



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

Region	Area	Stream Name	Tributary No.	Stream Length
3	Lake City	West Indian Creek	M-34-17	7.2
County			Source (T, R, S)	Mouth (T, R, S)
Wabasha			T109N, R11W, S2 T110N, R11W, S21	

**Date(s) of Assessment:** October 30, 2014.

**Assessment Purpose:** Long-term monitoring to evaluate annual variation and temporal trends in trout populations, fish community (IBI), and stream habitat.

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 813 adults/mile and 102 recruits/mile. The number of Brown Trout  $\geq 12$  inches was an estimated 121 /mile. There was an estimated 27 Brown Trout  $\geq 14$  inches per mile. There were no Brown Trout  $\geq 16$  inches. Total Brown Trout biomass was estimated at 191.5 lbs/acre.

There were only five adult Brook Trout sampled in this survey and no recruits. This produced an estimate of 36 adult Brook Trout per mile.

There were 13 White Suckers sampled and 20 Slimy Sculpin sampled in this station.

**Fishery Characteristics – Population Estimates**

Station: 5.4      Date: 10/30/2014      Gear: Shocking Barge      Method: Two Pass Depletion      Station length (ft): 780

<b>Brook Trout</b>			
In Station			
	Recruits	Adults	Total
n	No Pop Est	5	--
95% CI	--	1.99	
Per Mile			
	Recruits	Adults	Total
n	--	36	--
	≥ 10 inches		
n	7		
95% CI	0.00		
Per Acre			
	Recruits	Adults	Total
n	--	17	--
lbs	--	5.0	--

<b>Brown Trout</b>			
In Station			
	Recruits	Adults	Total
n	15	120	135
95% CI	0.64	8.04	
Per Mile			
	Recruits	Adults	Total
n	102	813	915
	≥ 12 inches	≥ 14 inches	≥ 16 inches
n	121	27	--
95% CI	19.38	0.00	--
Per Acre			
	Recruits	Adults	Total
n	49	388	436
lbs	1.8	189.7	191.5

Length (in)	Brook Trout	Brown Trout	White Sucker
1			
2			
3		1	
4	2	10	6
5	1	5	7
6		1	
7		7	
8	1	8	
9	2	19	
10	1	32	
11		29	
12		11	
13		2	
14		4	
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30+			
<b>Total</b>	<b>7</b>	<b>129</b>	<b>13</b>

**Other Species Sampled:**

Common Name	Number Sampled
Slimy Sculpin	20
White Sucker	13

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

Total Captured	169
Number of Species (10)	4 (10)
Number of Coldwater Species (10)	3 (5)
Number of Minnow Species (10)	0 (10)
Number of Benthic Species (10)	2 (5)
Number of Tolerant Species (10)	1 (10)
Percent Salmonids as Brook Trout (10)	5.14 (0)
Percent Intolerant Individuals (10)	15.97 (5)
Percent Coldwater Individuals (10)	92.3 (10)
Percent White Suckers (10)	7.69 (0)
Percent Top Carnivores (10)	80.47 (10)
Number of Coldwater Individuals per 150m (10)	98.42 (10)
Number of Warmwater Individuals per 150m (10)	8.2 (10)
<b>TOTAL IBI SCORE (120 maximum)</b>	<b>85</b>
Percent of maximum score:	70.83%

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

MSHA Metric	Component score maximum	Component score
Surrounding Land Use	5	2.5
Riparian Zone	15	11
Instream Zone - Substrate	27	11.3
Instream Zone - Cover	17	14
Channel Morphology	36	28
	100	<b>MSHA Score</b> (Max = 100)
		<b>66.8</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 22<sup>nd</sup> fall that this station has been sampled since 1981 and it has been sampled annually since 1999 (Figures 1 and 2).

Estimated numbers of adult Brown Trout in this assessment were 813/mile, which was similar to the 22 year mean of 869/mile (Table 1). Estimated number of Brown Trout recruits was 102/mile, which is far lower than the 22 year mean of 920/mile. Brown Trout  $\geq 12$  inches and  $\geq 14$  inches were estimated at 121/mile and 27/mile, respectively. There were no Brown Trout collected  $\geq 16$  inches in this assessment and none have been collected since 2002. Total Brown Trout biomass was estimated at 191.5 lbs/acre (Table 1). This is the second year in a row of poor Brown Trout recruitment.

