LAKE ERIE COMMITTEE
WALLEYE TASK GROUP
EXECUTIVE SUMMARY REPORT
MARCH 2015

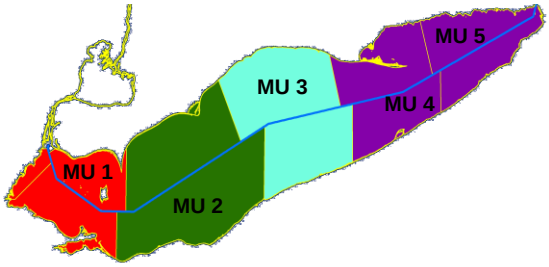

Figure 1. Lake Erie walleye management units

Introduction

This summary report highlights elements of the 2015 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 partitions the lake into five management units (MUs) for data analysis and managing Walleye (Figure 1). Statistical catch at age (SCAA) population models are run for a combined west-central area (MUs 1 to 3) to produce estimates that are used with WTG Harvest Control Rules to generate a Recommended Allowable Harvest (RAH). The WTG assesses the status of Walleye and their resulting fisheries in MUs 4 and 5, but it does not generate an RAH due to uncertainties concerning stock delineation.

Four charges were addressed by the WTG during 2014-2015: (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 and reliable method for estimating and forecasting abundance, recruitment, and mortality and continue to explore additional recruitment indices for incorporating into catch-at-age model and to explore ways to account of tag loss and non-reporting in natural mortality (M) estimates for statistical catch-at-age modeling; (3) Report RAH levels for 2014; (4) Review jaw and PIT tagging study results and provide guidance/recommendations for future tagging strategies to the LEC. Please see the full report for details of activities addressing all of these charges. This executive summary will focus on WTG Charges 1, 2, and 3.

2014 Fishery Review

The total allowable catch (TAC) in quota area waters of the west and central basins for 2014 was 4.027 million fish. This allocation represented a 20% increase from the 2013 TAC of 3.356 million fish. In the TAC area, the total harvest was 2.669 million fish, or 66% of the quota (Table 1). Harvest in the non-TAC area of the eastern basin amounted to 199,500 fish. Lake-wide Walleye harvest was estimated at 2.869 million fish for 2014. Sport fishery (1.577 million fish) and commercial fishery (1.292 million fish) harvest levels reported for 2014 were both below the long-term (1975-2013) means (2.346 and 2.042 million fish, respectively).

Table 1. Summary of walleye harvest by jurisdiction in Lake Erie, 2014.

in number	TAC Area (MU-1, MU-2, MU-3)				Non-TAC Area (MU-4 & MU-5)				All Areas
of fish	Michigan	Ohio	Ontario	Total	NY	Penn.	Ontario	Total	Total
TAC	234,774	2,058,200	1,734,026	4,027,000	-	-	-	-	4,027,000
TAC % Share	5.83%	51.11%	43.06%	100.00%	-	-	-	-	100.00%
Harvest	42,142	1,303,133	1,324,201	2,669,476	61,982	84,843	52,675	199,500	2,868,977

Total commercial Walleye fishery effort increased in 2014 compared to 2013. Commercial gill net effort in MU's 1, 2, and 3 increased (93%, 60%, and 11% respectively), but effort decreased in MU's 4&5 by 16% (Table 2). The total commercial effort of 14,943 km fished was 20% below the long-term average (1975-2013: 18,731 km). Commercial effort was greatest in the west basin, declining eastward through the lake. Across the lake, sport fishery effort in 2014 increased 11% relative to 2013. Sportfish effort in MU1 decreased in Michigan waters by 28%, but increased in Ohio by 9%. Central basin sportfish effort was mixed, with a 9% decrease in Ohio's portion of MU2, but an 87% increase in effort in Ohio's MU3 waters. Sport effort increased in Pennsylvania (11%) and New York (31%) waters of MUs 4&5 (Table 3). The 2014 Walleye sport effort (3.267 million angler hrs) was 62% of the long-term mean.

Table 2. Ontario walleye gillnet effort in 2014.

	Unit 1	Unit 2	Unit 3	Units 4 & 5
Effort (km)	7,351	4,426	2,911	254
change from 2013	93%	60%	11%	-16%

Table 3. Summary of sport fishery effort reported in thousands of hours for 2014.

	Unit 1 - MI	Unit 1 - OH	Unit 2 - OH	Unit 3 - OH	Units 4&5- PA	Units 4&5- NY
Effort (1000s hrs)	131	1,552	459	441	171	187
change from 2013	-28%	9%	-9%	87%	11%	31%

Lake-wide catch rates in 2014 increased for the sport fishery (fish per hour) and declined for the commercial fishery (fish per kilometer of net fished). The 2014 catch rate in the sport fishery (0.51) is higher than the long-term average while the catch rate in the commercial fishery (86.5) is lower than the long-term average. Compared to 2013, the 2014 sport catch

rates by MU increased by 10% in MU1, increased 3% in MU2, were down 16% in MU3, and up 28% in MUs 4&5. Gill net catch rates decreased by 47% and 45% in MU1 and MU2 respectively; while the commercial catch rate increased in MU3 (10%) and MU4 (56%). Age distribution of fish in the harvest was dominated by Walleye age 7-and-older (including the 2003 year class) and ages 3 and 4 (2010 and 2011 year classes); lake-wide, age 7-and-older, age 4, and age 3 Walleye comprised 39%, 20%, and 21% of the commercial fishery and sport fishery, respectively. The 2012 (age 2), 2009 (age 5) and 2008 (age 6) year classes each represented 5 to 7% of the total harvest in 2014. Age 1 (2013 year class) fish contributed 1% to the total lake-wide harvest.

