



Department of  
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## Evaluation of the black bass 10-inch minimum size limit in New York rivers



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*Cover photo: P. DiConza with a smallmouth bass from the Hudson River near Schuylerville, NY. Photo by J. Loukmas*

## ABSTRACT

Black bass [smallmouth bass (*Micropterus dolomieu*) and largemouth bass (*Micropterus salmoides*)] are generally managed under a statewide minimum size limit of 12 inches during the harvest season. However, there are a number of rivers and streams throughout the state where they are managed under a 10-inch minimum size limit. This special regulation was established to allow harvest of bass from populations that are generally believed to not grow as large as their lake and pond counterparts. From 2013 – 2017 black bass populations in 10 rivers with the 10-inch minimum size regulation were sampled using boat electrofishing, angling, or both. Smallmouth bass populations were assessed for size structure [percent of the population <10 inches, 10 – 11.9 inches and  $\geq 12$  inches; and size structure indices (proportional stock density and relative stock density – preferred)], growth (length at age), and longevity (proportion of age classes of  $\geq$  age-4 fish). These metrics were compared with averages from inland river and lake populations with the 12-inch minimum size limit to determine if there were differences in size, age and growth. Size structures and growth were highly variable among study rivers, but the average values for these metrics were similar to averages for statewide regulation rivers and lakes. Rivers with the 10-inch minimum size limit had a lower proportion of older ( $>$  age 5) smallmouth bass than statewide rivers and lakes, an indication that longevity is likely less in these rivers. Shorter lifespans in these rivers should result in a smaller proportion of larger bass ( $>14$  inches (the approximate length at age-5)), but this was only weakly reflected in the size structure indices. All 10 study rivers had smallmouth bass  $>12$  inches, including seven rivers where  $>20\%$  of the adult stock population was  $\geq 12$  inches. This suggests that smallmouth bass can obtain sufficient sizes in adequate numbers to provide opportunities for angler harvest under the statewide regulation in these rivers. The results of this study and general bass harvest patterns across the state suggest that there is little benefit to maintaining the special 10-inch minimum size limit regulation in rivers and streams. Elimination of this regulation and replacing it with the statewide minimum size limit should not affect angler opportunity and will simplify the current suite of black bass fishing regulations.

## INTRODUCTION

New York State has an abundance of warmwater streams and rivers, and black bass [smallmouth bass (*Micropterus dolomieu*) and largemouth bass (*Micropterus salmoides*)] are typically the most prevalent, and sought after, sportfish in these systems. Most riverine black bass populations are managed under the statewide regulations which include an open “harvest” season from the 3rd Saturday in June to November 30, a daily possession limit of 5, a 12-inch minimum size limit, and a catch and release only season from December 1 to the “harvest” season opener. However, some river populations are managed under special regulations, with the most widely applied one being a 10-inch minimum size limit to allow some angler harvest of bass from populations that are generally believed to not grow as large as their lake and pond counterparts, either because of reduced longevity, slower growth rates, or both (Green et al. 1992). The continued need for this special regulation is in question as bass angling is now largely catch and release (Connelly and Knuth 2013), and anecdotal angler reports suggest that bass well over 12 inches can be regularly caught from at least some of these rivers. An assessment of the size, age and growth characteristics of black bass in rivers with the special 10-inch minimum size regulation was necessary to determine if this regulation was still warranted.

## **METHODS**

From 2013 – 2017, black bass populations in 10 rivers (referred to hereafter as “study rivers”) in DEC regions 3, 4 and 6 with the 10-inch minimum size regulation were sampled using boat electrofishing, angling, or both (Table 1). Sampling occurred from May – November. Despite the differences in sampling dates and methods, it was assumed that size and age structures derived from these surveys were representative of each population at stock size and above and were therefore suitable for this assessment. All collected bass were measured for length, and scale samples were taken for aging. Ages were determined for smallmouth bass from eight rivers (Table 1).

Population metrics were calculated and analyzed only for smallmouth bass because very few largemouth bass were collected (Table 1). Population metrics assessed included:

- percent of the stock size ( $\geq 7$  inches) population sample  $< 10$  inches,  $10 - 11.9$  inches, and  $\geq 12$  inches,
- size structure (Proportional Stock Density (PSD) and Relative Stock Density - preferred (RSDp)),
- length at age, and
- proportion of each age class  $\geq$  age-4.