There were only five adult Brook Trout sampled in this survey giving a population estimate of 36 per mile. This is the second year in a row of zero Brook Trout recruits (Table 2). This has not been an uncommon observation for West Indian since 1999.

A section of West Indian Creek, including the LTM station, 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. The long range management plan for West Indian Creek finalized in the year 2000 wanted to achieve a Brown Trout fishery consisting of 1,000 adults/mile with 15% of the population  $\geq 12$  inches within the special regulations area. This year the percentage of Brown Trout  $\geq 12$  inches reached 15% but was only 813 adults per mile.

The Coldwater IBI (Mundahl and Simon 1998) score of 85 is lower than last year (Table 3). From 2003 to 2014 the IBI score has ranged from 80 to 105. Slimy Sculpin and White Sucker were the only other species sampled in this survey.

The Minnesota Stream Habitat Assessment score was 66.8 (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 there was a well-developed channel.

**Credits and Signatures:**


<b>Field Crew:</b>		
Randy Binder, Dan Spence, Jeff Weiss		
<b>Report completed by:</b>		
<b>Name:</b>	<b>Title:</b>	<b>Date:</b>
Dan Spence	Fisheries Specialist	6-Jan-15
<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 Creek 1981-2014.

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)
<b>5.4</b>	<b>5.4</b>	<b>2</b>	<b>10/30/2014</b>	<b>813</b>	<b>102</b>	<b>121</b>	<b>27</b>	<b>0</b>	<b>191.5</b>
5.4	5.4	2	10/22/2013	1253	83	124	14	0	199.1
5.4	5.4	2	9/17/2012	1170	1434	122	20	0	195.9
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	869	920	101	20	3	150.3

Table 2. Trends in brook trout population metrics for West Indian Creek 1993-2014.

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥10 in.)	lbs/acre (all sizes)
<b>5.4</b>	<b>5.4</b>	<b>2</b>	<b>10/30/2014</b>	<b>36</b>	<b>0</b>	<b>0</b>	<b>5</b>
5.4	5.4	2	10/22/2013	27	0	7	no est.
5.4	5.4	2	9/17/2012	83	7	0	3
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

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 Creek 2003-2014.

Station	River Mile	Similar Reach	Date	IBI	Land Use	Riparian Zone	Instream Substrate	Instream Cover	Channel Morphology	Final Score
<b>5.4</b>	<b>5.4</b>	<b>2</b>	<b>10/30/2014</b>	<b>85</b>	<b>2.5</b>	<b>11</b>	<b>11.3</b>	<b>14</b>	<b>28</b>	<b>66.8</b>
5.4	5.4	2	10/22/2013	100	2.5	8	9.5	14	30	64
5.4	5.4	2	9/17/2012	100	2.5	8	9.5	14	30	64
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	-	-	-	-	-	-

Figure 1. Trend in the number of adult Brown Trout in the Long Term Monitoring station of West Indian Creek 1981-86 and 1999-2014.

