STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-5

Study No.: 230460

Title: Dynamics of Lake Erie walleye and yellow perch populations and fisheries

Period Covered: October 1, 2003 to September 30, 2004

Study Objective: To work with Ohio, New York, Pennsylvania, and Ontario to develop and verify models for inter-agency harvest quotas of walleye and yellow perch in Lake Erie using population samples taken each spring and fall.

Summary: In 2003 and 2004, walleye and yellow perch samples were collected from a spring trap net survey, a fall gill net survey, and an on-site creel survey. To fulfill inter-agency objectives, Michigan's survey data and data analyses were shared with the other Lake Erie fishery management agencies. The inter-agency task groups combined their walleye tag data, and their walleye and yellow perch survey data, to produce estimates of mortality and exploitation rates. These estimates were used to establish harvest quota recommendations for the lake wide recreational and commercial percid fisheries.

Findings: Jobs 1 through 9 were scheduled for 2003-04, and progress is reported below.

Job 1. Title: Carry out trap-net sampling.–In spring 2004, 39 net lifts were made between April 13 and April 26. To date, 51,560 walleye have been tagged at the Monroe tag site, including 1,451 captured in the trap nets in spring 2004. An additional 1,398 walleye were tagged on the spawning run in the lower Huron River (site 64) in 2004 to boost total number tagged.

Job 2. Title: Analyze growth data from trap nets and angler catches.–Scale samples collected from walleye and yellow perch caught in trap nets in 2004 have not yet been processed and interpreted for ages.

Sport-caught walleye and yellow perch from Michigan's Lake Erie waters have been sampled for biological data (length, weight, and age) as part of Michigan's Great Lakes creel survey (Federal Aid Study 427). A total of 722 walleye and 755 yellow perch scale samples collected during the 2003 creel survey were interpreted for ages. Age 4 walleye accounted for the largest portion (53%) of the walleye recreational harvest (Table 1), reflecting the strength of the 1999 year class. No trend in growth was apparent for sport-caught walleye over the past six years. However, the mean length for all walleye harvested in 2003 was highest for the period, reflecting the heavy contribution of the maturing 1999 year-class.

For yellow perch, the 1999 year-class was also dominant in 2003, accounting for 32% of the total catch (Table 2). The 2001 year-class (age 2) added an additional 21% to the total. Age 5 and older yellow perch represented another 33% of the total harvest. The average length of yellow perch harvested by Michigan sport anglers was 223 mm, reflecting the strong contribution by older yellow perch in the harvest. No obvious trend in growth was apparent for sport-caught yellow perch over the past six years. However, it should be noted that the mean length for ages 2, 3, and 4 yellow perch in the 2003 harvest were the highest recorded for the 6-year period, suggesting food resources have not been a limiting factor for Lake Erie yellow perch.

Job 3. Title: Collect tag recovery data.–A total of 50,109 walleye have been tagged at Monroe (site 61) between 1978 and 2003. An additional 1,073 walleye were tagged on the spawning run in the lower Huron River (site 64) in 2003 to boost total number tagged. Of the Monroe tagged fish, 4,230 (8.4%) have been reported caught by anglers and commercial fishermen through 2003. A total of 1,511 walleye were tagged in 2003; of which, 179 were subsequently recovered by fishermen in 2003. There were 122 reported recoveries from all years of tagging at Monroe, and 57 recoveries from the 2003 Huron River tagging during the subsequent 2003 fishing season. The geographical distribution of the 2003 returns (Table 3) is as follows: Lake Huron 0.8%, St. Clair River 7.4%, Lake St. Clair 4.9%, Detroit River 18.9%, Western Basin-Lake Erie 55.7%, Central Basin-Lake Erie 8.2%, and Eastern Basin-Lake Erie 2.5%. Recoveries were reported from all months except January, February, March, and September with 94.4% reported during the months of April (3.3%), May (20.5%), June (35.2%), July (21.3%), and August (13.9%).

