

# YELLOW PERCH TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2018



## 2017 Fisheries Review

The lakewide total allowable catch (TAC) of Yellow Perch in 2017 was 10.375 million pounds. This allocation represented a 13% increase from a TAC of 9.208 million pounds in 2016. For Yellow Perch assessment and allocation, Lake Erie is partitioned into four management units (MUs; Figure 1). The 2017 TAC allocation by MU was 3.062, 3.237, 3.776, and 0.300 million pounds for MUs 1 through 4, respectively. The lakewide harvest of Yellow Perch in 2017 was 7.789 million pounds, or 75% of the total 2017 TAC. This was an 8% increase from the 2016 lakewide harvest. Harvest from Yellow Perch MUs 1 through 4 was 2.773, 2.142, 2.639, and 0.235 million pounds, respectively (Table 1). The portion of TAC harvested was 91%, 66%, 70%, and 78%, in MUs 1 through 4, respectively. In 2017, Ontario harvested 4.983 million pounds, followed by Ohio (2.387 million lbs.), Michigan (0.256 million lbs.), Pennsylvania (0.123 million lbs.), and New York (0.040 million lbs.).

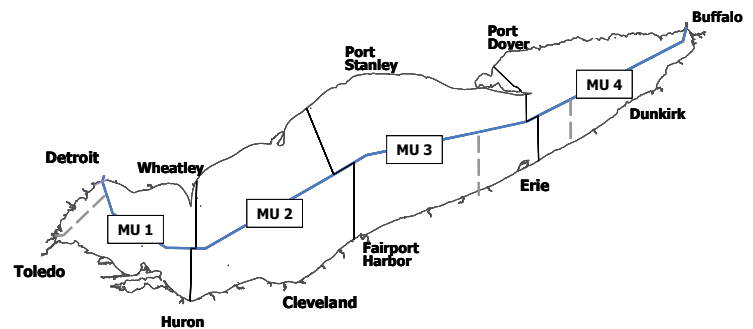


Figure 1. Yellow Perch Management Units (MUs) of Lake Erie.

Targeted gill net effort in Ontario waters in 2017 decreased from 2016 in all MUs (-7% in MU1, -5% in MU2, -20% in MU3, and -57% in MU4). Similarly, angling effort in U.S. waters in 2017 decreased from 2016 in all MUs (-9% in MU1, -42% in MU2, -35% in MU3, and -1% in MU4). U.S. trap net effort in 2017 increased in MU1 (+57%), but decreased in MU2 (-43%), MU3 (-25%), and MU4 (-16%). Fishing effort by jurisdiction and gear type is presented in Table 2.

Targeted gill net harvest rates in 2017 increased in MU1 (+46%), MU2 (+21%), MU3 (+22%), and MU4 (+78%) from 2016 rates. Angling harvest rates, in fish harvested per angler hour, decreased in Ohio and Michigan waters of MU1 (-12% in each, respectively), in Ohio waters of MU2 (-19%) and MU3 (-16%), and in Pennsylvania waters of MU4 (-5%), but increased in the Pennsylvania waters of MU3 (+8%) and New York waters of MU4 (+42%). In 2017, the trap net harvest rate increased in all MUs (176% in MU1, 51% in MU2, 66% in MU3, and 29% in MU4) compared to 2016 harvest rates.

Table 1. Lake Erie Yellow Perch harvest by jurisdiction and gear type for 2017.

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	255,605	1,277,587	792,312	447,263					2,772,767
2		1,498,437	53,107	590,447					2,141,991
3		2,027,235	54,244	449,979	61,594	45,741			2,638,793
4		179,730			16,078	0	27,232	12,366	235,407
<b>Total</b>	255,605	4,982,989	899,663	1,487,689	77,672	45,741	27,232	12,366	7,788,958

\*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 2017.

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	204,877	5,656	775,334	3,830				
2		6,094	119,163	2,567				
3		4,775	58,119	1,679	98,302	262		
4		565			12,843	0	26,154	248
<b>Total</b>	204,877	17,090	952,616	8,076	111,145	262	26,154	248

\*Targeted small mesh gill net effort only.

