

# YELLOW PERCH TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2011



## 2010 Fisheries Review

The lakewide total allowable catch (TAC) in 2010 was 13.137 million pounds. This allocation represented a 9.4% increase from a TAC of 12.012 million pounds in 2009. For yellow perch assessment and allocation, Lake Erie is partitioned into four Management Units (Units, or MUs; Figure 1). The 2010 allocation by Management Unit was 2.094, 4.000, 6.251, and 0.792 million pounds for Units 1 through 4, respectively. The lakewide harvest of yellow perch in 2010 was 9.689 million pounds, 73.8% of the 2010 TAC. This was a 6.1% increase from the 2009 harvest of 9.137 million pounds. Harvest by Lake Erie Management Units 1 through 4 was 1.853, 3.347, 3.965, and 0.526 million pounds, respectively (Table 1). The portion of TAC harvested was 88.5%, 83.7%, 63.4%, and 66.3% in MUs 1 through 4, respectively. In 2010, Ontario harvested 6.606 million pounds, followed by Ohio (2.824 million lbs.), Pennsylvania (138 thousand lbs.), Michigan (84 thousand lbs.), and New York (38 thousand lbs.).

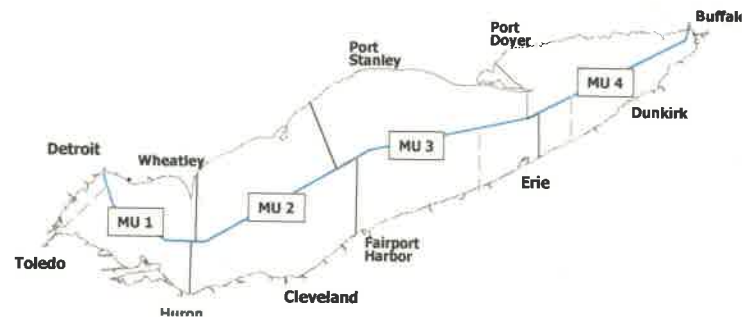


Figure 1. Yellow Perch Management Units (MUs) of Lake Erie.

Targeted gill net effort in Ontario waters in 2010 increased 3.1% in MU1, 41.9% in MU3, 71.0% in MU4, but decreased 31.8% in MU2 from 2009. U.S. angling effort increased in 2010 from 2009 in MU1 (31.4%), MU2 (20.3%), but decreased in MU3 (37.8%) and MU4 (49.9%). U.S. trap net effort (lifts) in 2010 increased in MU2 (6.1%), MU3 (82.4%), and MU4 (33.5%) compared to 2009. Trap netting returned in MU1 in 2010 following a two year absence (2008-2009). 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 2010.

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	83,725	879,358	693,838	195,674					1,852,595
2		1,888,876	522,207	935,616					3,346,699
3		3,370,099	323,711	153,097	81,614	36,026			3,964,547
4		467,612			19,989	0	25,958	11,772	525,331
<b>Total</b>	<b>83,725</b>	<b>6,605,945</b>	<b>1,539,756</b>	<b>1,284,387</b>	<b>101,603</b>	<b>36,026</b>	<b>25,958</b>	<b>11,772</b>	<b>9,689,172</b>

\*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 2010.

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	132,852	3,152	798,240	2,607				
2		3,783	502,507	6,701				
3		5,747	182,485	972	84,171	128		
4		1,227			23,248	0	35,526	287
<b>Total</b>	<b>132,852</b>	<b>13,909</b>	<b>1,483,232</b>	<b>10,280</b>	<b>107,419</b>	<b>128</b>	<b>35,526</b>	<b>287</b>

\*Targeted small mesh gill net effort only.

## ADMB Catch-at-Age Analysis and Recruitment Estimate for 2011

Population size for 1975 to 2010 for each management unit was estimated by catch-at-age analysis using modeling software Auto Differentiation Model Builder (ADMB). Stock size estimates for 2011 (ages 3 and older) were projected from catch-at-age analysis estimates of 2010 population size and age-specific survival rates in 2010. Age-2 yellow perch

recruitment in 2011 was predicted by linear regression of juvenile yellow perch trawl indices against catch-at-age analysis estimates of two-year-old abundance in each management unit. Trawl index values of age-0 yellow perch in 2009 were among the lowest seen in the time series, and estimates of age-2 recruitment for 2011 (the 2009 year class) were below average in all MUs. Projected age-2 yellow perch recruitment from the 2009 year class was added to the 2011 population estimate for older fish in each Unit, producing the total standing stock in 2011 (Table 3). Estimated abundances of age-2-and-older yellow perch in 2011 are lower by 14%, 14%, 36%, and 34% than the 2010 abundances in Management Units 1 to 4, respectively (Table 3). Abundance projections for 2011 were 11.7, 22.7, 49.3, and 19.5 million age-3-and-older yellow perch in Management Units 1 through 4, respectively. Using weight-at-age information from assessment surveys, in 2011, biomass estimates for age-2-and-older declined from 2010 in MU 1 to 4 by 9%, 22%, 15%, and 9%, respectively.