Job 4. Title: Analyze tag recovery data.–Walleye tag data were analyzed to estimate annual rates for tag recovery and survival during the period from 1986 through 2003. The computer program, known as ESTIMATE (Brownie et al. 1985), was used and all parameter estimates were taken from Model 1 under the assumption that survival and reporting rates were year-specific. Model 1 was more compatible with all data sets than three alternative models and probably produced the least biased estimates. Another assumption made was that all tag recoveries attributable to the 2003 fishing year had been received; thus, the recovery rate estimates for 2003 were comparable to those for prior years.

Walleye tag and recovery data from the Ohio, Ontario, and Michigan surveys covered the period from 1990 through 2003 (Table 4). Walleye were not tagged by Ontario in 1996 and Ohio in 1999; and Michigan tagged very few (94) in 2001. Michigan, Ontario, and Ohio used a monel metal tag, which was placed in the lower jaw. During some years, Ontario also used a plastic streamer tag, which was sewn into the dorsal musculature with monofilament nylon. Based on a literature review of studies comparing different tag types, tag loss was considered a potential problem only with the plastic streamer tag.

Analysis of the combined data produced an estimate for mean annual survival of 61.6% and mean recovery rate of 3.1% (Table 5). These values were used to estimate instantaneous natural mortality (M) according to the relationship M = Z - uZ/A where (uZ/A = F) for type II fisheries; where, Z is instantaneous total mortality, u is the exploitation rate, A is the total mortality rate, and F is the instantaneous fishing rate (Ricker 1975). A walleye reward tag study, funded by the Ontario Ministry of Natural Resources, was conducted during 1990 by Ontario, Ohio, and Michigan. This study, based on random application of $100.00 US reward tags to 10% of the walleye, produced a reward/non-reward ratio of 2.73 (Thomas and Haas 1999). A value for u of 8.5% was generated by expanding mean recovery rate (3.11%) by the non-reporting rate (2.73). The resulting value for M was 0.38. It is important to note that survival rate estimates from program "ESTIMATE" are independent of recovery rates; thus, expansion of the tag recovery rate by reward/non-reward ratios will not alter survival rate estimates in any way.

The reward tag program was replicated in 2000, to provide an updated non-reporting rate. Funding for the $100.00 US tags was provided by the US agencies (NY, PA, OH, and MI). Reward tags were applied to 10% of the tagged walleye population at the Chicken and Hen Island site in Ontario, the Lackawanna and Van Buren Bay sites in New York, the Grand River and Sandusky Bay sites in Ohio, and the Raisin River site in Michigan (Table 6). Anglers reported catching 240 non-reward and 75 reward tags from the 2000 tagged population during the 2000, 2001, 2002, and 2003 fishing seasons. The non-reporting ratio for anglers was 2.80 which was nearly identical to the 2.73 value calculated from the long-term recovery data from the 1990 reward study. However, commercial operators reported 88 reward tags and only 50 non-reward tags resulting in a non-reporting ratio of 15.76. This was much higher than any non-reporting ratios encountered during the 1990-99 period suggesting that the commercial operators, during 2000, 2001, 2002, and 2003, dramatically altered how frequently they reported non-reward tags. These data were not used to calculate a new non-reporting ratio because they need to be adjusted for this change in reporting behavior. The reporting pattern for the reward tags may provide a basis for adjusting the non-reward tag numbers.

Job 5. Title: Carry out gill net sampling.–The MDNR has fished experimental gill nets at two stations in western Lake Erie since the fall of 1978, as part of the inter-agency assessment program. The 2003 fall gill-net survey included two 1,300-foot sets of variable-mesh multi-filament gill net at each index station, as well as three sets at two random stations. All nets were suspended from the surface. A total of 356 walleye were captured, and sampled for age and growth information.