PSD and RSDp were calculated with the Bureau of Fisheries Fish Calculator (Brooking et al. 2018b). Smallmouth bass reach quality size at 11 inches and preferred size at 14 inches (Gablehouse et al. 1984).

All metrics were compared to average values from inland rivers with the statewide 12-inch minimum size limit. Averages were derived from the only four rivers with at least 30 measured and aged smallmouth bass from 2010 – 2019 (Appendix A).

In addition, proportion of each age class  $\geq$  age-4 was compared to those from inland lakes with at least 30 aged smallmouth bass from 2010 – 2019 (Appendix A). The assessment of age 4 and older fish was done to avoid any potential sample size biases related to the collection of young (sub-legal) fish. Population metrics for these groups were calculated from data in the Statewide Fisheries Database. Size structure indices and length at age were also compared to statewide averages for lakes in the spring and fall. These statewide averages were from the Bass and Sunfish Population Metric Data manual (Brooking et al. 2018). Comparison groups are referred to as “statewide regulation rivers” and “statewide lakes” hereafter.

## **RESULTS**

A total of 765 black bass were collected, 694 of which were smallmouth bass (Table 1). Collections from only two of the study rivers had more than 20 largemouth bass, while collections from all of the study rivers had at least 30 smallmouth bass.

Smallmouth bass ranged from 2.8 – 19.2 inches in length, with a general and gradual decrease in numbers with increasing size (Figure 1). The size structure of smallmouth bass population samples varied greatly among study rivers. The average percent of the population sample  $\geq 10$  inches was 48% and ranged from 30% in Rondout Creek to 71% in Raquette River. The average for statewide regulation rivers (47%) was nearly identical to the average for study rivers (Figure 2). The average percent of the population sample  $\geq 12$  inches was 28% in

study rivers and ranged from 11% in the St. Regis River to 55% in the Raquette River. The average for statewide regulation rivers (29%) was, again, nearly the same as it was for study rivers (Figure 2). The average percent of smallmouth bass in the 10 – 11.9 inch size range were therefore similar for both study rivers (20%) and statewide regulation rivers (18%). For study rivers, this is the percent of the population that would revert to sublegal if the statewide regulation ( $\geq 12$  inches) was implemented.

Table 1. Sampling details from 10 rivers with a black bass 10-inch minimum size limit, 2013-2017.

River	Region	Year (s) surveyed	Survey month(s)	Sampling method(s)	No. of smb collected	No. of lmb collected	Aged
Rondout Creek	3	2017	June	boat electrofishing	85	11	Y
Wallkill River	3	2017	May, June	boat electrofishing	145	10	Y
Normans Kill	4	2013	September, October	angling	49	2	N
Schoharie Creek	4	2013-14	June, August, September	angling	107	0	N
Black River	6	2015-16	May, June, July	angling, boat electrofishing	82	0	Y
Grass River	6	2016	June, August, September	angling	61	1	Y
Indian River	6	2015	July	angling, boat electrofishing	30	22	Y
Oswegatchie River	6	2015	July, September	angling, boat electrofishing	47	24	Y
St. Regis River	6	2017	July	angling	52	0	Y
Raquette River	6	2017	July, August	angling, boat electrofishing	35	1	Y



