



Age Composition of Yellow Perch (*Perca flavescens*) and Lake Whitefish (*Coregonus clupeaformis*) in Commercial Trap Nets in Western Lake Erie*

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Abstract

We collected samples of yellow perch (*Perca flavescens*) in spring and autumn 2006, and lake whitefish (*Coregonus clupeaformis*) in autumn 2006, from commercial trap nets set in western Lake Erie. The spring yellow perch sample (N = 85) was dominated (70.6% of the total sample) by the 2001 year class. These results were similar to the spring commercial samples collected in 2004 and 2005. The autumn yellow perch sample (N = 106) was dominated by the 2003 year class (58.5% of the total sample) and the 2001 year class (34.9%). These results were similar to the autumn 2005 commercial sample, in which the 2001 and 2003 year classes collectively accounted for 88.2% of the individuals collected. Similarly, the 2001 year class dominated the autumn 2004 commercial sample of yellow perch. The lake whitefish sample (N = 205) was dominated by the 2003 and 2001 year classes, which respectively accounted for 62% and 17.6% of the sample. No sample of lake whitefish was collected in 2005. However, the 2000 year class, which dominated the autumn 2004 commercial sample, was nearly absent in 2006.

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Introduction

The U.S. Geological Survey Lake Erie Biological Station has collected fish samples from commercial trap nets in the western basin of Lake Erie since the 1960s. The objectives of this activity are to determine growth rates and age structures of commercially harvested species. These data are critical for estimating abundances and determining harvest limits. In this report we summarize age structures and mean size-at-age for two commercial species (yellow perch [*Perca flavescens*] and lake whitefish [*Coregonus clupeaformis*]) collected from commercial trap nets set in western Lake Erie in 2006. These results are intended to provide insights into the current status of age composition and growth of these species.

Methods

Samples of yellow perch were collected from landed catches from commercial trap nets set offshore of Kelleys Island in western Lake Erie in spring and autumn 2006. Spring samples were collected on 17 May and 1 June. Autumn samples were collected on 16 October and 13 November. Samples of lake whitefish were collected from landed catches from commercial trap nets set offshore of Luna Pier, Michigan on 21 November and offshore of Turtle Island, Ohio on 27 and 29 November.

Total length (nearest mm) of each yellow perch specimen was measured. Both length and weight (nearest g) of each lake whitefish specimen was measured. For all samples, sex and maturity were determined by inspecting the gonads. Saggital otoliths were removed, and ages of specimens were estimated by examining the otoliths in the laboratory.

Prior to 2003, ages of yellow perch were estimated by examining scales. Similarly, ages for lake whitefish were estimated by examining scales until 2004. Lake whitefish samples were not collected during 2005. Due to the low number of years in which otoliths were examined, we did not compare size-at-age for fish collected in 2006 with any previous long-term mean.

Results and Discussion

Yellow perch

Seven year classes were represented in the spring 2006 commercial trap net sample (Table 1, N = 85). All individuals collected were sexually mature.

Specimens ranged from age-3 (2003 year class) to age-10 (1996 year class). The sample was dominated (70.6% of the total sample) by age-5 (2001 year class) individuals. The 2003 year-class, which was not fully recruited to commercial nets in 2005 (Bur et al. 2006), was the second-largest year class (9.4%) represented in the spring 2006 sample. No other year class had more than 8 individuals in the spring sample and the 2000 year class was not represented. These results were similar to the spring commercial samples collected in 2004 and 2005, in which the 2001 year class accounted for 47% and 83.1%, respectively, of the individuals collected (Bur et al. 2006).

Five year classes were represented in the autumn 2006 commercial trap net sample (Table 2, N = 106). All individuals collected were sexually mature. Specimens ranged from age-3 (2003 year class) to age 8 (1998 year-class). The sample was dominated by the 2003 year class (58.5% of the total sample) and the 2001 year class (34.9%). No other year class accounted for more than 3% of the autumn sample and the 2000 year class was not represented. These results were similar to the autumn 2005 commercial trap net sample for yellow perch, in which the 2001 and 2003 year classes collectively accounted for 88.2% of the individuals collected (Bur et al. 2006).