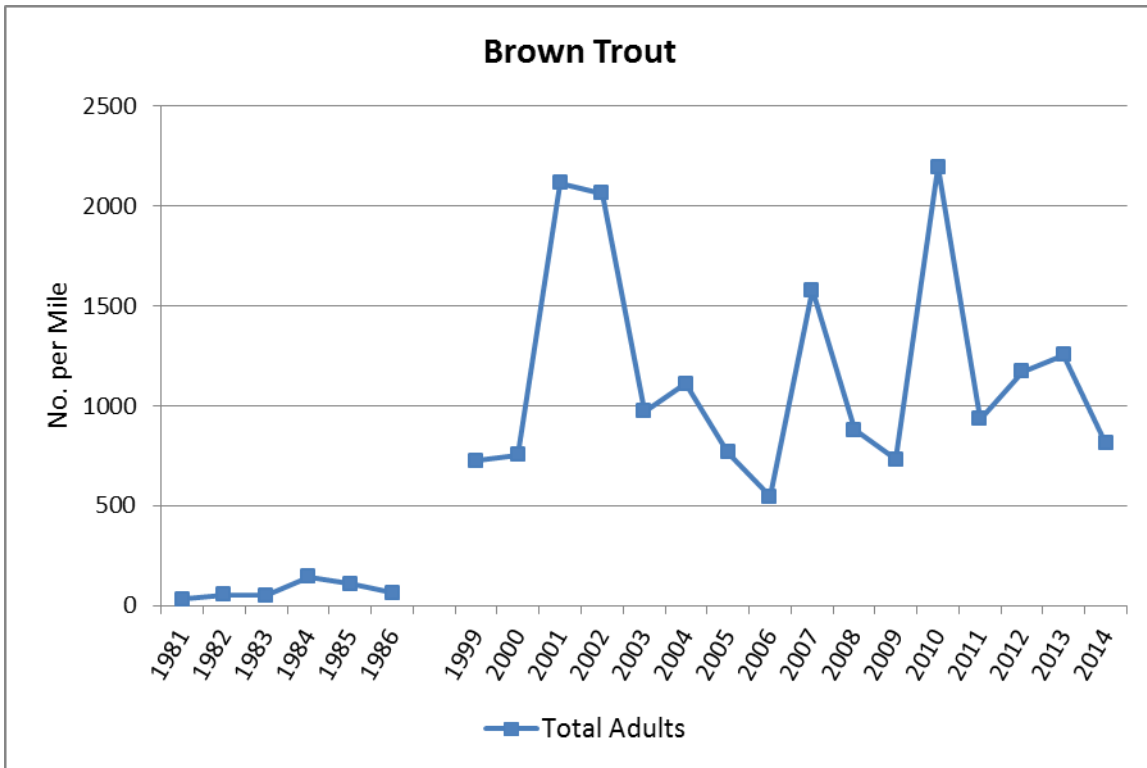
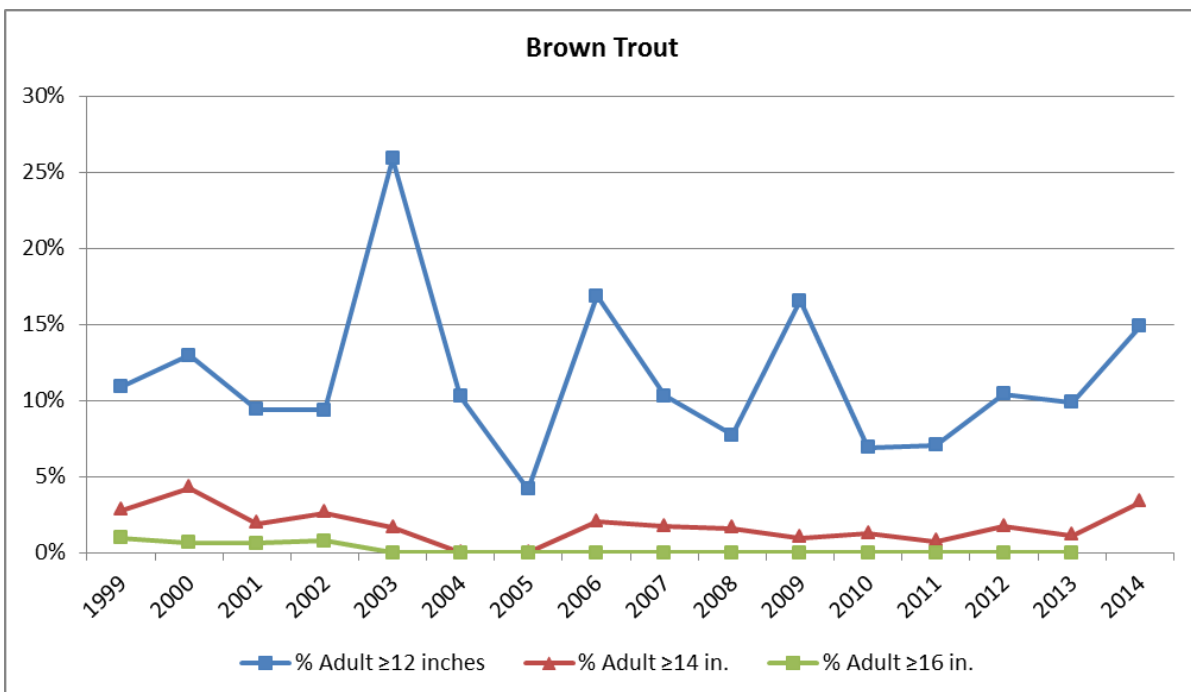


Figure 2. Percent of adult Brown Trout by size group in the Long Term Monitoring station of West Indian Creek 1999-2014.