Catch-at-Age Analysis Population Estimate & Recruitment for 2014 and 2015

Based on the 2015 integrated SCAA model, the 2014 west-central population estimate was 25.124 million age 2 and older Walleye (Figure 2). The estimated number of age 7 and older fish (≥2007 year class) in 2014 was 6.137 million fish, and represented 24% of the Walleye (age 2 and older) in the population. The second-most abundant age group (23%) was age 3, followed by age 4 fish at 21%. Using the 2015 integrated SCAA model, the number of age 2 recruits entering the population in 2015 (2013 year-class) and 2016 (2014 year-class) will be 7.953 and 17.557 million Walleye, respectively.

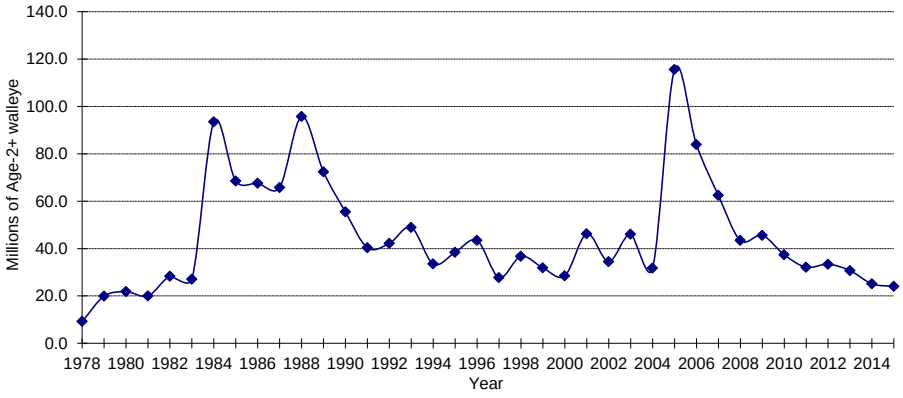

Figure 2. Population estimate of Lake Erie Walleye ages 2 and older from 1978 to 2014, and the projection for 2015 from the integrated SCAA model.

2015 Population Abundance

Using the 2015 integrated SCAA model, the projected abundance of Walleye in the west-central population is 24.039 million Walleye (Table 4). The most abundant year-class (33%) in the population is projected to be age 2 Walleye from the 2013 cohort (7.953 million fish). Fish originating from the 2012 (age 3), 2011 (age 4) and 2010 (age 5) year-classes are all expected to contribute equal proportions to the population, 14%, 15% and 14%, respectively. Age 7 and older fish are expected to account for 19% of the 2015 population size. The spawning stock biomass (SSB) projected for 2015 is 28.634 million kilograms.

2015 Harvest Strategy and Recommended Allowable Harvest (RAH)

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

	2015 Stock Size (millions of fish)	60% F_{msy}		Rate Functions			2015 RAH (millions of fish)			Projected 2016 Stock Size (millions)	
Age	**Mean**	**F**	**sel(age)**	**(F)**	**(S)**	**(u)**	**Min.**	**Mean**	**Max.**	**Mean**	
2	7.953		0.281	0.089	0.665	0.073	0.426	0.579	0.731	17.557	
3	3.259		0.896	0.283	0.547	0.212	0.533	0.692	0.851	5.285	
4	3.687		0.927	0.293	0.542	0.219	0.616	0.806	0.997	1.784	
5	3.286		0.885	0.279	0.549	0.210	0.524	0.690	0.856	1.998	
6	1.251		0.918	0.290	0.544	0.217	0.205	0.271	0.338	1.805	
7+	4.603		1.000	0.316	0.530	0.234	0.804	1.075	1.346	3.118	
Total (2+)	24.039	0.316				0.171	3.108	4.114	5.119	31.547	
Total (3+)	16.086						2.682	3.535	4.388	13.990	
SSB	28.634	mil. kgs								25.858	mil. kgs

probability of 2016 spawning stock biomass being less than 20% SSB_0 = 0.048%

After twelve Lake Erie Percid Management Advisory Group (LEPMAG) meetings over three years to discuss Walleye assessment, management objectives, management alternatives, and trade-offs between various management options, the LEC charged the WTG to employ the integrated Walleye assessment model that incorporates random walk catchability for the age-0 Walleye recruitment index. Beginning in 2014, the Walleye Harvest Control Rules policy set a target fishing rate at 60%Fmsy, with an accompanying limit reference point which will reduce the this target fishing rate beginning at 20% of the unfished spawning stock biomass (20%SSB_0) if dictated by projected spawner biomass in the year following TAC implementation. Also for LEC consideration was the limitation of TAC variation from one year to the next of 20% to implement a measure of fishery stability. For a complete description of the LEPMAG process and the harvest policy used to calculate the RAH for 2015, please refer to the complete version of the 2015 Walleye Task Group Report. Using results from the 2015 integrated SCAA model, the harvest policy adopted for 2014, and selectivity values from the current fisheries, a mean RAH of 4.114 million fish was calculated for 2015, with a range of 3.108 to 5.119 million fish (Table 4). The TAC range for 2015 based on minimizing variation from the 2014 TAC, plus or minus 20%, would be 3.222 to 4.832 million fish.