Job 6. Title: Analyze growth and abundance data from gill net sampling.–Scale samples taken from walleye captured in 2003 fall gill nets have been processed and aged. Mean length (mm) at age is presented in Table 7. No trends in walleye growth were evident over the last five years. Mean length of yearlings collected in 2002 remained well within the range observed since 1978 and near the long-term mean of 330 mm (Table 8). The total walleye catch-per-effort for the index sites of 42.1 (Table 9) was well below the long-term mean annual CPUE (121.5 fish/net-lift). The 2002 cohort CPUE (0.8) is the lowest yearling catch rate for the time series, suggesting walleye experienced extremely poor recruitment in Lake Erie in 2002. Age 3 fish, representing the 2000 year-class, exhibited the lowest age-3 catch rate since the 1995 and 1992 year-classes, suggesting it too is among the weakest year classes in the last 20 years. Certainly the low abundance of age 1 and age 3 walleye in 2003 is a major factor in the low overall gill-net catch rate in 2003. The 1999 year class (age 4 fish in 2003) accounted for 77% of the catch with a CPUE of 32.5 fish per net lift.

Historical walleye catch data were used to develop a mean rank for the 1974-2001 year classes, some of which were not yet completely represented throughout their life (Table 10). Total harvest included the sport and commercial catches from Lake Erie. Trap- and gill-net catch-per-effort data came from Michigan's spring and fall surveys. Year classes were ranked for each capture method and then averaged. There was good agreement between the three gear types and a nonparametric statistical comparison showed no significant differences. The top five year-classes were 1982, 1986, 1985, 1991, and 1984. The worst five year-classes were the 2000, 1995, 1976, 2001, and 1992. In general, a pattern of inconsistent recruitment is evident throughout the time series.

Job 7. Title: Participate in inter-agency work groups.–Data summaries and analyses for 2003 MDNR surveys were completed and presented (as computer files and hard copies) to the Scientific Technical Committee, the Walleye Task Group (WTG), the Forage Task Group, and the Yellow Perch Task Group. Inter-agency walleye tag data for 2003 and 2004 were compiled and disseminated to each agency. Extensive walleye and yellow perch population modeling was done utilizing the inter-agency tag and fishery data sets. Estimates of walleye size selectivity by the commercial and sport fisheries were determined from tag recovery data and submitted to the WTG to assist with development of a walleye management model. We also served as a WTG co-chair during 2003. As such, considerable time was invested in preparing for task group and annual meetings.

Job 8. Title: Prepare annual reports.–This progress report was prepared. Additionally, some of the data collected during this study were presented in the annual "Status of the fisheries in Michigan waters of Lake St. Clair and Lake Erie" report prepared each winter by the Lake St.

Clair Fisheries Research Station for the Great Lakes Fisheries Commission's Lake Erie Committee Annual Meeting.

Job 9. Title: Prepare five-year interim report.–The results of this study for the period from 1999 to 2003 were summarized and analyzed. A research report, presenting those results and analysis, was prepared and submitted to the Fisheries Division editor.

Table 1.–Mean length-at-age (mm) of walleye sampled from Michigan's Lake Erie sport fishery, 1998-2003. Sample size in parentheses.

	Survey year											
Age	1998		1999		2000		2001		2002		2003	
1	–	–	–	–	357	(2)	–	–	336	(4)	–	–
2	341	(196)	357	(105)	363	(152)	356	(142)	371	(22)	366	(146)
3	431	(72)	411	(211)	430	(208)	427	(75)	432	(419)	434	(37)
4	473	(147)	446	(66)	470	(170)	469	(45)	466	(80)	478	(380)
5	513	(25)	496	(21)	500	(28)	500	(27)	499	(52)	494	(54)
6	548	(14)	561	(4)	510	(19)	535	(5)	525	(38)	521	(35)
7	576	(8)	567	(4)	555	(10)	531	(7)	539	(11)	564	(28)
8	583	(8)	569	(3)	561	(6)	603	(4)	580	(17)	570	(11)
9	655	(3)	628	(6)	638	(2)	612	(3)	609	(12)	583	(9)
10	651	(5)	546	(2)	650	(4)	670	(3)	665	(4)	604	(11)
11	–	–	–	–	742	(2)	742	(1)	607	(4)	609	(4)
12	–	–	655	(2)	746	(1)	–	–	705	(3)	652	(3)
13	–	–	572	(1)	–	–	–	–	–	–	704	(3)
14	–	–	–	–	–	–	–	–	–	–	747	(1)
Mean	424	(478)	416	(425)	437	(607)	418	(312)	456	(667)	467	(722)

Table 2.–Mean length-at-age (mm) of yellow perch sampled from Michigan's Lake Erie sport fishery, 1998-2003. Sample size in parentheses.

