



**MINNESOTA DEPARTMENT OF NATURAL RESOURCES**  
**DIVISION OF FISH AND WILDLIFE**  
**STREAM ASSESSMENT REPORT**

**Report Date:** February 6, 2010

Region	Area	Stream Name	Tributary No.	Stream Length
3	Lake City	West Indian	M-34-17	7.2
County		Watershed Name, No.	Source (T, R, S)	Mouth (T, R, S)
Wabasha		Zumbro River,41	109N, R11W, S2T110N,R11W,S21	

**Date(s) of Assessment:** September 30, 2011

**Assessment Purpose:** Long Term Monitoring

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> (↓)
5.4	2	5.4	780	17.3	0.31			568328	4898689

**Summary:**

Station 5.4 on West Indian Creek is part of the Long-Term Monitoring program in southeast Minnesota.

Estimated brown trout numbers were 933 adults/mile and 412 recruits/mile. The number of brown trout  $\geq 12$  inches was an estimated 66 /mile and brown trout  $\geq 14$  inches was an estimated 7 /mile but there were no brown trout  $\geq 16$  inches. Total brown trout biomass was estimated at 151.2 lbs/acre.

There were no adult brook trout sampled in this survey. There were an estimated 61 brook trout recruits per mile.

There were no white suckers sampled in this station.

**Fishery Characteristics – Population Estimates**

Station: 5.4      Date: 9/30/2011      Gear: Stream Shocking Barge Method: Two Pass Depletion      Station length (ft): 780

Brook Trout				
In Station				
	Recruits	Adults	Total	
n	9	0	9	
95% CI	4.24	--		
Per Mile				
	Recruits	Adults	Total	≥ 10 inches
n	61	0	61	--
95% CI				--
Per Acre				
	Recruits	Adults	Total	
n	29	0	29	
95% CI				
lbs	0.7	0.0	0.7	

Brown Trout				
In Station				
	Recruits	Adults	Total	
n	61	138	199	
95% CI	9.63	9.35		
Per Mile				
	Recruits	Adults	Total	
n	412	933	1345	
95% CI				
	≥ 12 inches	≥ 14 inches	≥ 16 inches	
n	66	7	--	
95% CI	22.74	0.00	--	
Per Acre				
	Recruits	Adults	Total	
n	196	445	641	
95% CI				
lbs	4.9	146.3	151.2	

Length (in)	Brook Trout	Brown Trout	White Sucker
1			
2			
3	4	24	
4	4	30	
5		3	
6		12	
7		32	
8		15	
9		24	
10		23	
11		13	
12		4	
13		4	
14		1	
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30+			
<b>Total</b>	8	185	0

**Other species sampled:**

Common Name	Number Sampled
sculpin	150

**Coldwater Index of Biotic Integrity (Mundahl and Simon 1998)**

Station Name: 5.4  
 Stream Width (m): 5.3  
 Station Length (m): 237.7

<u>Metric (Max Score)</u>	<u>Value (Score)</u>
Total Captured	193
Number of Species (10)	2 (10)
Number of Coldwater Species (10)	2 (5)
Number of Minnow Species (10)	0 (10)
Number of Benthic Species (10)	0 (10)
Number of Tolerant Species (10)	0 (10)
Percent Salmonids as Brook Trout (10)	4.14 (0)
Percent Intolerant Individuals (10)	4.14 (0)
Percent Coldwater Individuals (10)	100 (10)
Percent White Suckers (10)	0 (10)
Percent Top Carnivores (10)	100 (10)
Number of Coldwater Individuals per 150m (10)	121.76 (10)
Number of Warmwater Individuals per 150m (10)	0 (10)
<b>TOTAL IBI SCORE (120 maximum)</b>	<b>95</b>
Percent of maximum score:	79.17%

**Stream Characteristics – Minnesota Stream Habitat Assessment (MSHA)**

<u>MSHA Metric</u>	<u>Component score maximum</u>	<u>Component score</u>
Surrounding Land Use	5	2.5
Riparian Zone	15	8
Instream Zone - Substrate	27	9.5
Instream Zone - Cover	17	14
Channel Morphology	36	30
	100	<b>MSHA Score</b> (Max = 100)
		<b>64</b>

#### Discussion of Fishery:

Station 5.4 on West Indian Creek is one of the stations in the Long-Term Monitoring program of southeast Minnesota. This is the 19<sup>th</sup> fall that this station has been sampled since 1981 and it has been sampled annually since 1999.

