.75", 2.0", 2.25", 2.5", 2.75", 3.0", 3.5", 4.0", 4.5", 5.0", 5.5", and 6.0" (32 mm to 152 mm). Mesh sizes 2 inches (57 mm) and greater were composed of two 50 foot panels, and those less than 2 inches were single panels 50 feet (15.25 m) in length. Sets were approximately 24 hours in duration.

Nets were set at randomly selected locations among depth strata. The number of sites within each stratum was proportional to area. Depth strata for the western basin included 0 to 10 m and greater than 10 m. In the west-central and east-central basins, depths were grouped as 0 to 15 m, 15 to 20 m, and greater than 20 m. The eastern basin and Pennsylvania Ridge depth strata were partitioned as 0 to 15 m, 15 to 30 m and depths greater than 30 m. The number of locations fished in the west, west-central, east-central, Pennsylvania Ridge, east, and extra cap area sites were 22, 36, 36, 9, 30, and 9 respectively. Following the loss of gear at site 29, the effective number of sites fished in the east basin during 2010 was 29.

At each site, nets were fished on the bottom and suspended (canned) at depths determined partly by the depth stratum and by random selection. In the western basin, nets were canned at 1 fathom (1.8 m). In the west-central and east-central basins, gill nets were canned at 2.7 fathoms (5 m) or 6.0 fathoms (11 m) or 9.2 fathoms (17 m). As usual, the central basin surveys were fished following fall turnover, when the water temperature was uniform throughout the water column. Twelve additional gangs of 1 fathom index nets were fished in addition to the standard complement of canned nets in the west-central and east-central basin, as described above.

In the deeper study areas (Pennsylvania Ridge, and east basin including the Walleye Cap Area), index gear was fished during thermal stratification. The gear was fished in the standard manner with gill nets set on bottom and canned at 2 fathoms (3.7 m), 4 fathoms (7.3 m), or 8 fathoms (14.6 m) at

all sites. Additional canned nets were fished in the thermocline in 2010 at sites with depths sufficient for a hypolimnion (cold bottom layer) to exist.

All walleye and yellow perch were scanned for passive integrated transponder (PIT) tags using a Biomark hoop reader as bags of fish caught in index gear were removed from totes. All fish were identified, counted and weighed "in bulk" by species and mesh size. Biological sampling for selected species included determination of length, weight, sex, maturity, gonad weight and age. In addition to standard scale sample collection, sagittal otoliths were collected from yellow perch, walleye, burbot and lake whitefish. Otoliths were collected from yellow perch 15 cm and greater in total length caught in bottom nets, while scales were used to age smaller yellow perch and those caught in canned nets. All otoliths were collected from walleye 38 cm and larger, plus one out of every four per mesh size for smaller walleye. Lake trout heads were retained to recover coded wire tags present in stocked lake trout. Cold water species were examined for lamprey scars and wounds. Results from surveys include total catches, mean species biomass and age specific information for yellow perch, walleye and lake whitefish. Catch rates presented have not been adjusted for selectivity bias associated with the gang configuration of mesh sizes.

Index fishing began August 27, 2010 in the Pennsylvania Ridge area, progressing eastward until eastern Lake Erie was completed on September 9. Fishing began in the western basin on September 18 and was completed by September 23. Fall turnover occurred during the first week of October, allowing surveys to start in the west-central basin on October 6. The east-central basin survey was completed by October 24, 2010. Field work was completed lakewide aboard the Lasher-O.

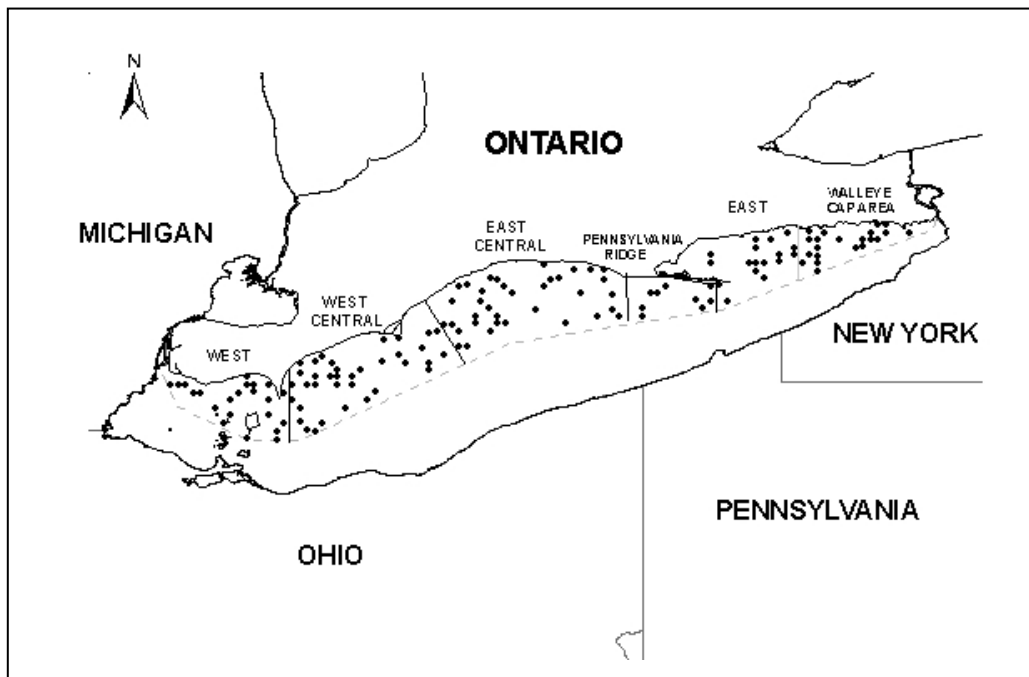


Figure 4.1.1 Lake Erie partnership index gill netting locations (dots) fished by basin in 2010. Note: the walleye cap area is within the east basin survey area.

Results

Fish Community

Catch in numbers by species over the time series is presented for the west, west-central, east-central, Pennsylvania Ridge, east basin and the eastern walleye cap area in Tables 4.1.1 to 4.1.6 respectively. Catches were standardized to an equal number of gangs as specified in Tables 4.1.1 to 4.1.6. The reference number of gangs in this report reflects the target number of gangs as targets have usually been met since the lakewide index fishing tender process began in 1999. Note that results for the walleye cap area (Table 4.1.6) include fish caught in the standard east basin survey (Table 4.1.5) at sites east of 79° 40'.

A total of 199 alewives were caught in the 2010 surveys. Most alewives were caught in the east basin survey, although several were caught in the east-central basin, Pennsylvania Ridge survey and walleye cap area projects (Tables 4.1.3, 4.1.4, 4.1.5 and 4.1.6). These tables include only catches in standard canned and bottom nets, whereas some alewives were caught in central basin auxiliary 1 fathom nets while others were caught in nets fished within the thermocline. With the exception of 2006 surveys in the eastern half of Lake Erie, alewife catches have remained low since 2003. Gizzard shad abundance was below average in surveys except for the west-central and east basin surveys (Table 4.1.2 and 4.1.5). In the west-central basin survey, the 2010 catch rate was second highest in the time series, with young-of-the-year representing approximately half of the catch. White perch catches in 2010 were below average in the west, east and walleye Cap Area surveys in contrast with central basin and Pennsylvania Ridge areas where white perch catch rates were above average (Tables 4.1.1 – 4.1.6). White bass abundance indices were well above average in the west-central basin, but remained below average elsewhere. Smallmouth bass were caught primarily in the east and west basin surveys. Smallmouth bass catch rates were below average in the east basin, and even more so in the west basin survey. Young-of-the-year represented 16% and 12% of smallmouth bass caught in the east and west basins respectively. Round gobies first appeared in partnership surveys in the west-central basin during 1997. Due to their smaller size and body shape, gobies are not vulnerable to capture in index gill nets. Round goby catches were greater in the eastern half of the lake compared to the western half. In 2010, catches of round gobies were below average in the west and west-central basin surveys while catches in more eastern surveys were near or above average. Freshwater drum abundance indices in 2010 were below average lake-wide, with adults representing the majority of the catch. Burbot catches in 2010 were low, continuing their decline from peak abundance during the late 1990s in central and east basin surveys (Tables 4.1.2 to 4.1.6).

Lake trout are stocked in Lake Erie by U.S. agencies and OMNR as part of an effort to rehabilitate this native species. Lake trout were caught mainly in the eastern basin Partnership surveys (Pennsylvania Ridge, east basin and walleye Cap Area) in bottom nets fished below the thermocline. In 2010, lake trout catches were the highest in the east basin time series (Table 4.1.5). Of the 68 lake trout caught in index nets, 28 (41%) were less than 30 cm in length. Up to ¾ of these juvenile lake trout were stocked in Ontario waters of eastern Lake Erie near Nanticoke Shoal or Port Maitland. Fin clips and coded wire tags helped identify source strains. Slate Island, Finger Lakes, Klondike, Traverse Island, Lake Champlain, Michipocoten comprised the strains of lake trout caught in 2010. In addition to lake trout caught in index gear, auxiliary 121 mm 50 mesh canned nets caught 2 lake trout of unknown origin.

Two lake sturgeons were caught in the west basin survey in 2010. Their total lengths and ages were 89 cm (6 years) and 49 cm (3 years) respectively. The sturgeons were aged using pectoral fin rays removed prior to their release. Both fish had floy tags applied and one sturgeon had a PIT (Passive Integrated Transponder) tag applied as part of multi-agency efforts to assess and rehabilitate this species at risk.

Silver chub occur throughout Lake Erie, with the greatest densities observed in the west basin (Tables 4.1.1 to 4.1.6). The peak catch of silver chub occurred in 1993. Since then, another spike in

abundance occurred in 1999, after which catches of silver chub declined. In 2010, only two silver chub were caught.

During 2010, two (2) pink salmon were caught in index nets; one from the west basin (Table 4.1.1) (east of Point Pelee) and the other from the east basin survey (Table 4.1.5). A third was caught in auxiliary canned 121 mm deep nets in the Walleye Cap Area. Pink salmon fry were introduced into the Current River, Lake Superior during the 1950s, after which they became established in the Great Lakes (Crawford, 2001). Pink salmon spawn in tributaries of eastern Lake Erie, maintaining a population that appears periodically in assessment netting.

Rainbow trout (39) were caught in the west, Pennsylvania Ridge, east basin and walleye Cap Area index netting surveys. A large fraction of them (59%) were caught in thermocline gangs which were not included in Tables 4.1.4 to 4.1.5 due to a lack of continuity in fishing this gear. Two were also caught in auxiliary canned 121 mm nets. Rainbow trout represent the majority of more than 2 million salmonids stocked annually by Lake Erie agencies. Naturalized populations of rainbow trout also occur in Lake Erie. Chinook salmon (2) and one brown trout were caught in index nets fished in the thermocline in the east basin surveys. Chinook salmon are no longer stocked by management agencies whereas nominal stocking of brown trout continues.

Biomass trends for dominant species are presented for the west, west-central, east-central and east basins in Figure 4.1.2. Species with average biomass equaling at least 5% of basin averages are represented individually. Remaining species were graphed in the "other" species category. The productivity gradient and associated species composition usually decreases from west to east. Since the west basin is considerably smaller in surface area and volume than other basins assessed, absolute numbers and biomass may be comparatively less than the west-central and east-central basins. Trends in mean biomass per gang of all species differed between Lake Erie surveys. West basin species biomass in 2010 (27 kg / gang) was the lowest observed in the time series, representing about half of the average (56 kg / gang). In contrast, west-central biomass (80 kg / gang) was above average (55 kg / gang) in 2010. East-central basin biomass (29 kg / gang) was below average (37 kg / gang) while east basin biomass (26 kg / gang) was greater than average (21 kg / gang). Excluding Pennsylvania Ridge, mean biomass of all fish species caught was greatest in the west central basin, followed by the east central basin, the west and east basins. This year (2010) marks the first year in which mean biomass caught in the west and east basin surveys were almost equal. The average ratio of west basin to east basin biomass is 3:1. It is possible that factors including above average water temperatures during summer 2010, increased primary production and hypoxia. This was followed by a cold, windy period in early September which may have influenced the spatial distribution of this fish community. Pennsylvania Ridge, a smaller area represented by 9 sites spanning the habitat transition between central and eastern basins, yielded a mean biomass of 54 kg / gang in 2010, of which 3/4 was attributed to yellow perch. This was above the Pennsylvania Ridge time series average of 32 kg / gang. High concentrations of fish in this area may be influenced by the fact that the Pennsylvania Ridge is situated between the hypoxic central basin to the west (during thermal stratification) and deeper, oligotrophic waters to the east. Due to the proximity to fishing ports, fishing in this area is minimal.

The smallest mesh size in the gear configuration is 32 mm which excludes most small bodied forage fish such as rainbow smelt, emerald shiners, and juvenile fish of most species. Round gobies are caught in index gill nets when they are larger, but due to their body shape and benthic behaviour, they are under represented in gill net assessments and accounted for less than 1% of biomass in all 2010 surveys.

West basin biomass in 2010 decreased by more than half from 2009, consisting of yellow perch (26%), walleye (22%), gizzard shad (18%), white perch (9%), freshwater drum (4%), and other species (21%). Over the time series, channel catfish averaged 3% of all biomass, but in 2010, channel catfish accounted for 10%. White bass (4%), shorthead redhorse suckers (3%), white suckers (2%) and smallmouth bass (1%) also contributed significantly to biomass in the west basin. West-central basin biomass in 2010 increased from 2009 by 25%. Mean biomass was dominated by gizzard shad (24%), yellow perch (22%), white perch (18%), walleye (15%), freshwater drum (14%)

and other species (7%). Although alewife represented an average of 4% of total biomass over the time series, none were caught in the west-central basin in 2010. White bass (3%), white suckers (2%), and channel catfish (1%) comprised the next largest fractions of biomass in 2010.

East-central basin biomass in 2010 consisted mostly of yellow perch (55%), white perch (22%), freshwater drum (9%), gizzard shad (6%), walleye (3%) and other species (5%). White sucker (2%), white bass (1%), lake whitefish (1%) and channel catfish (1%) contributed significantly but lesser amounts to east-central basin fish biomass. Alewife which represented an average of 6% of biomass over the time series were scarce (catch = 1) in the east-central basin survey during 2010.

The species composition of eastern Lake Erie consists of warm, cool, and cold water fish communities. Seven species represented 92% of the fish biomass in 2010. Yellow perch (55%), gizzard shad (11%), freshwater drum (7%), walleye (6%), smallmouth bass (4%), lake whitefish (4%) and lake trout (3%) contributed most to the 2010 survey biomass. Other species which contributed significantly to 2010 biomass included white perch (2%) and white suckers, burbot, rainbow trout and rainbow smelt at 1% each. Although alewife biomass remained below average, they represented 1% of east basin biomass. Numbers were rounded to the nearest percentage.

Yellow Perch

In 2010, yellow perch catch rates (all ages) declined from 2009 in the west, but less so in the west-central and east-central basin surveys (Figure 4.1.3). In contrast, catch rates in the Pennsylvania Ridge and eastern basin increased. In the far eastern Walleye Cap Area, catch rates dropped from 2009 but remained high relative to the time series since sites were added to this area since 2000. Yearling yellow perch (2009 year class) were not abundant in any surveys, but were best represented in the west basin. In all surveys except the Pennsylvania Ridge, the 2008 year class (age 2) was most abundant, by a large margin in the east basin and Walleye Cap Area surveys. Age 4 (2006 year class) was the most abundant age group in the Pennsylvania Ridge survey. Age 3 was the second most abundant cohort (2007) in all surveys. Representation of age 5 (2005 year class) generally increased from west to east. Ages 6 and older comprised 1% to 10% of all yellow perch caught in 2010, with the lowest proportion in the west basin and the highest proportion in Pennsylvania Ridge surveys.

The mean age of yellow perch in surveys reflects dominant year classes, recruitment, survival and possibly migration. In 2010, the mean ages of yellow perch were highest in the Pennsylvania Ridge survey, followed by the east-central basin, west-central basin, east basin and west basin (Figure 4.1.4). Yellow perch sex ratios remained relatively stable over the time series to 2010, during which females represented 55% to 65% of yellow perch ages 2 and older (Figure 4.1.5). Mean total length (mm) and weight (g) for each sex was plotted by basin for yellow perch collected in 2010 with 95% confidence limits to compare with the time series average up to 2009 (Figure 4.1.6). Length and weight of yellow perch may be influenced at times by year class strength. The average weights of age 7 yellow perch (2003 cohort) were below average in surveys other than the west basin. Female ages 3 to 5 caught in the west basin and 5-year-old yellow perch of both genders appeared heavier than average in the east basin. The mean weight of yellow perch ages 1 to 4 appeared below average in 2010 in the east-central basin and Pennsylvania Ridge.

During the fall partnership gill net survey in 2010, all 28,526 yellow perch (3,755 kg) were scanned for PIT tags as sample bags were removed from totes. One PIT tag was detected on a yellow perch caught in the west basin survey September 21, 2010 in sample 125. This fish was tagged on May 4, 2010 in the west basin.

Walleye

Walleye catch rates in 2010 decreased from 2009 in all basins except the west-central basin (Figure 4.1.7). Young-of-the-year (YOY) walleye were present in all areas except in the Pennsylvania Ridge survey. Despite a gradient of decreasing catches of YOY from west to east, the relative YOY index within each survey area was stronger eastward. Yearling walleye were more abundant in the

western half of the lake, representing the largest fraction of the age composition. This 2009 year class was more prominent in the west-central basin compared to other survey areas, ranging from weak to moderate in strength across the lake. Age 2 walleye appeared moderate in strength in the west-central and eastern basins, but weak elsewhere in surveys. Catch rates of the 2007 year class (age 3) were strongest in the west-central basin, followed by the west and east / walleye Cap Area surveys. In surveys, age 3 walleye representation ranged from 11% in Pennsylvania Ridge to 21% in the walleye Cap Area. Walleye ages 7 and older which includes the 2003 cohort, remained prevalent throughout Lake Erie, representing from 12% (west) to 67% (Pennsylvania Ridge) of walleye caught in surveys. Mean age of walleye caught in 2010 was lowest in the west (2.2), followed by the west-central (3.5), east-central (3.9), east (4.9), and lastly by the Pennsylvania Ridge (7.0) survey (Figure 4.1.8).

The percentage of age 2 and older walleye that were female ranged from 45% (Pennsylvania Ridge) to 69 % (East-Central) (Figure 4.1.9). In 2010, the proportion of age 2 and older walleye that were female was slightly above average in the west, east-central, and east basin surveys whereas the west-central, and Pennsylvania Ridge composition of female walleye was slightly below average.

Mean total length (mm) and weight (g) with 95% confidence limits for each sex was plotted by basin for walleye collected in 2010. The average size at age for each sex across years pooled to 2009 was plotted for comparison (Figure 4.1.10). Conditions for growth of walleye were favorable, particularly for west and central Lake Erie. Walleye of each gender at ages 1, 2 and 3 were above average in length and weight in the west, west-central and east-central basin surveys (Figure 4.1.10). This was also the case for walleye ages 2 and 3 in the Pennsylvania Ridge survey while trends were less apparent for walleye collected from eastern Lake Erie. Age 7 walleye (2003 cohort) were generally close to average in length and weight.

Walleye index catch rates were greater in standard canned index nets compared to bottom index gill nets in all basins except in the east basin, where catches were more evenly distributed among standard canned nets, thermocline nets and bottom nets (Figure 4.1.11). In the central basin surveys, walleye catch rates in auxiliary 1 fathom canned nets were two to three times greater than catch rates in standard canned nets.

Catch rates in commercial style 50 mesh 4 $\frac{3}{4}$ " nets fished adjacent to index canned nets were highest in the west-central basin (6.6 walleye per net), followed by the west basin (2.4), eastern (thermocline) (1.2), east (0.6) and the east-central basin survey (0.5) at standard depths. Central basin catch rates combine nets fished at standard depths along with canned nets fished at 1 fathom. Total lengths of walleye caught in index nets ranged from 16 to 79 cm whereas commercial style 4 $\frac{3}{4}$ " nets caught walleye 43 cm to 72 cm in length and were generally composed of larger walleye (Figure 4.1.11).

Walleye catch rates in 4 $\frac{3}{4}$ " (121 mm) nets are presented for the west, west-central, east-central basins pooled (Figure 4.1.12) and for Pennsylvania Ridge, east and walleye cap area surveys combined (Figure 4.1.13). In the pooled west and central basin series, the 2003 cohort dominated the catch rates from age 3 up to age 7 in 2010. In the combined eastern surveys, catch rates did not increase dramatically with recruitment of the 2003 cohort at age 3, but this year class dominated catches from age 4 in 2007 continuing to age 7 in 2010.

All 1,874 walleye caught in partnership surveys including auxiliary gear, were scanned for PIT tags in 2010. No PIT tags were detected.

Lake Whitefish

Lake whitefish are a migratory cold water species caught typically in central basin surveys following fall turnover and in the hypolimnetic waters of the eastern basin while the water is thermally stratified. The west basin survey occurs in September when the water is warm, preceding the lake whitefish migration into the west basin to spawn. Lake whitefish catch rates decreased in all surveys except in the east basin where they increased 10 fold from 2009 (Figure 4.1.14). Catch rates were highest in

the east basin (0.74 lake whitefish/gang), followed by the east-central basin (0.13), west-central basin (0.07), and Pennsylvania Ridge (0.0). In 2010, a lake whitefish index (all ages) consisting of the west-central, east-central, Pennsylvania Ridge, east basin and additional walleye cap area sites pooled, dropped 11% from 2009. The 2010 aggregate index exceeded 4 of the previous 12 years. The 2003 year class (age 7) represented 46% of lake whitefish caught, followed by the 2005 cohort (age 4) (19%). Lake whitefish ages ranged from 3 to 21 in gill net surveys. The increasing mean age in the lake whitefish population reflects the continued dominance of the 2003 cohort and weak to moderate recruitment (Figure 4.1.15). Whitefish from the 2003 cohort were not fully recruited to the aggregate survey index until age 5 (Figure 4.1.14). Survival estimates for the 2003 year class range from 59% to 69% based on catch curves from ages 5 to 7 or 6 to 7 respectively. Mean lengths and weights at age with 95% confidence limits for each sex are presented in Figure 4.1.16. Mean length and weight of male and female age 5 lake whitefish were above average in 2010. Age 7 male and female whitefish were comparable in length and weight to time series averages.

References

Crawford, S.S. 2001. Salmonine introductions to the Laurentian Great Lakes: an historical review and evaluation of ecological effects. *Can.Spec. Publ. Fish. Aquat. Sci.* 132. 205 pp.

Table 4.1.1 Total numbers of each species caught during western basin Partnership Index Fishing, Lake Erie, 1990-2010. Numbers are standardized to 44 gangs. Average catch from 1990-2010 is presented for each species.