	Survey year											
Age	1998		1999		2000		2001		2002		2003	
1	162	(2)	164	(3)	185	(1)	–	–	174	(19)	179	(2)
2	182	(224)	179	(26)	185	(100)	188	(63)	187	(24)	195	(180)
3	202	(268)	202	(419)	195	(127)	207	(107)	209	(242)	211	(82)
4	218	(187)	215	(183)	212	(289)	220	(33)	224	(325)	225	(240)
5	242	(45)	233	(86)	218	(140)	234	(33)	233	(104)	242	(160)
6	253	(3)	243	(31)	241	(33)	253	(2)	248	(92)	249	(54)
7	273	(2)	266	(12)	257	(10)	278	(2)	279	(24)	256	(33)
8	–	–	263	(5)	315	(1)	–	–	287	(5)	322	(1)
9	–	–	–	–	282	(1)	–	–	317	(3)	331	(3)
10	–	–	–	–	–	–	–	–	306	(2)	–	–
Mean	203	(731)	211	(765)	208	(704)	208	(240)	224	(843)	223	(755)

Table 3.–Geographical distribution of tag recoveries, 1992-2003, from walleye tagged at Monroe, Michigan, Lake Erie (expressed as a percentage of the total number recovered each year).

Geographical area	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001[a]	2002	2003
Lake Huron - Saginaw Bay	0.5	1.6	2.0	0.8	1.7	0.0	2.4	1.2	0.8	0.0	1.0	0.8
St. Clair River	2.7	6.1	6.2	8.3	2.8	4.2	7.9	9.5	4.6	0.0	6.9	7.4
Lake St. Clair	4.1	2.6	3.1	2.3	4.5	4.9	7.1	4.8	6.1	0.0	7.4	4.9
Detroit River	9.5	8.1	8.8	12.1	11.2	12.2	6.3	8.3	15.3	4.3	27.5	18.9
Western Basin-Lake Erie	64.5	58.7	54.1	43.9	54.1	57.1	56.7	53.6	65.6	76.6	48.5	55.7
Central Basin-Lake Erie	13.1	17.7	21.6	28.8	22.9	20.1	16.5	20.2	5.3	13.8	6.7	8.2
Eastern Basin-Lake Erie	2.7	3.5	4.1	3.8	2.8	1.6	3.1	1.2	2.3	4.3	2.0	2.5
Lake Erie-total	80.3	79.9	79.8	76.5	79.8	78.8	73.2	75.0	73.2	93.6	57.2	66.4

[a] Only 94 tags applied in 2001.

Table 4.–Non-reward tag recovery data for walleye tagged by Ohio, Ontario, and Michigan at Lake Erie sites, 1990-03.

	Number	Year														Percent
Year	tagged	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	recovered
1990	6,323	225	152	96	83	41	18	20	11	4	2	0	0	3	0	10.4
1991	8,602	–	275	224	160	72	50	43	21	15	4	2	3	0	3	10.1
1992	7,260	–	–	290	228	93	49	35	22	11	6	4	3	3	1	10.3
1993	7,359	–	–	–	402	142	84	70	29	15	9	4	3	4	2	10.4
1994	5,539	–	–	–	–	183	117	80	41	35	11	11	1	6	2	8.8
1995	5,540	–	–	–	–	–	169	92	46	22	4	6	5	5	5	6.4
1996	5,718	–	–	–	–	–	–	254	123	57	31	13	14	14	5	8.9
1997	6,261	–	–	–	–	–	–	–	195	83	35	18	7	17	4	5.7
1998	1,668	–	–	–	–	–	–	–	–	28	20	4	0	8	5	3.9
1999	1,630	–	–	–	–	–	–	–	–	–	36	32	13	13	4	6.0
2000	4,469	–	–	–	–	–	–	–	–	–	–	117	60	40	23	5.4
2001	2,719	–	–	–	–	–	–	–	–	–	–	–	79	32	33	5.3
2002	5,291	–	–	–	–	–	–	–	–	–	–	–	–	150	135	5.4
2003	3,461	–	–	–	–	–	–	–	–	–	–	–	–	–	159	4.6

Table 5.–Annual survival and recovery rate (percent) during 1990-2003 for Lake Erie walleye from Ohio, Ontario, and Michigan non-reward tags produced by program "ESTIMATE" (combined data).

