

## STREAM ASSESSMENT



### MINNESOTA DEPARTMENT OF NATURAL RESOURCES DIVISION OF FISH AND WILDLIFE

**Report Date:** March 1, 2011

Region	Area	Stream Name	Tributary No.	Stream Length
3	Lake City	Zumbro River	M-34	57.6 Miles
County	Watershed Name, No.		Source (T, R, S)	Mouth (T, R, S)
Wabasha	Zumbro, 41		109-14-27	110-9-31

**Date(s) of Assessment:** April 27, 28, 30, and May 6, 2010

**Assessment Purpose:** Determine abundance and size structure of smallmouth bass in two stations in the Zumbro River.

Station	Similar Reach	Stream Mile	Length (ft)	Mean Width (ft)	Acres	Water Temp (F)	Air Temp (F)	Downstream UTM's	
								utm <sub>x</sub> (↔)	utm <sub>y</sub> (↑)
Klein's	2	57.6	8450	-	-	60	-	541553	4899917
Hammond	2	45.2	6500	-	-	65	-	548454	4899448

**Summary:**

Smallmouth bass  $\geq 7$  inches are defined as stock size (Table 1).

Population estimates of stock size smallmouth bass were completed on two stations, "Klein's" and "Hammond", on the Main Branch Zumbro River in 2010. Klein's station has a long term data set dating back to 1997. The Hammond station was established in 2009 and lies between Zumbro Falls and Hammond. Habitat is similar in each station, but they are not equal lengths, so total catch is not comparable. Catch can be compared with population per 1000 ft. Sampling and estimates are made with a 2-pass, mark-recapture method using a caudal fin clip as a mark and a modified Chapman formula for estimates. Two, pulsed-DC electrofishing boats were used on the Klein's station. Only one boat was used on the Hammond station. Surveys prior to 2009 used a 3 pass Schnabel estimate, but future estimates will rely on the 2 pass Chapman estimate.

**Methods:**

On the first pass all gamefish were captured and measured. Smallmouth bass of stock size were given a caudal fin clip. The upper caudal was clipped on Klein's and the lower caudal was clipped on Hammond. Muskellunge were measured and tagged with a PIT and floy tag in both passes, assuming they weren't already tagged. Both PIT and floy tags were uniquely numbered. On the second pass, all smallmouth bass captured were measured and examined for caudal fin clips. The reported length frequencies do not include recaptured smallmouth bass or smallmouth bass less than stock size in the second pass.

**Discussion of Fishery:****Klein's Station:**

The Chapman population estimate of smallmouth bass greater than stock size was 536 (95% CL 418-653). The estimate of smallmouth bass  $\geq$  quality length was 238 (95% CL 215-341) and the estimate of smallmouth bass  $\geq$  preferred length was 77 (95% CL 48-107). The long term trends for Klein's station are outlined (Figures 1, 2, and 3). The estimate for stock size fish is 63 per 1000 ft, quality size is 28 per 1000 ft., and preferred size is 9 per 1000 ft (Table2.)

One hundred forty-one smallmouth bass greater than stock size were captured in both runs. Ninety-three of these were  $\geq$  11 inches and 27 were  $\geq$  14 inches. This resulted in a PSD of 66 and an RSD-14 of 19.

Klein's station is within a special regulation area with no harvest of smallmouth bass allowed and the Hammond station is under state-wide fishing regulations of a 6 bass daily limit.

**Hammond Station:**

The Chapman population estimate of smallmouth bass  $\geq$  stock size was 269 (95% CI 177 to 361). The estimate of smallmouth bass  $\geq$  quality length was 137 (95% CL 90-185) and the estimate of smallmouth bass  $\geq$  preferred length was 32 (95% CL 21-42). The estimate for stock size fish is 41 per 1000 ft., quality size is 21 per 1000ft., and preferred size is 5 per 1000 ft. All of these values are lower than the Klein's station (Table 2).

Eighty-four smallmouth bass greater than stock size were captured in both runs. Fifty of these were  $\geq$  11 inches and 22 were  $\geq$  14 inches. This resulted in a PSD of 60 and an RSD-14 of 26. The proportion of larger fish was higher in the Hammond station in 2010 compared to Klein's station. The two largest bass at 19 inches and 19.1 inches were found in the Hammond station. Long term comparisons will not be made until several more years of sampling are done in the Hammond station.