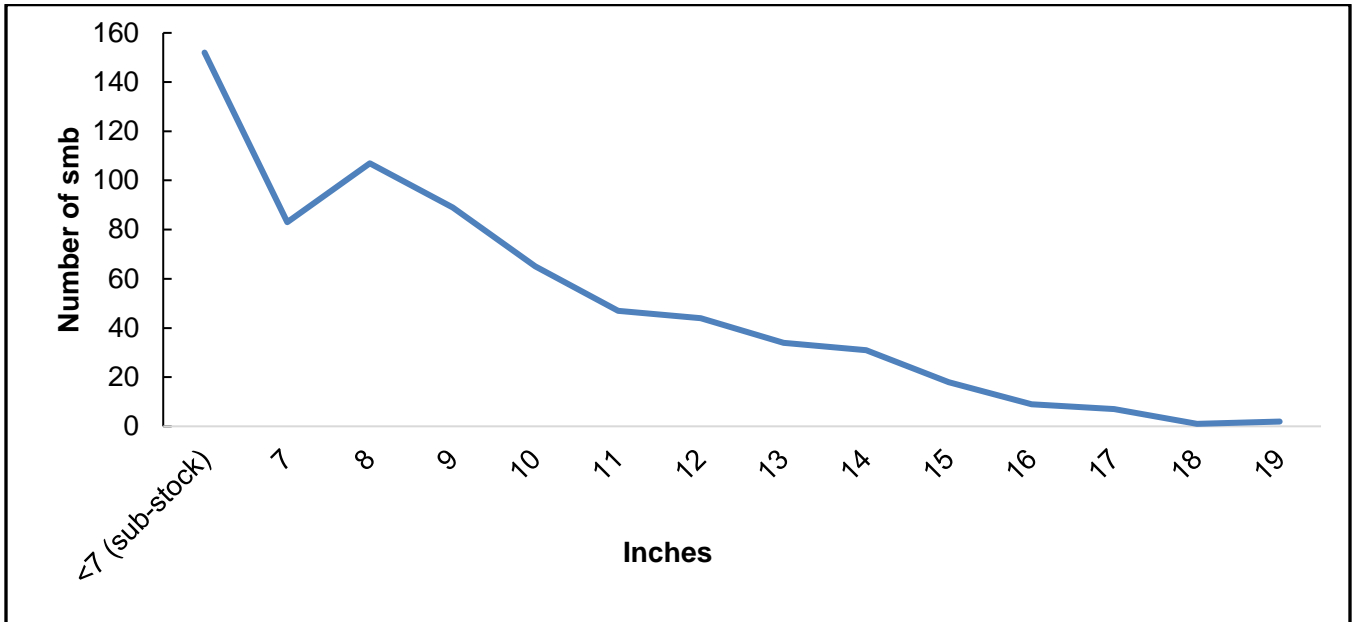


Figure 1. Length frequency of smallmouth bass from 10 rivers with the 10-inch minimum size limit.

