

# LAKE ERIE COMMITTEE WALLEYE TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2012

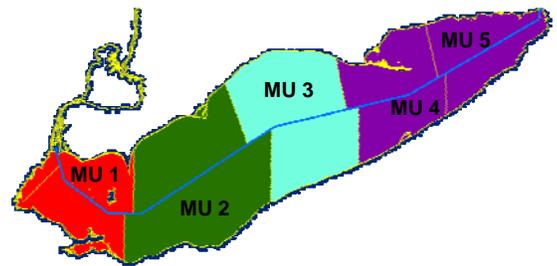


Figure 1. Lake Erie walleye management units

## Introduction

This summary report highlights elements of the 2012 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) to produce a Recommended Allowable Harvest (RAH). The WTG assesses the status of walleye and fisheries in MUs 4 and 5 but does not generate population estimates due to uncertainty concerning stock delineation.

Five charges were addressed by the WTG during 2011-2012: (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, recruitment, and mortality; (3) Report RAH levels for 2012; (4) Review jaw and PIT tagging study results and provide guidance/recommendations for future tagging strategies to the LEC; (5) Assist the STC with potential development of a new exploitation strategy and with updating the Walleye Management Plan. Please see the full report for details of activities addressing all the charges. This executive summary will focus on WTG charges 1 and 2.

## 2011 Fishery Review

The total allowable catch (TAC) in quota area waters of the west and central basins for 2011 was 2.919 million fish. This allocation represented a 33% increase from the 2010 TAC of 2.200 million fish. In the TAC area, the total harvest was 1.692 million fish, or 58% of the quota (Table 1). Harvest in the non-TAC area of the eastern basin amounted to 105,748 fish. Lake-wide walleye harvest was estimated at 1.798 million fish for 2011. Sport fishery (0.593 million fish) and commercial fishery (1.208 million fish) harvest levels seen in 2011 were both below the long-term (1975-2011) means (2.407 and 2.083 million fish, respectively).

Table 1. Summary of walleye harvest by jurisdiction in Lake Erie, 2011.

in number of fish	TAC Area (MU-1, MU-2, MU-3)				Non-TAC Area (MU-4 & MU-5)				All Areas Total
	Michigan	Ohio	Ontario	Total	NY	Penn.	Ontario	Total	
TAC	170,178	1,491,901	1,256,921	2,919,000	-	-	-	-	2,919,000
TAC % Share	5.83%	51.11%	43.06%	100.00%	-	-	-	-	100.00%
Harvest	50,490	417,314	1,224,057	1,691,861	31,506	45,369	28,873	105,748	1,797,609

Total commercial walleye fishery effort increased in 2011 compared to 2010 (Table 2). Commercial gill net effort in all MUs increased with the largest increases from 2010 in MU 1, MU 2 and MUs 4&5 (38%, 37% and 98% respectively). The total commercial effort of 6,591 km fished was the 5<sup>th</sup> lowest recorded since 1975, representing 34% of the long-term average (19,235 km). Commercial effort was greatest in the west basin, declining eastward in the lake. Sport fishery effort in 2011 decreased from 2010 by 27% in Michigan waters, and by 39% and 47% in Ohio waters of MU1 and MU2 respectively (Table 3). Sport effort in MU3 remained relatively the same as in 2010 (-1%). Sport effort also decreased by 17% for Pennsylvania but increased slightly in New York waters of MU 4&5 (Table 3). The walleye sport effort in 2011 (1.891 million angler hours) represented 35% of the long-term average.

Table 2. Ontario walleye gillnet effort in 2011.

	Unit 1	Unit 2	Unit 3	Units 4 & 5
Effort (km)	2,646	1,884	1,572	489
change from 2010	38%	37%	12%	98%

Table 3. Summary of sport fishery effort reported in thousands of hours for 2011.

	Unit 1 - MI	Unit 1 - OH	Unit 2 - OH	Unit 3 - OH	Units 4&5- PA	Units 4&5- NY
Effort (1000s hrs)	165	862	346	217	156	145
change from 2010	-27%	-39%	-47%	-1%	-17%	4%

Lake-wide catch rates in 2011 declined for both the sport fishery (fish per hour) and for the commercial fishery (fish per kilometer of net fished): catch rates in the sport fishery were below the long-term average but above in the commercial fishery. Compared to 2010, sport catch rates by MU decreased by 31% in MU1, 23% in MU2, 21% in MU3, and 7% in MU

4&5. Gill net CUEs decreased from 2010 by 12% in MU1 and 38% in MUs 4 and 5, but increased 3% in MU2, and 9% in MU3. Age distribution of fish in the harvest was dominated by ages 7-and-older fish (including the 2003 year class); lake-wide, they comprised 38% of the commercial fishery and 58% of the sport fishery. The 2007 year class (age-4 walleye) represented 26% of the commercial harvest and 22% of the total sport harvest. Age 4 (2007 year class) and ages 7-and-older (includes the 2003 year class) contributed 25% and 44%, respectively, to the total lake-wide harvest.

