

STREAM ASSESSMENT



MINNESOTA DEPARTMENT OF NATURAL RESOURCES DIVISION OF FISH AND WILDLIFE

Report Date: November 24, 2009

Region	Area	Stream Name	Tributary No.	Stream Length
3	Lanesboro	Belle Creek	M-048-004	28.2 miles
County	Watershed Name, No.	Source (T, R, S)	Mouth (T, R, S)	
Goodhue	Cannon River - 34	T111.R17.S35	T113.R16.S35	

Date(s) of Assessment: Station 1.8 – May 20, 2009
Station 3.1 – May 20, 2009

Assessment Purpose: Station 1.8 – Scheduled stream assessment and management plan update
Station 3.1 – Scheduled stream assessment and management plan update

Station	Similar Reach	Stream Mile	Length (ft)	Mean Width (ft)	Acres	Water Temp (F)	Air Temp (F)	Downstream UTM's	
								utm _x (↔)	utm _y (↓)
1.8	1	1.8	1,140	31.3	0.820	65	87	521929	4932834
3.1	-	3.1	1,000	28.5	0.654	62	85	521232	4931321

Summary:

Stations on Belle Creek were assessed for purposes of rewriting and updating the management plan.

Estimated numbers of adult brown trout (age 1+) in Station 1.8 was 42/mile (12/acre) with 5 estimated brown trout recruits/mile (1/acre). Estimated numbers of brown trout ≥12 inches and ≥14 inches was 14/mile (4/acre) and 14/mile (4/acre), respectively. No brown trout were collected ≥16 inches in this station.

Two smallmouth bass were collected in Station 1.8 (10.5 and 11.2 inches TL).

Estimated numbers of adult brown trout (age 1+) in Station 3.1 was 147/mile (42/acre) with 28 estimated brown trout recruits/mile (8/acre). Estimated numbers of brown trout ≥12 inches, ≥14 inches, and ≥16 inches was 109/mile (31/acre), 48/mile (14/acre), and 5/mile (2/acre), respectively.

No smallmouth bass were sampled in Station 3.1.

Belle Creek is not designated trout water. There has been a history of temperature being the most limiting factor to trout production in this stream. Currently numbers of trout in Station 3.1 are relatively low for designated trout streams in southeast Minnesota.

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Fishery Characteristics – Population Estimates

Population Metrics

Station	1.8	3.1
Date	May 20, 2009	May 20, 2009
Gear	Barge shocker	Barge shocker
Method	One-pass	Two-pass depletion
Station length (ft)	1,140	1,000

Population Estimate in Station, Adults

Species	Number	Wt (lbs)	Number	Wt (lbs)
Brown trout	9	5.45	28	22.85
95% CI	± 0.0		± 6.75	
Brook trout	0	0	0	0
95% CI	-		-	
Rainbow trout	0	0	0	0
95% CI	-		-	
Total trout	9	5.45	28	22.85

Population Estimate in Station, Recruits (YOY or yearlings)

Species	Number	Wt (lbs)	Number	Wt (lbs)
Brown trout	1	0.10	5	0.63
95% CI	± 0.0		± 1.99	
Brook trout	0	0	0	0
95% CI	-		-	
Rainbow trout	0	0	0	0
95% CI	-		-	
Total trout	1	0.10	5	0.63

Population Estimate in Station, Total

Species	Number	Wt (lbs)	Number	Wt (lbs)
Brown trout	10	5.55	33	23.48
Brook trout	0	0	0	0
Rainbow trout	0	0	0	0
Total trout	10	5.55	33	23.48

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Fishery Characteristics – Population Estimates (continued)

