

LAKE ERIE COMMITTEE WALLEYE TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2010

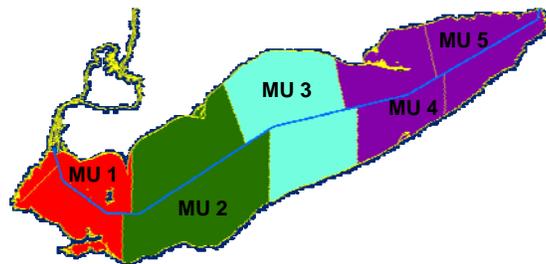


Figure 1. Lake Erie walleye management units

Introduction

This summary report highlights elements of the 2010 Walleye Task Group (WTG) annual report. The complete WTG report is available from the Great Lakes Fishery Commission's (GLFC) Lake Erie Committee (LEC) WTG website at <http://www.glfc.org/lakecom/lec/WTG.htm>, or upon request from an LEC, Standing Technical Committee (STC), or WTG representative.

The WTG continues to partition the lake into five management units (MUs) for data analysis and managing walleye (Figure 1). Population models are run for a combined west-central area (MUs 1 to 3) and for an eastern area (MUs 4 and 5) while a Recommended Allowable Harvest (RAH) is determined only for the west-central portion of the lake.

Six charges were addressed by the WTG during 2009-2010: (1) Maintain and update centralized time series of datasets and methodology required for population models and assessment; (2) Improve existing population models to produce the most scientifically-defensible method for estimating and forecasting abundance; (3) Report RAH levels for 2010; (4) Review jaw and PIT tagging study results and provide guidance and/or recommendations for future tagging strategies to the LEC; (5) Assist the Habitat Task Group with the identification and collection of habitat metrics for the purpose of re-examining the extent of suitable adult walleye habitat in Lake Erie; and (6) Assist the STC with a five-year review of the Walleye Management Plan and the Traffic Light approach. Please see the full report for details of activities addressing all the charges. This executive summary will focus on WTG charges 1 and 2.

2009 Fishery Review

The total allowable catch (TAC) in quota area waters of the west and central basins for 2009 was 2.450 million fish. This allocation represented a 32% decrease from the 2008 TAC of 3.594 million fish. In the TAC area, the total harvest was 2.157 million fish, or 88% of the quota (Table 1). Harvest in the non-TAC area of the eastern basin amounted to 83,874 fish. Lake-wide walleye harvest was estimated at 2.241 million fish for 2009. Sport fishery (1.166 million fish) and commercial fishery (1.079 million fish) harvest levels seen in 2009 were both below the long-term (1975-2009) means (2.495 and 2.140 million fish, respectively).

Table 1. Summary of walleye harvest by jurisdiction in Lake Erie, 2009.

in number of fish	TAC Area (MU1, MU2, MU3)				Non-TAC Area (MU4 & MU5)				All Areas Total
	MI	OH	ON	Total	NY	PA	ON	Total	
TAC	142,835	1,252,195	1,054,970	2,450,000	-	-	-	-	2,450,000
TAC % Share	5.83%	51.11%	43.06%	100.00%	-	-	-	-	100.00%
Harvest	94,048	967,476	1,095,500	2,157,024	13,727	42,422	27,725	83,874	2,240,898

Total commercial walleye fishery effort decreased in 2009 compared to 2008 (Table 2). Commercial gill net effort in MUs 1 and 2 showed the largest decreases (29% and 32% respectively) from 2008. The total commercial effort of 7,925 km fished remained among the lowest in the times series, representing 40% of the long-term average (20,028 km). Commercial effort was greatest in the west basin, declining eastward in the lake. Sport fishery effort in 2009 decreased from 2008 by 21% in Michigan waters and increased by 4% in Ohio waters of Unit 1 (Table 3). Sport effort in other parts of Ohio waters decreased: Unit 2 by 4% and Unit 3 by 19%. The trend in sport effort was similar between Pennsylvania and New York in Units 4 and 5 (Table 3). Angling effort in Pennsylvania dropped 34%, and New York effort decreased 36% from 2008 (Table 3). In comparison to the years since 2000, lake-wide sport effort remained on par in 2009. Over the long-term since 1975, however, Lake Erie walleye sport effort in 2009 (2.663 million angler hours) represented 47% of the average.