### Catch-at-Age Analysis & Recruitment for 2012

The WTG continued to use the Automatic Differentiation Model Builder (ADMB) catch-at-age analysis to estimate walleye population abundance from 1978 to 2011. 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 two index gill net surveys from: Michigan-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 in 2010. Age-2 fish in 2011 (2009 year class) were estimated using a regression of

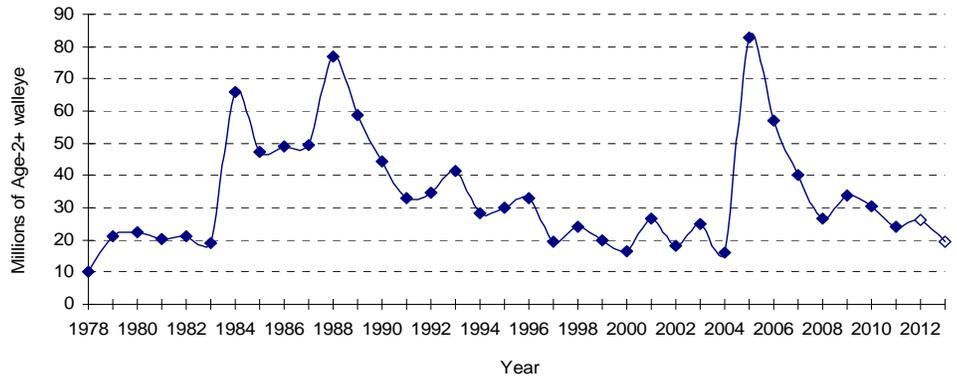


Figure 2. Population estimate of Lake Erie walleye ages 2 and older from 1978-2011, and projections for 2012 and 2013 based on age 2 recruitment regression of YOY in interagency trawls and the current fishing policy.

ADMB age-2 estimates and trawl index data. The 2011 west-central population estimate from the WTG 2012 model was 24.255 million ages 2 and older walleye. There were an estimated 14.815 million ages 4 and older walleye in 2011. The 2007 year class was estimated to contribute approximately 7.966 million age-4 fish to the population in 2011.

### 2012 Population Abundance

Stock size estimates for 2012 (ages 4 and older) were projected from ADMB catch-at-age analysis estimates of 2011 population size and age-specific survival rates in 2011. Age-3 abundance was estimated from the recruitment regression age-2 estimate for the 2009 cohort and age-specific survival rate in 2011. Projected age-2 recruitment from the 2010 year class added to the 2012 population estimate for ages 3 and older fish produces the total standing stock in 2012 of 26.132 million fish (Table 4). Statistical uncertainty surrounding population estimates is expressed as one standard error as in Table 4 for the standard model output.

Table 4. Stock size estimates and RAH values for mean and  $\pm$  one standard error

Age	2012 Stock Size (millions)			2012 RAH (millions of fish)			Est'd 2013 Stock Size (millions)	
	Min	Mean	Max	Min	Mean	Max	Mean	
2	6.706	9.723	14.097	0.282	0.513	0.918	3.614	
3	2.035	2.735	3.675	0.304	0.505	0.821	6.626	
4	2.859	3.740	4.621	0.436	0.703	1.051	1.560	
5	4.250	5.319	6.388	0.648	0.999	1.453	2.124	
6	0.191	0.233	0.276	0.029	0.044	0.063	3.020	
7+	3.684	4.382	5.080	0.493	0.724	1.020	2.703	
<b>Total</b>	<b>19.725</b>	<b>26.132</b>	<b>34.137</b>	<b>RAH 2+</b>	<b>2.191</b>	<b>3.487</b>	<b>5.326</b>	<b>19.648</b>
<b>(3+)</b>	<b>13.018</b>	<b>16.409</b>	<b>20.040</b>	<b>RAH 3+</b>	<b>1.910</b>	<b>2.974</b>	<b>4.408</b>	<b>16.033</b>
				<b>F</b>	<b>0.195</b>	<b>0.246</b>	<b>0.306</b>	

### 2012 Harvest Strategy and Recommended Allowable Harvest (RAH)

With the implementation of the Walleye Management Plan in 2005, yield strategies and RAH are linked to ages 2 and older walleye population levels of abundance. Using results from the WTG 2012 model, and based on the sliding-F scale harvest policy (Figure 3) and selectivity values from the current fisheries, an RAH of 3.487 million fish was calculated for 2012 with a range of 2.191-5.326 million fish (Table 4). Please refer to the complete 2012 WTG report for a more detailed explanation of the population abundance projections and RAH derivation.

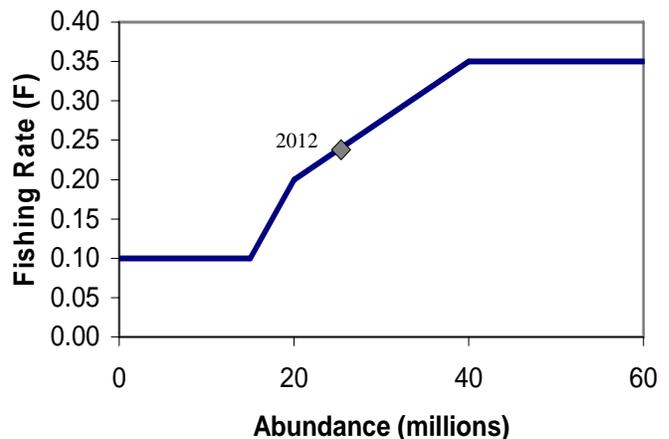


Figure 3. The Lake Erie walleye sliding F harvest policy. Diamond symbol indicating 2012 projected abundance and corresponding F