Minnesota Department of Natural Resources

Division of Fish and Wildlife
Section of Fisheries

Stream Survey Report

Seven Mile Creek 2011

Funding: Federally funded under aid from the Sport Fish Restoration Act, F-29-R(P), Fisheries Management

Field work by: Brad Koenen, Chris Foster, and Hutchinson management intern Kevin Boike

Report completed by: Chris Foster, Hutchinson Area Fisheries

Office

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

RIVER OR STREAM SURVEY

Initial Survey
Resurvey
Pop. Assessment
Special Assessment X

Date(s) of Field Work: 12-13 September 2011.

Leader Brad Koenen
Assistant(s) Chris Foster, Kevin Boike

NAME, LOCATION AND FLOW CHARACTERISTICS

1. **Stream Name:** Seven Mile Creek

2. **Alternate Name(s):** None

3. **Tributary Number:** M-55-71.5

4. **Counties:** Nicollet

5. **Watershed Name and Number:** Lower Minnesota #29

6. **Sequence of Waterways to Basin:** Seven Mile Creek to Minnesota River to Mississippi River.

7. **Map(s) Used:** Prim Maps

8. **Average Width - Upper Stations:** 8.5′ **Lower Stations:** 10′

9. **Mouth Location:** **T.** 109 N **R.** 27 W **S.** 12

10. **Flow at Mouth of watershed (SMC_WQ3):** 1.12 cfs **Date:** 9/12/11

11. **Location of SMC_WQ3: River mile 0.4, below second bridge in park (E: 417873 x N: 4901492).**

WATERSHED DESCRIPTION AND USE

12. Description of Watershed (soil types, cover types, topography, land use and ownership.

a) Mostly row crop agriculture on rather flat land, except creek valley below Highway 99, which is a hardwood forest on steep slopes.

b) Land adjacent to stream: Mostly hardwood trees once stream enters natural channel below Highway 99. Above Highway 99 the stream is an open ditch in agricultural ground.

GENERAL INFORMATION ON THE STREAM

13. Reason for Survey: To assess the fish community prior to further restoration measures that will be implemented as part of the Seven Mile Creek Watershed project. Four standardized stations (SMC_BS1 - SMC_BS4) were created for future comparisons (Fig. 1). A Seven Mile Creek Watershed Program Monitoring Plan was written in December, 2011 and much of this report follows those protocols.

14. Previous Investigations and Surveys: Initial survey in 1985; population assessments in 1986, 1987, 1991, 1993, 1996, and 2002; brown trout abundance estimates in 2002, 2003, 2005, and 2008.

15. Special Problems or Conditions: Flooding, seasonal low flows, agricultural run-off, and lack of deep pool habitat for adult brown trout.

GENERAL INFORMATION ON THE STREAM (continued)

16. Dams and other obstructions (including beaver dams): See 1985 survey.

17. Use of Water: Fishing _X_ **Recreation** _X_ **Com. Navigation** _____ **Power** _____ **Irrigation** _____ **Livestock Watering** _X_ **Other (specify)**

18. Access (location and ownership): Road crossings and within the park.

19. Recreational Boating:
1) Navigable reach: None.
2) Type of Boating: n/a.

20. Tributaries and springs: Springs near SMC_BS4 allow brown trout to occupy a small section (Approximately 1,000 feet) of Seven Mile Creek.

21. Stream Physical Characteristics: Several physical stream measurements were taken during this survey. Miles from mouth was estimated using Arcmap10 "Stream routes with Kittle numbers" layer. The stream layer was not an exact match to the actual stream location.

a)Station no.	SMC_BS1	SMC_BS2	SMC_BS3	SMC_BS4	SMC_WQ3
b)Date	9/12/11	9/12/11	9/13/11	9/13/11	9/12/11
c)Loc.(mi from Mouth)	5.8	5.2	0.6	1.0	0.4
d)Length of station	350	350	350	525	
e)% station in					
Pools	100	50	0	5	
Riffle & Rapids	0	0	20	65	
Runs	0	50	80	30	
Other (list)					
f)Avg. width	10′	7′	10′	10′	3.8′
g)Avg. depth	24″	12″	8″	8″	2.4″
h)Flow (cfs)	0.0	<0.1	Same as FL1	Same as FL1	1.12
i)High water mark	Not checked				
j)Present stage	Low	Low	Low	Low	
k)Banks:	Heavy veg. Reed canary	Reed canary & brush	Heavy grass, brush,& Forbes	Hardwoods, brush, & Reed canary	
Avg. height	Not measured				
Height range	Not measured				
Erosion	Light-moderate	Moderate-severe	Moderate	Moderate	
%grazed	0	0	0	0	
%ditched	100	20, near Hwy 13.	100	0	
l)Shade	Light	Heavy	Moderate	Heavy	
m)Overall Bottom type					
Rubble			20	30	
Boulder		5	10	30	
Sand		5	5	5	
Gravel	20	10	60	30	
Silt	80	80	5	5	
n)Wood debris	none	light	none	light	

