



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

Region	Area	Stream Name	Tributary No.	Stream Length
3	Lake City	East Indian Creek	M-32	10.6 miles
County			Source (T, R, S)	Mouth (T, R, S)
Wabasha			T109N,R10W,S31	T109N,R9W,S19

**Date(s) of Assessment:** October 21, 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> (↓)
7	2	7	687	17.82	0.28			577838	4896292

**Summary:**

Station 7.0 on East Indian Creek is one of 23 stations in the Long-Term Monitoring program in southeast Minnesota.

Estimates were obtained for trout by using a two pass depletion method using a stream shocking barge. East Indian Creek contains Brook Trout and Brown Trout. Adult Brook Trout abundance was estimated to be 1,480/mile with 94/mile  $\geq 10$  inches. Recruit Brook Trout abundance was estimated at 4,694/mile. This is the second highest year for Brook Trout recruits in the long term dataset. Total Brook Trout biomass was 228.4 lbs/acre.

There were an estimated 98 Brown Trout recruits per mile and 8 adult Brown Trout per mile. This was the first year in the last five years that recruit Brown Trout were sampled.

There were two adult White Suckers sampled in this survey.

Fishery Characteristics – Population Estimates

Station: 7      Date: 10/21/2014      Gear: Shocking Barge      Method: Two Pass Depletion      Station length (ft): 687

Brook Trout			
In Station			
	Recruits	Adults	Total
n	611	193	803
95% CI	102.39	9.16	
Per Mile			
	Recruits	Adults	Total
n	4694	1480	6173
	≥ 10 inches		
n	94		
95% CI	63.80		
Per Acre			
	Recruits	Adults	Total
n	2175	686	2861
lbs	74.2	154.2	228.4

Brown Trout			
In Station			
	Recruits	Adults	Total
n	13	1	14
95% CI	6.37	0.00	
Per Mile			
	Recruits	Adults	Total
n	98	8	106
	≥ 12 inches	≥ 14 inches	≥ 16 inches
n	--	--	--
95% CI	--	--	--
Per Acre			
	Recruits	Adults	Total
n	46	4	49
lbs	2.3	0.8	3.1

White Sucker			
In Station			
	Recruits	Adults	Total
n	No Pop Est	2	--
95% CI	--	0.00	
Per Mile			
	Recruits	Adults	Total
n	--	15	--
Per Acre			
	Recruits	Adults	Total
n	--	7	--

Length (in)	Brook Trout	Brown Trout	White Sucker
1			
2	2		
3	38		
4	266	3	1
5	114	8	1
6	20		
7	45		
8	74	1	
9	40		
10	8		
11	2		
12	1		
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30+			
<b>Total</b>	610	12	2

Other Species Sampled:

Common Name	Number Sampled
White Sucker	2
Brook Stickleback	2
Blacknose Dace	1

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

<u>Metric (Max Score)</u>	<u>Value (Score)</u>
Total Captured	638
Number of Species (10)	5 (5)
Number of Coldwater Species (10)	3 (5)
Number of Minnow Species (10)	1 (10)
Number of Benthic Species (10)	1 (10)
Number of Tolerant Species (10)	2 (5)
Percent Salmonids as Brook Trout (10)	98.1 (10)
Percent Intolerant Individuals (10)	97.33 (10)
Percent Coldwater Individuals (10)	99.52 (10)
Percent White Suckers (10)	0.31 (5)
Percent Top Carnivores (10)	99.21 (10)
Number of Coldwater Individuals per 150m (10)	454.87 (10)
Number of Warmwater Individuals per 150m (10)	2.14 (10)
<b>TOTAL IBI SCORE (120 maximum)</b>	<b>100</b>
Percent of maximum score:	83.33%

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

<u>MSHA Metric</u>	<u>Component score maximum</u>	<u>Component score</u>
Surrounding Land Use	5	3
Riparian Zone	15	10.5
Instream Zone - Substrate	27	12.1
Instream Zone - Cover	17	14
Channel Morphology	36	34
	100	<b>MSHA Score</b> (Max = 100)
		<b>73.6</b>

### **Discussion of Fishery:**

Station 7 on East Indian Creek is one of the stations in the Long-Term Monitoring (LTM) program in southeast Minnesota. This station has been assessed annually in the fall since 1980. As shown in Figure 1, trout populations in this station have been dominated by Brook Trout in most years since 2005.

