YELLOW PERCH TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2014

Lake Erie Committee

REPRESENTING THE FISHERY MANAGEMENT AGENCIES OF LAKE ERIE AND LAKE ST. CLAIR

2013 Fisheries Review

The lakewide Yellow Perch total allowable catch (TAC) in 2013 was 12.237 million pounds. This allocation represented a 10.3% decrease from a TAC of 13.637 million pounds in 2012. For Yellow Perch assessment and allocation, Lake Erie is partitioned into four management units (Units, or MUs; Figure 1). The 2013 allocation was 1.800, 4.000, 5.600, and 0.837 million pounds for Units 1 through 4, respectively. The lakewide harvest of Yellow Perch in 2013 was 9.583 million pounds, or 78.3% of the total 2013 TAC. This was an 11.2% decrease from the 2012 harvest of 10.786 million pounds. Harvest by Management Units 1 through 4 was 1.476, 3.522, 3.894, and 0.691 million pounds, respectively (Table 1). The percentages of TAC harvested was 82.0%, 88.0%, 69.5%, and 82.5%, in MUs 1 through 4, respectively. In 2013, Ontario harvested 5.933 million pounds, followed by Ohio (3.224 million lbs.), Pennsylvania (229 thousand lbs.), New York (120 thousand lbs.), and Michigan (77 thousand lbs.).

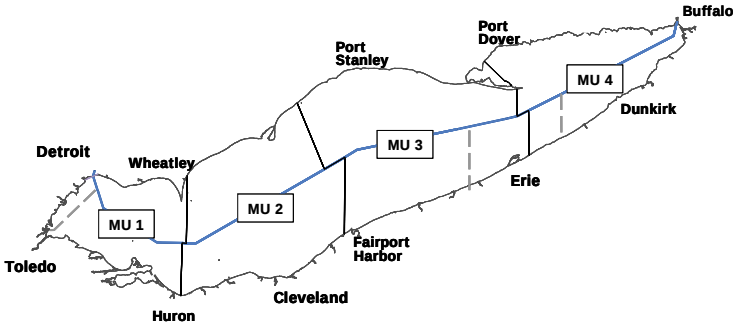

Figure 1. Yellow Perch Management Units (MUs) of Lake Erie.

Targeted gill net effort in Ontario waters in 2013 increased 52.1% in MU1, 47.8% in MU2, and 9.2% in MU4, but decreased 23.1% in MU3 from 2012. U.S. angling effort increased in 2013 from 2012 in MU1 (+5.2%), MU3 (+25.0%), and MU4 (+5.2%), but decreased in MU2 (-6.2%). U.S. trap net effort (lifts) in 2013 decreased 15.4% in MU2, 51.9% in MU3, and 15.0% in MU4 compared to 2012. There was no trap net effort in MU1 in 2013. Fishing effort by jurisdiction and gear type is presented in Table 2.

Table 1. Lake Erie Yellow Perch harvest by jurisdiction and gear type for 2013.

MU	Harvest by jurisdiction (lbs)								Total (lbs)
	Michigan	Ontario	Ohio		Pennsylvania		New York		
	sport	all commercial*	sport	commercial trap net	sport	commercial trap net	sport	commercial trap net	
1	76,994	648,884	750,052	0					1,475,930
2		1,803,684	488,021	1,230,249					3,521,954
3		2,983,539	454,847	300,346	154,403	790			3,893,925
4		496,666			74,277	0	104,055	15,814	690,812
Total	76,994	5,932,773	1,692,920	1,530,595	228,680	790	104,055	15,814	9,582,621

*Small mesh gill net, large mesh gill net, trap net (MU1), and incidental trawl (MUs 2-4) harvest combined.

Table 2. Lake Erie Yellow Perch fishing effort by jurisdiction and gear type for 2013.

MU	Effort by jurisdiction							
	Michigan	Ontario	Ohio		Pennsylvania		New York	
	sport (angler hours)	commercial (km gill net)*	sport (angler hours)	commercial (trap net lifts)	sport (angler hours)	commercial (trap net lifts)	sport (angler hours)	commercial (trap net lifts)
1	130,809	3,412	946,138	0				
2		6,821	428,187	5,851				
3		6,037	232,234	1,014	83,739	25		
4		1,932			48,093	0	65,750	364
Total	130,809	18,202	1,606,559	6,865	131,832	25	65,750	364

*Targeted small mesh gill net effort only.

