



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

**Report Date:** January 21, 2014

| Region  | Area                | Stream Name      | Tributary No.   | Stream Length |
|---------|---------------------|------------------|-----------------|---------------|
| 3       | Lake City           | East Indian      | M-32            | 10.6 miles    |
| County  | Watershed Name, No. | Source (T, R, S) | Mouth (T, R, S) |               |
| Wabasha | Miss. R. Winona, 40 | T109N,R10W,S31   | T109N,R9W,S19   |               |

**Date of Assessment:** October 17, 2013

**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> (↓) |
| 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 and Brown Trout. Adult Brook Trout abundance was estimated to be 3,528/mile with 188/mile  $\geq$ 10 inches. Both values of adults and adults over 10" are the highest values recorded in this long term station. Recruit Brook Trout abundance was estimated at 329/mile. Total Brook Trout biomass was 270 lbs/acre.

Nine adult Brown Trout and no recruits were found in this survey.

There were no White Suckers sampled in this survey.

**Fishery Characteristics – Population Estimates**

|            |                  |                             |                        |                          |
|------------|------------------|-----------------------------|------------------------|--------------------------|
| Station: 7 | Date: 10/17/2013 | Gear: Stream Shocking Barge | Method: Electrofishing | Station length (ft): 687 |
|------------|------------------|-----------------------------|------------------------|--------------------------|

| <b>Brook Trout</b> |             |        |       |
|--------------------|-------------|--------|-------|
| <b>In Station</b>  |             |        |       |
|                    | Recruits    | Adults | Total |
| n                  | 43          | 459    | 502   |
| 95% CI             | 4.18        | 12.97  |       |
| <b>Per Mile</b>    |             |        |       |
|                    | Recruits    | Adults | Total |
| n                  | 329         | 3528   | 3857  |
|                    | ≥ 10 inches |        |       |
| n                  | 188         |        |       |
| 95% CI             | 14.64       |        |       |
| <b>Per Acre</b>    |             |        |       |
|                    | Recruits    | Adults | Total |
| n                  | 153         | 1635   | 1788  |
| lbs                | 4.6         | 265.4  | 270.0 |

| Length (in)  | Brook Trout | Brown Trout | White Sucker |
|--------------|-------------|-------------|--------------|
| 1            | ---         | ---         | ---          |
| 2            | ---         | ---         | ---          |
| 3            | 4           | ---         | ---          |
| 4            | 33          | ---         | ---          |
| 5            | 45          | ---         | ---          |
| 6            | 140         | ---         | ---          |
| 7            | 108         | 3           | ---          |
| 8            | 92          | 2           | ---          |
| 9            | 35          | 2           | ---          |
| 10           | 24          | 1           | ---          |
| 11           | 1           | ---         | ---          |
| 12           | ---         | 1           | ---          |
| 13           | ---         | ---         | ---          |
| 14           | ---         | ---         | ---          |
| 15           | ---         | ---         | ---          |
| 16           | ---         | ---         | ---          |
| 17           | ---         | ---         | ---          |
| 18           | ---         | ---         | ---          |
| 19           | ---         | ---         | ---          |
| 20           | ---         | ---         | ---          |
| 21           | ---         | ---         | ---          |
| 22           | ---         | ---         | ---          |
| 23           | ---         | ---         | ---          |
| 24           | ---         | ---         | ---          |
| 25           | ---         | ---         | ---          |
| 26           | ---         | ---         | ---          |
| 27           | ---         | ---         | ---          |
| 28           | ---         | ---         | ---          |
| 29           | ---         | ---         | ---          |
| 30+          | ---         | ---         | ---          |
| <b>Total</b> | 482         | 9           | 0            |

**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 every year 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 9 adult Brown Trout sampled in this survey. No Brown Trout recruits were sampled. This is the fourth year in a row that Brown Trout recruits were not sampled in this station.