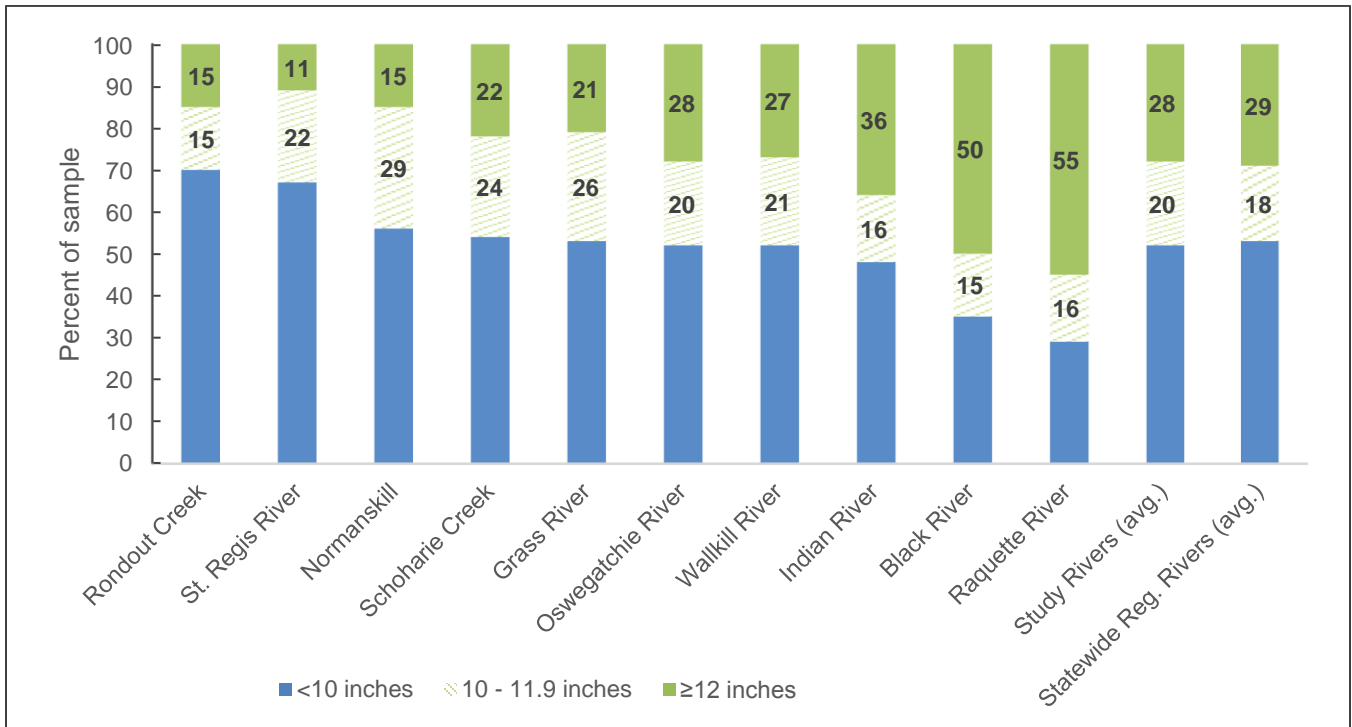


Figure 2. Percent of smallmouth bass population samples <math>< 10</math> inches, 10 – 11.9 inches, and

The average PSD for all study rivers was 35 and ranged from 15 in St. Regis River to 56 in Black River. The average RSD<sub>14</sub> was 14 and ranged from 4 in the Normans Kill to 33 in the Black River. Average values were similar to those from statewide regulation rivers and slightly below those for statewide lakes in the spring and fall (Figure 3).

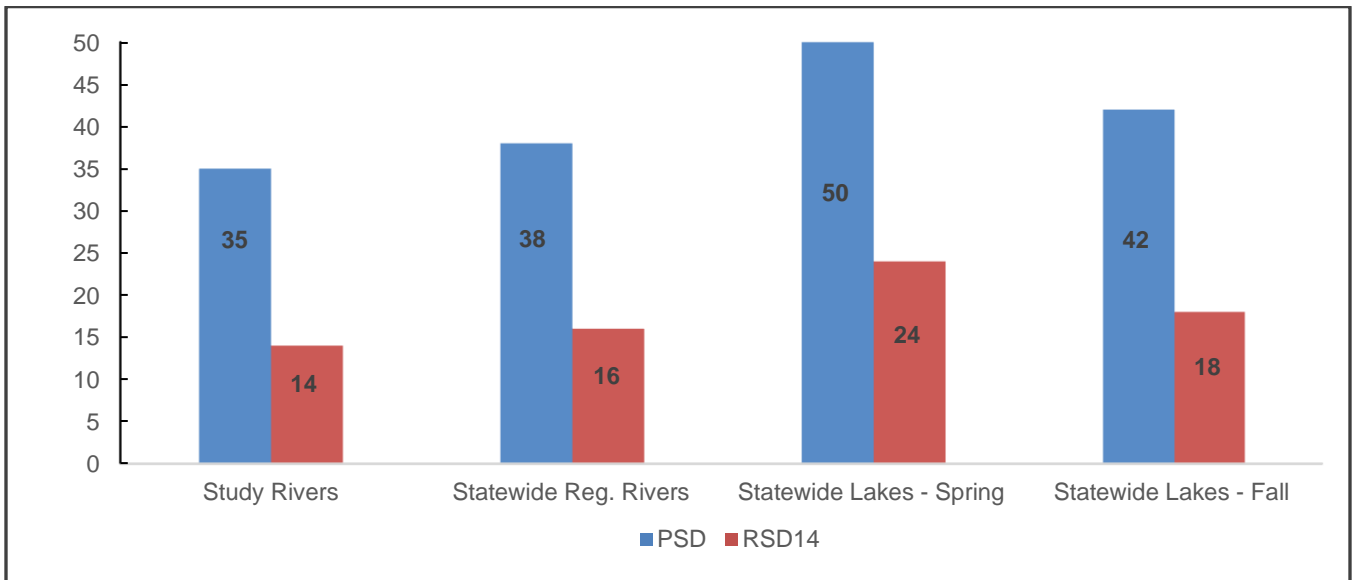


Figure 3. Average PSD and RSD<sub>14</sub> for smallmouth bass population samples from rivers with the 10-inch minimum size limit, statewide rivers, and statewide lakes in the spring and fall (Brooking et. al 2018).