Population Estimate Summary

Station	1.8			3.1		
Date	May 20, 2009			May 20, 2009		
Species	No/Mile	No/Acre	Lbs/Acre	No/Mile	No/Acre	Lbs/Acre
Brown trout	46	12	6.77	175	51	35.89
Adults	42	11	6.65	147	42	34.92
≥12 inches	14	4		109	31	
95% CI	± 0.0	± 0.0		± 53.31	± 15.43	
≥14 inches	14	4		48	14	
95% CI	± 0.0	± 0.0		± 5.17	± 1.50	
≥16 inches	0	0		5	2	
95% CI	-	-		± 0.0	± 0.0	
Recruits	5	1	0.12	28	8	0.97
Brook trout	0	0	0	0	0	0
Adults	0	0	0	0	0	0
≥10 inches	-	-		-	-	
95% CI	-	-		-	-	
Recruits	0	0	0	0	0	0
Rainbow trout	0	0	0	0	0	0
Adults	0	0	0	0	0	0
≥12 inches	-	-		-	-	
95% CI	-	-		-	-	
Recruits	0	0	0	0	0	0
All trout	46	12	6.77	175	50.59	35.89
Adults	42	11	6.65	147	42.44	34.92
Recruits	5	1	0.12	28	8.15	0.97

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Fishery Characteristics – Length Frequency in Station (Actual Catch)

Species	Brown trout	Smallmouth bass	Brown trout
Station	3.1	1.8	1.8
Date	May 20, 2009	May 20, 2009	May 20, 2009
Length Class			
0 – 2.9			
3.0 – 3.4			
3.5 – 3.9			
4.0 – 4.4			
4.5 – 4.9			
5.0 – 5.4			
5.5 – 5.9			
6.0 – 6.4	1		
6.5 – 6.9	4		1
7.0 – 7.4			1
7.5 – 7.9	3		1
8.0 – 8.4	2		
8.5 – 8.9	1		1
9.0 – 9.4			
9.5 – 9.9			
10.0 – 10.4			
10.5 – 10.9		1	1
11.0 – 11.4		1	1
11.5 – 11.9	2		1
12.0 – 12.4	2		
12.5 – 12.9	1		
13.0 – 13.4	2		
13.5 – 13.9	3		
14.0 – 14.9	6		3
15.0 – 15.9	2		
16.0 – 16.9	1		
17.0 – 17.9			
18.0 – 18.9			
19.0 – 19.9			
20.0 – 20.9			
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+			
Sample Size	30	2	10

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Fishery Characteristics – Non-game species

Species Sampled

Station	1.8	3.1
Date	May 20, 2009	May 20, 2009
Length (ft)	1,140	1,000
Mean Width (ft)	31.3	28.5
Species	Number	Number
Carp, Common	4	
Chub, Creek	3	5
Dace, Longnose	17	32
Dace, Blacknose	8	33
Darter, Johnny	3	1
Darter, Fantail	14	21
Minnow, Bluntnose	3	
Redhorse, Golden		5
Shiner, Bigmouth	1	1
Shiner, Emerald	21	
Stoneroller, Central	21	
Sucker, White	72	65
Sucker, Northern Hog	3	1

Coldwater Index of Biotic Integrity (Mundahl and Simon 1998) for Stations 1.8 and 3.1

Station 1.8		Station 3.1		Metric	IBI Rating Guidelines
Value	Score	Value	Score		
182		187		Total Captured	
14	0	10	0	Number of Species	105-120 Excellent
1	0	1	0	Number of Coldwater Species	70-100 Good
8	0	4	0	Number of Minnow Species	35-65 Fair
6	0	6	0	Number of Benthic Species	10-30 Poor
5	0	3	5	Number of Tolerant Species	0-5 Very Poor
0	0	0	0	Percent Salmonids as Brook Trout	
2.74	0	0.53	0	Percent Intolerant Individuals	
5.49	0	12.30	0	Percent Coldwater Individuals	
39.56	0	34.76	0	Percent White Suckers	
6.59	0	12.30	0	Percent Top Carnivores	
4.31	0	11.32	0	Number of Coldwater Individuals per 150m	
74.25	0	80.71	0	Number of Warmwater Individuals per 150m	
0		5		TOTAL IBI SCORE (120 maximum)	
0		4.17		Percent of maximum score	

Stream Characteristics – Minnesota Stream Habitat Assessment (MSHA) (Fisheries Stream Survey Manual)

MSHA Metric	Component score maximum	Component score of station	
		Station 1.8	Station 3.1
Surrounding Land Use	5	5	5
Riparian Zone	15	11.5	10
Instream Zone – Substrate	27	16.2	19
Instream Zone – Cover	17	12	13
Channel Morphology	36	28	31
Final score	100	72.7	78

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Discussion of Fishery:

The estimated numbers of brown trout adults in Station 1.8 is similar to past assessments with 42 adult brown trout/mile (Table 1). Recruit brown trout are few with only 5/mile estimated this assessment. Brown trout recruits were not separated from the data collected in assessment before 1997.