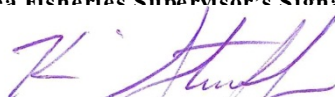
Brook Trout recruits were estimated at 329/mile (Table 1). This year’s estimate of recruits was much lower than the mean of 1,740/mile (Table 1). Low recruitment in both brook and Brown Trout was observed in all streams surveyed in Wabasha County in 2013. The adult Brook Trout population was estimated at 3,528 trout/mile, which is the highest estimate of any survey on this station (Table 1). There was an estimated 188 Brook Trout/mile  $\geq 10$  inches, which is well above the mean of 44/mile and is the highest number sampled in this station. There were 270 lbs/acre of Brook Trout (Table 1), which is well above the mean of 101.1 lbs/acre (Table 1).

The Coldwater Index of Biotic Integrity (Mundahl and Simon 1998) score in 2012 for Station 7 was 115 (Table 2). This score puts this station in the “excellent” category. There were no White Suckers collected in this station. This is the fourth year in a row that no White Suckers were sampled. Brook Trout and Brown Trout were the only species sampled in 2013.

The Minnesota Stream Habitat Assessment (MSHA) score for Station 7 was 68 (Table 2). This is the same as the prior year due to no change in surrounding land use and an unchanged stream channel. There was less in stream Water Cress as the survey in 2012, but not a dramatic enough difference to change MSHA values.

Due to the low numbers 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 is tested annually for fish diseases and has tested negative for at least three consecutive years. Brook Trout from this stream may be used for hatchery broodstock and transfers to other streams. 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.

**Credits and Signatures:**

|   |   |              |
|---|---|--------------|
| <b>Field Crew:</b>  |   |              |
| Randy Binder, Dan Spence  |   |              |
| <b>Report completed by:</b>   |   |              |
| <b>Name:</b>  | <b>Title:</b>                                 | <b>Date:</b> |
| Dan Spence  | Fisheries Specialist                          | 28-Jan-14    |
| <b>Approved by:</b>   |   |              |
| <b>Area Fisheries Supervisor's Signature</b>  | <b>Regional Fisheries Manager's Signature</b> | <b>Date:</b> |
|  |   |              |

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

| <u>Metric (Max Score)</u>                     | <u>Value (Score)</u> |
|---|----------------------|
| Total Captured                                | 491                  |
| 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)         | 98.16 (10)           |
| Percent Intolerant Individuals (10)           | 98.16 (10)           |
| 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) | 351.72 (10)          |
| Number of Warmwater Individuals per 150m (10) | 0 (10)               |
| <b>TOTAL IBI SCORE (120 maximum)</b>          | <b>115</b>           |
| Percent of maximum score:                     | 95.83%               |

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

| MSHA Metric               | Component score maximum | Component score                  |
|---------------------------|-------------------------|----------------------------------|
| Surrounding Land Use      | 5                       | 4                                |
| Riparian Zone             | 15                      | 10                               |
| Instream Zone - Substrate | 27                      | 10                               |
| Instream Zone - Cover     | 17                      | 13                               |
| Channel Morphology        | 36                      | 31                               |
|                           | 100                     | <b>MSHA Score</b><br>(Max = 100) |
|                           |                         | <b>68</b>                        |

Figure 1. Trends in the number per mile of adult Brook Trout and Brown Trout in Station 7 (LTM) of East Indian Creek, 1993 - 2013