All eight rivers with aged fish had smallmouth bass that were at least 6 years old. Length of smallmouth bass varied by age among these rivers, but stock size (7 inches) was typically reached at 2 years old, legal (10 inches) and quality size (11 inches) at 4 years old, and 12 inches at 5 years old (Table 2). Age 5 bass in all of these study rivers were >12 inches. Average length at ages for all eight rivers were generally equivalent to those from statewide regulation rivers and statewide lakes in both the spring and fall (Table 2 and Figure 4).

Table 2. Average length (inches) at age of smallmouth bass from eight rivers in New York with a 10-inch minimum size limit, rivers with the statewide 12-inch minimum size limit, and statewide lakes (Brooking et al. 2018).

River	Age (year)									
	1	2	3	4	5	6	7	8	9	10
Black River	4.4	8.0	10.1	11.9	14.7	14.9	16.2			
Grass River	6.2	8.7	10.4	11.0	12.9	13.8				
Indian River	5.7	9.1	8.3	11.9	13.9	16.2			19.0	
Oswegatchie River	4.7	7.4	9.3	10.0	13.8			19.2		
Raquette River	5.1	8.0	9.4	9.9	13.1	14.1	15.4	16.6		
Rondout Creek	4.2	7.0	9.3	11.3	13.6	12.5				17.7
St. Regis River	6.0	7.3	8.8	10.1	12.6	14.4				
Wallkill River	4.7	6.5	8.8	10.9	12.8	13.2	15.3	16.3		
Study Rivers (avg.)	<b>5.0</b>	<b>7.2</b>	<b>9.3</b>	<b>11.1</b>	<b>13.5</b>	<b>14.3</b>	<b>15.7</b>	<b>16.9</b>	<b>19.0</b>	<b>17.7</b>
Statewide Reg. Rivers (avg.)	<b>6.3</b>	<b>7.4</b>	<b>9.0</b>	<b>10.8</b>	<b>13.2</b>	<b>14.9</b>	<b>15.7</b>	<b>15.5</b>	<b>15.6</b>	<b>14.9</b>
Statewide Lakes - Spring (avg.)	<b>4.4</b>	<b>6.7</b>	<b>9.3</b>	<b>11.7</b>	<b>13.1</b>	<b>14.3</b>	<b>15.6</b>	<b>16.4</b>	<b>17.5</b>	<b>18.2</b>
Statewide Lakes – Fall (avg.)	<b>6.6</b>	<b>8.6</b>	<b>10.5</b>	<b>12.4</b>	<b>14.0</b>	<b>15.1</b>	<b>15.4</b>	<b>16.9</b>	<b>16.8</b>	<b>18.3</b>

