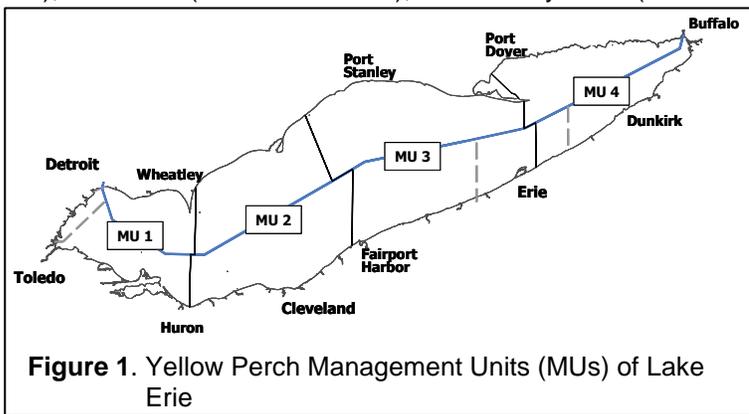


# YELLOW PERCH TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2021



## 2020 Fisheries Review

The lakewide total allowable catch (TAC) of Yellow Perch in 2020 was 7.805 million pounds. This allocation represented a 9% decrease from a TAC of 8.552 million pounds in 2019. For Yellow Perch assessment and allocation, Lake Erie is partitioned into four management units (MUs; Figure 1). The 2020 TAC allocation was 2.110, 2.021, 3.020, and 0.654 million pounds for MUs 1 through 4, respectively. The lakewide harvest of Yellow Perch in 2020 was 3.105 million pounds, or 40% of the total 2020 TAC. This was a 30% decrease from the 2019 harvest of 4.467 million pounds. Harvest from MUs 1 through 4 was 1.333, 0.676, 0.672, and 0.423 million pounds, respectively (Table 1). The portion of TAC harvested was 63%, 33%, 22%, and 65%, in MUs 1 through 4, respectively. In 2020, Ontario harvested 2.129 million pounds, followed by Ohio (0.835 million lbs.), Michigan (0.085 million lbs.), New York (0.036 million lbs.), and Pennsylvania (0.021 million lbs.).



In 2020, targeted (i.e., small mesh) commercial gill net effort in Canadian waters increased from 2019 in MU1 (+44%) and MU4 (+57%), but decreased in MU2 (-3%) and MU3 (-43%). Sport angling effort in U.S. waters increased in 2020 from 2019, in management units 1 (+91%) and 2 (+9%), and decreased in MU3 (-17%) and MU4 (-40%). In 2020, angling effort in U.S. waters was at its lowest in the time series in MU3 and its second lowest in MU2. Compared to 2019, commercial trap net effort (lifts) in U.S. waters decreased by 12% in MU1, 1% in MU2, 37% in MU3, and 39% in MU4. Fishing effort by jurisdiction and gear type is presented in Table 2.

Ontario targeted commercial gill net harvest rates in 2020 decreased relative to 2019 rates in all management units, with decreases of 28%, 32%, 44% and 25%, in MU1, MU2, MU3 and MU4 respectively. Angling harvest rates, in fish harvested per angler hour increased in Michigan (+112%) and decreased in Ohio waters of MU1 (-7%), increased in the Ohio waters of MU2 (+168%), and the Ohio waters of MU3 (+1032%), increased in the Pennsylvania waters of MU3 (+18%) and MU4 (+107%), and decreased in the New York waters of MU4 (-13%). In 2020, trap net harvest rates in U.S. waters decreased by 19% in MU1, 40% in MU2, 15% in MU3, and increased by 30% in MU4.

**Table 1. Lake Erie Yellow Perch harvest by jurisdiction and gear type for 2020.**

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	84,613	857,561	254,676	136,555					1,333,405
2		407,553	19,492	248,721					675,766
3		478,837	4,370	171,180	3,061	14,961			672,408
4		384,737			2,664	0	21,246	14,837	423,484
<b>Total</b>	84,613	2,128,688	278,538	556,456	5,724	14,961	21,246	14,837	3,105,063

\*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 2020.**

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	151,528	9,183	500,595	3,341				
2		4,294	27,006	2,177				
3		3,968	5,022	1,811	1,697	241		
4		1,492			1,294	0	18,677	136
<b>Total</b>	151,528	18,937	532,623	7,329	2,991	241	18,677	136

\*Targeted small mesh gill net effort only.