Statistical Catch-at-Age Analysis and Recruitment Estimate for 2014

Population size for 1975 to 2013 for each Management Unit was estimated by statistical catch-at-age analysis (SCAA) using Auto Differentiation Model Builder (ADMB) modeling software. Stock size estimates for 2014 (ages 3 and older)

were projected from catch-at-age analysis estimates of 2013 population size and age-specific survival rates in 2013. Age-2 Yellow Perch recruitment in 2014 was predicted by multi-model averaging of juvenile Yellow Perch survey indices against catch-at-age analysis estimates of two-year-old abundance within each management unit. Projected age-2 Yellow Perch recruitment from the 2012 year class was incorporated into the 2014 population estimate with ages-3-and-older fish in each Unit, producing the total standing stock of ages-2-and-older fish in 2014 (Table 3). Abundance estimates of ages-2-and-older Yellow Perch in 2014 are projected to increase by 21.0% in MU2, and 39.9% in MU3, while decreasing by 10.9% in MU1 and 19.2% in MU4, compared to the 2013 abundance estimates. Ages-2-and-older Yellow Perch abundance in 2014 is projected to be 17.9, 51.9, 70.3, and 14.7 million fish in Units 1 through 4, respectively (Table 3). Using mean weight-at-age information from assessment surveys, in 2014 biomass estimates are projected to decline in all Units; MU1 (-17.7%), MU2 (-11.7%), MU3 (-4.5%), and MU4 (-11.7%) compared to 2013.

Table 3. Projection of the 2014 Lake Erie Yellow Perch population. Stock size estimates are derived from SCAA, and age-2 estimates for 2014 are derived from multi-model averaging of generalized linear models of ADMB age-2 abundance against YOY and yearling survey indices.

MU	Age	2013 Mean Stock Size (millions fish)	Fishing Mortality (F)	Survival Rate (S)	2014 Mean Stock Size (millions fish)	Mean Weight in Population (kg)	Stock Biomass (millions kgs)	(millions kgs)	2014 (millions lbs)
1	2	3.144	0.093	0.611	8.238	0.068	0.223	0.560	1.235
	3	8.597	0.333	0.480	1.920	0.101	0.946	0.194	0.428
	4	3.251	0.430	0.436	4.131	0.133	0.436	0.549	1.211
	5	2.647	0.446	0.429	1.417	0.154	0.405	0.218	0.481
	6+	2.422	0.468	0.420	2.153	0.235	0.453	0.506	1.116
	Total	*20.061*	*0.335*	*0.480*	*17.859*	*0.114*	*2.462*	*2.028*	*4.471*
2	2	8.574	0.076	0.621	30.396	0.077	0.720	2.340	5.161
	3	11.633	0.207	0.545	5.327	0.123	1.640	0.655	1.445
	4	3.017	0.429	0.436	6.340	0.150	0.465	0.951	2.097
	5	9.759	0.439	0.432	1.317	0.181	1.932	0.238	0.526
	6+	9.890	0.434	0.434	8.512	0.254	2.433	2.162	4.768
	Total	*42.873*	*0.290*	*0.501*	*51.892*	*0.122*	*7.190*	*6.347*	*13.995*
3	2	4.507	0.056	0.634	42.295	0.060	0.356	2.538	5.596
	3	16.060	0.152	0.576	2.857	0.114	2.008	0.326	0.718
	4	1.993	0.176	0.562	9.247	0.138	0.275	1.276	2.814
	5	12.125	0.226	0.535	1.120	0.167	2.049	0.187	0.412
	6+	15.558	0.232	0.532	14.753	0.243	3.594	3.585	7.905
	Total	*50.244*	*0.185*	*0.557*	*70.273*	*0.113*	*8.282*	*7.912*	*17.445*
4	2	3.252	0.028	0.652	3.911	0.094	0.254	0.368	0.811
	3	9.138	0.117	0.596	2.120	0.153	1.444	0.324	0.715
	4	0.525	0.153	0.575	5.449	0.214	0.104	1.166	2.571
	5	2.783	0.195	0.552	0.302	0.253	0.718	0.076	0.168
	6+	2.482	0.189	0.555	2.912	0.326	0.747	0.949	2.093
	Total	*18.179*	*0.122*	*0.593*	*14.694*	*0.196*	*3.267*	*2.884*	*6.359*

Recommended Allowable Harvest (RAH) for 2014

Standard errors and ranges for population estimates were calculated for each age in 2014, and following estimated survival from catch-at-age, for 2014. RAH *min*, *mean*, and *max* values are based on mean population estimates minus or plus one standard deviation. Proposed target fishing rates for RAHs in 2014 are the same as 2013, and RAH ranges are presented in Table 4 for Management Units 1 through 4.

Table 4. Lake Erie Yellow Perch fishing rates and RAH (in millions of pounds) for 2014 by Management Unit.

MU	Fishing Rate	Recommended Allowable Harvest (millions lbs.)		
		MIN	MEAN	MAX
1	0.670	0.684	1.136	1.592
2	0.670	2.156	3.073	3.995
3	0.700	2.272	3.605	4.953
4	0.300	0.300	0.584	0.871
Total		5.412	8.397	11.411

The complete YPTG report is available from the GLFC's Lake Erie Committee Yellow Perch Task Group website at: http://www.glfc.org/lakecom/lec/YPTG.htm , or upon request from an LEC, Standing Technical Committee (STC), or YPTG representative.