Species	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Silver lamprey	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0.1
Lake sturgeon	0	0	1	1	1	1	2	0	1	0	3	0	2	5	8	0	1	9	2	0	2	1.9
Longnose gar	0	0	1	0	1	0	0	0	1	7	4	1	0	0	0	0	0	0	0	1	1	0.8
Alewife	87	2,272	309	196	349	1,384	105	54	1,159	1,239	1,939	154	721	0	103	2	80	1	0	0	0	483.5
Gizzard shad	718	7,729	2,856	4,103	5,844	6,624	1,118	1,416	2,873	8,542	2,838	4,056	8,561	7,043	5,294	14,185	8,329	2,887	3,283	1,544	1,846	4,842.3
Pink salmon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Chinook salmon	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Rainbow trout	3	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0.3
Brown trout	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Lake whitefish	10	1	0	1	0	0	5	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0.1
Rainbow smelt	8	1	0	37	0	1	0	1	1	0	1	95	1	0	1	1	2	2	34	1	1	8.9
Muskelunge	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Quillback	0	1	6	3	5	4	12	5	4	12	7	34	24	25	13	12	9	9	11	8	1	9.8
White sucker	59	43	130	46	94	46	73	71	30	39	42	101	90	77	127	133	69	61	71	91	29	72.5
Silver redhorse	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0.2
Golden redhorse	0	0	0	0	0	0	0	19	0	1	6	0	0	0	0	0	0	0	0	0	0	1.2
Shorthead redhorse	1	4	22	7	15	13	14	50	17	19	23	31	6	28	33	15	10	41	34	84	31	23.7
Redhorse sp.	0	0	0	0	0	0	0	0	0	0	4	0	19	0	0	0	0	0	0	0	0	1.0
Goldfish	0	0	0	0	0	1	0	0	0	2	4	0	0	0	0	2	0	0	5	2	0	0.8
Common carp	25	29	4	7	3	2	7	3	1	3	16	22	6	1	4	1	8	3	3	5	1	7.4
Silver chub	25	35	147	320	59	96	89	73	67	185	133	61	48	44	84	21	38	9	2	1	2	73.3
Hornhead chub	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Emerald shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0.1
Spottail shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0	0	0	0.3
Brown bullhead	0	0	1	0	0	0	0	0	0	0	3	1	1	0	0	2	0	1	1	0	0	0.5
Channel catfish	62	112	45	83	48	55	59	37	35	62	38	86	89	139	97	244	167	218	106	140	106	96.6
Stoner cat	1	1	0	1	0	0	1	0	2	2	0	0	0	0	0	0	0	1	0	0	0	0.4
Tadpole madtom	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
Brindled madtom	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Burbot	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.1
Trout-perch	0	0	0	0	0	0	0	1	4	0	1	3	0	1	0	0	0	0	0	0	0	0.5
White perch	462	713	3,155	2,217	1,194	971	972	382	309	1,795	2,053	1,710	1,195	3,090	2,998	3,613	5,360	3,462	1,852	2,108	973	1,932.6
White bass	158	110	65	67	288	89	135	271	102	174	225	308	460	367	218	285	277	275	357	435	134	228.6
Rock bass	6	27	20	1	18	5	12	9	8	5	8	23	7	13	8	3	5	21	1	9	10	10.4
Pumpkinseed	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0.2
Bluegill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.0
Smallmouth bass	41	83	149	231	231	108	248	162	166	93	116	12	59	12	17	2	32	15	19	78	17	90.0
Black crappie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0.1
Yellow perch	822	1,324	2,737	2,211	3,291	4,612	5,102	3,468	3,292	4,415	3,445	10,701	5,774	5,566	7,396	6,843	3,616	5,057	8,472	4,981	2,326	4,545.2
Walleye	602	1,648	1,356	1,886	1,002	1,503	821	1,148	648	769	1,143	691	714	1,297	1,408	1,365	914	483	837	831	326	1,018.6
Round goby	0	0	0	0	0	0	0	0	5	3	5	4	4	4	10	2	0	0	12	5	1	2.6
Freshwater drum	460	378	377	405	398	308	459	314	238	572	445	873	864	536	578	1,196	433	459	317	407	101	481.8
Goldfish-carp hybrid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0.2
Total	3,551	14,517	11,383	11,823	12,842	15,829	9,231	7,484	8,965	17,939	12,505	18,968	18,646	18,249	18,407	27,927	19,354	13,016	15,422	10,731	5,914	13,938
Number of Sites	21	22	21	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Number of Gangs	40	38	40	42	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43

Note: Values are continually corrected for errors and may be different from previous reports.

Table 4.1.2 Total numbers of each species caught during west-central basin Partnership Index Fishing, Lake Erie, 1990-2010. Numbers are standardized to 72 gangs. Average catch from 1990-2010 is presented for each species. Only standard gear was included.

Species	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Lake sturgeon	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0.2
Alewife	3,113	12,712	1,578	1,746	2,821	3,437	785	27	2,616	5,532	3,082	432	7,928	0	1	0	64	0	0	0	0	2,184.5
Gizzard shad	1,011	4,481	1,619	2,575	1,555	2,381	1,814	812	1,873	4,506	6,522	2,496	13,739	2,552	3,053	4,985	2,010	3,165	435	1,492	11,074	3,531.0
Coho salmon	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.1
Chinook salmon	0	4	0	1	0	3	0	3	0	0	0	0	1	0	0	0	0	0	0	1	0	0.6
Rainbow trout	2	0	1	0	0	2	0	0	0	3	1	0	3	2	0	0	0	3	1	0	1	0.9
Lake whitefish	5	0	5	4	10	29	15	62	31	47	49	11	17	36	15	82	40	29	50	21	5	26.8
Rainbow smelt	47	386	230	155	332	1,382	435	331	89	336	124	33	85	49	71	251	102	365	560	314	444	291.4
Quillback	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	0	1	1	0	0	0.3
White sucker	71	79	80	9	25	26	25	29	42	19	63	15	29	57	98	60	67	77	64	97	121	54.9
Spotted sucker	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.0
Silver redhorse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0.2
Golden redhorse	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0.1
Shorthead redhorse	1	6	2	0	0	1	1	0	0	4	0	1	0	3	2	0	2	1	5	10	1	1.9
Goldfish	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0.1
Common carp	3	0	0	0	0	2	1	1	0	0	2	0	2	1	0	0	3	5	1	0	0	1.1
Silver chub	2	5	15	0	0	1	0	0	3	4	3	0	2	0	0	1	0	1	5	3	0	2.1
Emerald shiner	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.3
Spottail shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Brown bullhead	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.0
Channel catfish	17	28	25	15	6	25	27	5	6	3	13	1	9	7	7	11	49	65	13	44	70	21.3
Stoneroller	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Burbot	3	7	5	3	5	3	2	8	9	0	2	1	0	0	0	0	0	0	0	0	0	2.5
Trout-perch	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
White perch	3,898	2,055	5,184	2,881	1,141	1,221	552	865	881	2,177	3,431	1,269	2,896	2,978	6,473	6,438	9,077	6,237	6,923	5,880	6,037	3,737.8
White bass	212	184	70	26	347	232	304	678	287	296	481	125	248	217	383	582	654	474	511	367	854	358.6
Rock bass	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0.2
Pumpkinseed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Smallmouth bass	0	3	2	0	1	1	1	1	0	0	1	0	0	1	0	0	0	1	0	0	1	0.6
Largemouth bass	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Yellow perch	1,810	2,315	2,105	1,165	2,020	2,260	3,813	5,002	3,070	5,034	11,823	9,604	10,941	12,950	24,743	13,156	11,161	15,409	12,276	9,516	7,616	7,989.9
Walleye	479	591	740	483	282	783	527	486	183	98	462	56	197	317	1,765	1,022	629	428	211	318	632	509.0
Round goby	0	0	0	0	0	0	0	1	8	37	19	13	10	24	15	9	17	4	49	11	7	10.7
Freshwater drum	3,306	1,395	2,696	1,330	1,740	1,192	1,441	1,534	840	1,231	1,752	809	3,249	1,883	1,736	2,076	2,281	1,360	1,475	1,587	1,374	1,727.9
Goldfish-carp hybrid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0.1
Total	13,981	24,253	14,357	10,393	10,286	12,983	9,744	9,845	9,939	19,330	27,834	14,866	39,359	21,084	38,368	28,676	26,161	27,624	22,579	19,664	28,240	20,455
Number of Sites	34	36	36	36	36	36	36	36	28	36	36	36	36	36	36	36	36	36	36	36	36	36
Number of Gangs	68	72	72	72	72	72	72	72	56	72	72	72	72	72	72	72	72	72	72	72	72	71

Note: Values are continually corrected for errors and may be different from previous reports.

Table 4.1.3 Total numbers of each species caught during east-central basin Partnership Index Fishing, Lake Erie, 1989-2010. Numbers are standardized to an effort of 72 gangs. Average catch from 1989-2010 presented for each species. Study was not done in 1996. Only standard gear was included.

Species	1989	1990	1991	1992	1993	1994	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average	
Lake sturgeon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
Alewife	677	3,567	12,878	1,894	682	578	1,556	143	1,350	7,108	5,033	793	8,380	4	4	48	153	18	4	0	0	1	2,039.6
Gizzard shad	860	285	2,633	522	1,003	637	1,971	426	1,250	3,197	2,281	462	5,753	127	351	1,822	892	608	53	247	503	1,176.5	
Coho salmon	1	2	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.2	
Chinook salmon	0	0	0	0	0	2	0	9	1	0	0	0	1	0	0	0	0	0	0	0	0	0.6	
Rainbow trout	3	0	1	2	1	0	2	2	1	1	0	2	0	1	0	0	1	0	1	1	0	0.9	
Lake trout	1	0	1	2	0	2	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0.4	
Lake whitefish	5	2	2	4	41	21	24	142	46	33	21	11	21	27	14	43	36	13	6	13	9	24.3	
Rainbow smelt	320	118	525	322	375	324	1,418	309	1,329	589	248	1,450	920	307	835	423	438	758	1,083	1,088	142	605.4	
Northern pike	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	
Quillback	0	0	0	0	24	9	3	0	1	0	5	0	0	0	2	2	0	0	0	1	0	2.1	
White sucker	72	52	63	72	129	78	126	46	60	56	71	30	135	13	60	78	83	35	35	73	52	64.5	
Silver redbreast	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.0	
Golden redbreast	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0.2	
Shorthead redbreast	0	15	0	4	12	0	2	2	1	2	18	0	1	0	0	0	1	1	1	3	1	2.9	
Goldfish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0.1	
Lake chub	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
Common carp	0	0	0	1	5	0	0	0	1	0	7	4	0	0	0	1	0	0	0	0	0	0.9	
Silver chub	0	0	0	1	0	0	0	0	24	14	18	7	2	0	1	4	2	2	0	2	0	3.5	
Emerald shiner	0	0	0	0	15	2	5	0	0	0	0	0	0	2	2	0	1	0	2	4	0	1.5	
Common shiner	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0.1	
Spottail shiner	0	2	1	1	3	0	0	2	0	18	0	0	10	0	2	0	2	0	0	0	2	1.9	
Notropis sp.	9	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	
Channel catfish	12	3	11	10	43	19	12	7	6	6	26	9	23	2	17	8	11	18	0	8	8	11.7	
Stonercat	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
Tadpole madtom	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
Burbot	31	13	9	19	20	19	14	25	36	15	2	12	9	0	1	3	2	1	2	0	2	10.7	
Trout-perch	0	7	1	19	12	4	0	2	2	1	0	15	4	12	7	1	3	0	4	0	0	4.3	
White perch	7,621	4,449	1,929	3,480	809	392	203	268	179	529	1,086	1,225	4,046	1,967	1,777	6,905	3,674	2,364	2,688	1,713	2,440	2,261.1	
White bass	636	88	170	91	67	203	176	734	167	419	316	101	261	276	232	329	765	330	161	201	143	266.6	
Rock bass	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0.3	
Bluegill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.0	
Smallmouth bass	0	0	0	0	0	0	8	0	6	2	0	0	1	0	0	1	0	0	0	2	0	0.9	
Largemouth bass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Yellow perch	3,332	1,121	1,174	1,295	726	2,179	1,944	4,681	2,347	7,149	9,229	4,613	8,458	5,744	6,956	8,578	8,132	9,367	9,967	12,384	7,153	5,296.8	
Walleye	465	118	207	276	367	366	237	82	70	17	29	27	99	68	639	473	310	63	45	81	33	185.1	
Round goby	0	0	0	0	0	0	0	0	0	2	40	61	34	157	76	70	148	39	41	34	91	37.9	
Freshwater drum	3,612	2,443	1,876	2,380	1,323	1,184	548	956	669	985	1,304	1,304	2,399	1,077	1,890	1,123	1,227	670	799	1,156	311	1,328.9	
Total	17,659	12,296	21,482	10,398	5,662	6,023	8,247	7,836	7,549	20,181	19,758	10,099	30,682	9,706	12,860	19,992	15,774	14,290	14,892	17,012	10,892	13,331	
Number of Sites	27	22	31	30	29	17	24	33	32	36	36	36	36	36	36	36	36	36	36	36	36	32	
Number of Gangs	54	44	62	60	58	34	48	66	64	72	72	72	72	72	72	72	72	72	72	72	72	64	

Note: Values are continually corrected for errors and may be different from previous reports.

Table 4.1.4

Total numbers of each species caught during Pennsylvania Ridge Partnership Index Fishing, Lake Erie, 1991-2010. Average catch from 1991-2010 is presented for each species. Study was not done in 1996 and 1997. Only standard canned nets are included (no thermocline gangs).

Species	1991	1992	1993	1994	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Longnose gar	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.1
Alewife	740	1,530	0	16	133	605	69	2,284	42	1,076	0	0	0	489	0	0	0	11	388.6
Gizzard shad	16	20	36	531	95	96	101	515	141	374	15	17	2	163	20	85	48	98	131.9
Pink salmon	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Coho salmon	2	0	2	0	0	0	1	0	2	0	0	1	0	0	0	1	0	0	0.5
Chinook salmon	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0.2
Rainbow trout	1	0	2	0	1	2	5	3	8	17	7	13	35	8	0	1	1	1	5.8
Lake trout	1	2	8	5	9	3	2	0	5	4	1	10	3	4	2	1	2	3	3.6
Lake whitefish	13	17	33	15	53	59	1	1	14	1	9	3	12	1	115	43	11	0	22.3
Rainbow smelt	179	22	38	38	60	40	14	8	111	21	54	80	9	16	630	183	86	6	88.6
Muskeellunge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.1
Quillback	0	0	0	0	0	0	1	2	6	1	0	2	0	2	0	1	2	0	0.9
White sucker	18	20	12	15	15	62	11	9	65	10	24	16	13	19	7	12	72	40	24.4
Silver redhorse	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0.2
Golden redhorse	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0.1
Shorthead redhorse	0	3	3	1	2	24	2	2	18	2	3	9	0	3	0	6	44	2	6.9
Redhorse sp.	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0.1
Common carp	0	0	0	0	0	0	0	3	1	0	0	1	0	0	0	0	0	0	0.3
Silver chub	0	0	0	0	0	0	0	0	3	0	8	0	0	1	0	2	2	0	0.9
Emerald shiner	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0.1
Spottail shiner	0	3	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0.4
Channel catfish	0	4	2	3	0	4	2	1	5	2	0	1	0	1	2	1	1	0	1.6
Stoneroller	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Burbot	8	8	8	12	15	71	59	36	74	49	76	49	10	10	54	17	20	8	32.4
Trout-perch	0	0	0	0	0	0	0	1	4	2	1	0	0	0	2	0	0	0	0.6
White perch	446	195	93	34	46	70	56	68	142	104	129	34	39	186	16	73	44	436	122.8
White bass	55	63	7	4	84	35	20	36	26	5	6	5	3	103	20	34	18	21	30.3
Rock bass	1	1	0	1	1	13	7	2	9	1	0	0	0	2	0	1	0	2	2.3
Smallmouth bass	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0.3
Black crappie	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.1
Yellow perch	714	20	190	104	483	1,743	1,654	3,752	1,881	3,008	1,115	1,310	2,558	4,710	4,280	3,508	3,783	5,204	2,223.1
Walleye	13	34	23	27	47	19	12	7	13	7	14	9	102	30	7	39	31	18	25.1
Round goby	0	0	0	0	0	0	2	19	30	38	37	4	9	146	95	67	28	25	27.8
Freshwater drum	285	118	43	142	88	103	41	62	74	56	39	15	9	21	14	37	127	56	73.9
Total	2,493	2,060	501	949	1,134	2,953	2,062	6,813	2,679	4,782	1,540	1,581	2,804	5,917	5,263	4,112	4,321	5,931	3,216
Number of Sites	9	9	9	9	9	9	9	9	9	9	9	9	9	9	4	9	9	9	9
Number of Gangs	18	18	18	18	18	18	18	18	18	18	18	18	18	18	8	18	18	18	17

Note: Values are continually corrected for errors and may be different from previous reports.

Table 4.1.5 Total numbers for each species caught during eastern basin Partnership Index Fishing surveys, Lake Erie, 1989-2010. Numbers are standardized to an effort of 60 gangs. Average catch from 1989-2010 presented for each species. Study was not done in 1996 and 1997. Low sample size in 1995 limits the value of information. Only standard gear included. Thermocline gangs and 2 m above thermocline sets were excluded.

Species	1989	1990	1991	1992	1993	1994	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Longnose gar	1	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0.2
Alewife	2,257	111	1,628	1,248	193	118	1,046	1,697	599	2,296	29	2,597	2	12	14	1,214	7	3	2	102	689.8
Gizzard shad	325	75	73	18	76	52	266	382	335	514	190	1,001	99	14	714	845	36	111	151	490	262.1
Pink salmon	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.4
Coho salmon	0	0	4	2	2	0	0	0	1	0	2	1	0	0	1	1	0	0	1	0	0.6
Chinook salmon	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0.1
Rainbow trout	1	3	5	8	0	2	4	6	2	0	4	6	6	1	15	1	1	2	7	4	3.5
Brown trout	1	0	0	0	0	0	0	3	0	0	0	21	2	2	1	0	0	0	1	0	1.4
Lake trout	15	5	8	3	26	24	4	11	11	18	9	15	30	8	18	24	21	15	17	58	15.4
Lake whitefish	15	43	35	14	0	10	8	133	6	0	2	18	2	2	3	45	16	39	4	45	19.9
Cisco	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Rainbow smelt	669	577	94	26	2	81	79	5	13	32	58	223	61	220	128	88	179	365	643	148	167.7
Northern pike	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Mooneye	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Quillback	4	0	0	0	0	5	0	0	2	4	3	0	1	0	0	4	4	0	3	2	1.5
White sucker	260	168	88	57	148	63	26	66	116	107	122	152	54	26	35	107	39	45	87	32	81.7
Silver redhorse	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.0
Golden redhorse	0	0	0	0	0	0	0	0	1	6	4	0	0	0	0	0	0	0	0	0	0.5
Shorthead redhorse	40	99	16	44	86	17	8	21	18	47	39	5	20	6	1	4	39	0	5	6	23.6
Redhorse sp.	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	0.2
Common carp	22	3	0	2	0	0	4	0	1	0	1	0	0	0	0	0	0	0	0	0	1.5
Silver chub	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.0
Brown bullhead	0	1	0	0	0	2	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0.3
Channel catfish	5	3	0	2	2	0	4	7	6	7	28	3	2	7	3	6	14	10	26	3	6.2
Stoner cat	12	3	6	3	7	0	0	0	10	2	3	0	0	0	0	0	0	0	0	0	2.1
Burbot	5	11	20	11	29	49	53	238	185	212	108	143	171	113	101	31	64	25	24	9	72.8
Trout-perch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0.1
White perch	3,339	1,421	481	129	104	36	56	22	49	35	76	181	19	10	45	1,117	117	224	123	262	356.7
White bass	174	28	187	23	15	10	64	34	24	61	19	45	8	6	23	172	60	45	49	23	48.5
Rock bass	209	76	30	96	152	122	71	56	299	480	109	11	20	43	7	14	117	7	64	41	92.1
Pumpkinseed	0	1	0	0	11	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0.7
Bluegill	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0.1
Smallmouth bass	137	333	64	239	300	370	270	284	242	890	341	111	156	195	150	413	854	298	201	166	273.3
Largemouth bass	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0.2
Black crappie	6	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
Yellow perch	1,180	464	382	228	135	47	146	211	679	1,306	3,160	1,321	3,608	1,983	1,643	4,650	3,796	2,936	3,948	5,524	1,697.6
Walleye	140	79	31	57	63	46	34	29	41	62	41	42	31	38	345	109	199	98	162	65	77.8
Round goby	0	0	0	0	0	0	0	0	0	9	19	178	93	54	23	55	27	25	26	45	25.2
Freshwater drum	1,063	335	178	207	404	172	266	374	142	145	303	151	183	257	319	343	74	168	270	162	250.7
Total	9,879	3,840	3,332	2,415	1,753	1,225	2,408	3,580	2,786	6,233	4,674	6,229	4,575	2,999	3,590	9,243	4,417	4,417	5,818	7,191	4,175
Number of Sites	27	26	26	20	19	19	8	30	30	29	30	30	30	30	30	30	21	30	30	29	26
Number of Gangs	49	45	52	40	37	38	16	60	60	58	60	60	60	60	60	60	42	60	60	58	52

Note: Values are continually corrected for errors and may be different from previous reports.

Table 4.1.6 Total numbers of each species caught during the Partnership survey in the walleye cap area, eastern Lake Erie, 2000-2010. Thermocline samples were included in years fished. Numbers of sites and gangs (samples) are presented. The number of sites was reduced to 9 in 2007. No thermocline gangs were fished in 2007. Data from 2007 are standardized to an effort of 49 gangs. Catches from some east basin survey sites are included in this table. Tables 4.1.5 and 4.1.6 are not mutually exclusive.