The brown trout population is in much better condition in Station 3.1 with an estimated 147 adults/mile. This is also an improvement over the past assessment in this station in 1989 when the brown trout population was estimated to be 47/mile.

Belle Creek should be considered for the brown trout natural reproduction check program. This program is used to monitor natural reproduction of trout and make management decisions regarding stocking across southeast Minnesota.

There is no management plan for this stream and the information from this assessment will result in the first. Information collected from assessments in the past will also help develop the management plan.

The current angling regulation on Belle Creek is catch-and-release of all trout with no gear restrictions from the mouth to stream mile 7.3 (Bridge at County Hwy 19).

This stream is not in any of our reintroduction programs (sculpin and brook trout) and no creels are planned in the near future.

It is very evident from the species collected during this assessment, especially in Station 1.8, that water temperature is a limiting factor for the trout population in Belle Creek. A number of minnow, sucker, and darter species were collected. Station 3.1, with its better trout population, included several golden redhorse and an abundance of darters (Fantail and Johnny). The Coldwater IBI (Simon and Mundahl)(Table 2) for Station 1.8 was 0 and 5 for Station 3.1 (maximum score is 120) (Table 2).

For the MSHA (Minnesota Stream Habitat Assessment) scoring, surrounding landuse scores were high for each of the two stations assessed (max 5) (Table 2). It is evident by the poor instream zone-substrate scores that upstream landuse has contributed to the large amount of fines in the stream channel.

It is evident from this assessment that water quality is most likely improving in the Belle Creek watershed. Because of this it is recommended that stocking of brown trout fingerlings not be used as a management tool to maintain the brown trout population. Identification of all coldwater springs and monitoring their contribution to Belle Creek would benefit fisheries management goals.

Credits and Signatures:

Field Crew:

Jason Roloff, Jim Melander, Randy Binder, Steve Klotz, Vaughn Snook, Melissa Konsti

Report completed by:

Name: Vaughn Snook	Title: Assistant Fisheries Supervisor	Date: November 24, 2009
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Approved by:

Area Fisheries Supervisor's Signature	Regional Fisheries Manager's Signature	Date:
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Table 1. Trends in brown trout population metrics for Belle Creek.

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)
1.8	1.8	1	5/20/2009	42	5	14	14	0	6.77
1.8	1.8	1	8/28/1997	12	4	12	-	-	6.4
1.8	1.8	1	8/28/1991	20	-	-	-	-	0.8
1.8	1.8	1	8/28/1990	10	-	-	-	-	3.0
1.8	1.8	1	8/11/1989	137	-	-	-	-	9.9
1.8	1.8	1	11/2/1988	44	-	-	-	-	5.2
Mean				44	5	13	-	-	5.35
3.1	3.1	1	5/20/2009	147	28	109	48	5	35.89
3.1	3.1	1	8/11/1989	47	-	-	-	-	3.3

Table 2. Trends in Index of Biotic Integrity (Mundahl and Simon 1998) and Minnesota Stream Habitat Assessment (Fisheries Stream Survey Manual 2007) scores for Belle Creek

Station	River Mile	Similar Reach	Date	IBI	Land Use	Riparian Zone	Instream Substrate	Instream Cover	Channel Morphology	Final Score
1.8	1.8	1	5/20/2009	0	5	11.5	16.2	12	28	72.7
3.1	3.1		5/20/2009	5	5	10	19	13	31	78

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.

Management for Belle

The habitat is degraded
The H₂O quality is poor.

We stocked some trout, then more and more.

They all went belly up within a year

There were none sampled with our gear.

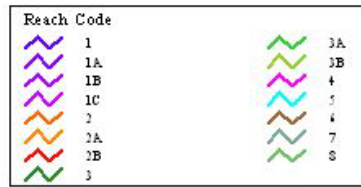
The trout management plan I present to you
will be probably ^{seen as only} a few.