Table 2. Ontario walleye gillnet effort in 2009.

	MU1	MU2	MU3	MUs 4 & 5
Effort (km)	3,537	2,164	1,746	478
change from 2008	-29%	-32%	-9%	-4%

Table 3. Summary of sport fishery effort reported in thousands of hours for 2009.

	MU1 - MI	MU1 - OH	MU2 - OH	MU3 - OH	MUs 4 & 5 - PA	MUs 4 & 5 - NY
Effort (1000s hrs)	310	1,063	777	289	124	100
change from 2008	-21%	4%	-4%	-19%	-34%	-36%

Lake-wide catch rates in 2009 declined for both sport and commercial fisheries, expressed as harvested fish per hour or per km of net fished, respectively, but catch rates remained near (sport) or above (commercial) long-term averages. Sport catch rates by MU compared to 2008 increased 4% in MU1, and decreased 10% in MU2, and 30% in MU3. Gill net

CUEs from the previous year increased slightly in MU1 (4%), but declined 7%, 39%, and 18% in MU2, MU3, and MUs 4 and 5, respectively. Age distribution of fish in the harvest was dominated by six-year-old walleye (2003 year class); lake-wide, they comprised 49% of the commercial fishery and 64% of the sport fishery. The 2007 year class (age-2 walleye) represented 11% of the total sport harvest and 27% of the total commercial harvest. Walleye ages-7 and older made up 10% of the total harvest lake-wide, but comprised a larger portion of the eastern basin harvest (28%). The 2003 and 2007 year classes contributed 57% and 19%, respectively, to the total lake-wide harvest.

Catch-at-Age Analysis & Recruitment for 2010

The WTG continued to use the Automatic Differentiation Model Builder (ADMB) catch-at-age analysis to estimate walleye population abundance from 1978 to 2009. The model includes fishery data from the Ontario commercial fishery (west and central basins) and sport fisheries in Ohio (west and central basins) and Michigan (west basin). In addition to fishery data, this model includes assessment data from three index gill net surveys from: Michigan (west basin), Ohio (west and west-central basins combined) and Ontario (west, west-central, and east-central basins combined). Lambda values for fishery and survey gears were set external to the model by an Expert Opinion WTG and MSU-QFC exercise completed this year. The 2009 west-central population estimate from the Expert Opinion (EO lambda) model was 39.243 million age-2 and older walleye. The age-2 abundance estimate of 26.867 million walleye represented 68% of the total population estimate, and was much stronger than initial estimates. Other survey and fishery regressions did not estimate that 2007 cohort as being that strong. There were an estimated 11.481 million age-4 and older walleye in 2009. The strong 2003 year class was estimated to contribute approximately 8.582 million age-6 fish to the population in 2009.

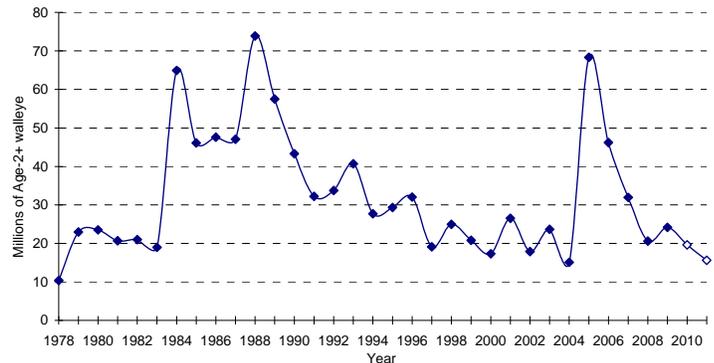


Figure 2. Population estimate of Lake Erie walleye ages 2 and older from 1978-2009, EO-lambda model with adjustment for age 2 in 2009, and projections for 2010 and 2011 based on age-2 recruitment regression of YOY walleye in interagency trawls and the current sliding-F fishing policy.