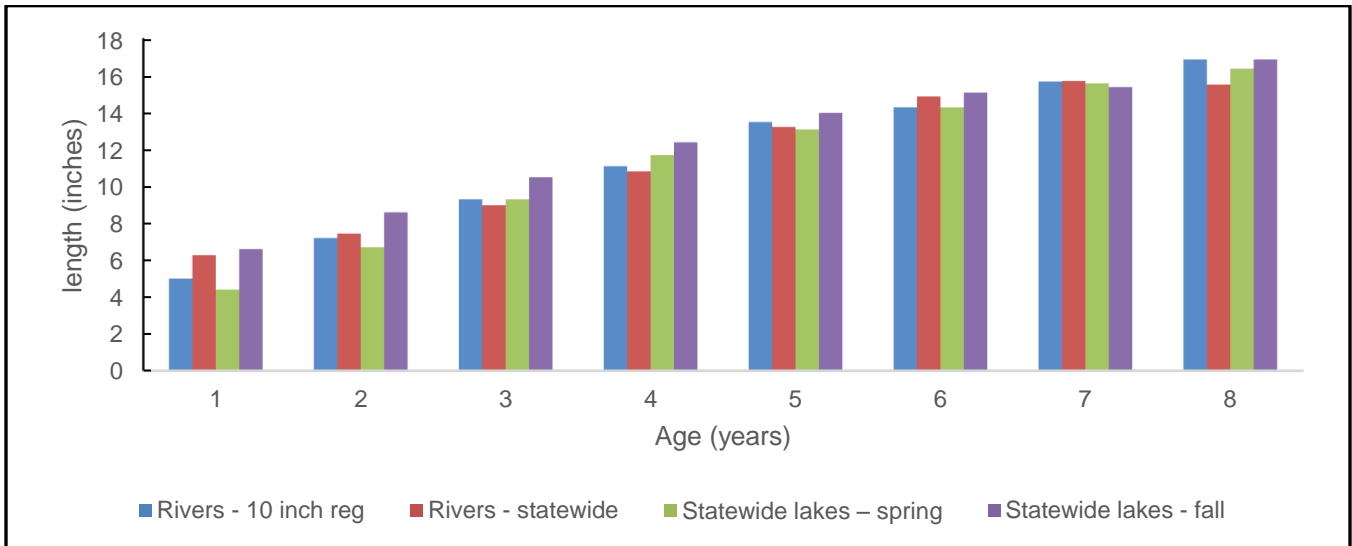


Figure 4. Mean smallmouth bass lengths at age for rivers with the 10-inch minimum size limit, statewide rivers, and statewide lakes in the spring and fall (Brooking et al. 2018).

The proportions of age classes  $\geq$  age 4 (when smallmouth bass typically reach 10 inches in length) indicated that 75% of the smallmouth bass in this age range in the study rivers were ages 4 and 5, compared to about 60% of the smallmouth bass in statewide regulation rivers and statewide lakes (Figure 5). Therefore, there was a higher proportion of older smallmouth bass (mostly ages 6-9) in statewide regulation rivers and statewide lakes than were in study rivers.

