YELLOW PERCH TASK GROUP
EXECUTIVE SUMMARY REPORT
MARCH 2013

Lake Erie Committee

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

2012 Fisheries Review

The lakewide yellow perch total allowable catch (TAC) in 2012 was 13.637 million pounds. This allocation represented a 7.8% increase from a TAC of 12.650 million pounds in 2011. For yellow perch assessment and allocation, Lake Erie is partitioned into four management units (Units, or MUs; Figure 1). The 2012 allocation was 1.800, 4.000, 7.000, and 0.837 million pounds for Units 1 through 4, respectively. The lakewide harvest of yellow perch in 2012 was 10.786 million pounds, or 79.0% of the total 2012 TAC. This was a 12.1% increase from the 2011 harvest of 9.620 million pounds. Harvest by Management Units 1 through 4 was 1.729, 3.729, 4.677, and 0.651 million pounds, respectively (Table 1). The portion of TAC harvested was 96.1%, 93.2%, 66.8%, and 77.7%, in MUs 1 through 4, respectively. In 2012, Ontario harvested 6.901 million pounds, followed by Ohio (3.482 million lbs.), Pennsylvania (203 thousand lbs.), New York (106 thousand lbs.), and Michigan (93 thousand lbs.).
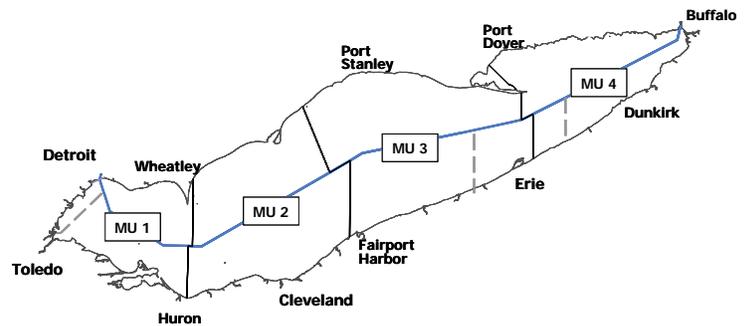
Figure 1. Yellow Perch Management Units (MUs) of Lake Erie.

Targeted gill net effort in Ontario waters in 2012 increased 9.5% in MU2, 28.8% in MU3, and 13.2% in MU4, but decreased 12.7% in MU1 from 2011. U.S. angling effort increased in 2012 from 2011 in MU1 (17.9%), MU2 (15.4%), and MU4 (9.3%), but decreased in MU3 (8.7%). U.S. trap net effort (lifts) in 2012 increased in MU2 (21.2%), MU3 (88.7%), and MU4 (11.7%) compared to 2011. There was no trap net effort in MU1 in 2012. 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 2012.

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	93,291	752,872	883,245	0					1,729,408
2		1,877,615	566,510	1,285,336					3,729,461
3		3,768,183	277,598	469,401	146,346	15,405			4,676,933
4		502,778			41,362	0	88,790	17,709	650,639
Total	93,291	6,901,448	1,727,353	1,754,737	187,708	15,405	88,790	17,709	10,786,441

*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 2012.

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	128,013	2,244	896,083	0				
2		4,616	456,404	6,919				
3		7,847	154,474	2,074	98,234	87		
4		1,770			49,577	0	58,621	428
Total	128,013	16,477	1,506,961	8,993	147,811	87	58,621	428

*Targeted small mesh gill net effort only.

Statistical Catch-at-Age Analysis and Recruitment Estimate for 2013

Population size for 1975 to 2012 for each Management Unit was estimated by statistical catch-at-age analysis (SCAA) using modeling software Auto Differentiation Model Builder (ADMB). Stock size estimates for 2013 (ages 3 and older)

were projected from catch-at-age analysis estimates of 2012 population size and age-specific survival rates in 2012. Age-2 yellow perch recruitment in 2013 was predicted by robust regression 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 2011 year class was incorporated into the 2013 population estimate for age-3 and older fish in each Unit, producing the total standing stock of age-2-and-older fish in 2013 (Table 3). Abundance estimates of age-2-and-older yellow perch in 2013 are projected to decrease by 20.6%, 23.3%, 17.4%, and 19.0% in MUs 1 through 4 respectively compared to the 2012 abundance estimates. Age-2-and-older yellow perch abundance in 2013 is projected to be 23.3, 45.3, 56.9, and 20.6 million fish in Units 1 through 4, respectively (Table 3). Using mean weight-at-age information from assessment surveys, in 2013 biomass estimates are projected to decline in MU1 (9.8%), MU2 (17.9%), MU3 (14.7%), and MU4 (5.3%) compared to 2012.