2010 Population Abundance

The WTG calculated an alternate abundance estimate for the 2007 year class at age-2 since values for this cohort appeared to be outliers in the standard statistical catch-age analysis and new expert opinion (EO lambda) models. This age-2 abundance estimate was based on 2009 agency gill net survey results. A linear regression model incorporating the age-2 gill net catch rates from the agency surveys and the EO lambda model age-2 estimates were used. This method resulted in a mean of 11.782 million age-2 walleye in 2009 with a range of 9.253 to 15.010 million age-2 walleye by averaging the 95% confidence intervals from the regressions. Using survival from ADMB, these values were projected forward to age-3 in 2010 with a mean of 8.319 million and a range from 6.534 to 10.599. The mean and range for age-specific 2010 abundance projections, selectivity estimates at age from ADMB, and the Walleye Management Plan (WMP) variable-F determine the RAH. The 2010 estimated abundance of age-2 and older walleye is approximately 19.627 million (Figure 2). It is projected that the 2003 year-class (age-7) and older cohorts represent 31% (6.035 million), whereas the 2007 year-class will comprise 42% (8.319 million) of the population in 2010. Please refer to the complete 2010 WTG report for a more detailed explanation of adjustment of the model estimate of abundance for the 2007 year class.

2010 Harvest Strategy and Recommended Allowable Harvest (RAH)

With the implementation of the Walleye Management Plan in 2005, yield strategies and RAH are linked to age 2 and older walleye population levels of abundance. Using results from the EO lambda model with the adjusted age-2 abundances, and based on the sliding-F scale harvest policy (Figure 3) and selectivity values from the current fisheries, an RAH of 2.429 million fish was calculated for 2010 with a range of 1.376-3.597 million fish (Table 4). Please refer to the complete 2010 WTG report for a more detailed explanation of the population abundance projections and RAH derivation.

Table 4. Stock size estimates and RAH values for mean and ± one standard error.

Age	2010 Stock Size (millions)			2010 RAH (millions of fish)			Est'd 2011 Stock Size (millions)
	Min	Mean	Max	Min	Mean	Max	Mean
2	2.778	3.586	4.630	0.055	0.107	0.166	3.414
3	6.534	8.319	10.599	0.684	1.211	1.837	2.514
4	0.418	0.561	0.704	0.046	0.085	0.127	5.018
5	0.656	0.843	1.030	0.072	0.127	0.185	0.336
6	0.225	0.283	0.341	0.024	0.043	0.061	0.505
7+	4.854	6.035	7.216	0.495	0.857	1.221	3.828
Total	15.464	19.627	24.520	RAH 2+	1.376	2.429	3.597
(3+)	12.686	16.041	19.890	RAH 3+	1.321	2.323	3.431
				F	0.109	0.193	0.234

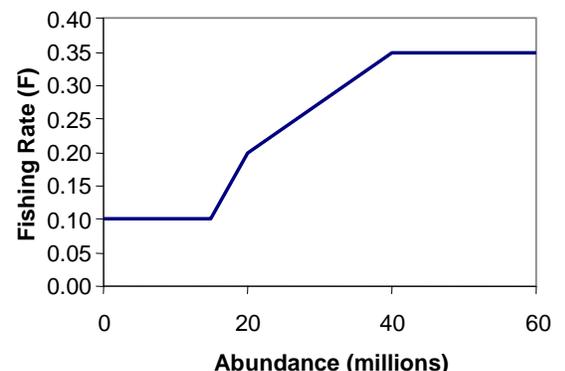


Figure 3. The Lake Erie walleye sliding-F fishing policy.