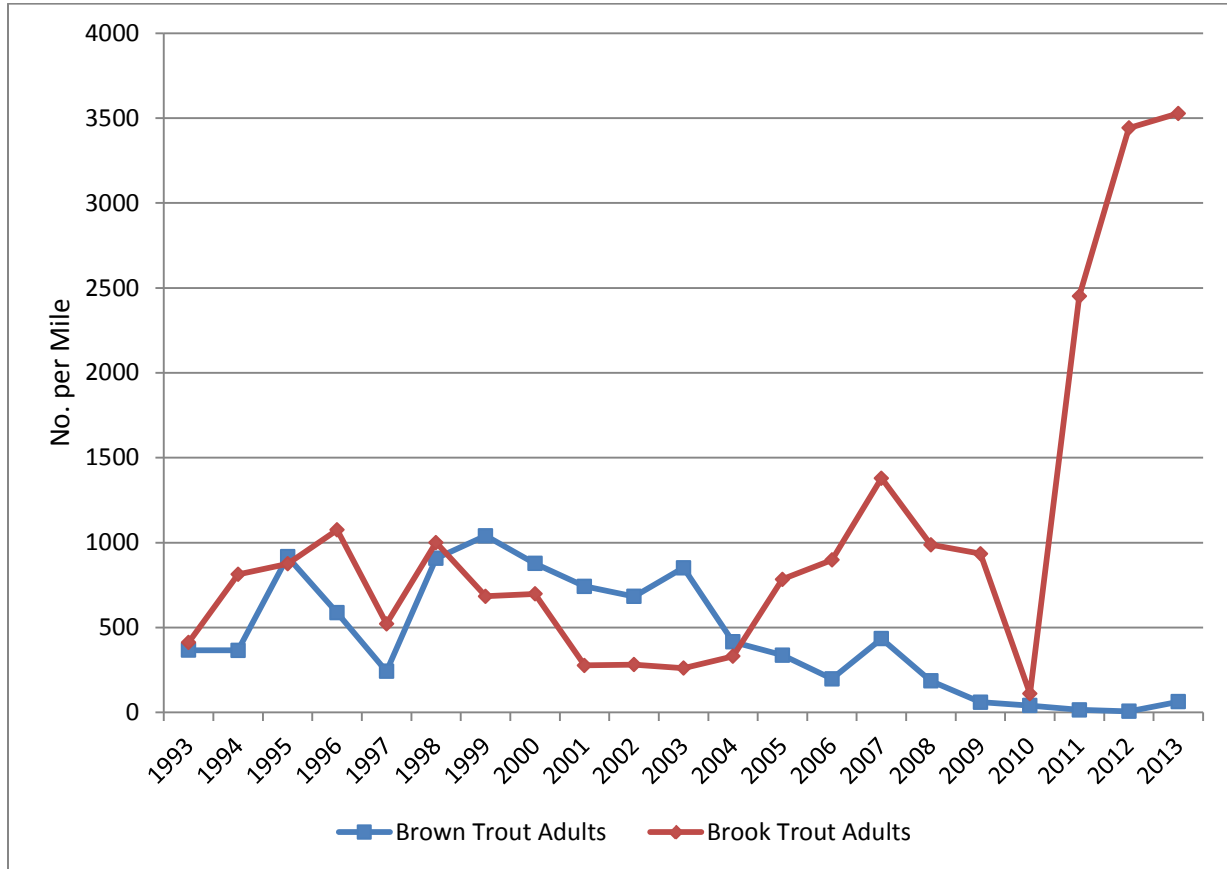


Table 1. Trends in Brook Trout population metrics for East Indian Creek, years 1981-2013

| Station          | River Mile | Similar Reach | Date              | No./mile (Adult) | No./mile (Recruits) | No./mile ( $\geq 10$ in.) | lbs/acre (all sizes) |
|------------------|------------|---------------|-------------------|------------------|---------------------|---------------------------|----------------------|
| <b>7</b>         | <b>7</b>   | <b>2</b>      | <b>10/17/2013</b> | <b>3528</b>      | <b>329</b>          | <b>188</b>                | <b>270</b>           |
| 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> |            |               |                   | 677              | 1815                | 44                        | 101.3                |

Table 2. Trends in Index of Biotic Integrity (Mundahl and Simon 1998) and Minnesota Stream Habitat Assessment (Fisheries Stream Survey Manual 2007) scores for East Indian Creek, years 2003-2013

| Station | River Mile | Similar Reach | Date       | IBI | Land Use | Riparian Zone | Instream Substrate | Instream Cover | Channel Morphology | Final Score |
|---------|------------|---------------|------------|-----|----------|---------------|--------------------|----------------|--------------------|-------------|
| 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.

Location map for Long Term Monitoring station.