There were an estimated 98 Brown Trout recruits per mile and 8 adult Brown Trout per mile (Table 2). This was the first time in the last five years that recruit Brown Trout were sampled.

Brook Trout recruits were estimated at 4,694/mile (Table 1). This year's estimate of recruits was much higher than the mean of 1,770/mile and was the second highest estimate in the long term data set. This year's estimate is just below the record estimate set in 1997. The adult Brook Trout population was estimated at 1,480 Brook Trout/mile, which is well above the mean of 763 Brook Trout/mile, but much lower than last year's estimate of 3,528 Brook Trout/mile. There was an estimated 94 Brook Trout/mile  $\geq 10$  inches, which was well above the mean of 44/mile, but half of last year's estimate of 188/mile. Biomass was estimated at 228.4 lbs/acre of Brook Trout, which is well above the mean of 106 lbs/acre (Table 1).

The Coldwater Index of Biotic Integrity (Mundahl and Simon 1998) score in 2014 for Station 7 was 100 (Table 2). This score puts this station in the "excellent" category. There were two adult White Suckers collected in this station. This is the only year in the last five that White Suckers were sampled. Brook Stickleback and Blacknose Dace were also sampled in 2014.

The Minnesota Stream Habitat Assessment (MSHA) score for Station 7 was 73.6 (Table 3).

Due to the low number of adult Brown Trout and the lack of recruits in the upper stations, an updated management plan should focus on managing only for Brook Trout in the upper reaches of East Indian Creek. East Indian Creek is tested annually for fish diseases and has tested negative for at least three consecutive years. Brook Trout from this stream are occasionally used as transfers to other streams and potentially may be used for brood stock in DNR hatcheries. Brook Trout in various lengths were collected from just below the LTM station in November of 2013 and approximately 170 were introduced into the upper end of Hay Creek in Goodhue County as part of a re-introduction effort. Other additions were made to Hay Creek in 2014. One hundred plus Brook Trout from East Indian Creek were also added to Dry Run Creek in Olmsted County in 2014.

A habitat improvement project is being proposed on the easement just downstream of the LTM station. Developments will be reported in next year's report for East Indian Creek.

**Credits and Signatures:**

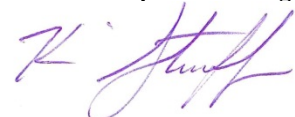
<b>Field Crew:</b>		
Randy Binder, Nick Schlessler, Daniel Spence		
<b>Report completed by:</b>		
<b>Name:</b>	<b>Title:</b>	<b>Date:</b>
Daniel Spence	Fisheries Specialist	30-Dec-14
<b>Approved by:</b>		
<b>Area Fisheries Supervisor's Signature</b>	<b>Regional Fisheries Manager's Signature</b>	<b>Date:</b>
		

Figure 1. Trends in Brook Trout adults vs. Brown Trout adults in East Indian Creek 2000-2014.