Species	2000	2001	2002	2003	2004	2005	2006	2007a	2008	2009	2010	Average
Sea lamprey	0	0	0	0	0	0	0	0	0	0	1	0.1
Alewife	1,331	43	1,655	3	10	14	65	0	5	5	62	290.3
Gizzard shad	48	231	164	36	4	290	38	54	80	60	30	94.1
Pink salmon	0	0	0	0	0	0	0	0	0	0	1	0.1
Coho salmon	1	0	5	0	0	1	0	0	0	1	0	0.7
Chinook salmon	0	0	1	0	0	1	0	0	0	0	2	0.4
Rainbow trout	9	13	52	20	4	18	1	0	6	6	26	14.1
Brown trout	0	0	2	0	1	2	0	0	2	2	1	0.9
Lake trout	12	35	11	15	15	11	35	22	7	19	12	17.6
Lake whitefish	1	1	1	9	1	12	80	16	35	49	48	23.0
Rainbow smelt	54	19	11	13	158	28	54	117	184	420	132	108.2
Quillback	5	1	1	0	0	0	0	8	1	3	0	1.7
White sucker	98	68	34	35	32	67	93	38	26	102	86	61.7
Golden redborse	10	1	0	0	0	0	0	0	0	0	0	1.0
Shorthead redborse	42	20	13	13	2	2	1	68	2	5	6	15.8
Redhorse sp.	0	0	0	0	0	0	0	0	0	1	0	0.1
Common carp	0	1	0	0	0	0	0	0	0	0	0	0.1
Channel catfish	9	21	3	6	9	8	1	14	5	27	3	9.6
Stonecat	0	1	0	0	0	0	0	0	0	0	1	0.2
Burbot	119	56	77	119	29	64	76	16	13	8	0	52.5
Trout-perch	0	0	0	0	0	0	0	0	1	1	1	0.3
White perch	38	115	57	24	7	72	444	147	238	128	77	122.4
White bass	32	50	31	16	10	36	90	63	25	43	7	36.6
Rock bass	359	106	18	5	11	22	3	212	5	64	32	76.1
Pumpkinseed	1	0	0	0	0	0	0	0	0	0	1	0.2
Smallmouth bass	556	304	127	146	161	256	31	949	128	193	68	265.4
Largemouth bass	0	0	0	0	1	0	0	0	0	0	0	0.1
Yellow perch	3,137	1,555	582	2,160	396	1,672	2,654	4,510	4,045	5,075	3,066	2,622.9
Walleye	76	99	90	76	119	515	153	261	101	182	61	157.6
Round goby	1	1	13	18	39	9	13	5	13	107	19	21.7
Freshwater drum	154	249	113	138	170	117	12	95	112	281	95	139.7
Total	6,093	2,990	3,061	2,852	1,179	3,217	3,844	6,596	5,034	6,782	3,838	4,135
Number of Sites	20	20	20	20	20	20	20	9	20	21	21	19
Thermocline Gangs	10	12	17	15	12	3	9	-	10	7	8	9
Number of Gangs	50	52	57	55	52	43	49	18	50	49	50	48

Note: Values are continually corrected for errors and may be different from previous reports.

^a 2007 catch values were standardized to an effort of 49 gangs (ie: corrected by a factor of 2.72).

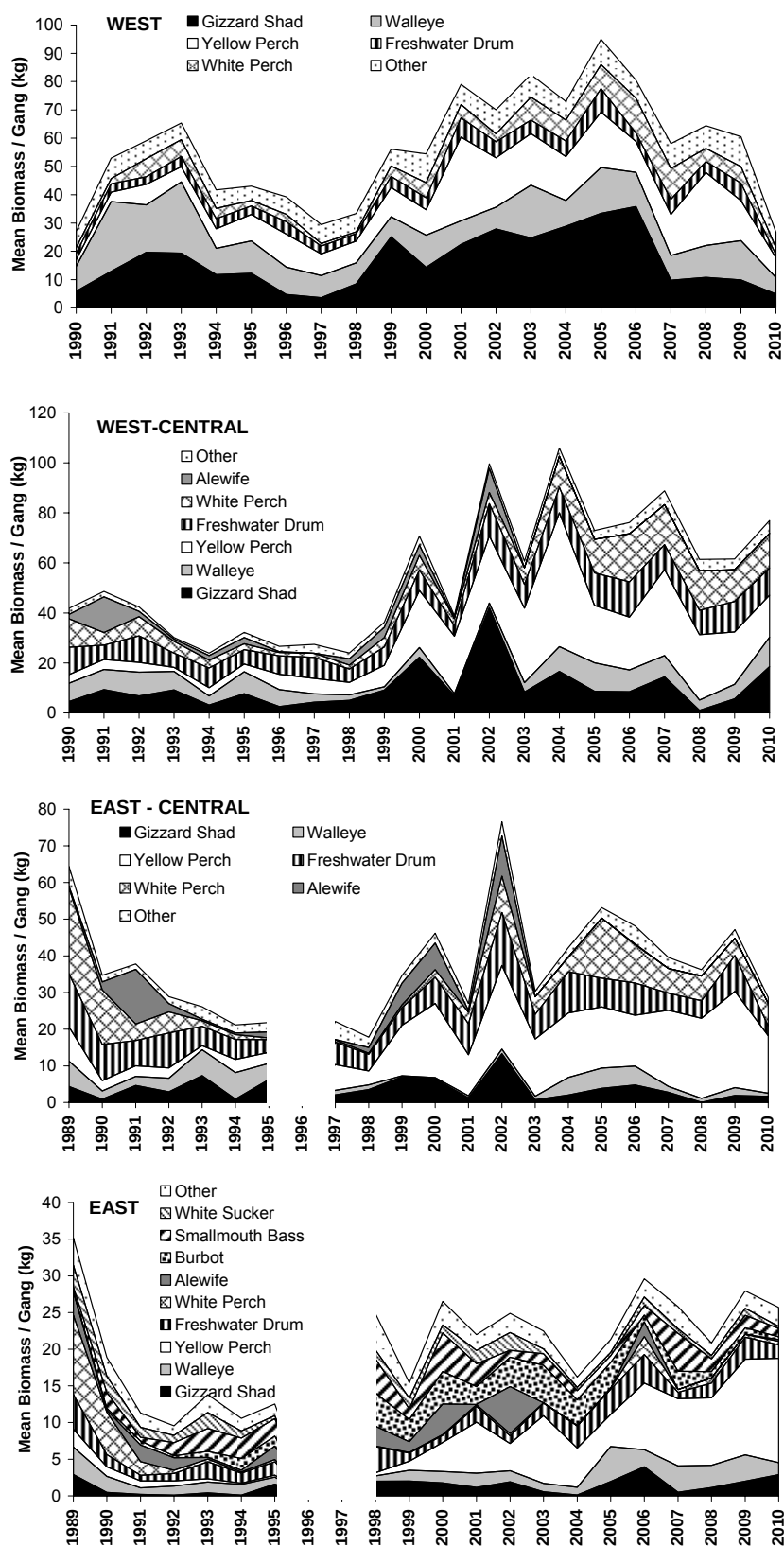


Figure 4.1.2 Mean species biomass (kg / gang) by basin, Partnership Index Fishing, 1989-2010. Species with an average biomass representing less than 5% of the average of all species combined were included in "Other" group¹. Thermocline gangs (1989, 1990, 1999-2010) were included for the east basin. Studies were not done in the east-central basin in 1996 or in the east basin from 1995-1997. Axes differ between basins. Effort was standardized across mesh sizes.

¹Alewife were retained in the individual series to illustrate continued absence or recovery to historic levels.

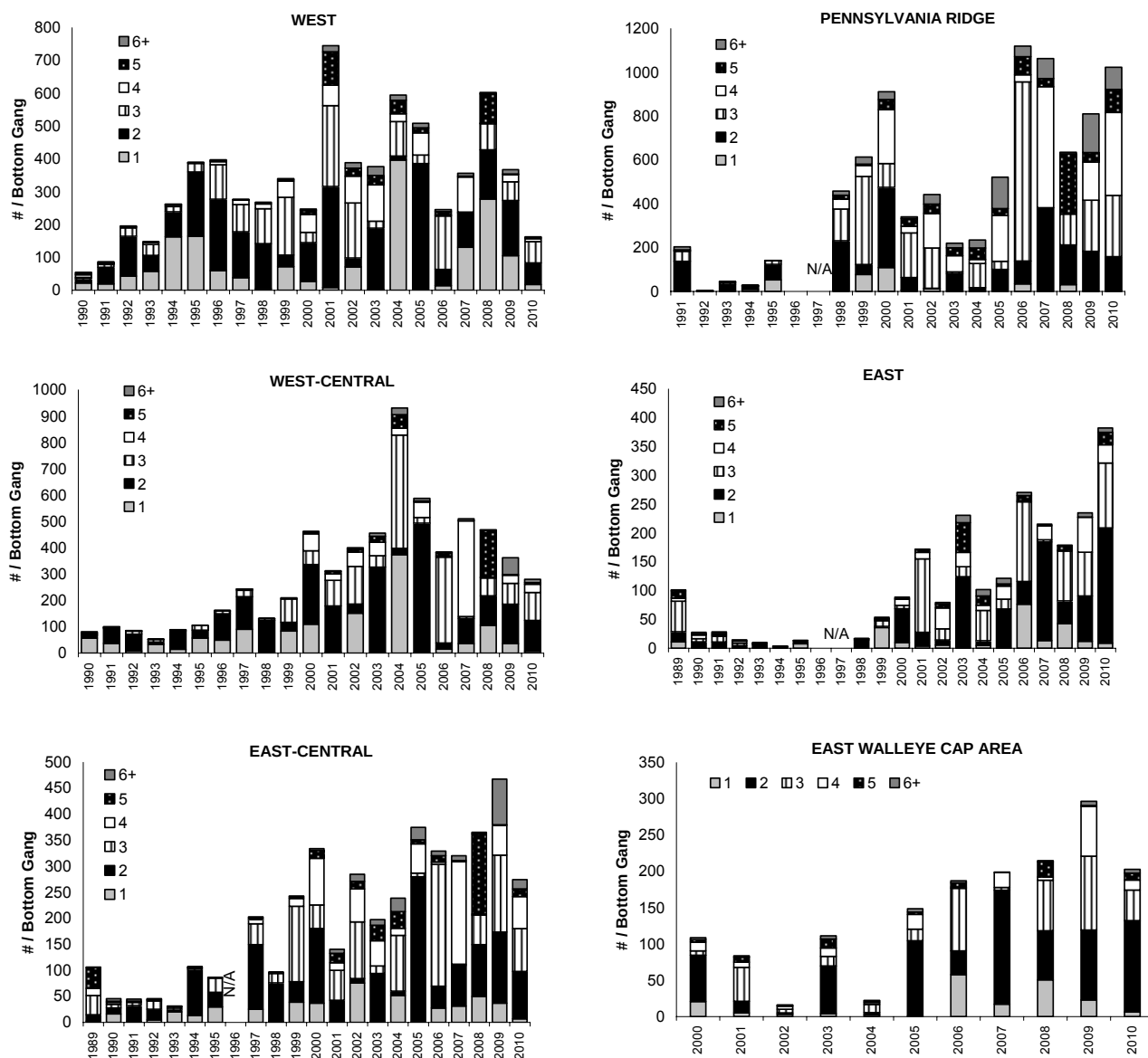


Figure 4.1.3 Yellow perch catch at age (number) per bottom gang of Partnership index gill nets, by basin. Time frames and axes differ among basins. Absent bars indicate when studies were not done. Ages 6 and older pooled. East basin, eastern walleye cap area and Pennsylvania Ridge analyses include depths 30 m or less. East walleye cap area survey and east basin survey are not mutually exclusive. 1995 east basin survey had low sample size.

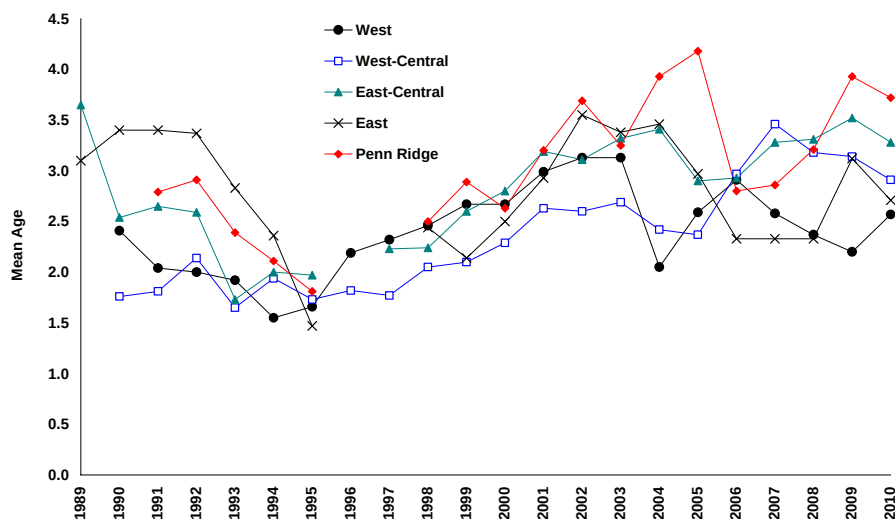


Figure 4.1.4 Mean age of yellow perch caught in Partnership index gill nets by basin, 1989-2010. All age groups included in calculations. Ages based on scales and otoliths since 2005.

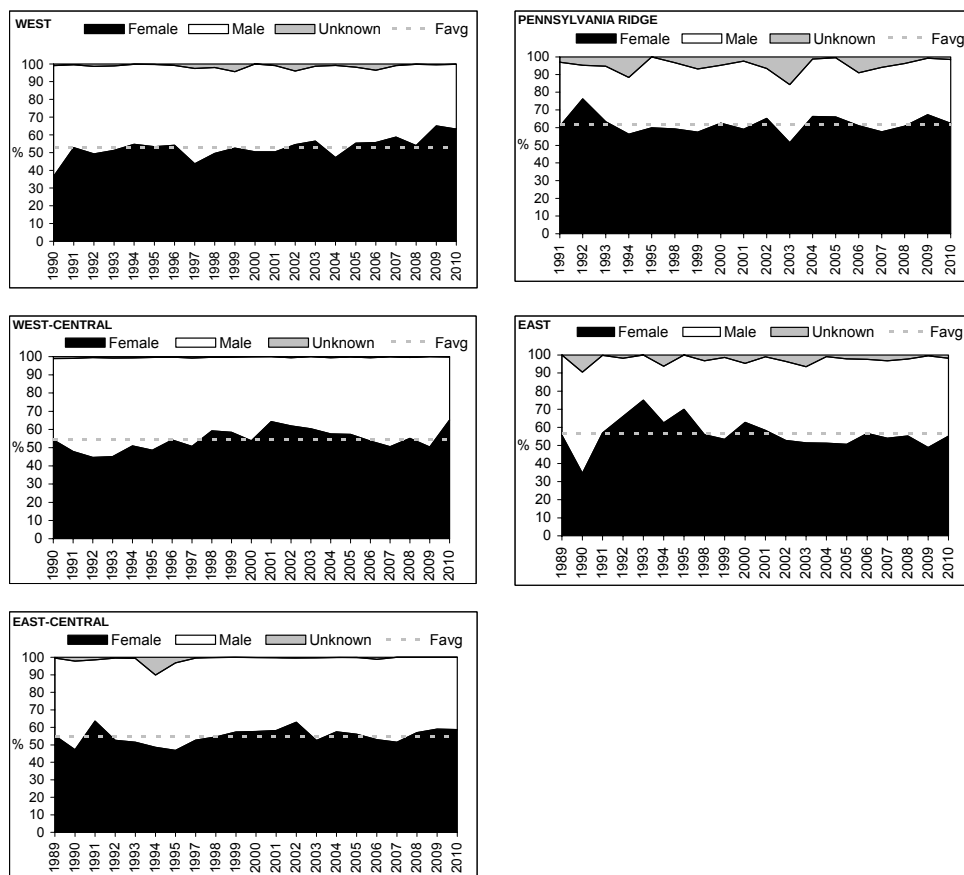


Figure 4.1.5 Proportion of yellow perch ages 2 and older represented by each sex caught in fall. Partnership index gill netting, 1989-2010. Note absent years in east-central, Pennsylvania Ridge, and east basin time series. Dashed line represents average proportion of females over the time series.

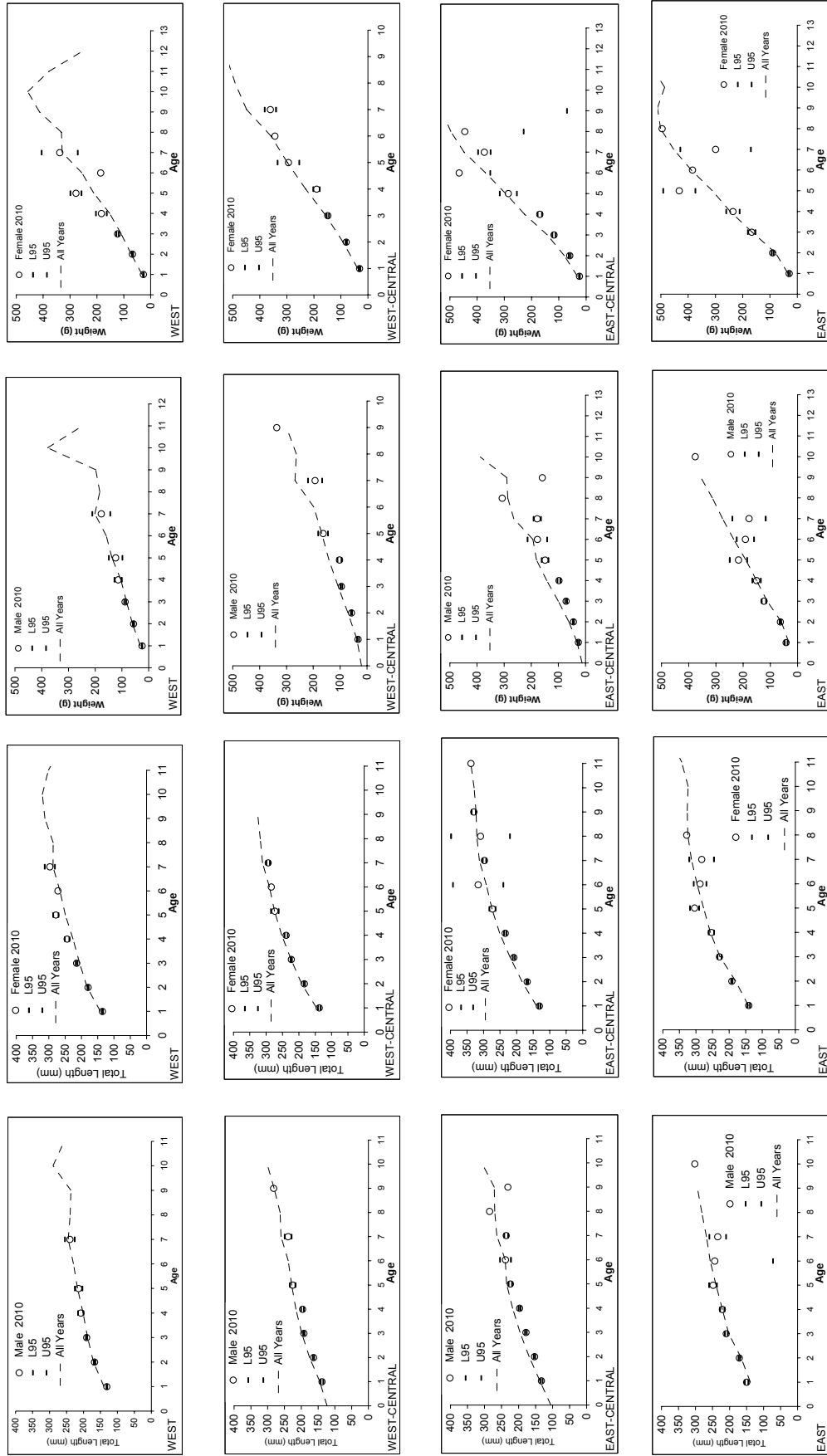


Figure 4.1.6 Yellow perch mean total length (mm) and weight (g) at age for the west (top row), west-central, east-central and east (bottom row) basins in 2010 (circles). Dotted line represents mean size at age for all years to 2009. Partnership Index Fishing, 1989-2010.

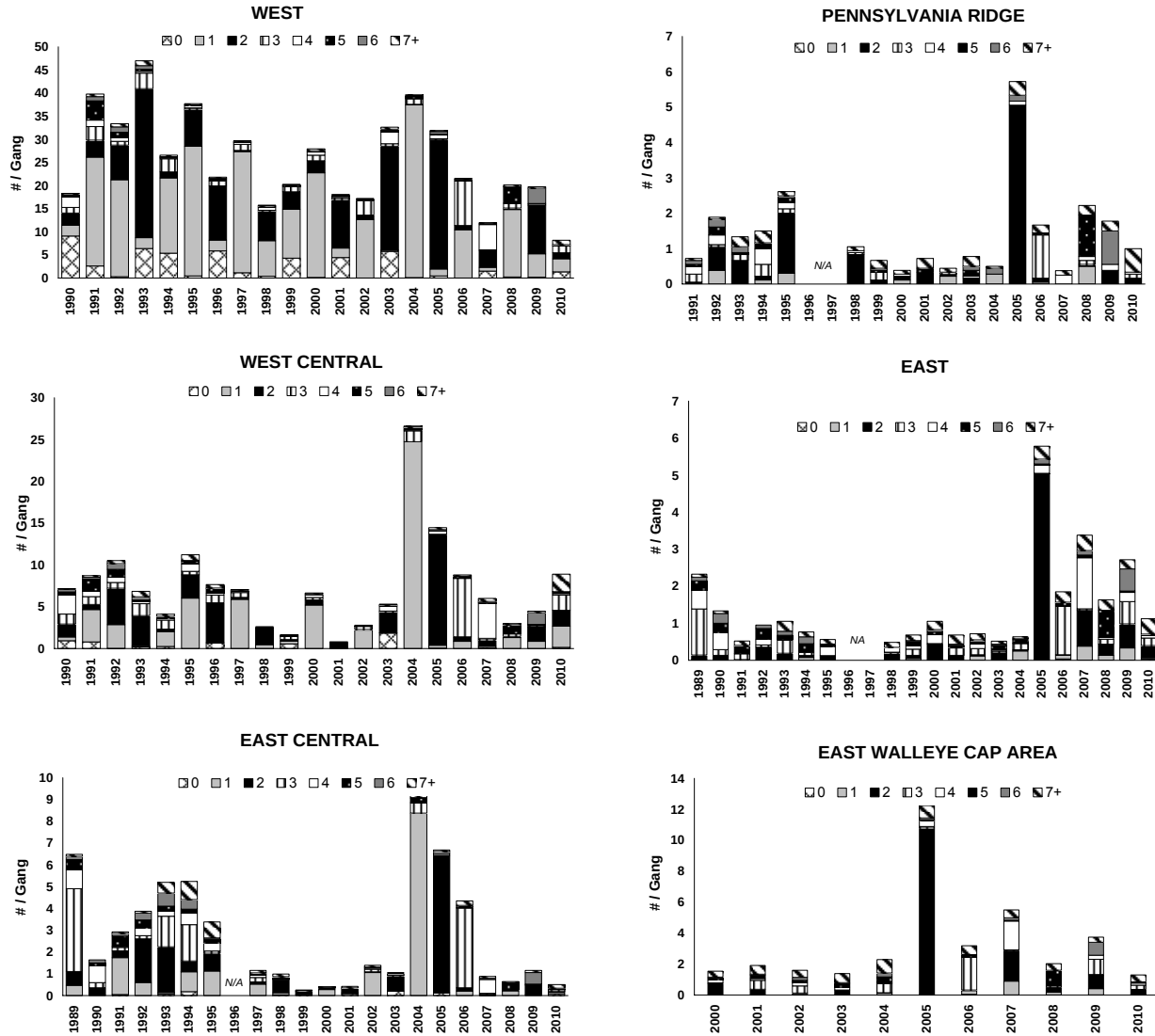


Figure 4.1.7 Walleye catch at age (numbers) per gang of index gill nets (canned and bottom), in the west, west-central, east-central, Pennsylvania Ridge and east basin Partnership surveys. Only standard canned sets are included in east basin and Pennsylvania Ridge graphs. East walleye cap area includes thermocline sets. East walleye cap area survey and east basin survey are not mutually exclusive. Note that catch rate and time axes differ among basins. Catch rates have been adjusted for walleye lacking age data. Absent bars indicate years when study was not done. 1995 east basin survey had low sample size.