O' belle O' belle, the hell with Belle

Belle Creek

M-48-4

Date: December 14, 2009
 Map For: Population Assessment
 Prepared By: Jim Melander
 Fisheries Office: Lanesboro
 Mouth TRS: 113-16-35
 Source TRS: 111-17-35
 Counties: Goodhue



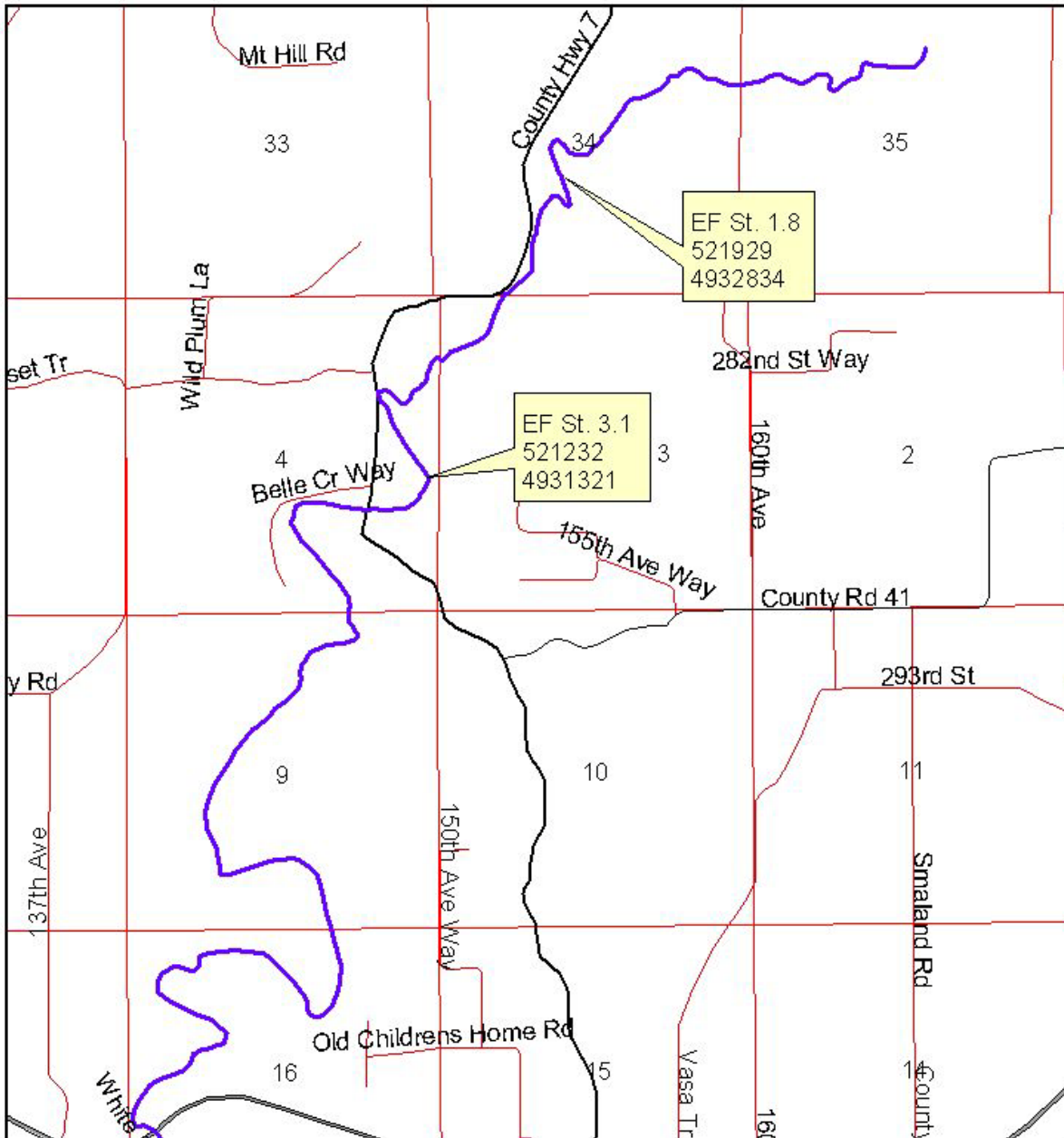
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 MN Dept of Natural Resources
 Division of Fisheries



Electrofishing Station Locations



0 0.2 0.4 0.6 Miles



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