Fishing year	Tag recovery rate	Standard error	Walleye survival rate	Standard error
1990	3.56	0.23	67.02	3.79
1991	3.33	0.17	66.31	3.39
1992	3.86	0.18	61.55	3.23
1993	5.11	0.21	59.86	3.59
1994	3.36	0.19	84.73	5.97
1995	2.57	0.16	42.67	3.01
1996	4.30	0.22	80.68	5.79
1997	2.80	0.17	74.24	10.06
1998	1.82	0.24	34.16	5.50
1999	2.35	0.27	68.01	8.36
2000	2.33	0.19	57.09	6.28
2001	2.37	0.23	54.13	5.89
2002	3.07	0.21	50.05	5.46
2003	4.59	0.36	–	–
Mean	3.14	0.06	61.58	0.82

Table 6.–Results from the year-2000 $100-reward tagging effort in Michigan, Ohio, and Ontario through year 2003.

Tag location	Tags applied non-reward	Reward	Non-reward tags returned	Reward tags returned	Non-reward rate	Reward rate	Non-reporting ratio
			Angler tag returns				
Chicken and Hen Islands (Ontario)	1,091	115	26	5	0.024	0.043	1.824
Lackawanna Shoreline (New York)	239	29	21	4	0.088	0.138	1.570
Raisin River (Michigan)	1,874	208	122	40	0.065	0.192	2.954
Sandusky Bay (Ohio)	1,460	162	27	14	0.018	0.086	4.673
Van Buren Bay (New York)	761	92	44	12	0.058	0.130	2.256
Total angler	5,425	606	240	75	0.044	0.124	2.798
			Commercial tag returns				
Chicken and Hen Islands (Ontario)	1,091	115	25	39	0.023	0.339	14.800
Lackawanna Shoreline (New York)	239	29	0	1	0.000	0.034	–
Raisin River (Michigan)	1,874	208	17	38	0.009	0.183	20.139
Sandusky Bay (Ohio)	1,460	162	7	8	0.003	0.049	10.300
Van Buren Bay (New York)	761	92	1	2	0.001	0.022	–
Total commercial	5,425	606	50	88	0.009	0.145	15.756

Table 7.–Mean total length-at-age (mm) for walleye caught during fall in survey multi-filament gill nets (sample size in parentheses) 1999-03.

	Survey year									
Age	1999		2000		2001		2002		2003	
					Sexes combined					
1	339	(233)	327	(228)	345	(26)	338	(316)	337	(8)
2	416	(301)	410	(118)	418	(293)	420	(51)	412	(253)
3	462	(218)	447	(81)	460	(59)	464	(244)	472	(11)
4	514	(5)	484	(53)	493	(61)	487	(48)	494	(55)
5	515	(16)	513	(3)	521	(39)	502	(33)	529	(8)
6	535	(10)	525	(7)	540	(3)	528	(15)	533	(10)
7	554	(6)	492	(1)	565	(3)	–	–	529	(9)
8	562	(2)	530	(1)	558	(2)	530	(2)	–	–
9	569	(1)	–	–	–	–	580	(1)	602	(1)
10	648	(2)	–	–	–	–	–	–	–	–
Mean	412	(795)	388	(492)	439	(486)	409	(710)	434	(356)
					Males					
1	337	(87)	326	(91)	342	(17)	335	(140)	343	(1)
2	406	(154)	401	(81)	412	(181)	413	(35)	407	(186)
3	444	(133)	441	(63)	443	(40)	451	(170)	469	(10)
4	480	(3)	467	(40)	480	(46)	477	(34)	476	(39)
5	492	(10)	494	(2)	493	(22)	490	(26)	472	(2)
6	511	(7)	498	(5)	540	(3)	501	(11)	527	(5)
7	544	(4)	492	(1)	528	(2)	–	–	526	(7)
8	562	(2)	530	(1)	499	(1)	538	(1)	–	–
9	569	(1)	–	–	–	–	–	–	602	(1)
10	–	–	–	–	–	–	–	–	–	–
Mean	411	(402)	398	(492)	430	(312)	415	(417)	426	(252)
					Females					
1	340	(146)	328	(136)	350	(9)	339	(176)	337	(7)
2	426	(147)	428	(37)	429	(112)	435	(16)	426	(67)
3	489	(85)	471	(17)	497	(19)	492	(74)		
4	564	(2)	535	(13)	533	(15)	511	(14)	548	(8)
5	553	(6)	550	(1)	556	(17)	546	(7)	563	(4)
6	592	(3)	594	(2)	638	(1)	604	(4)	573	(2)
7	572	(2)	–	–	618	(1)	–	–	–	–
8	–	–	–	–	–	–	522	(1)	–	–
9	–	–	–	–	–	–	580	(1)	–	–
Mean	414	(393)	374	(206)	456	(174)	401	(293)	440	(88)