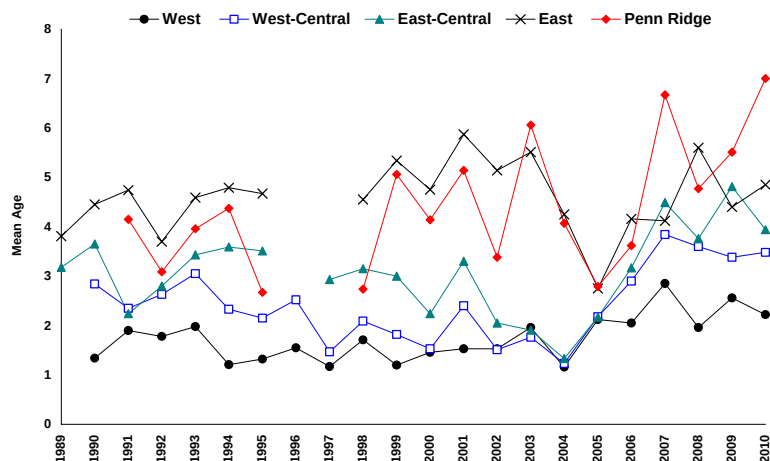


Figure 4.1.8 Mean age of walleye caught in Partnership index gill nets by basin, 1989-2010.

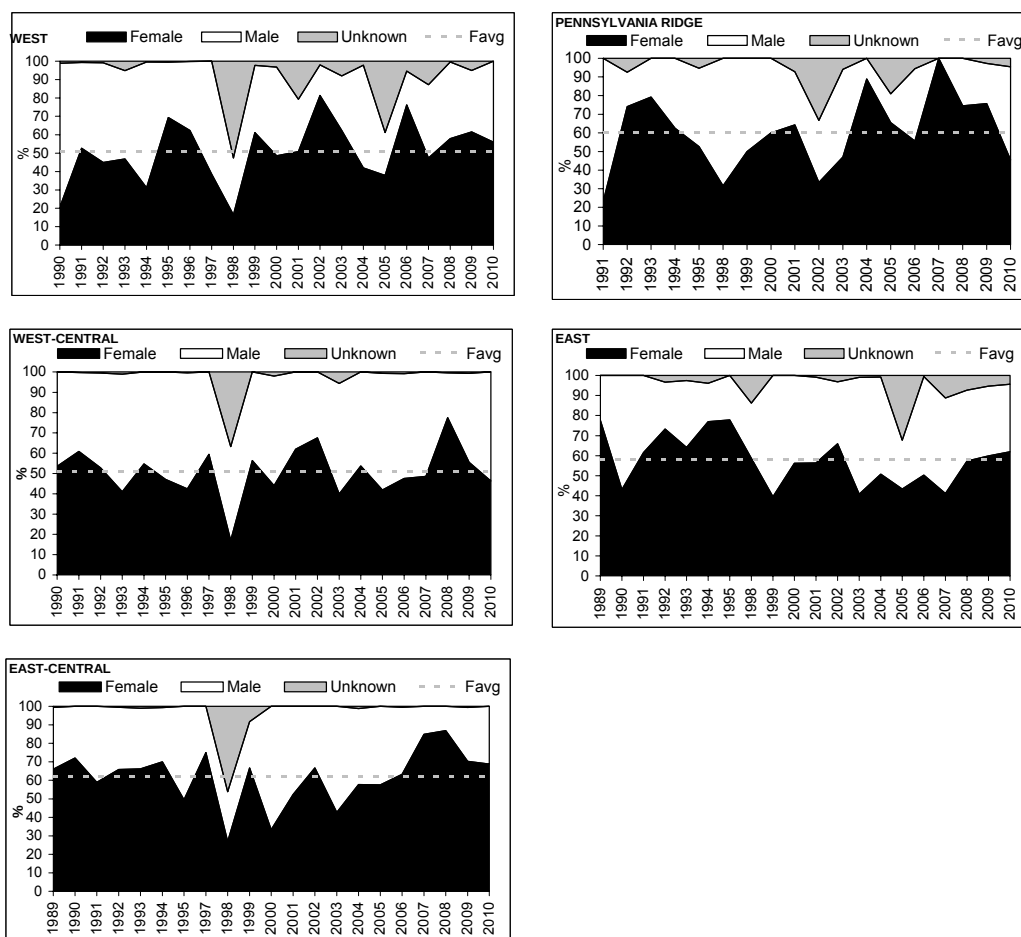


Figure 4.1.9 Proportion of walleye ages 2 and older represented by each sex caught in fall Partnership index gill netting, 1989-2010. Note absent years in east-central, Pennsylvania Ridge, and east basin time series. Dashed line represents average proportion of females over the time series.

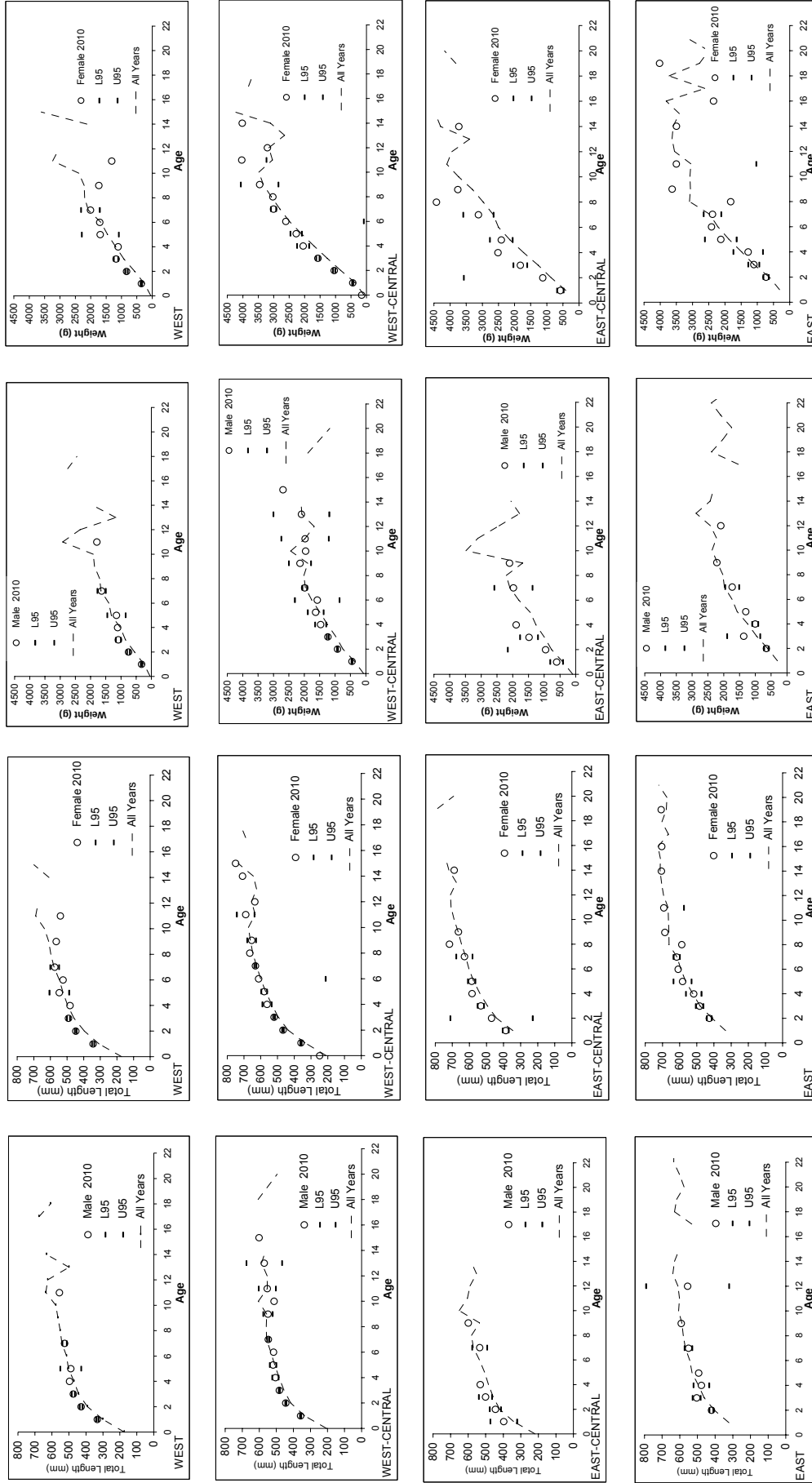


Figure 4.1.1.0

Walleye mean total length (mm) and weight (g) of males and females at age for the west (top row), west-central, east-central and east (bottom row) basins in 2010 (circles). 95% confidence limits shown. Dotted line represents mean size at age for all years to 2009. Partnership Index Fishing, 1989-2010.

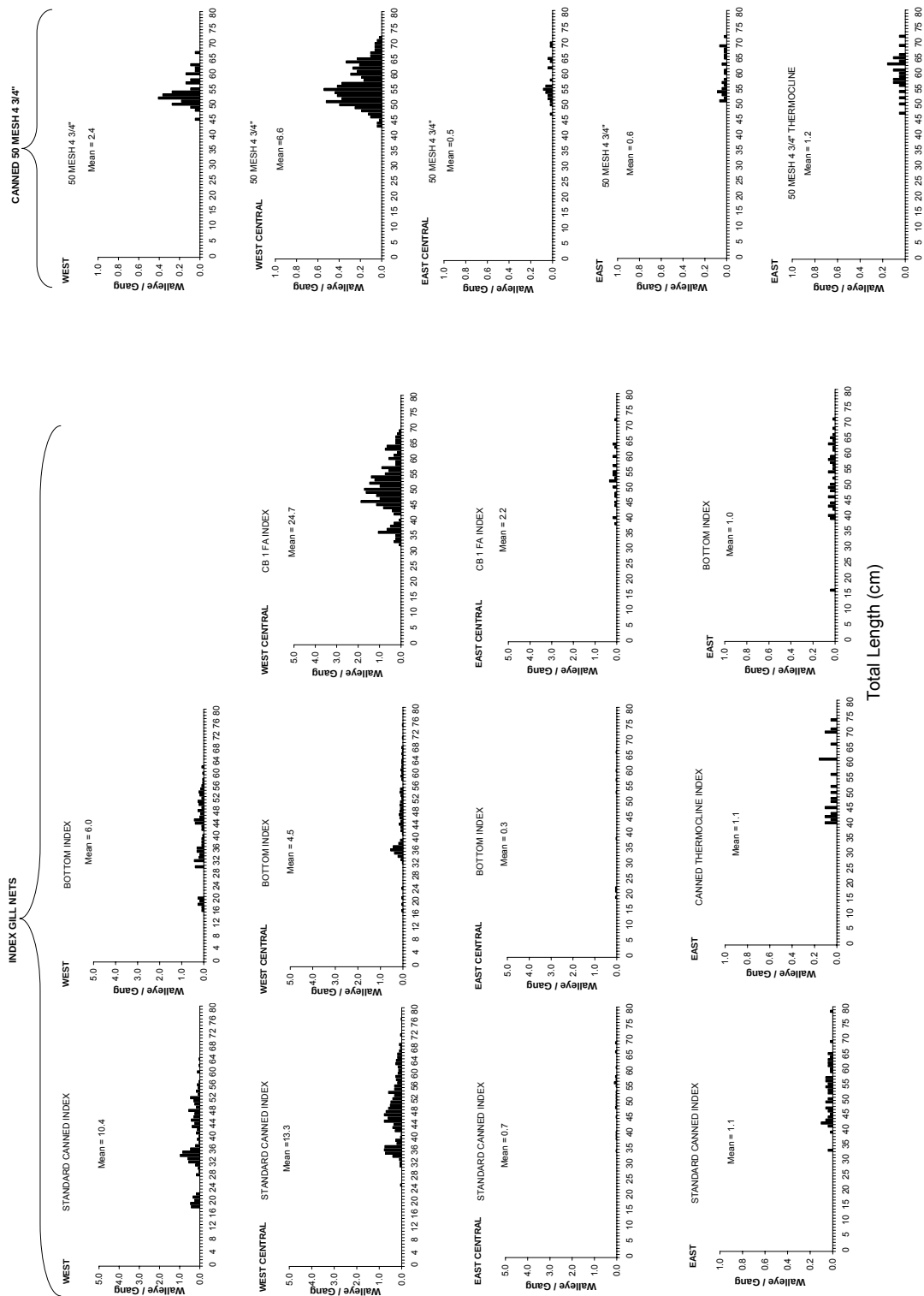


Figure 4.1.11 Walleye catch rates in 2010 by 1 cm length intervals in west basin (top row), west-central (2nd row), east-central (3rd row) and east basin (bottom row) in standard index canned gill nets, bottom nets, central basin 1 fathom canned nets, canned thermocline nets (east only) and in 50 mesh 4.75" canned nets (column on far right). All graphs have same x axes (length). East includes Pennsylvania Ridge and east basin surveys fished at all depths. Partnership Index Fishing, 2010.

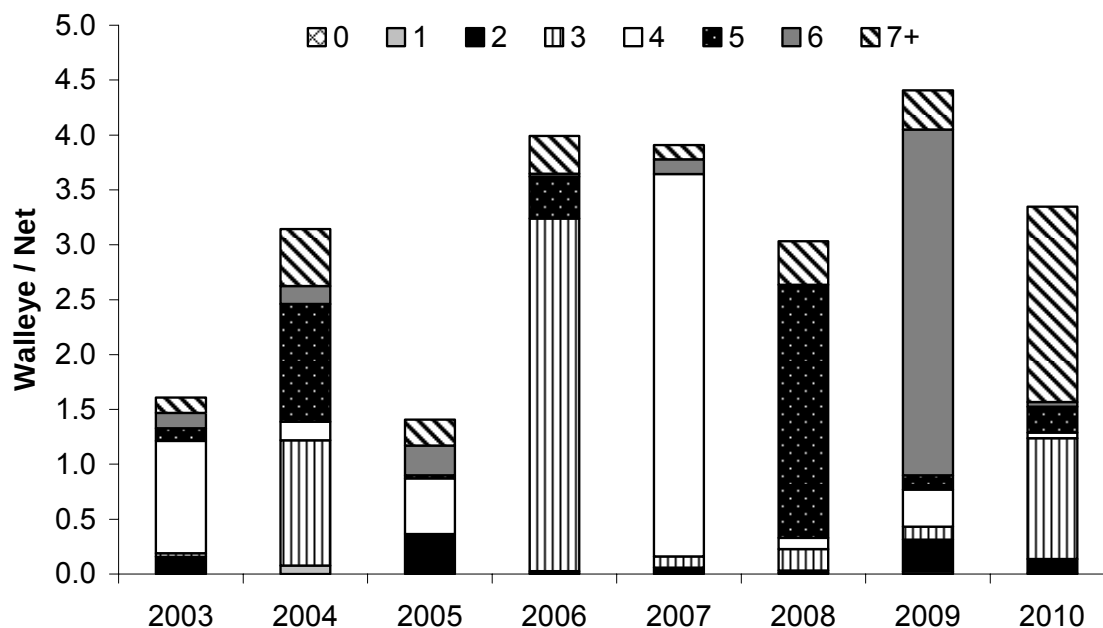


Figure 4.1.12 Walleye catch at age per 50 mesh deep 121 mm, 34 m canned gill net fished adjacent to index gill nets in the west, west-central, and east central basins. All canned depths were included.

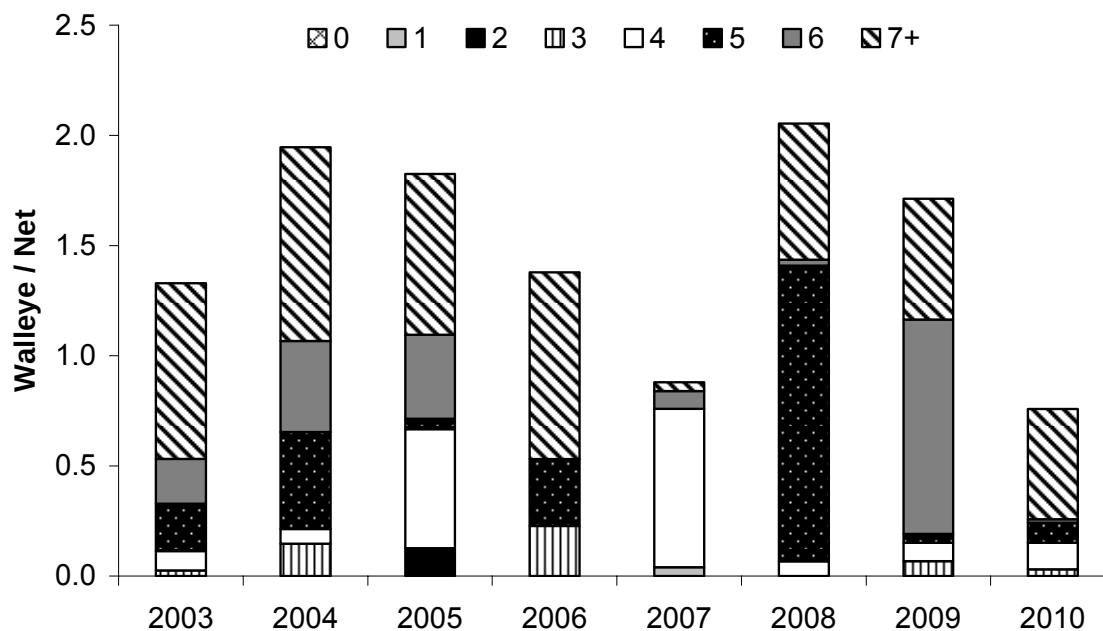


Figure 4.1.13 Walleye catch at age per 50 mesh deep 121 mm, 34 m canned gill net fished adjacent to index gill nets in the Pennsylvania Ridge, east, and walleye cap area surveys. All canned depths were included.

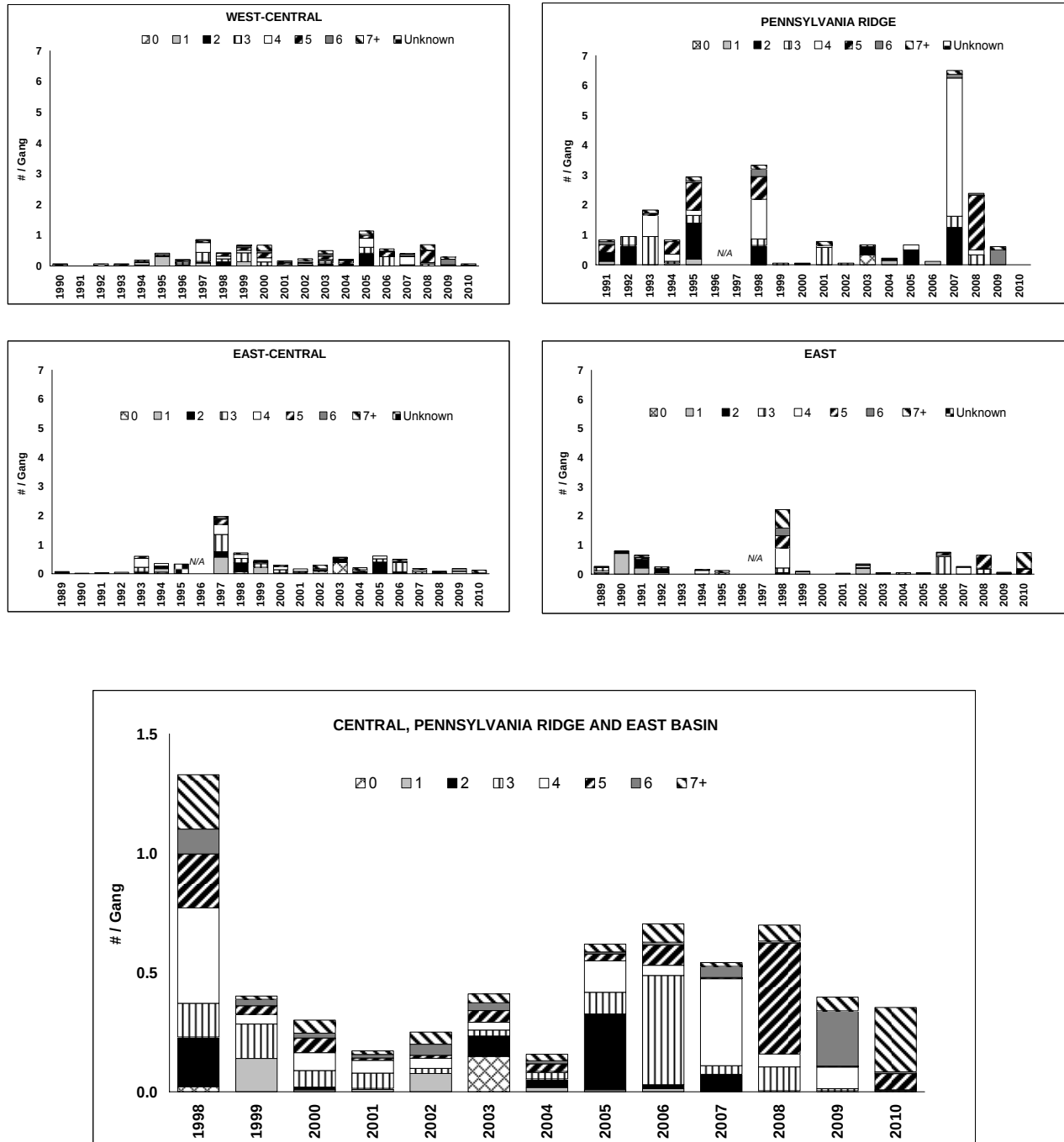


Figure 4.1.14

Lake whitefish catch at age (numbers) per gang of index gill nets (canned and bottom), in the west-central, east-central, Pennsylvania Ridge, east basin and with basins pooled. Only standard canned sets included in east basin and Pennsylvania Ridge graphs. Whitefish samples lacking age data are represented by the "unknown" series. East basin 1995 based on few sites. Pooled basins includes extra walleye cap area sites. Pooled basin series begins in 1998 to represent years in which all basins were sampled.