# East Indian Creek

## M-32

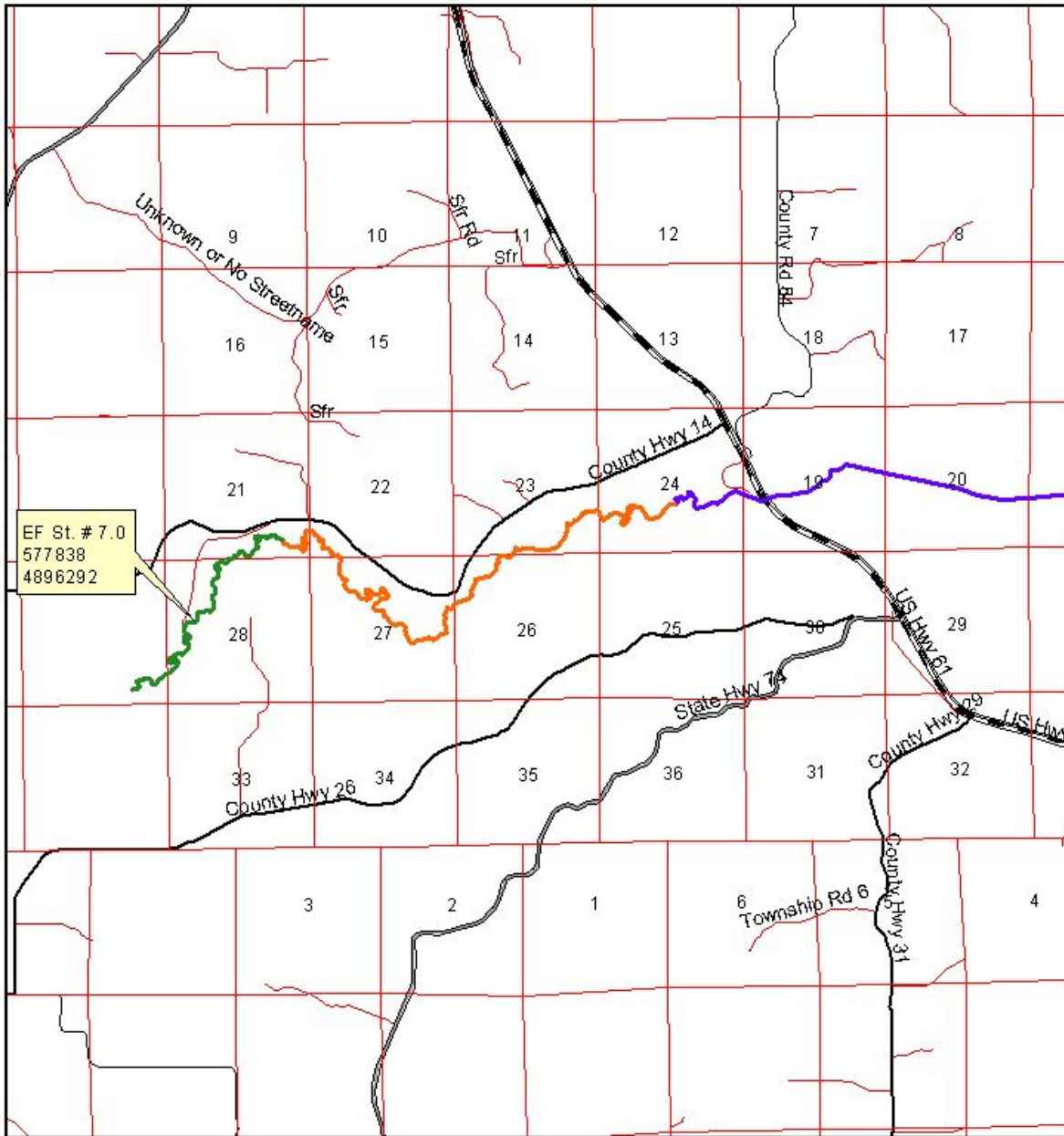
Date: January 05, 2009  
 Map For: Population Assessment  
 Prepared By: Jim Melander  
 Fisheries Office: Lanesboro  
 Mouth TRS: 109-9-19  
 Source TRS: 109-10-31  
 Counties: Wabasha



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 MN Dept. of Natural Resources  
 Division of Fisheries



Electrofishing Station Location



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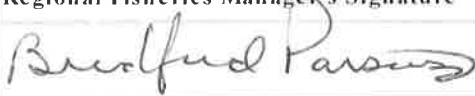
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| Randy Binder, Dan Spence  |  |              |
| <b>Report completed by:</b>   |  |              |
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| <b>Approved by:</b>   |  |              |
| <b>Area Fisheries Supervisor's Signature</b>  | <b>Regional Fisheries Manager's Signature</b>  | <b>Date:</b> |
|  |  | 5.15.14      |