Table 8.–Mean total length (mm) for yearling walleye caught in Michigan fall gill-net surveys (sample size in parentheses) 1978-03.

Survey year	Year class	Mean length		Standard error
1978	1977	343	(410)	1.0
1979	1978	330	(115)	1.9
1980	1979	344	(222)	1.3
1981	1980	336	(86)	2.0
1982	1981	333	(143)	1.9
1983	1982	308	(116)	1.7
1984	1983	311	(18)	4.7
1985	1984	329	(279)	1.2
1986	1985	339	(392)	1.0
1987	1986	332	(387)	1.1
1988	1987	347	(18)	4.2
1989	1988	336	(246)	1.2
1990	1989	352	(64)	2.4
1991	1990	345	(218)	1.3
1992	1991	309	(252)	1.4
1993	1992	331	(13)	6.5
1994	1993	328	(415)	1.0
1995	1994	318	(444)	1.1
1996	1995	326	(18)	4.0
1997	1996	306	(210)	1.3
1998	1997	319	(357)	1.0
1999	1998	339	(233)	1.1
2000	1999	327	(228)	1.0
2001	2000	345	(26)	2.0
2002	2001	338	(316)	1.0
2003	2002	338	(8)	6.9

Table 9.–Walleye CPUE (number per net lift), by cohort, in multi-filament gill nets during fall surveys on Michigan waters of Lake Erie, 1986-03.