**Table 3.** Projection of the 2011 Lake Erie yellow perch population. Stock size estimates are derived from ADMB and age-2 estimates for 2011 are derived from regressions of ADMB age-2 abundance against YOY and yearling trawl indices.

MU	Age	2010 Mean Stock Size (millions fish)	Fishing Mortality (F)	Survival Rate (S)	2011 Mean Stock Size (millions fish)	Mean Weight in Population (kg)	Stock Biomass		
							2010 (millions kgs)	2011 (millions kgs)	2011 (millions lbs)
1	2	4.419	0.068	0.626	8.990	0.073	0.283	0.656	1.447
	3	13.598	0.330	0.482	2.767	0.128	1.441	0.354	0.781
	4	3.127	0.500	0.407	6.553	0.161	0.488	1.055	2.326
	5	1.430	0.531	0.394	1.271	0.214	0.279	0.272	0.600
	6+	1.549	0.576	0.377	1.147	0.238	0.367	0.273	0.602
	<i>Total</i>		<i>24.123</i>	<i>0.320</i>	<i>0.487</i>	<i>20.729</i>	<i>0.126</i>	<i>2.858</i>	<i>2.611</i>
2	2	15.535	0.073	0.623	15.487	0.074	1.150	1.146	2.527
	3	14.329	0.267	0.513	9.680	0.134	1.906	1.297	2.860
	4	5.305	0.505	0.405	7.354	0.179	0.865	1.316	2.903
	5	2.856	0.569	0.379	2.146	0.211	0.697	0.453	0.998
	6+	6.624	0.602	0.367	3.516	0.255	1.928	0.897	1.977
	<i>Total</i>		<i>44.649</i>	<i>0.277</i>	<i>0.508</i>	<i>38.184</i>	<i>0.134</i>	<i>6.545</i>	<i>5.109</i>
3	2	30.406	0.019	0.658	2.099	0.058	1.794	0.122	0.268
	3	22.660	0.078	0.620	19.998	0.115	2.447	2.300	5.071
	4	12.104	0.175	0.563	14.050	0.164	1.707	2.304	5.081
	5	5.501	0.209	0.544	6.811	0.210	1.177	1.430	3.154
	6+	10.094	0.220	0.538	8.422	0.274	2.846	2.308	5.088
	<i>Total</i>		<i>80.764</i>	<i>0.094</i>	<i>0.610</i>	<i>51.380</i>	<i>0.165</i>	<i>9.971</i>	<i>8.464</i>
4	2	15.172	0.007	0.666	0.389	0.093	1.305	0.036	0.080
	3	6.359	0.043	0.642	10.099	0.178	1.056	1.798	3.964
	4	4.376	0.074	0.623	4.083	0.240	1.103	0.980	2.161
	5	2.489	0.086	0.615	2.724	0.281	0.787	0.765	1.688
	6+	1.788	0.091	0.612	2.625	0.315	0.576	0.827	1.824
	<i>Total</i>		<i>30.184</i>	<i>0.035</i>	<i>0.647</i>	<i>19.921</i>	<i>0.221</i>	<i>4.825</i>	<i>4.406</i>

### Recommended Allowable Harvest (RAH) for 2011

Standard errors and ranges for population estimates were calculated for each age in 2010, and following estimated survival from catch-at-age, for 2011. Descriptions of *min*, *mean*, and *max* population were estimated using age-specific estimates minus or plus one standard deviation. Proposed target fishing rates for RAHs in 2011 are the same as 2010, and RAHs are presented in Table 4 for Management Units 1 through 4.

**Table 4.** Lake Erie yellow perch fishing rates and Recommended Allowable Harvest (RAH; in millions of pounds) for 2011 by Management Unit (MU).

MU	Fishing Rate	Recommended Allowable Harvest (millions lbs.)		
		MIN	MEAN	MAX
1	0.670	0.803	1.437	2.071
2	0.670	1.515	2.526	3.537
3	0.700	2.985	4.996	7.006
4	0.300	0.399	0.952	1.506
<b>Total</b>		5.702	9.911	14.120

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.