

# YELLOW PERCH TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2015



## 2014 Fisheries Review

The lakewide total allowable catch (TAC) of Yellow Perch in 2014 was 11.081 million pounds. This allocation represented a 9.4% decrease from a TAC of 12.237 million pounds in 2013. For Yellow Perch assessment and allocation, Lake Erie is partitioned into four management units (Units, or MUs; Figure 1). The 2014 TAC allocation by management unit was 1.592, 3.699, 4.953, and 0.837 million pounds for Units 1 through 4, respectively. The lakewide harvest of Yellow Perch in 2014 was 8.972 million pounds, or 79.3% of the total 2014 TAC. This was an 8.3% decrease from the 2013 harvest of 9.583 million pounds. Harvest from Yellow Perch management units 1 through 4 was 1.100, 3.222, 3.818, and 0.652 million pounds, respectively (Table 1). The TAC percentages harvested were 69.1%, 87.1%, 77.1%, and 77.9%, in MUs 1 through 4, respectively. In 2014, Ontario harvested 5.455 million pounds, followed by Ohio (2.915 million lbs.), Pennsylvania (185 thousand lbs.), New York (150 thousand lbs.), and Michigan (88 thousand lbs.).

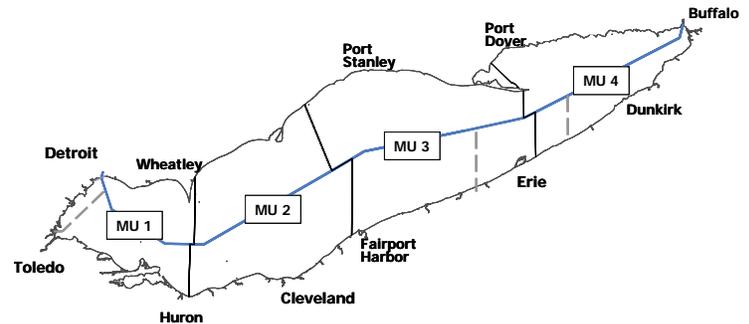


Figure 1. Yellow Perch Management Units (MUs) of Lake Erie.

Targeted gill net effort in Ontario waters in 2014 decreased slightly from 2013 by 0.4% in MU1, 2.5% in MU2, and 5.9% in MU3, but increased 4.3% in MU4. U.S. angling effort decreased in 2014 from 2013 in MU1 (-34.3%), MU2 (-34.6%), and MU4 (-20.3%), but increased in MU3 (+35.0%). U.S. trap net effort in 2014 decreased in MU2 (-2.4%), MU3 (-26.2%), and MU4 (-41.5%) compared to 2013. There was no U.S. trap net effort in MU1 in 2014. 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 2014.

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	87,511	620,667	391,361	0					1,099,539
2		1,679,175	263,042	1,280,184					3,222,401
3		2,668,921	713,974	265,963	168,184	506			3,817,548
4		485,899			16,671	0	139,313	10,355	652,238
<b>Total</b>	87,511	5,454,662	1,368,377	1,546,147	184,855	506	139,313	10,355	8,791,726

\*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 2014.

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	76,996	3,398	630,989	0				
2		6,653	280,018	5,713				
3		5,678	336,607	581	90,024	186		
4		2,016			13,959	0	76,817	213
<b>Total</b>	76,996	17,745	1,247,614	6,294	103,983	186	76,817	213

\*Targeted small mesh gill net effort only.

## Statistical Catch-at-Age Analysis and Recruitment Estimate for 2015

Population size for 1975 to 2014 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 2015 (ages 3 and older)

were projected from SCAA estimates of 2014 population size and age-specific survival rates in 2014. Age-2 Yellow Perch recruitment in 2015 was predicted by multi-model averaging of juvenile Yellow Perch survey indices against SCAA abundance estimates of two-year-old Yellow Perch within each management unit. Projected age-2 Yellow Perch recruitment from the 2013 year class was incorporated into the 2015 population estimate along with estimates of ages-3-and-older fish in each Unit, producing the total standing stock of ages-2-and-older fish in 2015 (Table 3). Abundance estimates of ages-2-and-older Yellow Perch in 2015 are projected to increase by 58.9% in MU1, and decrease by 28.1%, 32.3%, and 38.1% in MU2, MU3, and MU4, respectively, compared to the 2014 abundance estimates. Ages-2-and-older Yellow Perch abundance in 2015 is projected to be 34.060, 66.569, 30.211, and 6.736 million fish in Units 1 through 4, respectively (Table 3). Using mean weight-at-age information from assessment surveys, in 2015 biomass estimates are projected to decline in MU2 (-18.9%), MU3 (-34.7%), and MU4 (-33.6%), and increase in MU1 (+27.4%) compared to 2014.