### Fishery Characteristics

Station	Klein's		Hammond	
Date	5/8 & 11, 2010		5/12 & 15, 2010	
Gear	Smith-Root Mini-Boom		Smith-Root	
EFFORT (FEET)	8450 feet 2 runs		6500 feet 2 runs	
Species	No.	Wt. (lb)	No.	Wt. (lb)
Black crappie	3	-	0	-
Bluegill	7	-	12	-
Brook Trout	1	-	1	-
Brown trout	10	-	7	-
Channel catfish	4	-	1	-
Largemouth bass	2	-	0	-
Muskellunge	17	-	0	-
Northern pike	7	-	0	-
Rock bass	6	-	2	-
Sauger	1	-	2	-
Smallmouth bass*	337	-	183	-
Walleye	2	-	0	-

\* Recaptured fish from run 2 are not included in totals

Length Class Distributions – Klein's Station, SPRING 2010

Species	SMB	BKT	BLC	BLG	BNT	CCF	LMB	MUE
Length (in)								
< 6.0	19							
6.0 - 6.9	12		3	1				
7.0 - 7.9	19			1	1		1	
8.0 - 8.9	11				3		1	
9.0 - 9.9	10				1			
10.0 - 10.9	8							
11.0 - 11.9	21	1		1				
12.0 - 12.9	19							
13.0 - 13.9	26				2			
14.0 - 14.9	9				2			
15.0 - 15.9	9							
16.0 - 16.9	6					1		
17.0 - 17.9	1							
18.0 - 18.9	2							
19.0 - 19.9								
20.0 - 20.9					1			
21.0 - 21.9						1		
22.0 - 22.9						1		
23.0 - 23.9						1		
24.0 - 24.9								
25.0 - 25.9								
26.0 - 26.9								
27.0 - 27.9								
28.0 - 28.9								
29.0 - 29.9								
30.0 - 34.9								1
35.0 - 39.9								9
40.0 - 44.9								4
45.0 - 49.9								3
<b>Total No.</b>	172	1	3	3	10	4	2	17
<b>Mean Length</b>	10.9	11.8	6.6	8.7	11.9	21.0	5.0	39.9


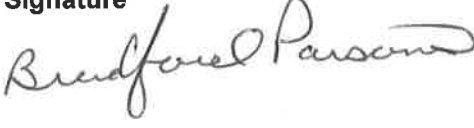
Length Class Distributions – Klein’s Station, SPRING 2010 (continued)

Species	NOP	RKB	SAR	WAE	YEP
Length (in)					
< 6.0		2			2
6.0 - 6.9		2			
7.0 - 7.9		2			2
8.0 - 8.9					
9.0 - 9.9					
10.0 - 10.9				1	
11.0 - 11.9					
12.0 - 12.9					
13.0 - 13.9					
14.0 - 14.9				1	
15.0 - 15.9					
16.0 - 16.9					
17.0 - 17.9					
18.0 - 18.9					
19.0 - 19.9					
20.0 - 20.9					
21.0 - 21.9					
22.0 - 22.9	1		1		
23.0 - 23.9					
24.0 - 24.9	2				
25.0 - 25.9					
26.0 - 26.9	1				
27.0 - 27.9					
28.0 - 28.9					
29.0 - 29.9					
30.0 - 34.9	3				
35.0 - 39.9					
40.0 - 44.9					
45.0- 49.9					
<b>Total No.</b>	7	6	1	2	4
<b>Mean Length</b>	27.3	6.0	20.3	12.6	5.8

Length Class Distributions – Hammond Station, SPRING 2010

Species	SMB	BKT	BLG	BNT	CCF	RKB	SAR	YEP
Length (in)								
< 6.0	18		2			1		
6.0 - 6.9	8		3					
7.0 - 7.9	9		6	1		1		
8.0 - 8.9	11		1	1				
9.0 - 9.9	6			1				
10.0 - 10.9	8							1
11.0 - 11.9	6	1						
12.0 - 12.9	11			1				
13.0 - 13.9	11							
14.0 - 14.9	10			1				
15.0 - 15.9	7						1	
16.0 - 16.9	3			2				
17.0 - 17.9								
18.0 - 18.9								
19.0 - 19.9	2						2	
20.0 - 20.9					1		2	
21.0 - 21.9								
22.0 - 22.9								
23.0 - 23.9								
24.0 - 24.9								
25.0 - 25.9								
26.0 - 26.9								
27.0 - 27.9								
28.0 - 28.9								
29.0 - 29.9								
30.0 - 34.9								
35.0 - 39.9								
40.0 - 44.9								
45.0- 49.9								
<b>Total No.</b>	102	1	12	7	1	2	5	1
<b>Mean Length</b>	11.0	11.2	6.8	12.1	12.1	6.0	18.9	10.8

**Credits and Signatures**

<b>Field Crew:</b> Randy Binder, Dan Spence, Dan Dieterman, Jeff Weis, Kevin Stauffer			
<b>Report Completed by:</b>			
<b>Name:</b> Dan Spence		<b>Title:</b> Fisheries Specialist	<b>Date:</b> March 1, 2011
<b>Approved by:</b>			
<b>Area Fisheries Supervisor</b>	<b>Date</b>	<b>Regional Fisheries Manager's Signature</b>	<b>Date</b>
	April 20, 2011		5-12-11