Estimated numbers of adult brown trout in this assessment were 933/mile which is higher than the 18 year mean of 827/mile (Table 1). Estimated number of brown trout recruits was 412/mile which is lower than the 18 year mean of 966/mile. Brown trout  $\geq 12$  inches were estimated at 66/mile, brown trout  $\geq 14$  inches were 7/mile, but there were no brown trout collected  $\geq 16$  inches in this assessment and one has not been collected since 2002. Total brown trout biomass was estimated at 151.2 lbs/acre (Table 1).

No adult brook trout were sampled in this survey but adults have been sampled in other years (Table 2). There were an estimated 29 brook trout recruits in this survey.

A section of West Indian Creek is currently being managed using a 12-16" protected slot with bait allowed. This area begins at the County 4 bridge and continues upstream to the stream source, and this LTM station is included in this stretch. The long range management plan for West Indian Creek finalized in the year 2000 wanted to achieve a brown trout fishery consisting of 1000 adults/mile with 15% of the population  $\geq 12$  inches within the special regulations area.

There was only 7% of the population of adult brown trout  $\geq 12$  in this assessment (Table 1). Since the special regulations inception the average brown trout population  $\geq 12$  inches/mile is 8%. Before the implementation of the special regulation, the percentage of adult brown trout  $\geq 12$  inches was 52% from 1981-1986 but total population was much lower (Table 1). No fall data is available for 1987 to 1998 on station 5.4 (Table 1). The size restrictions on this stream should be reevaluated.

The Coldwater IBI (Mundahl and Simon 1998) score of 80 is lower than last year (Table 3). This was due to the lower percentage of brook trout. From 2003 to 2011 the IBI score has ranged from 80 to 105.

The Minnesota Stream Habitat Assessment score was 64 which is lower than the 2010 value of 72.1 (Table 3). The surrounding land use is row crop agriculture. The stream has moderate bank erosion and moderate shade. The pools were made up mostly of sand and other substrates were moderately embedded. The riffle/run complex was made up of gravel and cobble. Extensive amounts of cover were available in all categories. Channel stability and sinuosity were moderate and the channel development was good.

Stream: West Indian  
Tributary: M-34-17  
Survey Year: 2011

**Credits and Signatures:**


<b>Field Crew:</b>		
Randy Binder, Nick Schlessler, Dan Spence		
<b>Report completed by:</b>		
<b>Name:</b> Dan Spence	<b>Title:</b> Fisheries Specialist	<b>Date:</b> February 6, 2012
<b>Approved by:</b>		
<b>Area Fisheries Supervisor's Signature</b>	<b>Regional Fisheries Manager's Signature</b>	<b>Date:</b>
		

Table 1. Trends in brown trout population metrics for West Indian, years 1981-1986 and 1999-2011