22. Characteristics of Water: No grab samples were taken during this survey.

a)Station No.	SMC_BS1	SMC_BS2	SMC_BS3	SMC_BS4	SMC_WQ3
b)Date	9/12/11	9/12/11	9/13/11	9/13/11	9/12/11
c)Loc.(mi. from mouth)	5.8	5.2	0.6	1.0	0.4
d)Length of station	350	350	350	525	
e)Time	1345	1223	1110	0855	
f)Air temp F	26.1	26.1	18.3	12.8	Not taken
g)Water temp C	22.4	18.8	13.9	10.7	15.6
h)Color	Green	Brown/grey	Clear	Clear	Clear
i)Cause of color	Algae	Silt			
j)Secchi disc (ft.)	Not done				
Field Determinations					
Dissolved oxygen (mg/l)	8.5	6.1	7.7	7.7	
T Tube – Turbidity (cm)	60+	10	60+	60+	
Conductivity (umhos)	860	767	899	899	

23. Temperature Profile: No temperature loggers were deployed during this survey.

24. Biological Characteristics:

a) Distribution of aquatic plants: Aquatic plants were not quantitatively examined in this survey.

b) Distribution and abundance of aquatic invertebrates: Aquatic invertebrates were not examined in this survey.

a)Station No.	SMC_BS1	SMC_BS2	SMC_BS3	SMC_BS4
b)Date	9/12/11	9/12/11	9/13/11	9/13/11
f)Filamentous Algae	Abundant	None	Moderate	Moderate

25. Fishery Characteristics:

Station number:	SMC_BS1	SMC_BS2	SMC_BS3	SMC_BS4
b) Date	9/12/2011	9/12/2011	9/13/2011	9/13/2011
c) Start location – downstream end (UTM)	E: 414187 N: 4904792	E: 414078 N: 4903934	E: 417624 N: 4901646	E: 417275 N: 4901935
d) Length of Station	350 ft	350 ft	350 ft	525 ft
e) Gear	Haltech-Backpack Pulsed DC 150 volts 60 pps	Haltech-Backpack Pulsed DC 150 volts 60 pps	Haltech-Backpack Pulsed DC 150 volts 60 pps	Haltech-Backpack Pulsed DC 150 volts 60 pps
f) Amt. of sampling effort	577 seconds	659 sec	1070 sec	1631 sec
ff) Number of netters	1	1	1	1

(g) Species present:

Station:	SMC_BS1		SMC_BS2		SMC_BS3		SMC_BS4	
	Num	Wt(g)	Num	Wt(g)	Num	Wt(g)	Num	Wt(g)
BND					115	577	58	250
BNM					3	5	3	7
BNT					54	1,296	32	1,028
BSD							3	7
BST	1	2	1	2				
CRC	29	2,155	91	2,250	4	27	52	505
CSR					3	50	10	64
FHM	24	48	6	35	3	6		
GSF					1	5	1	15
JND					21	46	10	25
LMB							1	26
SHI							1	1
WTS					3	16	2	11
YEP					1	4	5	46
Total	54	2,205	98	2,287	208	2,032	183	1,985

Remarks: A total of 14 species were found. Species included were; blacknose dace, bluntnose minnow, brown trout, blacksided darter, brook stickleback, creek chub, central stoneroller, fathead minnow, green sunfish, johnny darter, largemouth bass, unknown shiner, white sucker, and yellow perch. No anomalies (deformations, tumors, discoloration, open sores, diseases, or parasites) were seen on any fish.

26. Fish Sizes: **Length - Frequency Distributions**
Species of Particular Interest
Numbers of Fish in Length Groups (Inches)

Species	BND	BNM	BNT	BSD	BST	CRC	CSR	FHM	GSF	JND
< 2.0										
2.0 - 2.9									2	
3.0 - 3.9			8							
4.0 - 4.9			50							
5.0 - 5.9			23							
6.0 - 6.9			2							
7.0 - 7.9										
8.0 - 8.9			3							
9.0 - 9.9										
10.0 - 10.9										
11.0 - 11.9										
12.0 - 12.9										
13.0 - 13.9										
14.0 - 14.9										
15.0 - 15.9										
16.0 - 16.9										
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										
Not measured	173	6		3	2	176	13	33		31
Total	173	6	86	3	2	176	13	33	2	31

Continued:

	LMB	SHI	WTS	YEP						
< 2.0										
2.0 - 2.9			5	4						
3.0 - 3.9				2						
4.0 - 4.9	1									
5.0 - 5.9										
6.0 - 6.9										
7.0 - 7.9										
8.0 - 8.9										
9.0 - 9.9										
10.0 - 10.9										
11.0 - 11.9										
12.0 - 12.9										
13.0 - 13.9										
14.0 - 14.9										
15.0 - 15.9										
16.0 - 16.9										
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										
Not measured		1								
Total	1	1	5	6						

27. Age and Growth of Gamefish: Game fish were aged. All largemouth bass and yellow perch were young-of-the-year (YOY). A sub-sample of brown trout scales, 10 from the 3.0-6.9” range and the 3 largest fish (8.0-8.9” range), were taken but could not be aged. Scales were not archived.