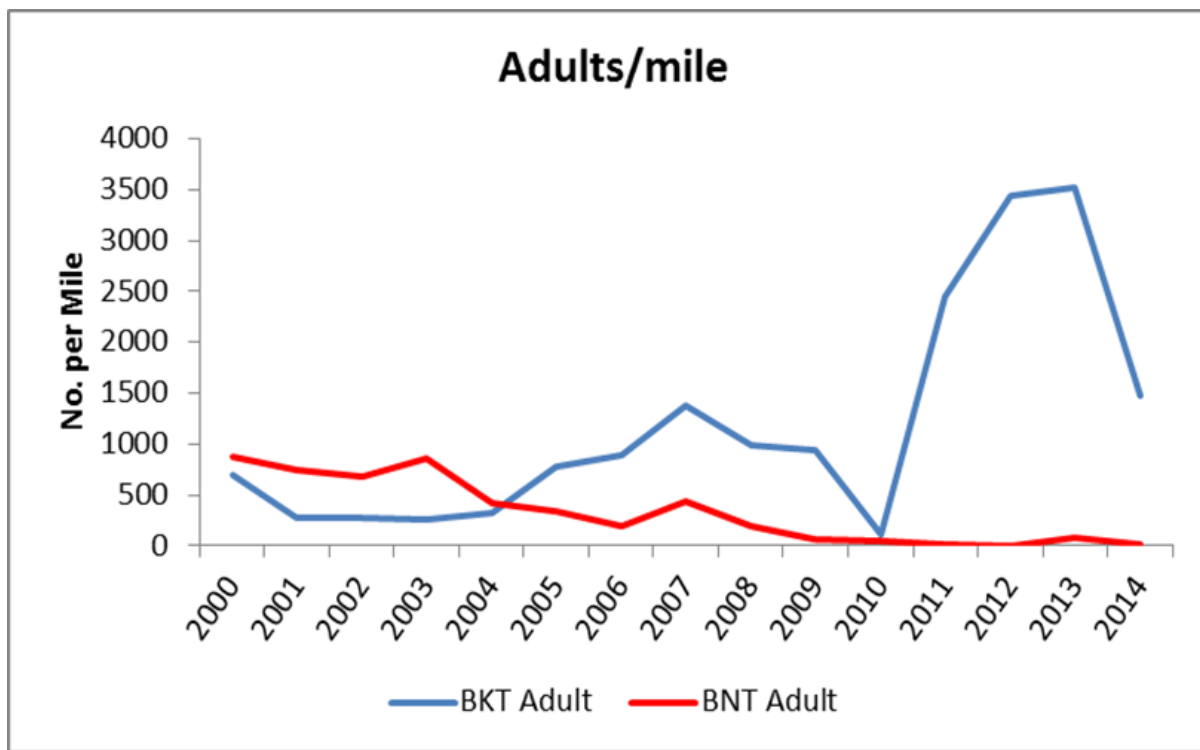


Table 1. Trends in Brook Trout population metrics for East Indian, years 1981-2014

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥10 in.)	lbs/acre (all sizes)
7	7	2	10/21/2014	1480	4694	94	228.4
7	7	2	10/17/2013	3528	329	188	270
7	7	2	9/24/2012	3442	4110	77	314.1
7	7	2	9/22/2011	2452	2794	41	94.4
7	7	2	9/30/2010	111	3144	23	69.56
7	7	2	9/21/2009	935	4388	8	148.92
7	7	2	9/22/2008	988	4474	69	171.5
7	7	2	9/24/2007	1380	1332	15	110.49
7	7	2	10/3/2006	898	7080	168	292.34
7	7	2	9/26/2005	784	938	48	127.51
7	7	2	9/13/2004	331	1366	48	86.3
7	7	2	9/25/2003	261	1707	24	83.42
7	7	2	9/17/2002	282	293	64	36
7	7	2	9/19/2001	277	1429	27	83.25
7	7	2	9/25/2000	698	2709	0	167.5
7	7	2	9/23/1999	684	3063	16	151.3
7	7	2	9/25/1998	1001	2611	40	198.58
7	7	2	9/29/1997	522	4757	41	220.4
7	7	2	9/27/1996	1075	715	49	188.1
7	7	2	10/5/1995	876	1970	104	180
7	7	2	9/30/1994	813	1162	25	97
7	7	2	9/15/1993	413	1047	0	48
7	7	2	10/22/1992	624	1029	-	72
7	7	2	9/4/1991	331	2268	-	31
7	7	2	9/26/1990	64	1056	-	7
7	7	2	10/9/1989	202	294	-	17
7	7	2	9/26/1988	459	386	-	54
7	7	2	9/9/1987	406	349	-	45
7	7	2	9/18/1986	219	1015	-	38
7	7	2	9/4/1985	633	390	-	45
7	7	2	9/17/1984	195	65	-	22
7	7	2	9/14/1983	114	57	-	19
7	7	2	9/7/1982	138	65	-	13
7	7	2	9/4/1981	41	8	-	10
<b>Fall Mean</b>				763	1770	44	106