**Table 3.** Projection of the 2015 Lake Erie Yellow Perch population. Stock size estimates are derived from SCAA, and age-2 estimates for 2015 are derived from multi-model averaging of generalized linear models of ADMB age-2 abundance against YOY and yearling survey indices.

MU	Age	2014 Mean Stock Size (millions fish)	Fishing Mortality (F)	Survival Rate (S)	2015 Mean Stock Size (millions fish)	Mean Weight in Population (kg)	Stock Biomass		
							2014 (millions kgs)	2015 (millions kgs)	2015 (millions lbs)
1	2	10.565	0.103	0.605	22.250	0.074	0.877	1.647	3.631
	3	2.306	0.241	0.527	6.389	0.107	0.272	0.684	1.507
	4	4.547	0.296	0.499	1.215	0.135	0.646	0.164	0.362
	5	1.635	0.317	0.488	2.267	0.163	0.283	0.369	0.815
	6+	2.388	0.338	0.478	1.940	0.205	0.482	0.398	0.877
	<i>Total</i>		<i>21.440</i>	<i>0.196</i>	<i>0.551</i>	<i>34.060</i>	<i>0.096</i>	<i>2.560</i>	<i>3.261</i>
2	2	65.019	0.095	0.610	14.248	0.084	5.592	1.197	2.639
	3	8.266	0.200	0.549	39.634	0.127	1.000	5.033	11.099
	4	7.929	0.438	0.433	4.536	0.157	1.316	0.712	1.570
	5	1.585	0.439	0.432	3.430	0.188	0.293	0.645	1.422
	6+	9.849	0.492	0.410	4.721	0.253	2.630	1.195	2.634
	<i>Total</i>		<i>92.648</i>	<i>0.171</i>	<i>0.565</i>	<i>66.569</i>	<i>0.132</i>	<i>10.831</i>	<i>8.782</i>
3	2	6.492	0.049	0.638	5.879	0.069	0.422	0.406	0.894
	3	6.629	0.148	0.578	4.144	0.118	0.736	0.489	1.078
	4	11.743	0.232	0.532	3.832	0.143	1.797	0.548	1.208
	5	1.601	0.230	0.533	6.242	0.171	0.290	1.067	2.353
	6+	18.152	0.273	0.510	10.114	0.223	4.048	2.255	4.973
	<i>Total</i>		<i>44.618</i>	<i>0.206</i>	<i>0.545</i>	<i>30.211</i>	<i>0.158</i>	<i>7.292</i>	<i>4.765</i>
4	2	2.762	0.055	0.634	0.580	0.084	0.240	0.049	0.107
	3	1.747	0.146	0.579	1.752	0.151	0.278	0.265	0.583
	4	4.059	0.213	0.542	1.012	0.215	0.954	0.218	0.480
	5	0.202	0.257	0.518	2.199	0.253	0.055	0.556	1.227
	6+	2.109	0.262	0.516	1.193	0.320	0.685	0.382	0.841
	<i>Total</i>		<i>10.879</i>	<i>0.169</i>	<i>0.566</i>	<i>6.736</i>	<i>0.218</i>	<i>2.212</i>	<i>1.469</i>

### Recommended Allowable Harvest (RAH) for 2015

Standard errors and ranges for population estimates were calculated for each age in 2014, and following estimated survival from catch-at-age, for 2015. 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 2015 are the same as 2014, 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 2015 by management unit.

MU	Fishing Rate	Recommended Allowable Harvest (millions lbs.)		
		MIN	MEAN	MAX
1	0.670	0.957	1.551	2.156
2	0.670	2.553	4.450	6.353
3	0.700	1.672	2.739	3.811
4	0.300	0.170	0.344	0.524
<b>Total</b>		5.352	9.084	12.844

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.