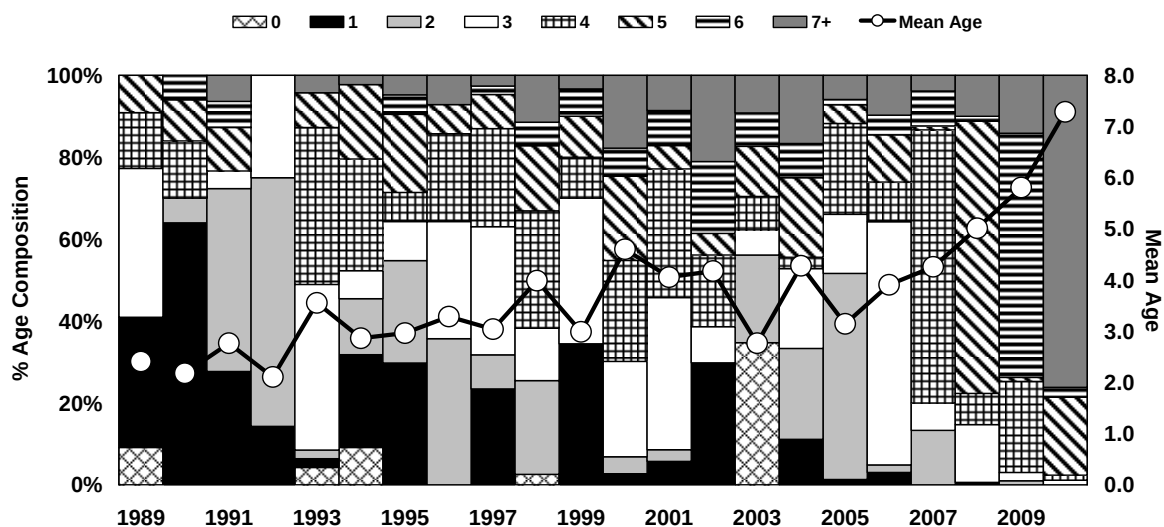


Figure 4.1.15 Whitefish age composition and mean age (line) from Partnership Index Fishing, all basins combined, all index gear included. Ages 7 and older pooled (otolith and scale ages in 2010).

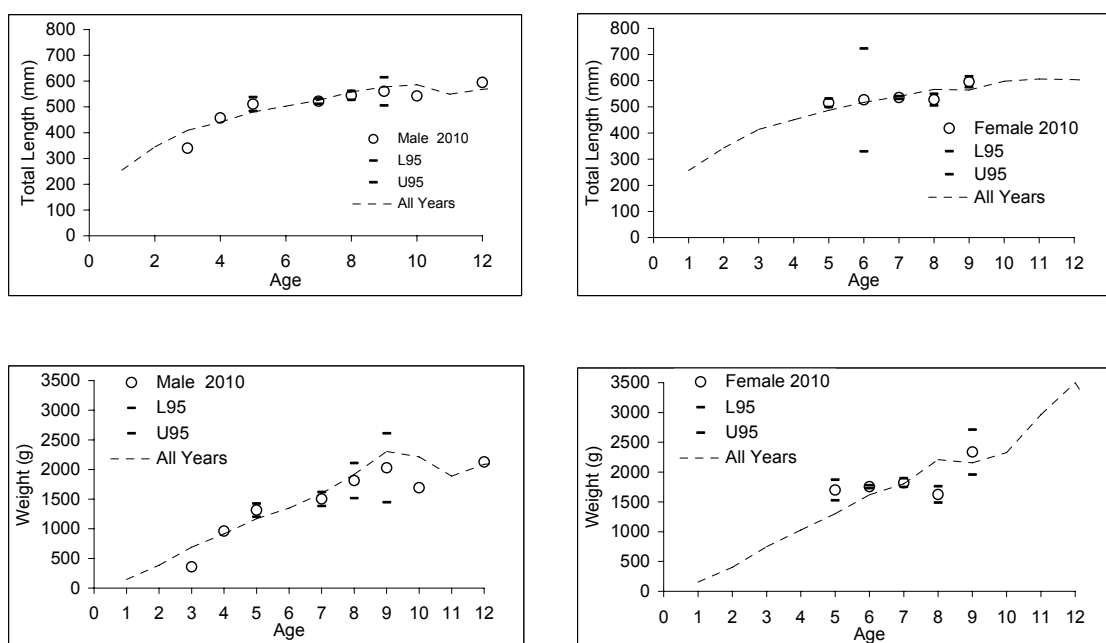


Figure 4.1.16 Mean length (top) and weight (bottom) at age for male (left) and female (right) lake whitefish, 2010 (circles). 95% confidence limits shown. Dotted line represents mean size at age 1989-2009, combined. Ages based on scales prior to 2006. Partnership Index Fishing 1989-2010, all basins.

4.2 Index Trawling: Western Lake Erie

The western basin interagency trawling index, conducted by Ontario and Ohio, was completed during August, 2010. The study is used to assess year class strength of species based on catches of young-of-the-year and older fish. Ontario survey results describe cohort strength by species as observed in Ontario waters, but trends may differ from pooled Ontario – Ohio indices that are more spatially extensive. Lake Erie task groups use these values to project abundance of two-year-old yellow perch and walleye in advance of recruitment to fisheries. Species composition and trends in forage abundance are also described by index trawling. Length and weight measurements were recorded to describe trends in growth. Subsamples of yellow perch were aged using scales and otoliths. Yearling and older yellow perch were scanned for the presence of PIT tags.

The gear used was a two seam, 33' Biloxi bottom trawl (38' ground line) with a ½" cod end liner. Trawls in Ontario waters of western Lake Erie took place over two weeks from August 17 to August 25, 2010 (Figure 4.2.1). As in 2009, the 2010 field season experienced hypoxic conditions in the west basin. Hypoxia (dissolved oxygen < 3 mg / l) was present at seven sites (6,11, 12, 14, 17, 18, 33). During week 1, three hypoxic sites (17,18 and 12) were assigned an effort status of zero due to hypoxia and evidence on sonar suggesting that all fish were suspended at these locations. Trawling did not occur at sites 12 and 18. These three sites were repeated successfully during the second week under improved oxygen conditions. Four sites exhibiting hypoxia (6, 11, 14, 33) but without evidence that all fish were suspended, were assigned an effort status of 1, resulting in 36 successful trawls. Indices of abundance are presented for young-of-the-year (YOY) fish, yearling-and-older (YAO) and small bodied fish with age groups pooled (all ages) for the period 1988-2010 (Table 4.2.1). Since the 2008 Status of Major Stocks Report, these indices have been expressed as number caught per hectare (CPHA), by species and age group.

For the seventh consecutive year, catches of young-of-the-year (YOY) white perch exceeded all other species and age groups, representing 55% of all fish caught (Table 4.2.1). Compared to indices over the time series for species encountered regularly, evidence of strong year classes in 2010 were limited to rock bass. YOY catches were moderate for white perch, white bass, and smallmouth bass but were weaker for yellow perch, walleye, freshwater drum and gizzard shad. Yellow perch YOY catch rates in Ontario waters improved slightly from 2009 (Figure 4.2.2). YOY walleye catches in 2010 were similar to 2009 in Ontario waters (Figure 4.2.3). Clupeids (gizzard shad and alewife) are often suspended and bottom trawl indices may not be indicative of their abundance. YOY gizzard shad remain an important prey of top predators, but grow beyond prey-size at older ages.

Abundance indices of yearling and older (YAO) channel catfish were high (Table 4.2.1). YAO yellow perch, white perch, freshwater drum, common white sucker, carp, brown bullhead, quillback carpsucker and shorthead redhorse sucker catches were moderate in 2010. Catches of yearling and older walleye, white bass, rock bass, gizzard shad and smallmouth bass were relatively low.

Forage species, which remain potential prey for the duration of their life histories, were caught in low to moderate numbers in 2010 (Table 4.2.1). Moderate catches of trout-perch, emerald shiners, spottail shiners and mimic shiners occurred in 2010. Only a single YOY alewife was caught in Ontario waters of the west basin. Low catches were also observed for rainbow smelt, other cyprinids, silver chub, logperch and round gobies. Rainbow smelt catches (primarily YOY) were above average in the four years previous to 2010. Cyprinids (minnows) are often suspended and bottom trawl indices may not accurately reflect trends in abundance.

Catch rates for species encountered infrequently (10 year average CPHA < 0.2) are presented in Table 4.2.2. YOY bluegill and largemouth bass were caught in 2010. In addition, a 140 cm (total length) lake sturgeon was caught, tagged with floy and PIT (Passive Integrated Transponder) tags and released. Two (2) silver lampreys and an adult longnose sucker were also caught in 2010.

Conditions in the west basin during 2010 were favourable for the growth of young-of-the-year percids. In 2010, the average total length of YOY yellow perch was above average at 73 mm (Figure 4.2.4). YOY yellow perch mean weight in 2010 was 3.8 g (STD = 0.8). The average total length of YOY walleye in 2010 (147 mm) was also above the time series average (Figure 4.2.5). The mean weight of YOY walleye in August, 2010 was 24.2 g (STD = 6.5).

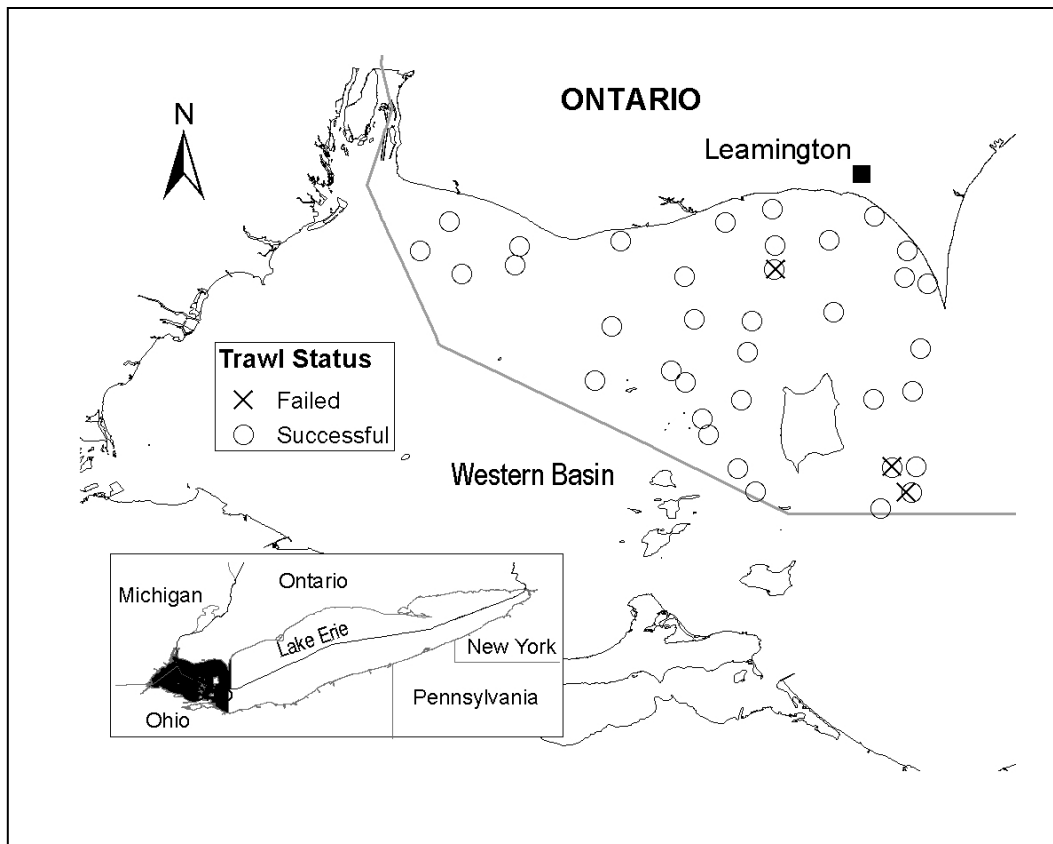


Figure 4.2.1 Ontario bottom trawl index locations fished in the western basin of Lake Erie during August, 2010. Thirty-six (36) stations were completed successfully.

Table 4.2.1 Mean catch per hectare (CPHA) of abundant species as young-of-the-year, yearling-and-older and all ages, collected during interagency trawling in western Lake Erie 1988-2010 by the OMNR Lake Erie Management Unit. The average CPHA for each age group includes 2001-2010. Species with mean CPHA less than 0.2 were excluded.

Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average (10 Yrs.)
<i>young-of-the-year</i>																								
White perch	4,988.7	6,046.9	7,724.9	3,878.4	1,183.6	1,062.2	1,054.4	293.5	1,009.5	118.4	124.4	235.4	898.2	1,489.9	358.0	1,312.8	4,657.0	1,762.1	3,254.0	4,265.0	1,947.0	2,058.9	1,267.3	2,237.2
Yellow perch	202.1	513.7	470.9	72.4	173.9	499.3	554.8	741.4	1,914.9	71.6	188.1	468.2	46.5	655.9	14.5	2,220.6	57.7	117.6	361.0	331.7	663.0	62.1	156.8	464.1
Gizzard shad	956.4	1,197.1	1,096.8	53.7	260.4	826.4	103.9	81.1	2,403.9	18.3	413.3	210.9	1,646.5	2,224.3	47.2	436.0	23.4	152.7	174.1	340.0	2.6	657.7	46.6	410.5
White bass	21.4	62.3	63.6	9.4	14.9	123.0	36.9	51.1	125.3	327.2	23.9	151.8	137.8	167.9	81.2	587.8	58.7	50.7	159.4	29.2	54.6	138.5	97.6	142.6
Freshwater drum	71.9	5.3	2.3	84.3	0.5	3.1	0.7	0.2	6.8	1.3	2.9	9.8	23.0	16.7	107.7	117.4	33.8	20.1	1.4	7.0	-	0.3	5.7	31.0
Walleye	14.1	1.4	35.1	49.4	0.2	8.4	19.5	0.9	35.0	6.3	5.1	41.8	0.3	16.1	0.1	117.4	5.5	5.3	0.8	10.4	0.7	5.2	6.0	16.7
Smallmouth bass	-	0.1	2.1	-	-	0.8	1.6	6.6	4.6	1.9	1.2	1.0	0.4	1.4	8.8	0.1	-	1.7	6.1	0.9	1.7	0.5	2.4	2.3
Rock bass	-	-	0.1	0.5	-	0.3	0.3	0.2	0.3	-	-	0.6	0.9	1.1	0.7	-	0.1	0.3	0.3	-	0.3	0.3	0.9	0.4
<i>yearling-and-older</i>																								
Yellow perch	169.4	7.8	52.0	89.3	70.7	99.3	68.3	137.5	374.7	74.1	98.7	187.8	328.9	131.3	120.1	470.2	402.9	294.9	83.5	84.2	536.2	409.4	152.7	288.6
White perch	113.1	21.4	12.2	138.8	394.4	93.7	1.9	35.2	27.3	2.7	3.8	107.0	55.9	41.3	27.3	1,142.3	193.3	70.2	126.3	24.3	268.6	95.1	96.7	208.5
Freshwater drum	140.4	5.0	22.3	36.6	20.2	37.5	9.5	17.2	39.7	14.4	24.4	33.3	61.4	51.4	98.8	67.5	90.9	91.3	58.0	29.5	36.6	35.1	37.7	59.7
Walleye	15.2	2.9	3.5	6.7	24.3	3.3	3.1	11.4	2.2	4.0	6.2	5.2	20.9	2.3	4.0	3.1	72.4	12.7	4.0	1.7	4.1	3.7	2.1	11.0
White bass	7.7	5.7	2.1	4.6	1.8	13.2	0.1	1.9	-	0.9	0.6	0.7	10.8	0.2	2.4	5.0	3.7	0.4	2.3	0.7	0.8	0.8	0.6	1.7
White sucker	0.3	-	0.5	0.5	0.9	0.3	0.1	1.5	0.3	0.3	-	1.3	0.4	1.0	2.0	0.7	1.7	2.3	0.7	1.6	0.5	1.7	0.5	1.3
Channel catfish	6.5	-	1.8	1.8	0.7	0.8	0.1	0.4	1.2	-	0.1	1.1	0.4	0.4	0.7	0.9	0.7	1.5	2.3	0.4	0.8	1.1	2.2	1.1
Carp	4.1	-	2.9	2.8	1.3	0.6	0.7	1.8	0.7	0.5	0.5	0.8	0.8	0.4	1.0	0.3	1.8	1.2	0.8	0.5	0.7	0.2	0.9	0.8
Brown bullhead	2.7	-	1.2	0.5	0.2	-	-	-	-	0.1	-	0.8	0.3	2.5	-	-	-	-	0.2	2.7	1.0	0.2	0.6	0.7
Rock bass	1.7	-	1.0	1.2	0.6	1.2	2.5	1.3	2.2	0.4	0.1	0.3	0.7	2.0	0.6	0.3	0.2	0.3	-	0.6	0.2	1.0	-	0.5
Quillback	-	-	0.5	0.6	-	0.1	-	0.5	0.4	0.2	-	0.2	0.2	0.2	0.9	0.1	2.0	0.1	-	-	0.1	-	0.4	0.4
Shorthead redbreast	-	-	-	0.1	-	-	0.1	-	-	-	-	-	-	-	-	0.5	1.3	0.1	-	-	0.7	0.4	0.1	0.3
Gizzard shad	1.7	-	3.0	46.5	0.1	0.2	0.1	1.1	0.4	25.2	0.1	3.8	0.4	0.7	0.7	-	-	0.1	0.2	0.1	-	-	0.2	0.2
Smallmouth bass	0.2	0.2	0.9	-	3.6	1.1	0.7	1.1	0.3	0.2	0.4	1.4	0.5	0.6	-	0.3	0.2	-	0.2	0.1	0.3	-	-	0.2
<i>all ages</i>																								
Trout-perch	213.3	142.6	347.7	479.3	71.1	267.8	182.9	63.9	336.0	61.5	67.1	128.7	321.6	187.4	196.8	40.8	670.4	311.9	281.9	92.4	34.9	379.0	273.3	246.9
Emerald shiner	2.6	3.3	143.3	12.0	60.4	30.9	21.0	108.2	129.2	61.3	6.1	39.3	34.8	52.6	98.5	633.8	88.4	118.9	65.8	285.8	141.0	208.0	91.2	178.4
Round goby	-	-	-	-	-	-	-	-	-	2.7	83.8	92.1	111.1	84.2	117.1	59.6	207.5	59.8	170.6	71.4	172.0	166.6	16.3	112.5
Alewife	877.9	254.0	313.7	51.3	3,188.8	2,112.9	30.4	73.2	742.4	66.4	33.8	107.0	536.7	520.6	218.4	-	-	-	0.3	0.5	-	-	0.1	74.0
Rainbow smelt	1.4	3.1	10.9	0.2	64.3	18.7	0.1	2.8	1.6	2.0	6.5	-	39.7	0.2	6.4	29.2	82.1	2.0	52.6	45.9	84.8	55.4	0.4	35.9
Spottail shiner	46.9	21.6	31.7	49.5	40.6	29.3	28.3	331.5	40.4	81.2	87.9	75.3	23.1	66.5	13.1	15.9	16.9	94.5	17.5	31.7	5.5	8.8	29.0	29.9
Cyprinidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	15.7	14.2	-	19.2	0.4	5.0
Silver chub	2.8	0.1	1.5	7.1	21.8	9.5	4.7	1.5	5.3	10.6	9.4	17.4	4.4	6.2	5.2	4.1	8.7	6.1	0.9	1.7	0.2	1.6	1.4	3.6
Logperch	2.7	1.7	1.8	8.5	0.2	0.3	20.1	1.3	8.2	2.0	3.4	0.2	0.1	-	-	0.6	3.9	2.2	2.1	0.6	2.3	10.9	1.1	2.4
Mimic shiner	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	21.3	-	0.8	0.6	2.3
Total	7,865	8,296	10,350	5,086	5,599	5,244	2,147	1,969	7,218	956	1,192	1,923	4,307	5,725	1,532	7,267	6,885	3,181	4,843	5,696	3,961	4,323	2,292	4,550
# of trawls	37	45	39	42	36	27	38	34	32	32	32	30	32	36	34	35	36	36	36	36	36	35	36	36

* Unweighted, arithmetic mean catch per hectare

** Note: 2007 data were corrected to include cyprinids identified as mimic shiners by the ROM

Table 4.2.2

Mean catch per hectare (CPHA) of species caught infrequently expressed as young-of-the-year, yearling-and-older and all ages, collected during interagency trawling in western Lake Erie 1988-2010 by the OMNR Lake Erie Management Unit. The average CPHA for each age group includes 2000-2010. Species with mean CPHA greater than 0.2 were excluded.

Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average (10 Yrs.)
<i>young-of-the-year</i>																								
Morone sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.0
Bluegill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
Largemouth bass	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1
White crappie	0.5	0.1	-	8.8	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1	-	-	-	-	0.0
Pumpkinseed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	0.0
Channel catfish	-	-	-	0.3	-	-	-	0.3	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.0
Black crappie	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.0
Quillback	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
White sucker	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>yearling-and-older</i>																								
Golden redhorse	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	0.4	-	0.1
Lake sturgeon	-	-	-	-	-	-	0.2	-	-	0.1	-	-	-	-	-	0.1	-	-	-	0.1	-	-	-	0.1
Silver redhorse	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1	-	-	-	0.1	-	-	0.0
Silver lamprey	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	0.1	-	-	-	-	-	0.2
Black crappie	0.1	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	0.0
Muskellunge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.0
Yellow bullhead	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	0.0
Carp-goldfish hybrid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
Longnose sucker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.0
Lake whitefish	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-
Northern pike	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Burbot	0.2	-	-	-	0.6	9.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Largemouth bass	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
White crappie	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>all ages</i>																								
Brook silverside	-	-	-	-	-	0.8	-	0.1	-	-	-	-	-	-	-	-	-	0.1	-	0.8	-	-	-	0.1
Goldfish	0.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1	-	0.0
Common shiner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	0.0
Notropis sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	0.0
Spotfin shiner	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blacknose dace	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nocomis sp.	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Johnny darter	-	-	-	-	-	-	2.1	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	2.5	0.2	0.2	15.5	0.6	10.5	2.4	0.5	1.4	0.2	0.0	0.0	0.1	0.3	0.1	0.3	0.2	0.2	0.6	1.4	0.1	0.6	0.7	0.5
# of trawls	37	45	39	42	36	27	38	34	32	32	32	30	32	36	34	35	36	36	36	36	36	35	36	35.6

* Unweighted, arithmetic mean catch per hectare

** In 2007 some unidentified cyprinids were likely mimic shiners

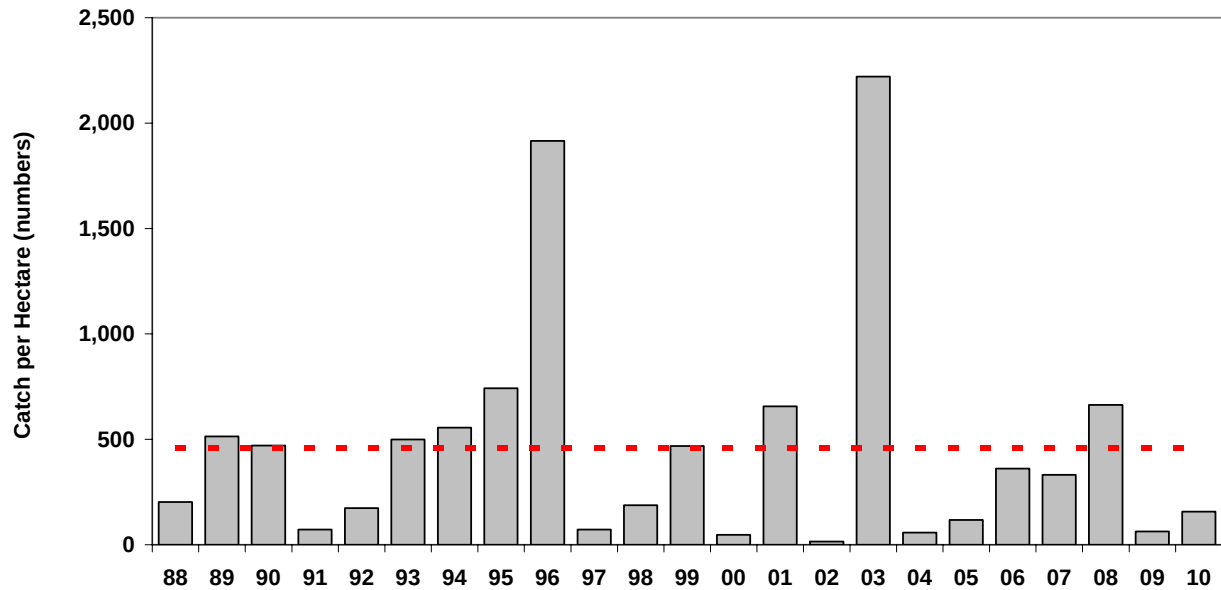


Figure 4.2.2 Number of young-of-the-year yellow perch caught per hectare during interagency trawling (1988-2010) in western Lake Erie. Horizontal line indicates 1988-2010 average catch per hectare.