Table 2. Trends in Brown Trout population metrics for East Indian, years 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>7</b>	<b>7</b>	<b>7</b>	<b>10/21/2014</b>	<b>98</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>106</b>
7	7	7	10/17/2013	75	0	8	0	0	10.8
7	7	7	9/24/2012	-	-	-	-	-	-
7	7	7	9/22/2011	15	0	0	0	0	1.6
7	7	7	9/30/2010	41	0	0	0	0	8.92
7	7	7	9/21/2009	61	205	0	0	0	12.82
7	7	7	9/22/2008	186	383	69	8	0	59.25
7	7	7	9/24/2007	435	164	23	15	0	68.43
7	7	7	10/3/2006	198	1349	140	32	8	112.83
7	7	7	9/26/2005	338	8	56	8	0	79.46
7	7	7	9/13/2004	416	256	80	0	0	95.62
7	7	7	9/25/2003	852	981	48	0	0	165
7	7	7	9/17/2002	683	2203	60	8	8	178
7	7	7	9/19/2001	743	784	75	23	0	167.27
7	7	7	9/25/2000	877	1080	60	8	0	173.6
7	7	7	9/23/1999	1040	1132	32	0	0	155.6
7	7	7	9/25/1998	908	2048	78	32	16	201.49
7	7	7	9/29/1997	242	2429	101	17	0	121.7
7	7	7	9/27/1996	587	228	49	17	0	123.7
7	7	7	10/5/1995	917	1220	42	8	-	206
7	7	7	9/30/1994	366	1168	67	17	-	135
7	7	7	9/15/1993	367	983	49	-	-	98
7	7	7	10/22/1992	459	781	-	-	-	105
7	7	7	9/4/1991	331	5803	-	-	-	71
7	7	7	9/26/1990	83	983	-	-	-	34
7	7	7	10/9/1989	321	83	-	-	-	52
7	7	7	9/26/1988	643	937	-	-	-	107
7	7	7	9/9/1987	325	634	-	-	-	58
7	7	7	9/18/1986	130	300	-	-	-	85
7	7	7	9/4/1985	414	8	-	-	-	131
7	7	7	9/17/1984	276	552	-	-	-	53
7	7	7	9/14/1983	81	336	-	-	-	107
7	7	7	9/7/1982	73	89	-	-	-	24
<u>7</u>	<u>7</u>	<u>7</u>	<u>9/4/1981</u>	<u>162</u>	<u>32</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>32</u>

Table 3. Trends in Index of Biotic Integrity (Mundahl and Simon 1998) and Minnesota Stream Habitat Assessment (Fisheries Stream Survey Manual 2007) scores for East Indian, 2003-2014.

Station	River Mile	Similar Reach	Date	IBI	Land Use	Riparian Zone	Instream Substrate	Instream Cover	Channel Morphology	Final Score
<b>7</b>	<b>7</b>	<b>2</b>	<b>10/21/2014</b>	<b>100</b>	<b>3</b>	<b>10.5</b>	<b>12.1</b>	<b>14</b>	<b>34</b>	<b>73.6</b>
7	7	2	10/17/2013	115	4	10	10	13	31	68
7	7	2	9/24/2012	115	4	10	10	13	31	68
7	7	2	9/22/2011	115	4	10	10	13	31	68
7	7	2	9/30/2010	100	4.5	8	19	14	27	72.5
7	7	2	9/21/2009	95	4	8.5	16.4	15	25	68.9
7	7	2	9/22/2008	95	4	8	17	10	23	62
7	7	2	9/24/2007	60	4	8	15.7	7	22	56.7
7	7	2	10/3/2006	80	-	-	-	-	-	-
7	7	2	9/26/2005	85	-	-	-	-	-	-
7	7	2	9/13/2004	100	-	-	-	-	-	-
7	7	2	9/25/2003	85	-	-	-	-	-	-

## 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.

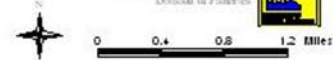
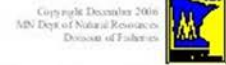


Maps:

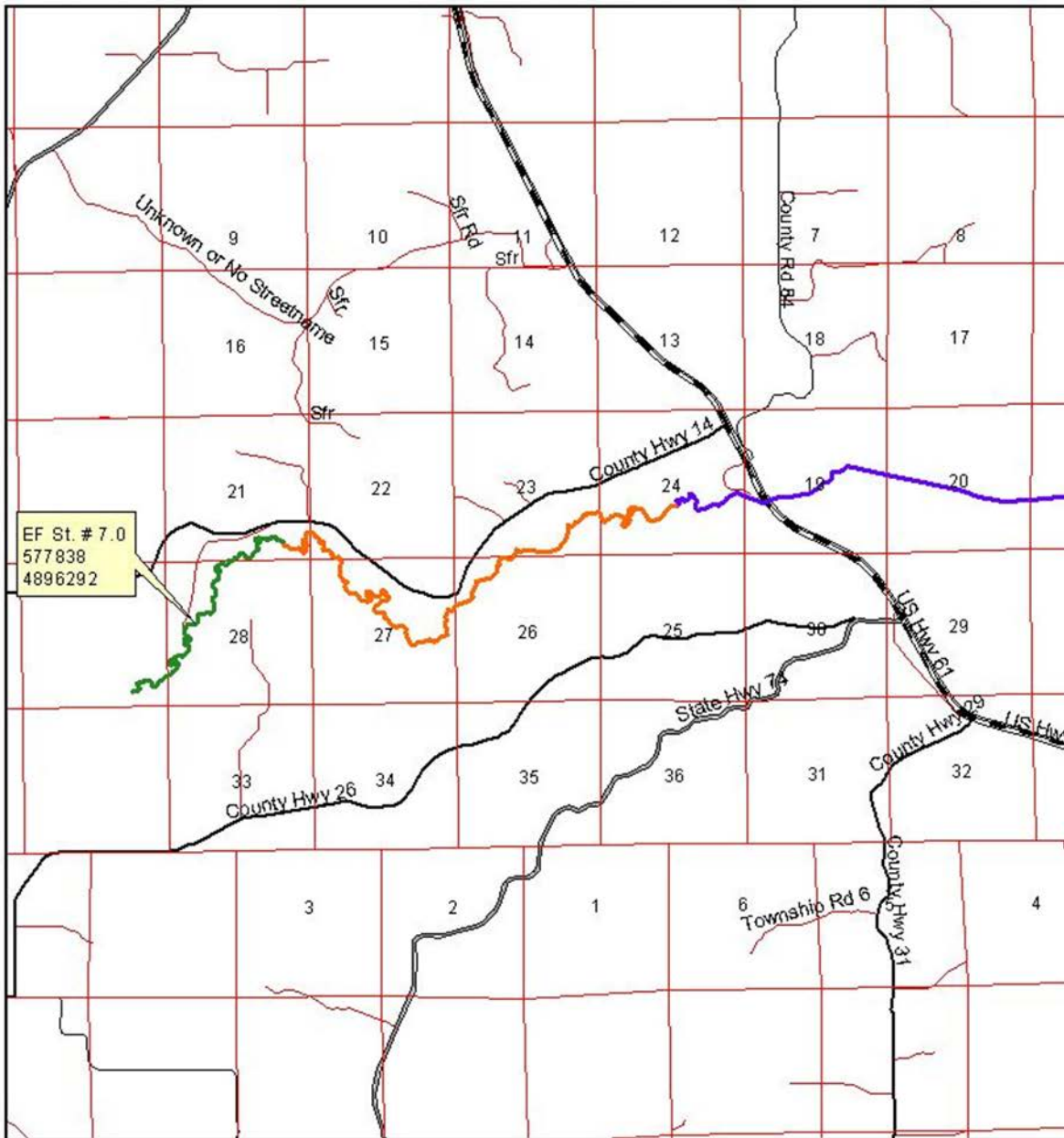
# East Indian Creek M-32

Date: January 05, 2009  
 Map For: Population Assessment  
 Prepared By: Jim Melander  
 Fisheries Office: Lanesboro  
 Mouth TRS: 109-9-19  
 Source TRS: 109-10-31  
 Counties: Wabasha

Reach Code	
1	3A
1A	3B
1B	4
1C	5
2	6
2A	7
2B	8
3	



Electrofishing Station Location



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**Credits and Signatures:**

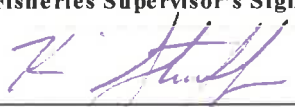
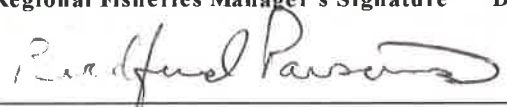
<b>Field Crew:</b> Randy Binder, Nick Schlessler, Daniel Spence		
<b>Report completed by:</b>		
<b>Name:</b> Daniel Spence	<b>Title:</b> Fisheries Specialist	<b>Date:</b> 30-Dec-14
<b>Approved by:</b>		
<b>Area Fisheries Supervisor's Signature</b> 	<b>Regional Fisheries Manager's Signature</b> 	<b>Date:</b> 4-14-15

Figure 1. Trends in Brook Trout adults vs. Brown Trout adults in East Indian Creek 2000-2014.