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥12 in.)	No./mile (≥14 in.)	No./mile (≥16 in.)	lbs/acre (all sizes)
5.4	5.4	2	9/30/2011	933	412	66	7	0	151.2
5.4	5.4	2	9/29/2010	2195	1405	152	27	0	335.24
5.4	5.4	2	9/17/2009	731	2955	121	7	0	141.68
5.4	5.4	2	9/22/2008	879	622	68	14	0	149.66
5.4	5.4	2	9/26/2007	1579	144	163	27	0	267
5.4	5.4	2	10/3/2006	545	884	92	11	0	108.14
5.4	5.4	2	9/27/2005	766	92	32	0	0	94.6
5.4	5.4	2	10/12/2004	1111	975	114	0	0	175.37
5.4	5.4	2	10/17/2003	973	1168	252	16	0	193.4
5.4	5.4	2	9/16/2002	2063	1144	193	54	16	286
5.4	5.4	2	9/24/2001	2115	2966	199	40	13	312.81
5.4	5.4	2	9/20/2000	755	2437	98	32	5	168.32
5.4	5.4	2	9/16/1999	725	669	79	20	7	115.2
5.4	5.4	2	9/26/1986	64	694	44	-	-	74
5.4	5.4	2	9/23/1985	109	58	53	-	-	44
5.4	5.4	2	9/24/1984	144	646	52	-	-	91
5.4	5.4	2	10/3/1983	51	144	33	-	-	29
5.4	5.4	2	10/5/1982	54	288	23	-	-	48
5.4	5.4	2	10/13/1981	32	94	32	-	-	25
5.4	5.4	2	Fall Mean	827	966	100	-	-	147.7

Table 2. Trends in brook trout population metrics for West Indian, years 1999-2011

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥10 in.)	lbs/acre (all sizes)
5.4	5.4	2	9/30/2011	0	9	0	0.7
5.4	5.4	2	9/29/2010	183	0	7	18.88
5.4	5.4	2	9/17/2009	7	0	0	1.26
5.4	5.4	2	9/22/2008	7	14	0	0.92
5.4	5.4	2	9/26/2007	107	0	7	12
5.4	5.4	2	10/3/2006	11	11	0	1.21
5.4	5.4	2	9/27/2005	0	0	0	0
5.4	5.4	2	10/12/2004	5	5	0	0.7
5.4	5.4	2	10/17/2003	0	22	0	1
5.4	5.4	2	9/16/2002	32	0	0	3
5.4	5.4	2	9/24/2001	0	0	0	0
5.4	5.4	2	9/20/2000	0	0	0	0
5.4	5.4	2	9/16/1999	0	0	0	0
5.4	5.4	2	Fall Mean	29.3	4.3	1.2	3.2

Table 3. Trends in Index of Biotic Integrity (Mundahl and Simon 1998) and Minnesota Stream Habitat Assessment (Fisheries Stream Survey Manual 2007) scores for West Indian, years 2003-2011

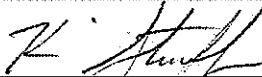
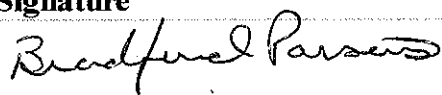
Station	River Mile	Similar Reach	Date	IBI	Land Use	Riparian Zone	Instream Substrate	Instream Cover	Channel Morphology	Final Score
5.4	5.4	2	9/30/2011	80	2.5	8	9.5	14	30	64
5.4	5.4	2	9/29/2010	90	2.5	8	17.6	14	30	72.1
5.4	5.4	2	9/17/2009	100	2.5	10	17.6	16	28	74.1
5.4	5.4	2	9/22/2008	100	2.5	9.5	17	13	28	70
5.4	5.4	2	9/26/2007	85	2.5	8.5	17.2	13	25	66.2
5.4	5.4	2	10/3/2006	90	-	-	-	-	-	-
5.4	5.4	2	10/12/2004	105	-	-	-	-	-	-
5.4	5.4	2	10/17/2003	105	-	-	-	-	-	-

## References

Fisheries Stream Survey Manual. 2007. Special Publication No. 165. Minnesota Department of Natural Resources.

Mundahl, N.D., and T.P. Simon. 1998. Development and application of an index of biotic integrity for coldwater streams of the upper Midwestern United States. Pages 383-415 In Thomas P. Simon (ed.). Assessing the Sustainability and Biological Integrity of Water Resources Using Fish Communities. CRC Press, Boca Raton, Florida.

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		6-7-12