**Population Estimate of SMB >7'**  
Zumbro River Long-term Station (Klein's)

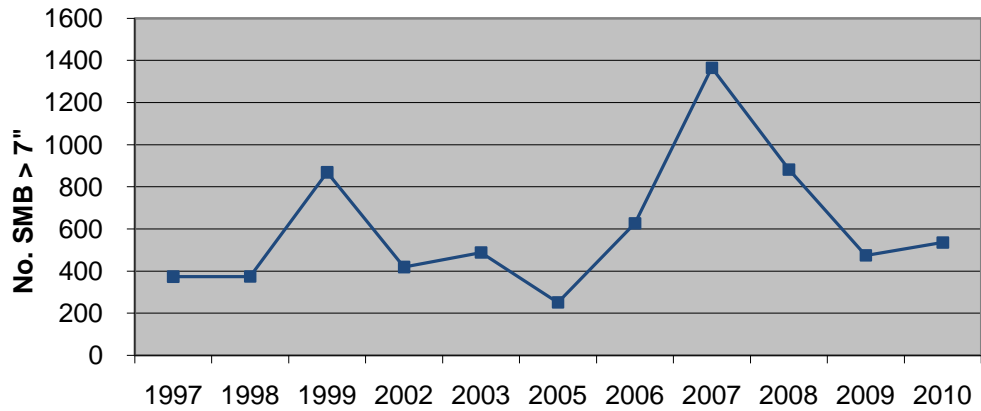


Figure 1. Smallmouth bass  $\geq 7''$  on Klein's station Zumbro River.

**Population Estimate of SMB >11"**  
Zumbro River Long-term Station (Klein's)

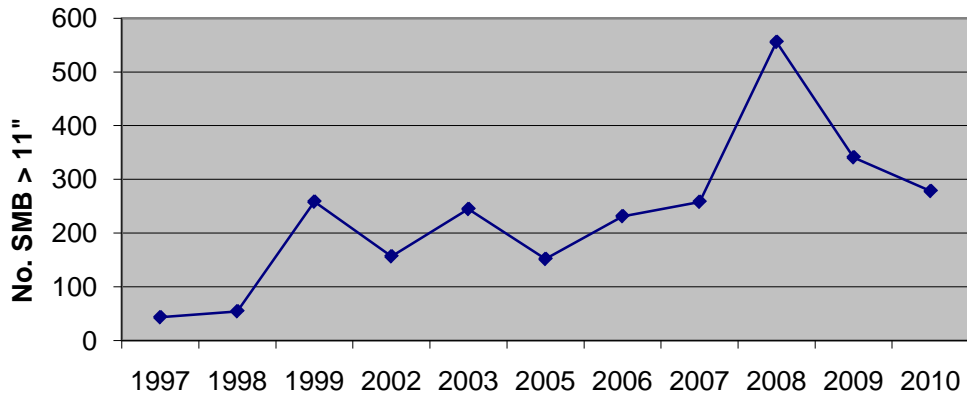


Figure 2. Smallmouth bass  $\geq 11''$  on Klein's station Zumbro River.

**Population Estimates for SMB > 14"**  
Zumbro River Long-term Station (Klein's)

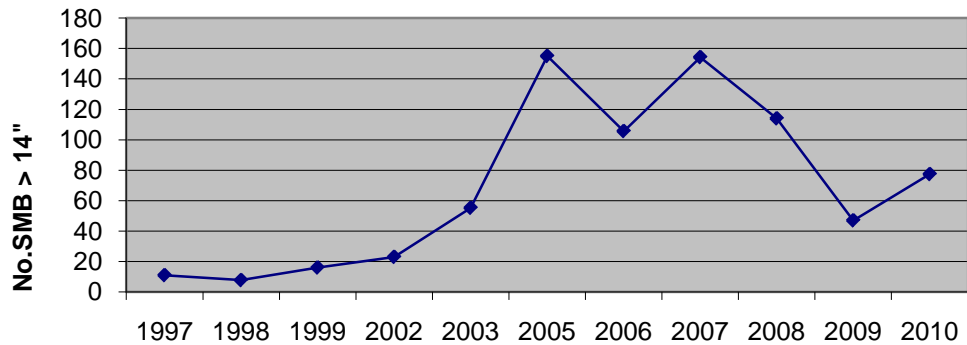




Figure 3. Smallmouth Bass  $\geq 14$ " on Klein's station Zumbro River.  
**Smallmouth bass size designation**

Stock	Quality	Preferred	Memorable	Trophy
7"	11"	14"	17"	20"

**Table 1.** Maximum total length for minimum stock, quality, preferred, memorable, and trophy sizes based on percentages of world record lengths for smallmouth bass.

Size Class	Klein's	Hammond
Stock	63	41
Preferred	28	21
Quality	9	5

**Table 2.** Comparisons of Proportional and Relative Stock Densities between Klein's and Hammond stations on Zumbro River, 2010