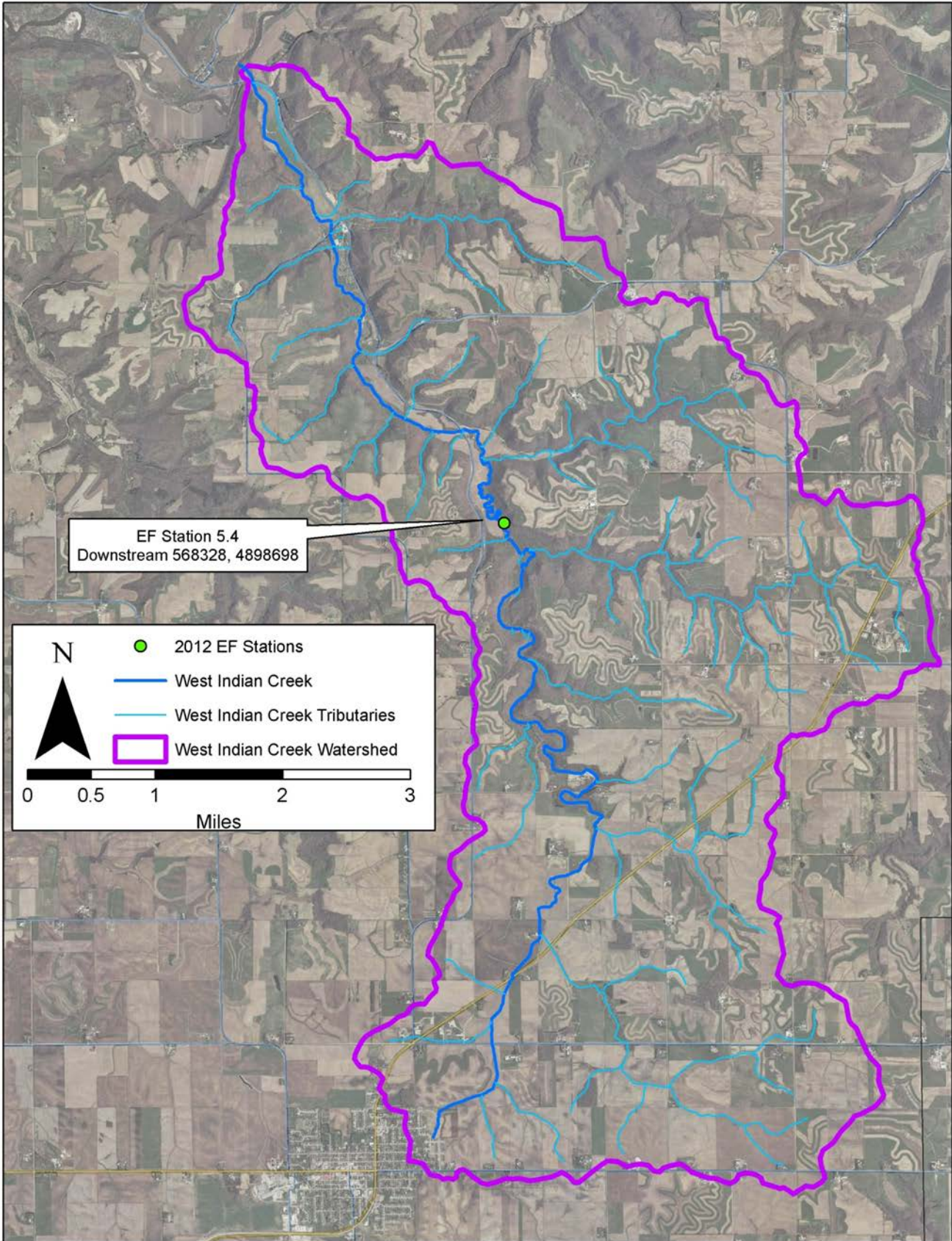





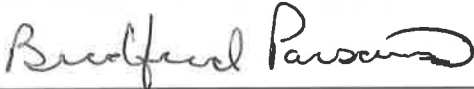
## References

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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		4-14-15