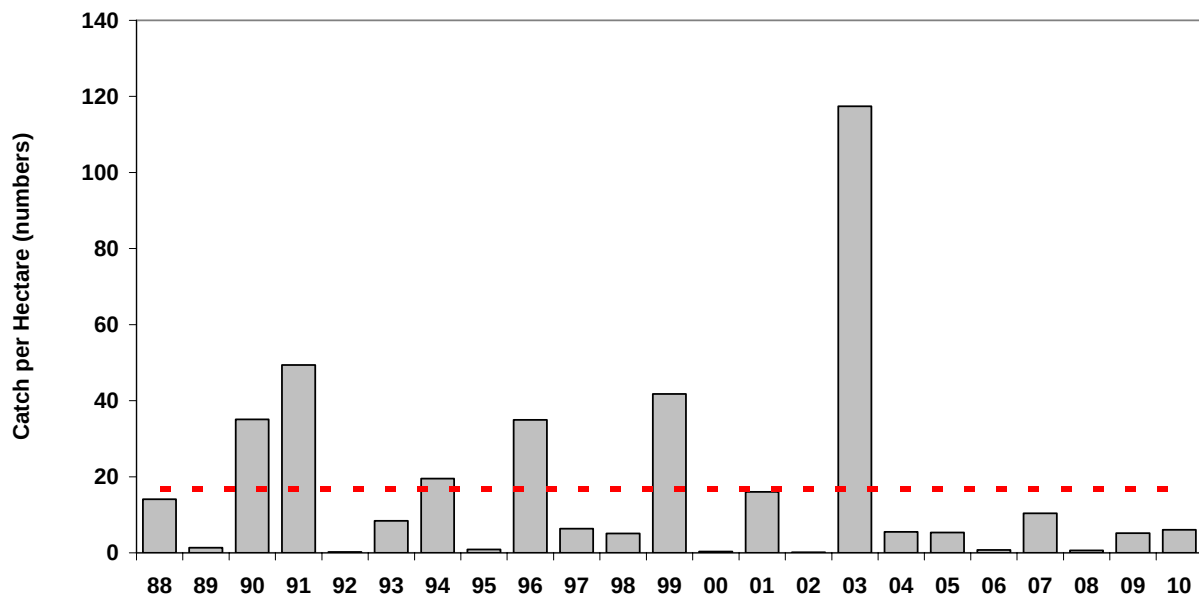


Figure 4.2.3 Number of young-of-the-year walleye caught per hectare during interagency trawling (1988-2010) in western Lake Erie. Horizontal line indicates 1988-2010 average catch per hectare.

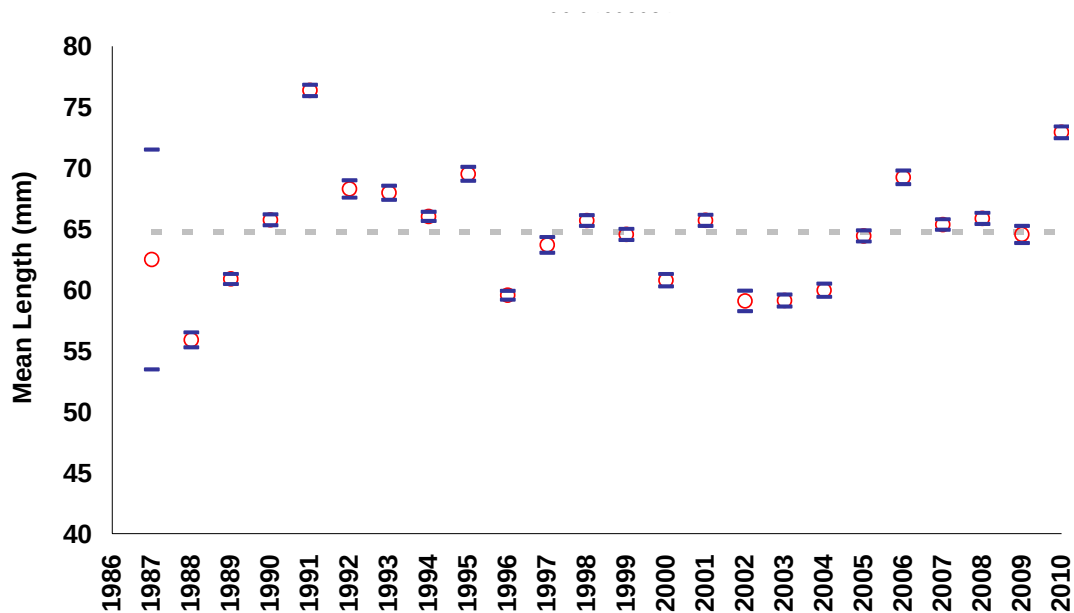


Figure 4.2.4 Mean total length of young-of-the-year (YOY) yellow perch with 95% confidence limits. Interagency trawling, Ontario waters of western Lake Erie, 1987-2010. Horizontal broken line indicates the average of the time series.

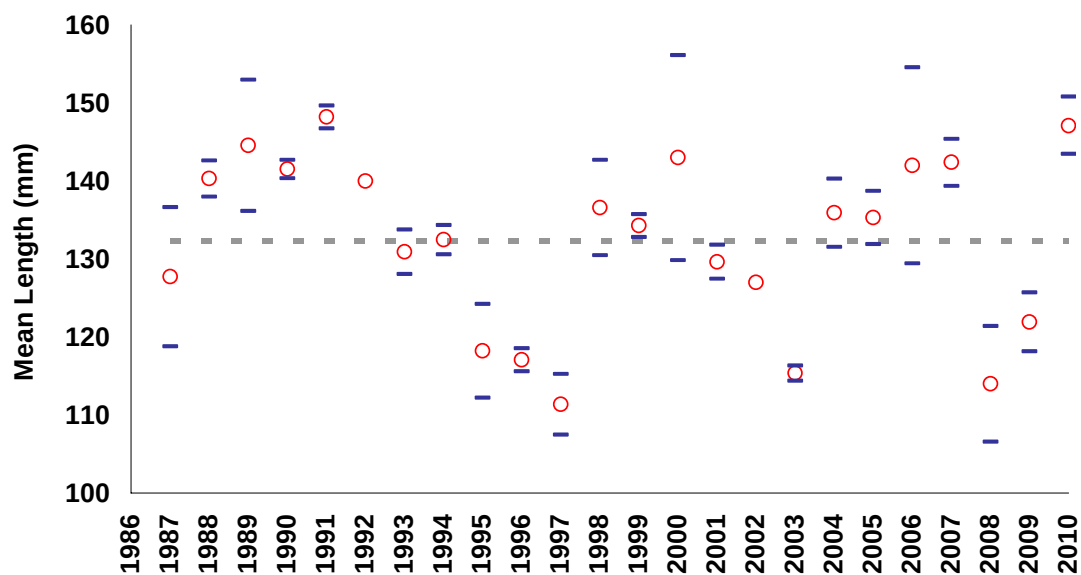


Figure 4.2.5 Mean total length of young-of-the-year (YOY) walleye with 95% confidence limits. Interagency trawling, Ontario waters of western Lake Erie, 1987-2010. Horizontal broken line indicates the average of the time series. Two (2) YOY were caught in 1992 and one (1) in 2002.

4.3 Long Point Bay Index Trawl Survey

Current assessment of juvenile fish in Long Point Bay consists of three independent bottom trawl surveys conducted concurrently during early fall each year in three areas (Figure 4.3.1). Trawling with a 6.1m modified Biloxi bottom trawl, targeting yellow perch has been conducted at up to four fixed locations annually since 1980 in Inner Long Point Bay (Inner Bay Trawl Assessment) and the inshore waters of Outer Long Point Bay (Nearshore Outer Bay Trawl Assessment). A third trawl survey was initiated in 1984 to estimate recruitment of rainbow smelt. In this survey, a 10m Biloxi bottom trawl was fished at four fixed stations in the offshore waters of Outer Long Point Bay (Offshore Outer Bay Trawl Assessment).

Trawling was conducted weekly during September and October. Two 10 minute tows were made at each station per week. Total annual trawling effort was approximately 640, 480 and 400 minutes in the Inner Bay, Nearshore Outer Bay, and Offshore Outer Bay trawl assessments, respectively. Trawling at the offshore Outer Bay stations has been conducted only during October since 1996. Index trawling during 2005 was discontinued after October 3rd at Inner Bay and nearshore Outer Bay stations due to budget constraints.

Trawl catches were sorted by species and age group. Species catch was classified as young-of-the-year (YOY) and yearling-and-older (YAO) based on a fork length criterion derived from examinations of size frequency distributions and age determination of representative juveniles from selected length classes. Random samples of YOY and YAO for selected species were measured for lengths and weight. Sex, maturity and age (from scale interpretations) were also recorded for YAO fish.

Relative abundance indices were expressed as arithmetic mean catch (number) per hectare (NPHa). Arithmetic means were calculated from the summed catch and effort of tows 1 and 2 at each location.

A new index of age 0 yellow perch abundance was introduced in 2010 that combines the annual recruitment estimates from each of three Long Point Bay trawl assessments into a single composite index series. Referred to as the yellow perch or Long Point Bay composite index (LPBc), this new method of reporting age 0 perch abundance was created to provide a geographically robust estimate of the overall abundance of YOY perch in Long Point Bay because juvenile perch distribution changed beginning about 2003 from predominately nearshore to predominately offshore habitats. The composite index combines the annual mean abundance (NPHa) estimates from each of the three trawl assessments and assigns a 3.6 times greater weight to the Offshore Outer Bay trawl mean estimate based on the proportion of the total surface area of Long Point Bay (including Inner Bay) represented by bottom depths greater than 5 m (78.3%) and less than or equal to 5 m (21.7%) according to the following equation:

$$LPBc_i = (OOB_i \times 0.783) + \frac{(IB_i \times 0.217)}{2} + \frac{(NOB_i \times 0.217)}{2},$$

where LPBc_i is the age 0 yellow perch composite index in year i, and OOB_i, IB_i and NOB_i are the age 0 perch mean NPHa estimates for each of the three Long Point Bay trawl assessments in year i; Offshore Outer Bay (OOB), Inner Bay (IB), and Nearshore Outer Bay (NOB).

Smelt

Although recruitment of age 0 rainbow smelt increased from 2009 (NPHa=148.2), the 2010 year class was moderate at best, ranking at about the 46th percentile among all years surveyed since 1984 (Table 4.3.3). Relative abundance of YOY smelt in the offshore waters of Long Point Bay in 2010 (NPHa=326.9) was less than one-third of the long term average (1984-2009 avg. NPHa=1041). YAO smelt abundance decreased in 2010 (NPHa=223) from comparatively high densities observed during 2009 (NPHa=1654). Age 2 smelt from the moderately strong 2008 year class accounted for 50% of the October 2010 YAO smelt catch in number; yearlings from the moderately weak 2009 year class comprised 48% of the YAO smelt catch (Table 4.3.5).

Age 0 smelt mean length and weight increased in 2010 and both size measures remained above their respective long term averages (Figure 4.3.2). Age 1 smelt size increased from record small length and weight in 2009; however both of these size measures remained below average (Figure 4.3.2).

Yellow Perch

Fall index trawl assessments during 2010 once again showed that YOY yellow perch were more abundant in offshore waters than in traditional near shore habitats of Long Point Bay (Tables 4.3.1 to 4.3.3). Age 0 perch densities were 15 to 7 times lower in the Inner Bay and the Nearshore Outer Bay trawl assessment areas, respectively than in the Offshore Outer Bay survey area, confirming a pattern that has predominated since about 2003. The two nearshore trawl assessments rank the 2010 year class as being relatively poor, whereas age 0 perch recruitment ranks as the 5th highest during the 27 year history of the offshore trawl assessment. The Long Point Bay composite index indicates the 2010 year class was moderate (NpHa=51.2) compared to the long term average (1984-2009 avg. NpHa=56.1). According to the composite index, the period since 2002 has featured three of the weakest (2002, 2004, 2009) and three of the strongest (2003, 2005, 2008) perch year classes observed since 1984 (Figure 4.3.3).

Mean size of age 0 yellow perch has fluctuated in an overall increasing trend through the time series (Figure 4.3.4). Maximum mean YOY perch size was observed in 2005. Age 0 perch have remained larger than average during the past six years, although it should be noted that sample size in 2009 was fewer than 10 fish (Figure 4.3.4).

Although few in number, three year old (2007 year class) fish were the dominant age class represented in the 2010 YAO perch catch from the two Long Point Bay nearshore trawl assessments (Table 4.3.4).

Smallmouth bass

Age 0 smallmouth bass abundance decreased in 2010 (NpHa=7.9), falling below the long term average density of 10.8 bass/ha (Table 4.3.1). Mean total length of age 0 smallmouth bass has fluctuated between 60 and 90 mm during the 31 year time series of the Inner Bay trawl assessment (Figure 4.3.5). Age 0 bass mean length and weight increased in 2010; in general, YOY bass have been above average size during most of the years surveyed in the past decade.

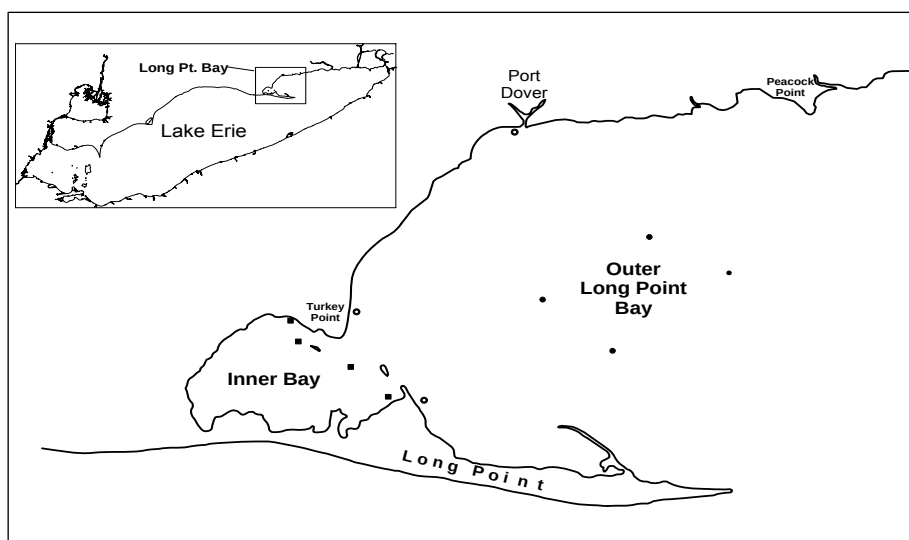


Figure 4.3.1 Location of trawl stations where bottom trawling was conducted in Inner Bay (■), and the nearshore (○) and offshore (●) waters of Outer Long Point Bay, Lake Erie.

Table 4.3.1 Relative abundance (mean number per hectare) of selected young-of-the-year fish species caught in Inner Long Point Bay, Lake Erie, 1980-2010. Pooled data are from bottom trawling (6.1m trawl) during September and October.

Year	Effort (min.)	Yellow Perch	Rock Bass	Smallmouth Bass	Largemouth Bass	Spottail Shiner	Banded Killifish	Johnny Darter	Sunfish (Lepomis spp.)	Round ^b Goby
1980	180	125.7	6.5	2.9	2.2	265.4	0.0	1.0	2.2	0.0
1981	400	486.6	1.8	0.1	0.0	3.7	0.0	1.0	5.0	0.0
1982	640	741.9	8.4	7.7	2.4	79.7	0.2	0.8	0.1	0.0
1983 ^a	220	125.9	7.0	7.5	5.3	0.2	1.0	1.2	11.8	0.0
1984	640	1031.3	36.7	1.9	5.2	99.9	1.2	5.6	84.8	0.0
1985	640	21.8	29.0	9.3	3.1	682.9	0.5	0.7	3.0	0.0
1986	720	1169.5	7.3	3.0	3.7	626.2	0.1	0.0	1.2	0.0
1987	640	2.5	4.3	3.1	4.6	134.6	0.0	0.1	4.7	0.0
1988	640	238.0	3.1	3.6	3.1	465.6	0.1	0.2	6.3	0.0
1989	640	317.4	9.9	3.6	4.4	554.7	14.9	26.2	75.0	0.0
1990	640	160.3	3.8	3.1	5.2	270.0	8.1	23.0	101.5	0.0
1991	720	93.7	3.8	8.2	4.8	255.0	7.9	33.1	6.3	0.0
1992	720	378.3	2.4	10.9	0.9	47.2	0.6	8.1	0.1	0.0
1993	640	159.5	14.6	16.7	2.0	72.1	3.8	9.3	117.9	0.0
1994	640	59.2	5.4	26.0	26.6	39.8	7.7	51.6	10.6	0.0
1995	640	3.5	57.0	12.3	49.5	98.6	33.9	52.2	48.8	0.0
1996	720	37.5	145.1	13.7	36.0	49.6	30.6	22.0	104.3	0.0
1997	720	18.1	16.7	41.5	11.0	66.5	11.2	34.9	2.8	0.0
1998	720	854.2	13.3	9.6	8.0	152.1	152.1	25.2	13.2	0.0
1999	720	23.2	11.8	64.5	66.2	64.8	31.4	13.2	4.6	0.4
2000	640	1.9	28.8	5.2	3.5	2.3	8.2	5.1	2.4	17.4
2001	640	479.3	3.3	13.9	2.2	10.7	8.4	8.0	4.4	122.6
2002	640	6.5	9.1	8.9	16.4	0.0	47.1	6.2	18.5	46.6
2003	640	117.0	2.3	6.5	2.2	0.3	2.2	7.4	3.6	20.4
2004	720	0.1	0.4	8.1	0.6	1.9	0.2	13.8	0.2	65.2
2005 ^c	480	8.8	9.7	9.0	7.0	1.0	3.7	0.2	10.3	21.0
2006	640	0.6	0.3	3.1	2.4	0.1	0.2	9.9	0.2	21.4
2007	720	45.5	0.2	4.6	0.9	0.3	0.1	4.0	0.0	185.1
2008	640	0.2	0.9	5.3	0.7	0.0	0.4	1.0	0.4	137.9
2009	560	0.0	1.0	10.9	0.4	0.0	0.3	2.2	0.0	164.0
2010	560	4.1	0.0	7.9	4.2	0.0	0.7	2.4	0.2	100.5
Avg. for 1980-2009		223.6	14.8	10.8	9.4	134.8	12.5	12.3	21.5	26.7

^a Index trawling during 1983 discontinued after September 30th.

^b Abundance indices of round goby include all ages.

^c Index trawling during 2005 discontinued after October 3rd.

Table 4.3.2 Relative abundance (mean number per hectare) of selected young-of-the-year fish species caught in the nearshore waters of Outer Long Point Bay, Lake Erie, 1980-2010. Pooled data are from bottom trawling (6.1m trawl) in September and October.

Year	Effort (min.)	Yellow Perch	White Perch	White Bass	Alewife	Gizzard Shad	Emerald Shiner	Spottail Shiner	Round ^b Goby
1980	285	27.5	0.0	12.1	2.9	12.0	19.2	74.1	0.0
1981	300	75.4	0.0	0.8	0.0	17.8	0.0	2.0	0.0
1982	300	46.9	0.0	1.9	145.1	2.6	0.7	68.8	0.0
1983 ^a	0								
1984	480	237.8	129.5	103.8	3.4	29.5	25.3	110.1	0.0
1985	500	3.1	1.9	50.8	21.4	16.6	59.3	512.3	0.0
1986	540	105.9	60.3	22.3	8.4	103.3	292.7	195.3	0.0
1987	480	2.3	1.2	0.3	250.9	6.8	14.0	127.5	0.0
1988	480	410.6	60.7	0.0	1.5	19.3	138.9	542.4	0.0
1989	420	174.0	5.1	7.8	29.4	8.6	820.7	608.9	0.0
1990	480	31.4	58.6	5.9	0.9	8.5	226.0	1581.2	0.0
1991	539	9.0	2.3	1.3	21.3	0.4	35.6	336.4	0.0
1992	520	34.1	5.1	0.0	576.9	0.3	23.3	167.6	0.0
1993	360	21.1	8.3	0.3	2.3	2.9	9.1	952.4	0.0
1994	420	98.8	37.8	0.0	4.4	21.3	12.2	458.2	0.0
1995	480	5.0	1.5	0.2	1.6	3.2	386.1	249.9	0.0
1996	540	130.0	20.2	0.4	0.5	46.2	381.7	1071.1	0.0
1997	540	12.6	7.1	0.1	1.6	5.3	10.6	1044.3	0.0
1998	540	84.1	0.5	0.0	0.0	2.9	108.5	528.0	0.0
1999	540	1.7	0.3	0.2	0.2	5.2	1.4	576.8	0.6
2000	480	8.7	5.9	0.1	17.4	5.8	20.7	1118.2	24.4
2001	480	55.9	3.9	1.9	0.3	6.3	28.6	50.4	129.9
2002	480	0.3	0.0	0.0	13.0	1.5	20.0	12.6	97.2
2003	480	48.8	8.6	0.2	8.9	3.1	160.3	40.0	61.6
2004	540	0.3	0.1	0.0	3.2	3.6	405.2	43.2	69.1
2005 ^c	360	10.3	0.4	0.7	11.0	1.9	1.1	58.7	28.0
2006	480	2.0	0.8	0.2	459.4	19.0	64.8	12.5	20.8
2007	540	4.0	0.4	0.1	25.5	12.3	76.9	12.3	59.8
2008	480	3.1	1.3	0.3	11.4	2.6	1.6	23.9	44.2
2009	420	0.9	0.0	0.1	1.1	1.1	1.3	2.8	52.1
2010	420	9.4	0.0	0.2	0.2	2.7	0.0	2.2	48.5
Avg. for 1980-2009		56.8	14.5	7.3	56.0	12.8	115.4	364.9	20.3

^a Index trawling discontinued during 1983.