## Statistical Catch-at-Age Analysis and Recruitment Estimate for 2018

Population size for 1975 to 2017 for each MU was estimated by statistical catch-at-age analysis (SCAA). Stock size estimates for 2018 (age-3-and-older) were projected from SCAA estimates of 2017 population size and age-specific survival rates in 2017. Age-2 Yellow Perch recruitment in 2018 was predicted by multi-model averaging of juvenile Yellow Perch survey indices against SCAA abundance estimates of age-2 Yellow Perch within each MU. Projected age-2 Yellow Perch recruitment from the 2016 year class was incorporated into the 2018 population estimate along with estimates of age-3-and-older fish in each MU, producing the total standing stock of age-2-and-older fish in 2018.

In 2017 and 2018, the YPTG used two SCAA models in each MU to estimate abundance. The first was the model the YPTG has used in the past (hereafter referred to as the YPTG model), the second was the model developed by the Quantitative Fisheries Centre at Michigan State University (hereafter referred to as the Peterson-Reilly or PR model) as part of the Lake Erie Percid Management Advisory Group process. Descriptions of the YPTG and PR models can be found in the complete YPTG report on the GLFC's Lake Erie Committee Yellow Perch Task Group website (see below).

The YPTG recommended using the YPTG model in 2017 and 2018. The current harvest policy was developed for the YPTG assessment models after conducting a stock recruitment simulation to evaluate the risks of various fishing strategies, and the formal risk assessment has yet to be completed for the PR models, which is currently underway through LEPMAG.

Using the YPTG model, abundance estimates of age-2-and-older Yellow Perch in 2018 are projected to decrease by 40% in MU1 and 25% in MU2, and increase by 19% in MU3 and 54% in MU4, compared to the 2017 abundance estimates. Age-2-and-older Yellow Perch abundance in 2017 is projected to be 41.341, 43.279, 49.543, and 17.292 million age-2-and-older Yellow Perch in MUs 1 through 4, respectively. Using mean weight-at-age information from assessment surveys, 2018 biomass estimates are projected to decrease in MU1 (-35%), MU2 (-25%), and MU3 (-5%), and to increase in MU4 (+30%), compared to 2017 estimates.

Using the PR model, abundance estimates of age-2-and-older Yellow Perch in 2018 are projected to decrease by 35% and 26% in MU1 and MU2, respectively, and to increase by 5% and 4% in MU3 and MU4, respectively, compared to the 2017 abundance estimates. Age-2-and-older Yellow Perch abundance in 2018 is projected to be 37.901, 53.868, 77.644, and 16.983 million age-2-and-older Yellow Perch in MUs 1 through 4, respectively. Using mean weight-at-age information from assessment surveys, biomass estimates in 2017 are projected to decrease in MU1 (-35%), MU2 (-27%), and in MU3 (-9%), and to increase in MU4 (+12%), compared to 2017 estimates.

### Recommended Allowable Harvest (RAH) for 2018

Standard errors and ranges for population estimates were calculated for each age in 2017, and projected forward into 2018 using estimated survival rates from catch-at-age. 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 2018 are the same as 2017. The fishing rates applied to abundance estimates from the PR model were the same as those used for the YPTG model. A formal risk assessment has not been completed for harvest strategies applied to the PR model. RAH ranges are presented in Table 3 for management units 1 through 4.

**Table 3.** Lake Erie Yellow Perch fishing rates and RAH (in millions of pounds) for 2018 by management unit.

MU	Fishing Rate	Recommended Allowable Harvest (millions lbs.)					
		YPTG Model			PR Model		
		MIN	MEAN	MAX	MIN	MEAN	MAX
1	0.670	1.871	3.533	5.072	2.060	2.516	3.031
2	0.670	1.889	3.150	4.434	3.159	3.698	4.251
3	0.700	1.457	2.578	3.714	3.065	3.633	4.207
4	0.300	0.246	0.431	0.632	0.390	0.478	0.583
<b>Total</b>		5.463	9.691	13.853	8.675	10.324	12.071

The complete YPTG report is available from the GLFC's Lake Erie Committee Yellow Perch Task Group website at: <http://www.glfc.org/lake-erie-committee.php>, or upon request from an LEC, Standing Technical Committee (STC), or YPTG representative.