28. Comparisons with past investigations and surveys: This was the first time that these four stations were done together in one assessment. Station SMC_BS4 was the same as what the Pollution Control Agency (PCA) did in 2010 and 2011. The PCA calculated an Index of Biotic Integrity (IBI) score for their work on Seven Mile Creek in 2010. Our data was sent to them and came back with an IBI score of ??? They sampled a total of 21 different species in 2010 and 14 species in 2011. We sampled 12 species in 2011.

29. History of fishing conditions: No angling, trout or otherwise, was observed during the 2011 assessment.

30. Records of past management. Trout habitat improvements (3 J-hooks, 2 cross-vanes, 2 channel constrictors, bank resloping, and root wad placements) were completed in 2002. Native vegetation was planted to stabilize eroding banks in 2003. Trout habitat improvements (5 Lunker structures and several rock weirs) were completed in 2007. Fish stocking:

Year	Species	Size	Number or pounds
2004	BNT	Fingerling	10,500 fgl
2005	BNT	Fingerling	7,500 fgl
2006	BNT	Fingerling	7,500 fgl
2007	BNT	Fingerling	7,500 fgl
2008	BNT	Fingerling	7,500 fgl
2009	BNT	Fingerling	7,500 fgl
2010	BNT	Fingerling	7,500 fgl
2011	BNT	Fingerling	7,500 fgl

31. Special Regulations: Designated trout stream.

32. Discussion of Fishery:

a) General characteristics: A total of 14 species representing 6 families were sampled. The two most abundant species sampled were blacknose dace and creek chub. Non-game fish (creek chub and fathead minnow) dominated the two upper stations, while blacknose dace and brown trout were the most abundant species sampled in the lower stations. Diversity was much higher in the lower stations (13 spp.) compared to the upper stations (3 spp.). Many of the lower station species were intolerant of the conditions found in the upper reaches. The mean water temperature for the upper stations (20.6 C) was much higher than that of the lower stations (12.3 C). It was highly unlikely that brown trout would be able to survive in the upper area throughout the summer. Most (97%) of the brown trout were likely YOY, based on a length frequency distribution from the 2003 survey report. The remaining three fish were probably 1 year olds. No adult brown trout (12 inches or longer) were sampled in any of the standardized stations. After the standardized sampling was completed we electrofished the only deep pool in the lower section of the park and found 8-10 adult brown trout that were approximately 12-19 inches long. This may have been the extent of the adult trout population in Seven Mile Creek. The upper stations offered little recreational fishing opportunity.

b) Fish management problems: Poor land use practices within the watershed have likely resulted in degradation of water quality and loss of in-stream habitat through erosion, siltation, pollution, and flooding. Unstable flows, too few deep pools, and insufficient suitable cover likely limit the introduced brown trout population. Springs in the lower section of Seven Mile allow brown trout to occupy approximately 1,000 feet of Creek. This area of the state was in a drought in the fall of 2011 and stream conditions reflected this. The largest flow measured in 2011 was below the springs and measured 1.12 cfs. A 4.7 mile section of the creek virtually dried up above the area with the springs (SMC_BS4). The pool, where the adult brown trout were electrofished, appeared to have the only remaining and functional “Lunker” structure. Spring floods, particularly in

2010 (park manager, personal communication), appeared to have altered or destroyed several of the trout habitat improvement projects installed in 2002 and 2007. Flooding was so bad in the park in 2010, that parts of the creek channel had to be moved and reshaped (park manager, personal communication).

33. Ecological Classification of Waterway: 0-4.5 I-D marginal trout waters

34. Summary and Recommendations

Summary: Inadequate habitat for adult brown trout was reflected in the 2011 sampling results. The annual stocking of 7,500 fingerling brown trout probably produced an adult population of less than a dozen fish during fall 2011. Anecdotal reports indicated that fishing pressure and catch rates, for brown trout, were generally low at Seven Mile Creek. Switching to the stocking of yearlings might provide a more immediate return for anglers using this put-and-take fishery. Stocking yearlings would also allow for evaluation of natural reproduction. Perhaps a more thorough investigation into what remains of the in-stream habitat improvements should be conducted before additional money is spent on that type of work. Despite all of this, Seven Mile Creek does offer a unique trout angling opportunity in this part of the state.

35. CREDITS AND SIGNATURES

a. Funding: Federally funded under aid from the Sport Fish Restoration Act, F-29-R (P), Fisheries Management.

b. Field work by:

Name of crew leader: Brad Koenen – Fisheries Technician

Name of aide(s): Chris Foster and Kevin Boike (Intern)

c. Completed report by:

Name: Chris Foster

Title: Natural Resource Specialist - Fish Management

Approved by: _____ **Date:**
Area Fisheries Supervisor

Approved by: _____ **Date:**
Regional Fisheries Manager