^b Abundance indices of round goby include all ages.

^c Index trawling during 2005 discontinued after October 3rd.

Table 4.3.3 Relative abundance (mean number per hectare) of selected young-of-the-year fish species caught in the offshore waters of Outer Long Point Bay, Lake Erie, 1984-2010. Data are from bottom trawling (10m trawl) during October.

Year	Effort (min.)	Smelt	White Perch	White Bass	Yellow Perch	Alewife	Gizzard Shad	Emerald Shiner	Round ^a Goby
1984	320	2206.3	13.7	166.2	7.3	22.4	14.6	0.1	0.0
1985	394	84.0	12.9	8.1	1.2	0.5	0.4	0.8	0.0
1986	300	3510.5	0.3	16.9	0.0	10.8	74.4	3.1	0.0
1987	360	316.8	0.9	0.2	0.0	24.2	1.0	56.4	0.0
1988	400	761.4	4.1	0.2	0.5	25.4	1.4	51.3	0.0
1989	320	1418.3	1.6	6.7	0.5	45.3	0.2	11.3	0.0
1990	320	1454.4	1.1	9.3	0.0	38.2	0.7	9.2	0.0
1991	320	67.1	16.6	4.1	0.8	99.3	2.6	14.9	0.0
1992	320	1646.2	0.0	0.0	0.0	6.0	0.0	6.8	0.0
1993	320	233.6	0.4	5.1	3.2	12.6	1.3	11.1	0.0
1994	320	391.2	0.8	0.0	3.2	8.5	0.2	69.1	0.0
1995	320	93.0	1.1	0.3	4.9	0.8	0.0	11.4	0.0
1996	240	353.2	0.3	0.3	7.9	0.0	0.3	390.7	0.0
1997	400	154.4	0.0	0.0	0.0	0.1	0.0	0.1	0.0
1998	400	422.5	0.5	0.1	8.1	1.4	4.9	19.6	0.0
1999	310	40.3	1.0	40.0	14.4	2174.5	65.2	15.1	0.2
2000	400	259.9	0.0	2.0	3.0	25.6	0.3	3.3	50.8
2001	400	2633.3	6.1	19.4	13.8	81.1	16.0	12.7	69.0
2002	400	142.5	0.0	0.0	0.0	35.3	3.2	9.5	127.0
2003	400	7058.1	16.2	2.0	240.6	0.5	68.6	3388.0	158.8
2004	400	132.2	0.0	0.0	0.1	0.3	0.2	20.3	323.8
2005	400	0.9	0.1	1.1	156.2	0.1	1.7	645.7	66.9
2006	400	1256.0	0.9	0.3	38.0	78.6	1.4	452.3	93.3
2007	400	991.3	0.1	0.2	70.0	1.0	34.6	29.3	973.2
2008	400	1293.0	5.4	1.3	356.0	2.3	86.5	16.0	452.6
2009	400	148.2	0.6	0.2	0.3	0.1	0.4	54.8	43.6
2010	400	326.9	1.6	0.4	63.5	0.9	13.3	117.6	9.7
Avg. for 1984-2009		1041.1	3.3	10.9	35.8	103.7	14.6	203.9	90.7

^a Abundance indices of round goby include all ages.

Table 4.3.4 Relative abundance (mean number per hectare) of yellow perch at ages 0 to 3 caught with a 6.1m bottom trawl in Long Point Bay, Lake Erie, during September - October, 1980-2010.

	Year	Effort (minutes)	AGE			
			0	1	2	3
Inner Bay	1980	180	125.7	144.9	104.3	100.5
	1981	400	486.6	59.2	50.2	14.1
	1982	640	741.9	125.6	27.9	33.1
	1983 ^a	220	125.9			
	1984	640	1031.3	65.1	60.4	46.4
	1985	640	21.8	122.5	52.8	35.7
	1986	720	1169.5	36.4	172.7	28.2
	1987	640	2.5	26.5	1.9	13.2
	1988	640	238.0	3.1	47.1	1.9
	1989	640	317.4	59.1	19.1	74.1
	1990	640	160.3	27.9	48.6	4.4
	1991	720	93.7	22.7	14.5	8.0
	1992	720	378.3	21.5	4.3	1.0
	1993	640	159.5	13.6	9.4	1.7
	1994	640	59.2	20.3	7.6	8.7
	1995	640	3.5	41.2	19.5	3.8
	1996	720	37.5	4.2	16.9	6.4
	1997	720	18.1	6.3	3.1	7.8
	1998	720	854.2	14.3	10.3	1.5
	1999	720	23.2	105.5	17.4	7.6
	2000	640	1.9	3.0	69.3	4.1
	2001	640	479.3	5.0	11.8	31.7
	2002	640	6.5	36.7	6.7	7.9
	2003	640	117.0	0.9	5.0	0.4
	2004	720	0.1	15.5	2.0	1.8
	2005 ^b	480	8.8	0.2	10.9	0.6
	2006	640	0.6	3.9	1.0	3.9
	2007	720	45.5	1.8	4.4	1.3
	2008	640	0.2	3.0	0.1	0.0
	2009	560	0.0	0.0	0.0	0.0
	2010	560	4.1	0.5	1.1	2.6
	Avg. for 1980-2009		223.6	34.1	27.6	15.5
Outer Bay	1980	285	27.5	50.0	17.4	15.8
	1981	300	75.4	4.0	4.2	1.1
	1982	300	46.9	16.1	4.9	4.2
	1983	0				
	1984	480	237.8	6.6	2.4	1.8
	1985	500	3.1	61.5	10.9	7.1
	1986	540	105.9	0.7	31.9	4.2
	1987	480	2.3	178.0	9.8	55.9
	1988	480	410.6	0.6	31.0	6.5
	1989	420	174.0	32.6	15.6	50.4
	1990	480	31.4	10.0	19.4	2.9
	1991	539	9.0	0.9	0.7	0.5
	1992	520	34.1	6.9	0.8	0.6
	1993	360	21.1	3.3	2.2	0.1
	1994	420	98.8	10.9	8.0	1.5
	1995	480	5.0	24.0	9.5	2.4
	1996	540	130.0	2.2	4.8	1.1
	1997	540	12.6	34.1	1.8	2.1
	1998	540	84.1	1.2	0.7	0.4
	1999	540	1.7	41.3	1.2	0.5
	2000	480	8.7	2.8	11.5	0.2
	2001	480	55.9	1.2	1.9	3.7
	2002	480	0.3	10.8	1.3	4.4
	2003	480	48.8	0.4	4.1	0.1
	2004	540	0.3	3.5	0.5	1.0
	2005 ^b	360	10.3	0.1	6.9	0.3
	2006	480	2.0	1.0	0.1	0.7
	2007	540	4.0	0.5	0.3	0.0
	2008	480	3.1	4.1	0.7	0.3
	2009	420	0.9	2.4	3.4	0.0
	2010	420	9.4	0.4	0.1	1.1
	Avg. for 1980-2009		56.8	17.6	7.2	5.9

^a Index trawling during 1983 discontinued after September 30th.

^b Index trawling during 2005 discontinued after October 3rd.

Table 4.3.5 Relative abundance (mean number per hectare) of rainbow smelt at ages 0 to 3 caught with a 10m bottom trawl in the offshore waters of Outer Long Point Bay, Lake Erie, during October 1984-2010.

Year	Effort (minutes)	AGE		
		0	1	2
1984	320	2206.3	15.1	8.1
1985	394	84.0	397.8	11.8
1986	300	3510.5	31.3	387.2
1987	360	316.8	3860.7	206.3
1988	400	761.4	26.5	80.5
1989	320	1418.3	767.2	2.8
1990	320	1454.4	308.1	138.4
1991	320	67.1	787.0	0.0
1992	320	1646.2	29.8	70.3
1993	320	233.6	1723.0	95.8
1994	320	391.2	4.4	1.3
1995	320	93.0	334.8	52.2
1996	240	353.2	16.4	1.6
1997	400	154.4	168.4	14.1
1998	400	422.5	9.9	13.7
1999	310	40.3	137.1	33.6
2000	400	259.9	21.7	7.0
2001	400	2633.3	663.0	29.0
2002	400	142.5	3.5	1.9
2003	400	7058.1	165.7	32.5
2004	400	132.2	495.8	61.5
2005	400	0.9	3.7	2.9
2006	400	1256.0	28.9	40.8
2007	400	991.3	214.0	9.1
2008	400	1293.0	48.7	25.6
2009	400	148.2	1551.6	91.5
2010	400	326.9	106.0	112.0
Avg. for 1984-2009		1041.1	454.4	54.6

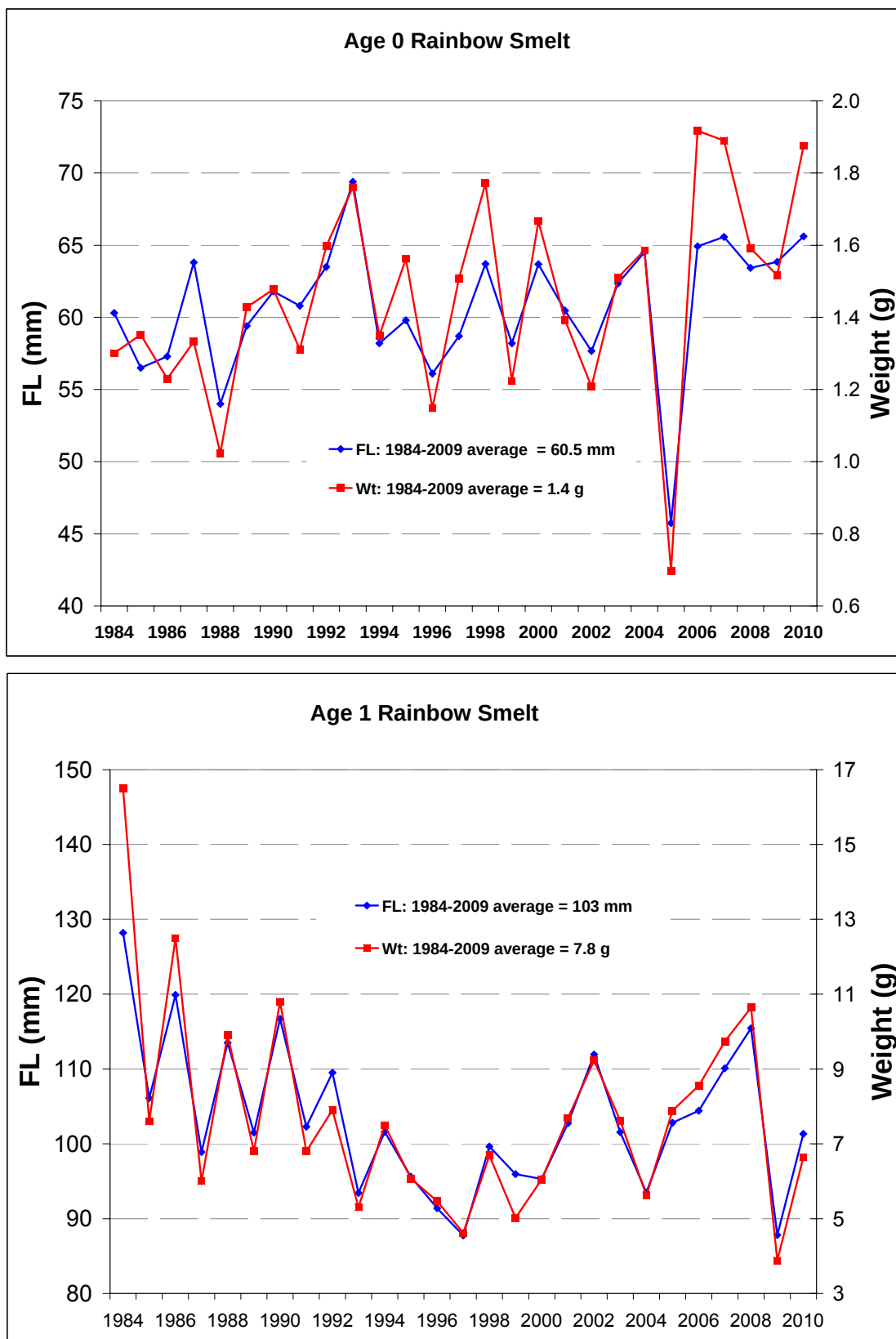


Figure 4.3.2 Mean fork length (mm) and weight (g) of Age 0 (top graph) and Age 1 (bottom graph) rainbow smelt from 10m index trawl catches in the offshore waters of outer Long Point Bay, Lake Erie, 1984-2010 (October data).

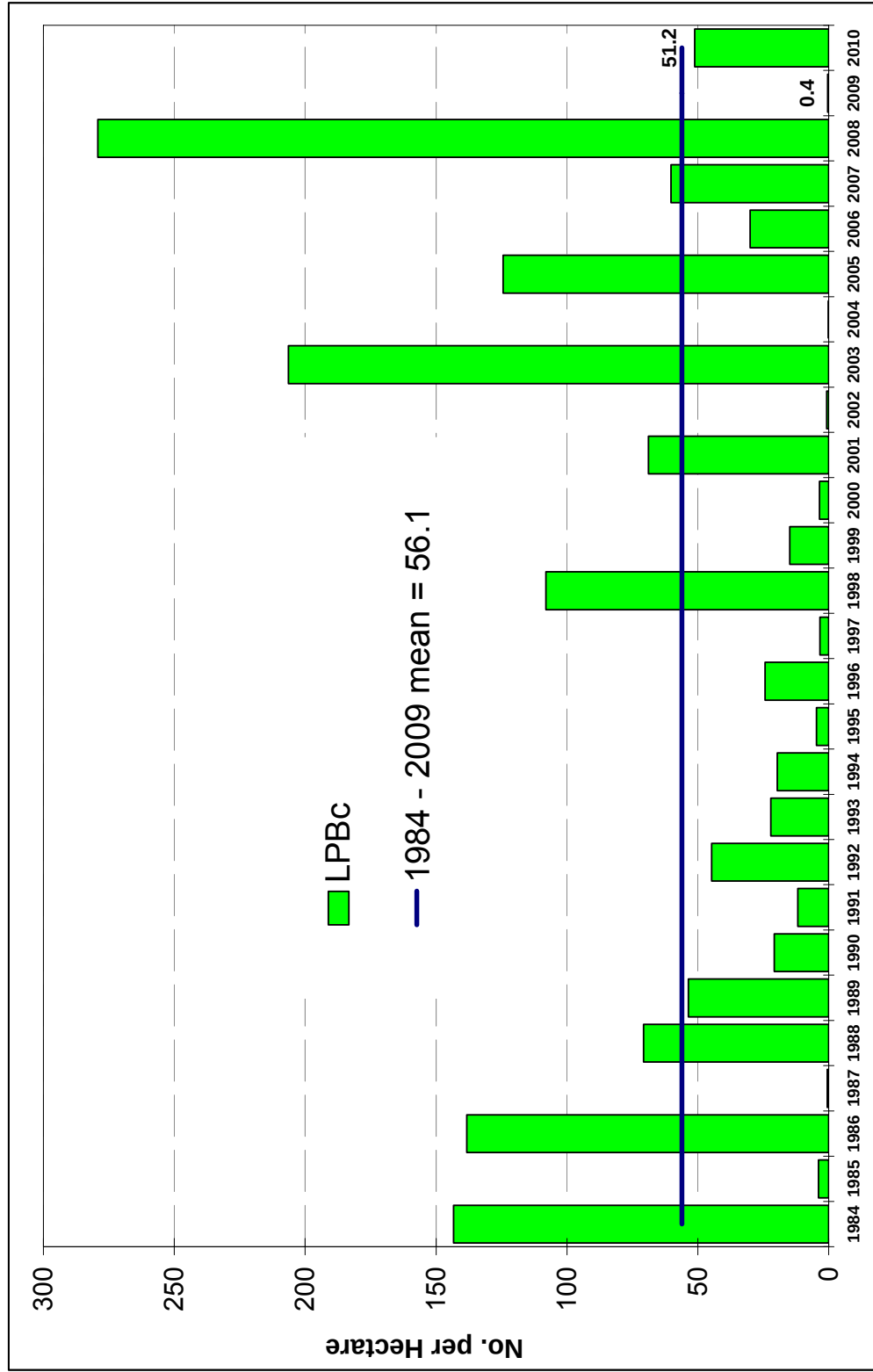


Figure 4.3.3 Relative abundance (mean number per hectare) of age 0 yellow perch from a composite index (LPBc) of three bottom trawl assessments in Long Point Bay, Lake Erie, during September - October, 1984-2010.

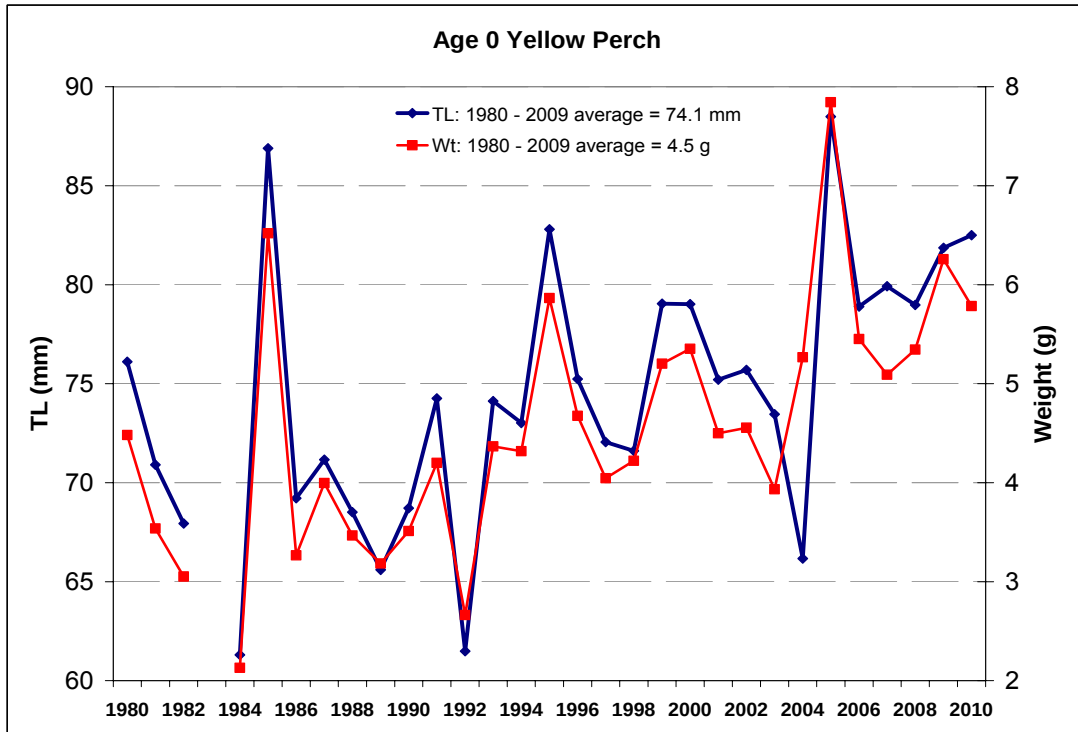


Figure 4.3.4 Mean total length (mm) and weight (g) of Age 0 yellow perch from 6.1m index trawl catches in the inshore waters of Long Point Bay (Inner and Outer Bays combined), Lake Erie, 1980-2010 (September - October data). No fish sampled in 1983.

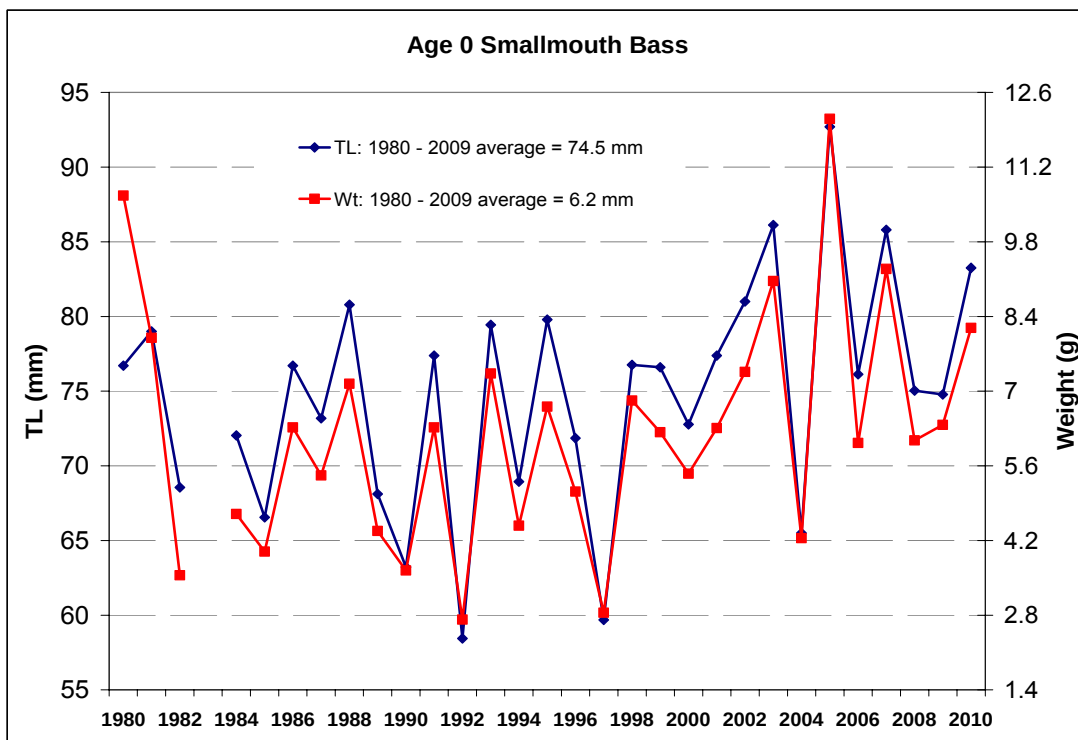


Figure 4.3.5 Mean total length (mm) and weight (g) of Age 0 smallmouth bass from 6.1m index trawl catches in Inner Bay of Long Point Bay, Lake Erie, 1980-2010 (September - October data). No fish sampled in 1983.

4.4 Long Point Bay Nearshore Fish Community Survey

A gill net survey has been conducted annually in Long Point Bay since 1986 to monitor the composition of the fish community, and describe the abundance and biological characteristics of important sport and commercial species over time. Between 1991 and 1994, the program was expanded to include comparisons of the effectiveness of multifilament gear (used 1986-1994) and monofilament gear (used since 1991). The later gear type has been used in the commercial fishery and, more recently, in agency gillnet assessment programs on Lake Erie. Comparisons of catches between mono and multi nets were completed in 1996, and species specific conversion ratios were computed. Species catches from multifilament nets (pre 1991) were adjusted to comparable efficiency of monofilament nets (by conversion ratio multipliers) to describe trends in abundance of major species across the entire time series (1986-2010). Monofilament nets have been used exclusively in this survey since 1995.