Year	Total	Survey year																	
class	CPUE	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1975	42.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1976	18.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1977	171.0	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1978	61.6	1.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1979	72.4	0.5	0.5	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1980	92.7	2.3	0.5	0.3	0.0	0.3	–	–	–	–	–	–	–	–	–	–	–	–	–
1981	72.3	2.8	2.3	0.5	0.3	0.0	–	–	–	–	–	–	–	–	–	–	–	–	–
1982	306.2	44.3	28.5	5.3	7.5	3.5	0.5	–	–	–	–	–	–	–	–	–	–	–	–
1983	34.6	4.0	5.0	3.5	1.8	1.8	2.0	–	–	–	–	–	–	–	–	–	–	–	–
1984	147.7	34.3	20.5	3.5	8.0	8.3	2.0	0.5	0.3	0.5	–	–	–	–	–	–	–	–	–
1985	177.2	98.0	42.5	9.3	14.3	8.5	1.5	1.3	0.8	1.0	–	–	–	–	–	–	–	–	–
1986	297.5	–	96.8	30.3	90.3	43.5	19.5	11.0	3.8	2.0	0.3	–	–	–	–	–	–	–	–
1987	127.8	–	–	4.5	53.8	26.8	20.0	13.8	2.5	3.8	1.0	0.5	0.8	–	0.3	–	–	–	–
1988	125.0	–	–	–	61.5	35.8	9.3	7.3	4.5	4.5	0.5	0.8	0.8	–	–	–	–	–	–
1989	52.6	–	–	–	–	16.0	17.0	10.0	2.8	3.3	1.3	0.8	0.8	0.3	0.3	–	–	–	–
1990	136.4	–	–	–	–	–	54.5	48.0	13.0	16.5	1.5	1.3	1.3	0.0	0.3	–	–	–	–
1991	194.3	–	–	–	–	–	–	63.0	47.3	61.5	11.3	6.8	2.8	1.3	0.3	–	–	–	–
1992	16.7	–	–	–	–	–	–	–	2.0	7.3	2.0	0.3	1.5	2.3	1.0	0.3	–	–	–
1993	169.7	–	–	–	–	–	–	–	–	73.3	71.0	11.8	8.08	3.3	1.5	0.3	0.5	–	–
1994	130.5	–	–	–	–	–	–	–	–	–	63.3	43.0	14.0	4.8	2.8	1.8	0.8	–	–
1995	8.3	–	–	–	–	–	–	–	–	–	–	3.3	1.3	0.8	1.0	0.8	0.8	0.3	–
1996	178.2	–	–	–	–	–	–	–	–	–	–	–	37.5	84.3	30.5	13.3	9.8	1.8	1.0
1997	128.2	–	–	–	–	–	–	–	–	–	–	–	–	54.3	34.3	20.3	15.3	3.0	1.0
1998	77.6	–	–	–	–	–	–	–	–	–	–	–	–	–	26.0	29.5	14.8	6.3	1.0
1999	157.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	57.0	73.3	21.5	5.8
2000	13.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6.5	6.3	0.8
2001	75.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	42.8	32.5
2002	0.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.8
	Total	187.8	196.6	57.5	237.5	144.5	126.3	154.9	77.0	173.7	152.2	68.6	68.8	151.4	98.3	123.3	121.8	82.0	42.1
	Net lifts	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Table 10.–Mean rank of Lake Erie walleye year classes based on measured harvest and survey catch per effort.

Year class	Total harvest[a]	Harvest rank	Trap CPUE	Trap rank	Gill-net CPUE	Gill-net rank	Mean rank
1974	2,727,989	18	0.4	26	13.6	27	23.7
1975	3,356,110	16	1.3	24	42.8	22	20.7
1976	812,855	26	0.8	25	18.4	24	25.0
1977	6,837,878	7	10.2	16	171.0	6	9.7
1978	3,578,926	15	8.9	19	61.6	19	17.7
1979	2,535,057	21	8.7	20	72.4	17	19.3
1980	5,426,616	11	21.5	7	92.7	15	11.0
1981	3,093,746	17	16.9	12	72.3	18	15.7
1982	21,305,596	1	98.6	1	306.2	1	1.0
1983	2,572,846	20	21.4	8	34.6	23	17.0
1984	6,639,741	8	28.1	3	147.7	9	6.7
1985	7,518,595	4	27.0	5	177.2	5	4.7
1986	13,469,004	2	56.6	2	297.5	2	2.0
1987	4,081,685	12	27.5	4	127.8	13	9.7
1988	3,941,361	13	15.9	13	125.0	14	13.3
1989	2,688,970	19	8.9	18	52.6	20	19.0
1990	6,106,960	10	20.9	11	136.4	10	10.3
1991	7,163,771	5	21.1	9	194.3	3	5.7
1992	1,579,416	24	2.8	22	16.7	25	23.7
1993	6,356,968	9	21.8	6	169.7	7	7.3
1994	7,803,377	3	14.6	14	130.5	11	9.3
1995	851,533	25	1.5	23	8.3	28	25.3
1996	7,080,274	6	21.1	10	178.2	4	6.7
1997	2,224,000	22	10.1	17	128.2	12	17.0
1998	1,984,308	23	3.2	21	51.6	21	21.7
1999	3,680,524	14	10.5	15	157.6	8	12.3
2000	297,483	28	0.1	27	13.6	26	27.0
2001	658,517	27			75.3	16	21.5
2002	2,905	29			0.8	29	29.0
Mean	4,702,656		17.8		106.0		

[a]Total harvest determined by summing each agencies sport and commercial age-specific harvest estimates.

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