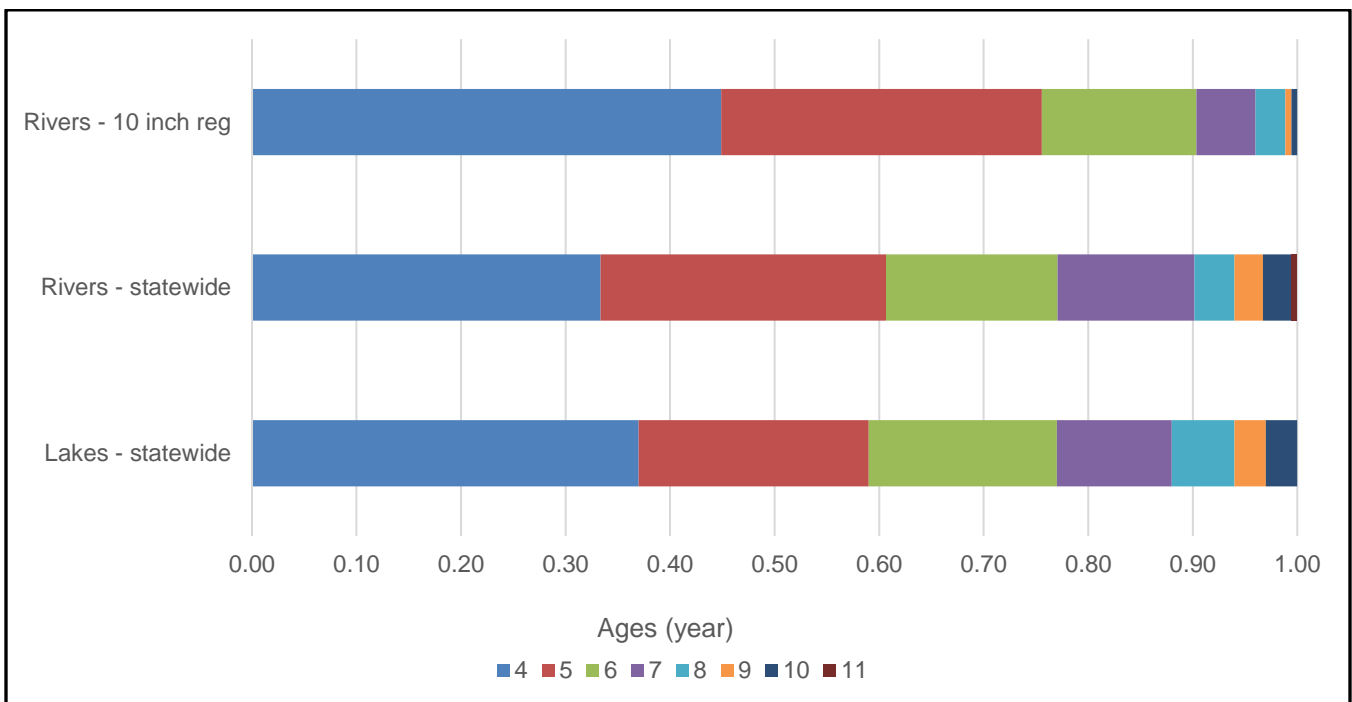


Figure 5. The proportion of each age class of smallmouth bass  $\geq$  age-4 from rivers with a 10-inch minimum size limit, statewide rivers and statewide lakes.



## DISCUSSION

The justification for the 10-inch minimum size limit in certain rivers and streams in New York is that black bass are generally believed to not grow as large in rivers and streams as they do in lakes and ponds, and there are likely fewer bass available for legal harvest as a result (Green et al. 1986, Green et al. 1992). This assessment indicated that, despite a high amount of variability among rivers, overall size structure and growth of smallmouth bass in rivers with this special regulation were very similar to those from lakes and rivers with the statewide 12-inch minimum size. However, there was a smaller proportion of older smallmouth bass (> age 5) in rivers with the 10-inch minimum size limit than there were in statewide regulation rivers and lakes, an indication that longevity is likely less in these rivers. Shorter lifespans in these rivers should result in a smaller proportion of larger bass [>14 inches (the approximate length at age-5)], but this was only weakly reflected in the size structure indices (average  $RSD_{14}$  for study rivers = 14; statewide regulation rivers = 16; spring statewide lakes = 24; fall statewide lakes = 18). All 10 study rivers had smallmouth bass >12 inches, including seven rivers where >20% of the adult stock population was  $\geq 12$  inches. This suggests that smallmouth bass can obtain sufficient sizes in adequate numbers to provide opportunities for harvest under the statewide regulation in these rivers.

Management of river black bass populations should be based in part on growth and longevity, but exploitation also needs to be considered (Green et al. 1992, Loukmas and Perry 2015). Unfortunately, information on angler catch and harvest of black bass in rivers is very limited, but a recent creel survey on the Chemung River provides some insights (Hammers 2017). Most of the Chemung River black bass fishery is managed under the statewide 12-inch minimum size limit (east of the 352 bridge in Corning, NY). A small section of river west of this bridge, along with its tributaries (Tioga and Cohocton rivers), are managed under the 10-inch minimum size limit. The creel survey was conducted on the river section east of Corning to the Pennsylvania border in 2015. Black bass were the primary sportfish, representing >90% of the total sportfish catch (6,188 of the 6,595 sportfish caught). Twenty nine percent of the black bass caught were legal size ( $\geq 12$  inches). The black bass catch and harvest rates were 0.2 fish/h and 0.02 fish/h, respectively. Harvest was influenced by only a few trips as the overwhelming majority of anglers released all black bass caught. Over 75% of anglers never keep bass from the river, while <1% regularly harvest bass. Boat electrofishing surveys in the fall of 2015 (Hammers 2017) and spring of 2017 documented that smallmouth bass were the predominant black bass species in the river (98% of the black bass caught). Forty-six percent of the smallmouth bass population was  $\geq 10$  inches and 22% of the population was  $\geq 12$  inches. The PSD was 37 and  $RSD_{14}$  was 11. These are all in the middle of the range for these metrics for the 10-inch minimum size rivers evaluated in this study.