## 2020 Data Challenges

During spring of 2020, fishery agency offices were closed due to COVID-19. As a result, not all fishery assessments were completed as usual. In Ontario, the commercial gill net fishery was not sampled from April to June 2020, resulting in a loss of samples to calculate the commercial gill net harvest by age. In Michigan, the sport creel survey did not begin until late May and no biological samples were collected. Also, the Ohio sport creel survey did not begin until July, with reduced area coverage, and no biological samples collected. Missing creel data impacted how estimates of total sport harvest and effort, and the age composition of the sport fishery were calculated. All other fishery assessments and fishery independent surveys used by the Yellow Perch Task Group were completed as usual in 2020. For additional information on these data challenges see YPTG 2021.

## Abundance Estimate for 2021

Population size for 1975 to 2020 for each MU was estimated by statistical catch-at-age analysis (SCAA). The PR ADMB model incorporates a recruitment index which is used to project total abundance estimates to 2021. Using the PR model, 2021 age-2-and-older Yellow Perch abundances are projected to decrease by 19% in MU1 and 27% in MU2, and to increase by 17% in MU3 and 35% in MU4, relative to the 2020 abundance estimates. The 2021 Age-2-and-older Yellow Perch abundance projections are 72.711, 34.935, 58.554, and 9.258 million fish in management units 1 through 4, respectively. Using mean weight-at-age information from assessment surveys, 2021 age-2-and-older biomasses are projected to decrease in MU1 (-4%), MU2 (-16%), and MU4 (-2%), while increasing in MU3 (+13%) compared to 2020 estimates.

## Recommended Allowable Harvest (RAH) for 2021

During 2020 the Yellow Perch Management Plan was finalized with harvest control rules (HCR) comprised of:

- Target fishing mortality as a percent of the fishing mortality at maximum sustainable yield ( $F_{msy}$ )
- Limit reference point of the biomass at maximum sustainable yield ( $B_{msy}$ )
- Probabilistic risk tolerance,  $P^*=0.20$
- A limit on the annual change in TAC of  $\pm 20\%$  (when  $P(SSB < B_{msy}) < P^*$ )

Target fishing rates and limit reference points are estimated annually using results from the SCAA models. Limit reference points and target fishing rates for each management unit are presented in Table 3. Target fishing rates are reduced when the probability of the projected spawning stock biomass being equal to or less than the limit reference point ( $B_{msy}$ ) is greater than 0.20 ( $P^*$ ). Fishing rates are applied to population estimates and their standard errors, to determine minimum, mean, and maximum RAH values for each management unit (Table 4).

**Table 3.** Parameters used in the harvest control rule 2021.  $F_{actual}$  may be reduced from  $F_{target}$  if  $P(SSB < B_{msy}) \geq P^*$ .

MU	Spawning Stock Biomass			Limit Reference Point		Fishing Rate			
	$SSB_0$	2021	2022 <sup>(a)</sup>	$B_{msy}$	P	$F_{msy}$	% $F_{msy}$	$F_{target}$	$F_{actual}$ <sup>(b)</sup>
MU1	5,934,540	5,808,720	5,738,570	1,643,824	0.00	2.34	28%	0.655	0.655
MU2	13,311,200	4,592,480	3,565,750	3,702,407	0.57	1.92	35%	0.672	0.114
MU3	12,475,900	4,952,570	5,047,750	3,449,903	0.07	2.11	32%	0.675	0.675
MU4	1,526,230	818,537	1,065,060	438,057	0.00	1.76	34%	0.598	0.598

(a) Spawning stock biomass when population is fished at target fishing rate.

(b) In MU2 fishing at  $F_{target}$  exceeds a 0.20 probability ( $P^*$ ) that the projected spawning stock biomass will be equal to or less than the limit reference point ( $B_{msy}$ ), therefore the fishing rate was reduced until the probability was less than 0.20.

**Table 4.** Lake Erie Yellow Perch fishing rates and RAH (in millions of pounds) for 2021 by management unit.

MU	Fishing Rate	Recommended Allowable Harvest (millions lbs.)		
		MIN	MEAN	MAX
1	0.655	3.033	3.807	4.576
2	0.114	0.436	0.526	0.615
3	0.675	2.105	2.568	3.027
4	0.598	0.287	0.423	0.559
<b>Total</b>		5.861	7.325	8.777

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.