Study Area and Sampling Design

The study area was comprised of the waters within Outer Long Point Bay, extending from the minimum depth (12 ft.) that the gear could be set, to the depth of the 30 ft. contour. The bay was partitioned into three sampling areas, then further partitioned into sampling grids (0.5 X 0.5 nautical miles), and 2 depth strata (12-18 ft., 18-30 ft.). Areas 1, 2 and 4 have been sampled each year since 1986. The survey period was from spring to fall during 1986 to 1993. This was reduced to June - August for the years 1994 and later. Only data from a comparable time period (June - August) for the entire time series (1986-2010) are reported below.

Areas were sampled weekly on a rotational basis. Two grid locations (one from each depth stratum) were chosen randomly within each sampling area to establish netting sites. A monofilament net composed of single 50 foot panels of mesh sizes 1.25, 1.5 and 1.75" (stretched mesh) and 2 panels each of mesh sizes 2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5 and 6" mesh, was set at each location. The total length of monofilament gang was 1250 ft. (381 m). Observed numbers and biomass (weight in grams) of fish species catches in the 1.25, 1.5 and 1.75" mesh size panels were doubled to standardize catch to an equivalent 100 ft panel length. Species CUE's as number per km and weight (biomass, grams) per km net were calculated from the total catch in gangs excluding the catch in 5.5 and 6" mesh sizes.

Fish Community

Catch (all mesh sizes) by species from 1995 to 2010 are summarized in Table 4.4.1. Yellow perch accounted for 49% of all fish species caught during the 2010 survey. Smallmouth bass (16.4%), freshwater drum (11%), gizzard shad (7.1%), white perch (4.4%) and rock bass (1.9%) contributed the next highest numbers of fish species caught (Table 4.4.1). Annual estimates of alewife abundance in Long Point Bay have been episodic, accounting for approximately half of the total fish species catch in some years (1995, 1998, 2002, 2006) and almost nothing in other years (1996, 1997, 2004). Only 96 alewife representing 1.5% of the total catch were netted in 2010.

Trends in Abundance, Biomass and Growth of Yellow Perch 1986-2010

Yellow perch were abundant in Long Point Bay during the late 1980's (Figure 4.4.1). Population size decreased precipitously during the early 1990's and remained at low levels throughout the decade until 2000, when two year old perch from the strong 1998 year class began to recruit into the population. The 1998 year class remained the dominant cohort of index gill net catches, contributing 88, 86, 70, and 41% of the annual survey total perch catch (in number) in successive years from 2000 to 2003. In 2002, the year of highest yellow perch abundance, the 1998 year class accounted for 70 and 74% of the total perch catch in number and biomass, respectively. Perch abundance and biomass decreased (37.5% and 35.3%, respectively) in 2010 to the lowest levels observed since 2000 (Figure 4.4.1). Age 3 fish from the 2007 year class accounted for 66% of the total number and 50% of the total biomass of perch caught in index nets in 2010. Age 2 fish (2008 year class) represented only 11% of the total catch in number, a surprisingly low contribution from a year class

that produced one of the highest age 0 recruitment index values in the Long Point Bay composite trawl series (Figure 4.3.3).

Yellow perch mean size at age has increased over the survey's time series (Figure 4.4.3). A more recent trend of decreasing size at age is evident in age 4 and 5 perch after 2001 to about 2008. The 2004 year class of perch was assessed as being relatively weak (Tables 4.3.1 to 4.3.3), and surviving members appear to have experienced rapid growth to age 3 in 2007, attaining a mean size equivalent of age 4 perch from the very abundant 2003 year class. In 2008, ages 3, 4 and 5 perch cohorts from the 2005, 2004 and 2003 year classes were all similar in size with estimated mean total length of 210, 210 and 215 mm, respectively (Figure 4.4.3). In 2009, ages 4 to 7 perch cohorts from the 2002 to 2005 year classes were all between 240 and 256 mm mean total length. In 2010, only a few millimeters separated the mean lengths of ages 5 (256 mm TL), 6 (268 mm) and 7 (271 mm) perch.

Trends in Abundance, Biomass and Growth of Smallmouth Bass 1986-2010

Catch rates of smallmouth bass in Long Point Bay index gill nets have ranged between 20 to 50 bass per km during most of the survey years between 1986 and 2003, indicating a relatively stable and healthy population during this time period (Figure 4.4.2). Comparatively low smallmouth bass abundance in 1998 was followed by a period of yearly increases that peaked in 2003 at 47 bass/km. Numeric abundance and biomass of bass decreased sharply in 2004 and again in 2005. The abundance trend reversed again in 2006 with consecutive year increases that peaked in 2007 at near record high mean numbers and biomass with an unexpected large contribution (56%) of age 2 smallmouth bass (Figure 4.4.2), a surprising observation considering that full vulnerability to the gear does not occur until age 3. The 2005 year class has continued to dominate the annual total smallmouth bass catch in each of the past three survey years at 79% in 2008, 59% in 2009, and 32% in 2010, respectively.

Smallmouth bass size at ages 2 through 7 has increased since about the late 90's (Figure 4.4.4). Although the mean size of ages 2, 4 and 6 smallmouth bass decreased slightly in 2010, all reported age classes remained above average size in 2010 (Figure 4.4.4).

Table 4.4.1 Total numbers of each fish species caught in monofilament nets during the Long Point Bay Index Gillnetting Survey, 1995-2010. Numbers include catch in all mesh sizes (14 mesh sizes from 32 to 152 mm) standardized to 40 sets for comparison.

Species	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Longnose gar	85	31	159	5	260	30	5	0	0	28	31	161	10	6	12	61
Bowfin	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Alewife	6169	7	3	4215	1070	5809	28	19339	12	2	24	7776	61	22	0	96
Gizzard shad	56	47	114	19	185	531	81	503	227	122	60	483	447	104	53	452
Pink salmon	0	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0
Rainbow trout	1	1	2	5	1	0	0	0	6	0	0	2	2	1	0	1
Atlantic salmon	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brown trout	4	3	3	7	1	0	2	2	6	1	1	0	9	5	1	5
Lake trout	0	1	0	1	0	0	0	0	0	2	1	2	0	0	0	5
Lake whitefish	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Rainbow smelt	1	0	9	0	0	0	12	0	0	20	13	3	20	26	72	27
Northern pike	5	1	9	7	47	6	7	7	19	10	1	2	4	6	6	9
Mooneye	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quillback	18	0	22	8	8	12	2	5	24	16	3	10	11	9	9	46
White sucker	151	133	163	199	334	141	122	95	150	92	149	41	61	59	54	93
Northern hog sucker	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Redhorse sucker	98	40	27	51	62	41	62	21	36	22	27	13	26	13	11	13
Common carp	11	1	0	10	3	6	10	5	11	8	0	12	11	3	5	7
Golden shiner	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
Emerald shiner	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0
Spottail shiner	0	0	4	0	0	2	4	2	0	2	2	2	0	0	0	0
Yellow bullhead	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Brown bullhead	4	9	1	2	36	0	1	12	24	81	35	32	50	38	53	69
Channel catfish	0	0	7	5	1	5	1	0	2	2	1	3	0	2	4	0
Stoner cat	8	6	10	4	3	19	15	3	0	0	0	0	0	0	0	0
Burbot	1	26	10	22	19	33	5	1	0	0	0	0	0	0	0	0
Trout-perch	0	0	0	0	0	2	0	2	0	2	0	0	2	0	0	2
White perch	26	11	83	7	52	58	31	73	58	103	42	60	59	54	118	278
White bass	21	4	37	3	26	16	2	19	42	11	4	50	34	19	19	71
Rock bass	794	470	380	264	640	291	201	81	151	69	151	219	136	104	174	123
Pumpkinseed	85	41	52	139	62	5	16	2	7	3	9	9	25	5	2	12
Bluegill	11	514	2	4	1	0	1	0	0	0	0	0	3	2	0	2
Smallmouth bass	910	514	742	293	427	485	509	428	702	181	132	376	1129	791	396	1045
Black crappie	5	1	6	5	2	0	1	0	0	0	0	0	0	0	0	0
Yellow perch	2316	1320	1404	1577	2083	7134	9633	11134	7233	7625	7359	7183	5389	3145	4889	3120
Walleye	16	11	20	4	14	3	4	5	27	40	23	18	13	31	23	78
Round goby	0	0	0	0	8	68	708	2399	424	391	134	275	172	222	89	47
Freshwater drum	569	539	577	472	412	270	225	256	537	240	150	170	495	263	282	698
Actual Number of Sets	32	28	36	40	40	44	40	40	36	40	40	40	40	40	40	40

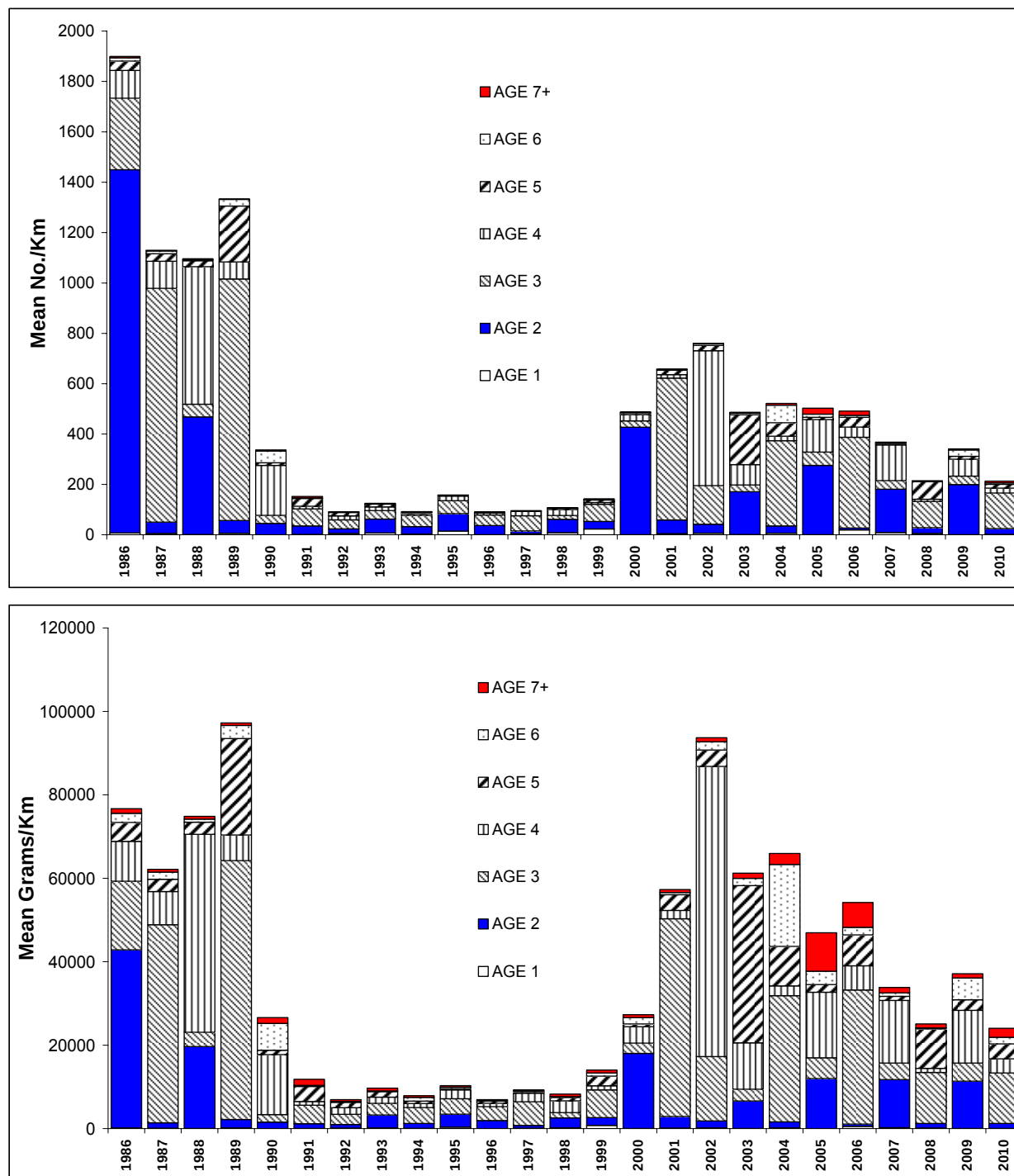


Figure 4.4.1 Catch at age of Yellow Perch in Long Point Bay index gill nets set overnight at 18-30 ft depths during June - August, 1986-2010. Catch reported in arithmetic mean number per kilometer (top graph) and arithmetic mean weight (g) per kilometer (bottom graph). Age 7 and older perch combined.

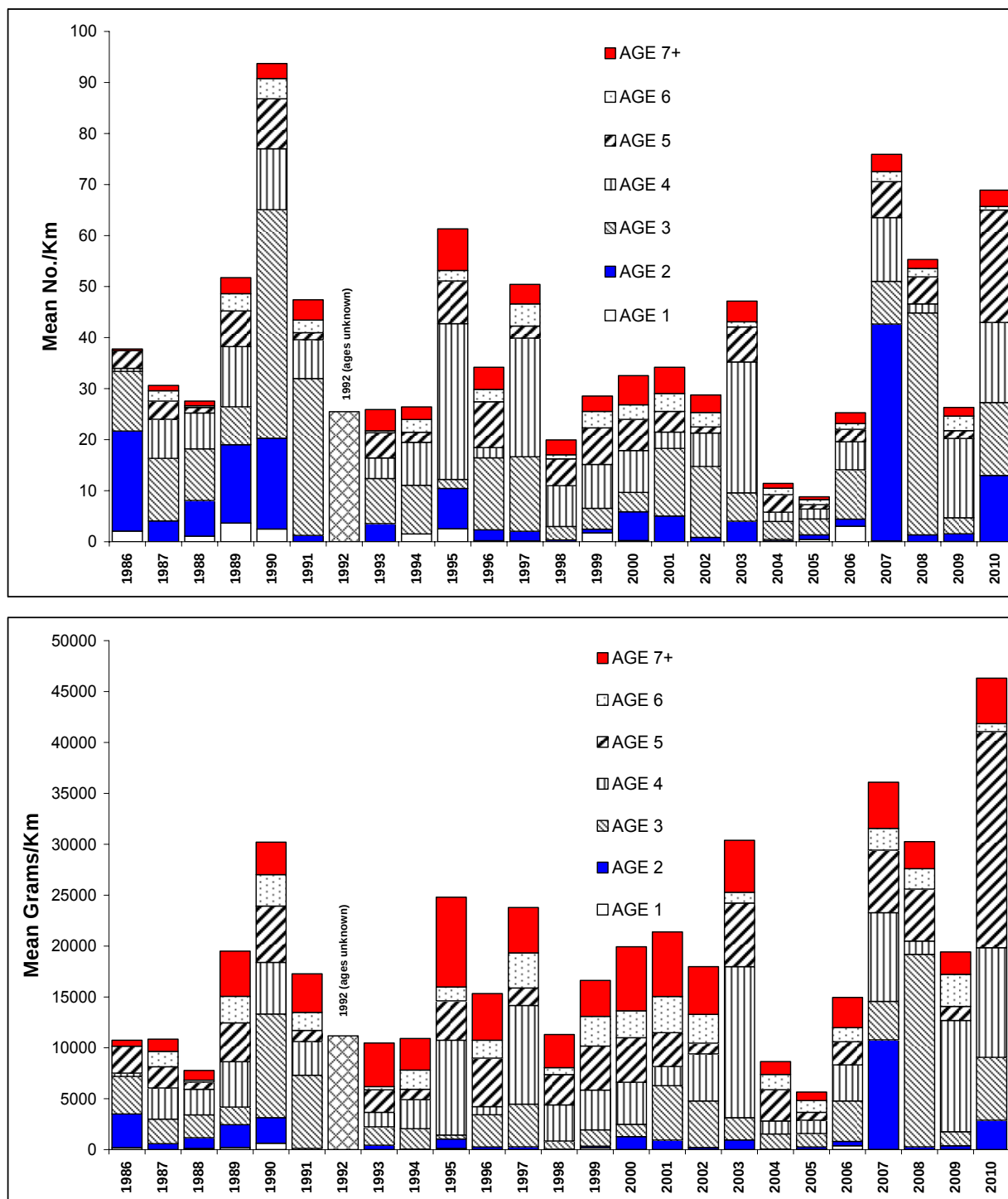


Figure 4.4.2 Catch at age of smallmouth bass in Long Point Bay index gill nets set overnight at 18-30 ft. depths during June - August, 1986-2010. Catch reported in arithmetic mean number per kilometer (top graph) and arithmetic mean weight (g) per kilometer (bottom graph). Age 7 and older bass combined.

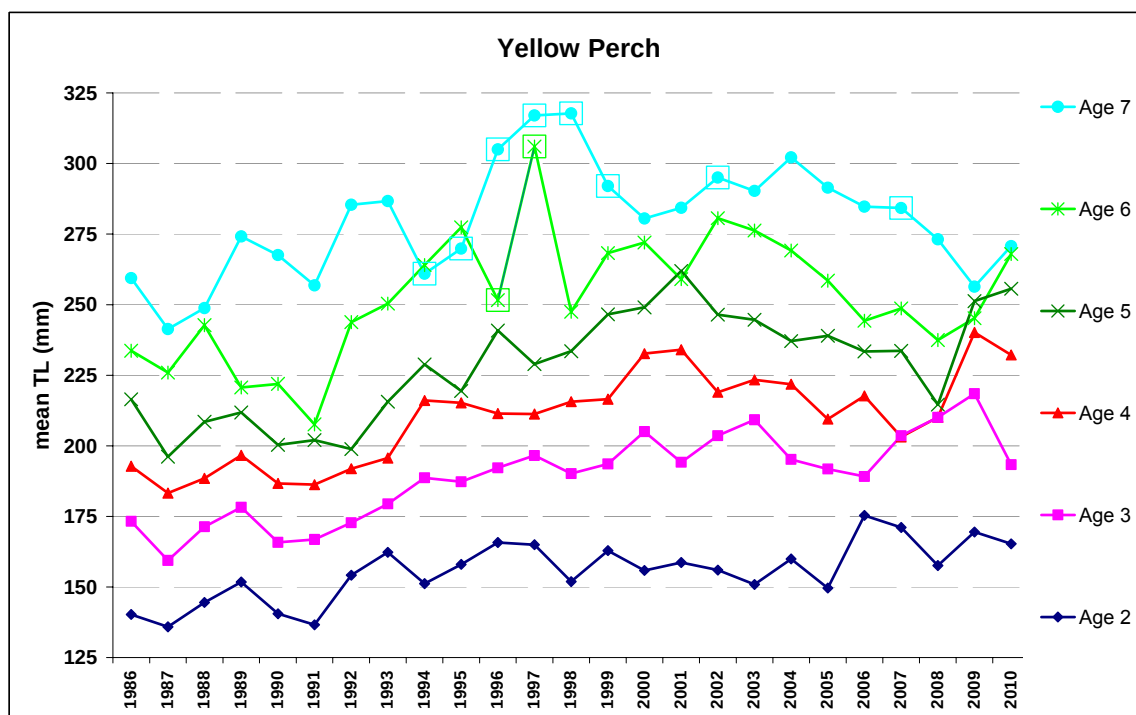


Figure 4.4.3 Yellow perch mean total length (mm) at ages 2 to 7 in Long Point Bay index gill nets set overnight at 18-30 ft depths during June - August, 1986-2010. Males and females combined. Mean values outlined with a box were estimated from $N < 10$ samples.

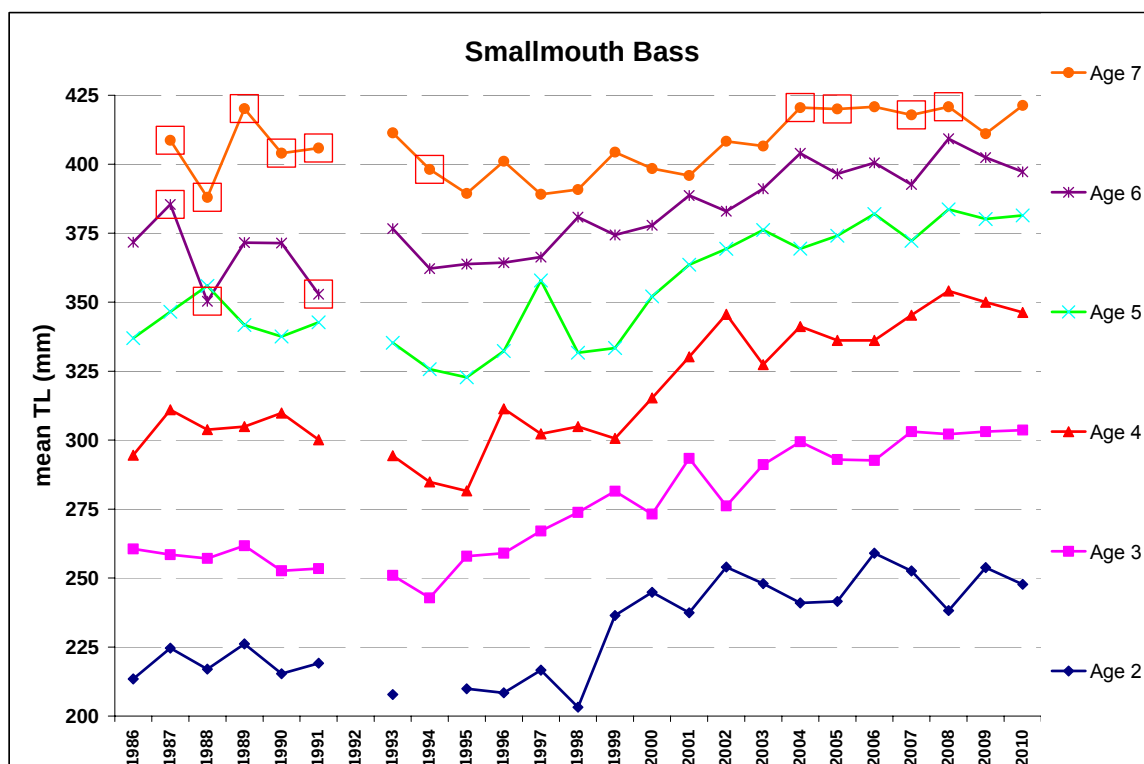


Figure 4.4.4 Smallmouth bass mean total length (mm) at ages 2 to 7 in Long Point Bay index gill nets set overnight at 18-30 ft depths during June - August, 1986-2010. Males and females combined. Mean values outlined with a box were estimated from $N < 10$ samples. Smallmouth bass ages were not available for 1992 samples.

APPENDIX A

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