In general, black bass fishing in New York is now primarily catch and release (Connelly and Knuth 2013), and recent creel surveys on lakes (Oneida, Cayuta, Canadice and Hemlock lakes, and Swinging Bridge Reservoir), bays (Port, East, Blind Sodus, Irondequoit and Sodus bays) and the Chemung River provide evidence of this, as harvest rates didn't exceed 0.03 bass/h on any of these waters (Sanderson 2009, Sanderson et al. 2009, Sanderson 2010, Sanderson 2014, Hammers 2014, Angyal 2016, Hammers 2017, Jackson et al. 2019). On the Chemung River, there was little interest in harvesting bass, and the overall harvest was low and driven by only a few individuals. This is likely representative of many other river black bass fisheries throughout New York State. An older, albeit very limited, creel survey on the Susquehanna and Tioughnioga rivers in 1999-2000 also supports this, as no smallmouth bass

were harvested by anglers targeting bass and very few (1 or 2) were harvested overall (effort: 221 anglers fished for 336 hours) (Bishop and Lemon 2003).

The results of this study and general black bass harvest patterns across the state suggest that there is little benefit to maintaining the special 10-inch minimum size limit regulation in rivers and streams. All of the rivers assessed provide opportunities to catch black bass 12 inches and larger, and if there is an interest in harvesting bass from these systems the statewide minimum size is sufficient to provide this. Elimination of this unnecessary special regulation and replacing it with the statewide minimum size limit should not affect angler opportunity and will simplify the current suite of black bass fishing regulations. In addition, >99% of bass anglers in New York prefer either a 12-inch minimum size or larger for managing black bass (Connelly and Knuth 2013), and therefore this change should be widely accepted among those anglers.

## **ACKNOWLEDGMENTS**

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Appendix A. Number of smallmouth bass in each age class from rivers and lakes used for age proportion analysis.

	Ages (year)											
	0	1	2	3	4	5	6	7	8	9	10	11
<b>Study River</b>												
Black River		5	6	24	24	12	7	4				
Grass River		4	23	16	9	8	1					
Indian River	2	4	6	7	2	5	3			1		
Oswegatchie River		9	8	12	10	3			1			
Raquette River		3	3	10	1	10	4	3	1			
Rondout Creek		7	38	25	7	6	1				1	
St. Regis River		5	14	17	10	3	3					
Wallkill River		11	61	37	16	7	7	3	3			
<b>Statewide Reg. River</b>												
Allegheny River	18	43	65	50	29	17	15	9	5	4	4	
Chemung River	7	17	21	17	13	9	3		1			
Susquehanna River	23	44	47	22	17	22	10	14	1	1		
Tunungwant Creek		3	13	3	2	2	2	1			1	1
<b>Statewide Lake</b>												
Ashokan Reservoir		9	66	85	156	93	97	104	34	5	1	
Black Lake	1	8	5	28	44	23	16	4		1		
Canandaigua Lake		9	22	15	16	5	2					
Cazenovia Lake			7	2		3	19	8	5	1		
Chautauqua Lake	4	18	46	33	29	19	20	13	9	6	18	2
Chenango Lake		4	23	16	14	10	9	15	8	8	5	1
Cuba Lake	1	7	21	14	17	12	12	23	10	10	7	
De Ruyter Reservoir		1	1	3	5	5	5	8	4	4		
Delta Lake	8	61	34	43	48	37	21	11	2			
East Canada Lake	3	22	12	13	14	4	2		1			
Eaton Brook Reservoir				7	5	9	22	8	6	1		
Fourth Lake	4	34	12	5	5		1					
Greenwood Lake			10	19	31	16	9	4		1		
Horseshoe Lake		17	12	3	3	10	4					
Jamesville Reservoir			8	25	18	10	4	4		2		
Kinderhook Lake		22	18	38	25	13	12	14	1			
Otisco Lake	4	47	40	32	28	18	13	13	6	2	1	
Pleasant Lake		2	4	8	13	5	4	1				
Quaker Lake		11	30	16	14	7	10	8	4	2	11	
Red Lake		3	1	17	13	14	7		1			
Rio Reservoir		18	13	11	2	3		1	1			
Skaneateles Lake			26	9	24	9	5	5	3	4	2	1
Swinging Bridge Reservoir	17	13	39	12	7	1	2					
Walton Lake				5		11	8	7	11	2	2	
Whitney Point Reservoir	4	38	40	58	51	25	12	5	2	1		