Table 1. Summary statistics for yellow perch (N = 85) collected from commercial trap net catches in western Lake Erie during spring 2006. All individuals were sexually mature. Abbreviations: F = female, M = male, SE = standard error.

Age	Year		n	%N	Total Length (mm)	
	Class	Sex			Mean	SE
3	2003	F	7	8.2	222	13.3
	2003	M	1	1.2	215	
4	2002	F	3	3.5	252	15.7
	2002	M	1	1.2	218	
5	2001	F	31	36.5	258	23.9
	2001	M	29	34.1	224	18.2
6	2000	F	0	0.0		
	2000	M	0	0.0		
7	1999	F	1	1.2	348	
	1999	M	5	5.9	259	17.4
8	1998	F	0	0.0		
	1998	M	4	4.7	256	14.0
9	1997	F	1	1.2	256	
	1997	M	0	0.0		
10	1996	F	1	1.2	284	
	1996	M	1	1.2	283	

Table 2. Summary statistics for yellow perch (N = 106) collected from commercial trap net catches in western Lake Erie during autumn 2006. All individuals were sexually mature. Abbreviations: F = female, M = male, SE = standard error.

Age	Year class	Sex	n	%N	Total length (mm)	
					Mean	SE
3	2003	F	34	32.1	245.4	27.3
	2003	M	28	26.4	221.2	17.6
4	2002	F	2	1.9	250.5	23.3
	2002	M	1	0.9	217.0	
5	2001	F	28	26.4	284.2	21.3
	2001	M	9	8.5	244.0	20.8
6	2000	F	0	0.0		
	2000	M	0	0.0		
7	1999	F	1	0.9	321.0	
	1999	M	1	0.9	258.0	
8	1998	F	1	0.9	235.0	
	1998	M	1	0.9	284.0	

The 2001 year class dominated the autumn 2004 commercial sample, accounting for 88.4% of the individuals collected (Bur et al. 2005).

Lake Whitefish

Twelve year classes were represented in the autumn 2006 commercial trap net sample (Table 3, N = 205). Specimens ranged from age 2 (2004 year class) to age 13 (1993 year class). Males outnumbered females in the sample by a ratio of 7.2:1. The sample was dominated by age 3 (2003 year class) and age 5 (2001 year class) individuals, which respectively accounted for 62% and 17.6% of the sample. No sample of lake whitefish was collected in 2005, due to adverse weather conditions and limited commercial harvest of the species. The 2003 year class would not have been fully recruited to the commercial gear in 2005. The 2000 year class dominated the autumn 2004 commercial sample, accounting for 45.3% of the individuals collected (Bur et al. 2005). However, this year class was nearly absent (0.5% of the total) in 2006.

Table 3. Summary statistics for lake whitefish (N = 205) collected from commercial trap net catches in western Lake Erie during autumn 2006. All individuals were sexually mature. Abbreviations: F = female, M = male, SE = standard error.

Age	Sex	Year Class	n	%N	Total Length (mm)		Weight (g)	
					Mean	SE	Mean	SE
2	F	2004	0	0.0				
	M	2004	1	0.5	440		763	
3	F	2003	12	5.9	444	13.8	861	118.7
	M	2003	115	56.1	446	27.0	801	197.5
4	F	2002	1	0.5	498		1109	
	M	2002	5	2.4	464	37.4	914	261.6
5	F	2001	10	4.9	517	20.4	1213	144.8
	M	2001	26	12.7	508	33.9	1202	247.7
6	F	2000	0	0.0				
	M	2000	1	0.5	519		1191	
7	F	1999	0	0.0				
	M	1999	4	2.0	522	17.6	1438	165.2
8	F	1998	0	0.0				
	M	1998	9	4.4	568	28.4	1701	329.6
9	F	1997	0	0.0				
	M	1997	3	1.5	587	9.1	1806	76.5
10	F	1996	2	1.0	509	74.2	1381	672.5
	M	1996	6	2.9	562	67.3	1764	564.5
11	F	1995	0	0.0				
	M	1995	5	2.4	584	26.3	1978	308.8
12	F	1994	0	0.0				
	M	1994	4	2.0	595	34.8	1997	327.6
13	F	1993	0	0.0				
	M	1993	1	0.5	437		702	

References

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