Table 3. Projection of the 2013 Lake Erie yellow perch population. Stock size estimates are derived from SCAA and age-2 estimates for 2013 are derived from regressions of SCAA age-2 abundance against YOY and yearling survey indices.

MU	Age	2012 Mean Stock Size (millions fish)	Fishing Mortality (F)	Survival Rate (S)	2013 Mean Stock Size (millions fish)	Mean Weight in Population (kg)	Stock Biomass 2012 (millions kgs)	Stock Biomass 2013 (millions kgs)	Stock Biomass 2013 (millions lbs)
1	2	13.420	0.071	0.624	7.313	0.065	0.899	0.475	1.048
	3	5.883	0.268	0.513	8.379	0.100	0.553	0.838	1.848
	4	4.873	0.363	0.466	3.016	0.141	0.624	0.425	0.938
	5	3.813	0.407	0.446	2.272	0.168	0.618	0.382	0.842
	6+	1.282	0.409	0.445	2.272	0.251	0.291	0.570	1.257
	Total	*29.270*	*0.208*	*0.545*	*23.253*	*0.116*	*2.985*	*2.691*	*5.933*
2	2	17.786	0.074	0.623	13.178	0.074	1.476	0.975	2.150
	3	5.154	0.135	0.586	11.072	0.121	0.618	1.340	2.954
	4	18.329	0.297	0.498	3.018	0.153	2.768	0.462	1.018
	5	11.292	0.295	0.499	9.129	0.197	2.033	1.798	3.966
	6+	6.459	0.291	0.501	8.872	0.269	1.582	2.387	5.262
	Total	*59.020*	*0.209*	*0.544*	*45.269*	*0.154*	*8.477*	*6.962*	*15.351*
3	2	20.592	0.061	0.631	18.812	0.054	1.297	1.016	2.240
	3	2.095	0.148	0.578	12.986	0.108	0.247	1.402	3.093
	4	19.840	0.262	0.516	1.211	0.139	2.718	0.168	0.371
	5	11.017	0.267	0.513	10.234	0.182	1.796	1.863	4.107
	6+	15.387	0.252	0.521	13.671	0.260	3.324	3.554	7.838
	Total	*68.931*	*0.193*	*0.553*	*56.914*	*0.141*	*9.382*	*8.004*	*17.648*
4	2	12.631	0.036	0.647	4.973	0.096	1.099	0.477	1.053
	3	0.933	0.062	0.630	8.168	0.156	0.127	1.274	2.810
	4	6.130	0.124	0.592	0.588	0.232	1.294	0.136	0.301
	5	2.397	0.158	0.572	3.630	0.272	0.546	0.987	2.177
	6+	3.273	0.183	0.558	3.199	0.333	1.097	1.065	2.349
	Total	*25.365*	*0.087*	*0.614*	*20.557*	*0.192*	*4.162*	*3.941*	*8.689*

Recommended Allowable Harvest (RAH) for 2013

Standard errors and ranges for population estimates were calculated for each age in 2012, and following estimated survival from catch-at-age, for 2013. 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 2013 are the same as 2012, 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 2013 by Management Unit.

MU	Fishing Rate	Recommended Allowable Harvest (millions lbs.) MIN	MEAN	MAX
1	0.670	0.820	1.570	2.391
2	0.670	2.275	3.711	5.279
3	0.700	2.403	4.053	5.813
4	0.300	0.345	0.789	1.248
Total		5.842	10.122	14.731

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.