

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
RIVER OR STREAM SURVEY

Survey x
Pop. Assessment

Date(s) of Field Work 7/28 – 9/13/2004
Leader Craig Berberich
Assistant(s) Todd Kolander, Mel Kuball, Steve Shroyer

NAME, LOCATION AND FLOW CHARACTERISTICS

1. Stream Name: Cannon River
2. Alternate Name(s): none
3. Tributary Number: M - 48
4. Counties: Rice, Le Sueur
5. Watershed Name and Number: Cannon River 34
6. Sequence of Waterways to Basin: Cannon River to Mississippi River
7. Map(s) Used: U . S . G . S . quads
8. Length of Stream: 111.8
9. Average Width-Upper Station: _____ Lower Station: _____
10. Mouth Location T. _____ R. _____ S. _____
11. Flow at Mouth: _____ cfs. Date: _____
12. Flow at Gaging Station - Minimum: _____ cfs Average: _____ cfs
13. Location of Gaging Station: _____
14. Initial Source of Sustained Flow: outlet Shields Lake
15. Gradient: 1.9 ft./mile
16. Sinuosity: 1.5

WATERSHED DESCRIPTION AND USE

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

a. **Entire Watershed:** Soils in the watershed are moderately to well drained loams, clay loams, and silt loams. Most of the watershed is in privately-owned land that is subject to intensive row crop agriculture. Numerous lakes and permanent wetlands also exist in this watershed.

b. **Land adjacent to stream:** Soils are poorly drained silt clay loams and silt loams. Much of the land adjacent to the stream is wetlands, including 3 state wildlife management areas, and a state aquatic management area. The remainder of the stream corridor is privately owned agricultural lands and bottom land hardwood forest.

Date(s): 7/28-9/13/2004

Stream: Cannon River

GENERAL INFORMATION ON THE STREAM

18. Reason for Survey:

Management purposes.

19. Previous Investigations and Surveys: Initial survey 1983-1984 Creel survey summer 1984. Survey 1994.

20. Special Problems or Conditions: The Cannon River flows through 11 lakes allowing considerable mixing of fish populations which creates difficulty in separating the fisheries from these various sources.

21. Sources of Pollution:

Source	Location	Substance Discharged
Agricultural	Entire river	Farm chemicals, feedlot
Municipal waste	Kilkenny – 77.5	Effluent from sewage treatment plant
Municipal waste	Waterville – 74.2	Effluent from sewage treatment plant
Municipal waste	Morristown – 70.2	Effluent from sewage treatment plant

22. Erosion:

Type	Degree	Affected Reach

23. Stream Alterations (dredging, channeling, etc.):

Type	Location	Date
Channelization	Section 111.8 - 97	Unknown

GENERAL INFORMATION ON THE STREAM (continued)**24. Dams and other obstructions (including beaver dams):**

Type	concrete	concrete	concrete
Mi. from mouth	73.9	70.6	59.5
Head (ft)	2.8	5.7	18.0
Length of Dam	119 ft.	110 ft.	66 ft.
Control Structure	Stop log	Stop log	Gate
Use	Lake elev.	Lake elev.	Lake elev.
Fish Barrier	yes	yes	Yes
Owner	state	City-Morristown	City-Faribault
Status	good	good	good

25. Use of Water: Fishing Recreation Com. Navigation
 Power Irrigation Livestock Watering
 Other (specify) Hunting, trapping, NOPSA's mile 82.1 and 69.5.

26. Access (location and ownership):

King Mill Dam at mile 59.5, City of Faribault.
 Cannon River AMA at mile 68.5 – 70, state.
 Morristown Park at mile 70.3, City of Morristown.
 Morristown Dam at mile 70.7, City of Morristown.
 Wildlife management area –mile 100, 84.7, and 68 –state owned.
 Public access at mile 78.8 in Waterville, state.
 County Park at mile 91.8, Le Sueur County.

27. Shoreline Developments: Residential and municipal development in Waterville, Morristown, and Faribault.
 Some scattered farms, camp grounds, and city parks.

28. Recreational Boating:

- 1) Navigable reach: Mile 85.5 to mile 57.6.
- 2) Type of Boating: Canoeing or small fishing boat.

33. Biological Characteristics

- a) Station no.
- b) Date
- c) Loc. (miles from mouth)
- d) Length of station
- e) Aquatic plants or filamentous algae:
- f) Distribution of aquatic plants:
- g) Common invertebrates (check blank if present)

Order	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7
Amphipoda Hyalella azteca (scuds)	364	50	184	145	61	14	375
Diptera Chironomidae (midges)	195	61	46	115	11	124	315
Turbellaria Tricladida (flatworms)			47				
Gastropoda Physidae (pouch snails)							4
Annelida Hirudinea (leeches)						1	

Remarks: Invertebrates were collected by placing round plate samplers (0.13 m. sq.) at each station for five weeks. The invertebrates collected were dominated by scuds and chironomids; absent were mayflies, stoneflies, and caddisflies.

34. Fishery Characteristics

a) Station No.	1	2	3	4
b) Date	8/12/2004	8/12/2004	8/31/2004	8/13/2004
c) Loc. (miles from mouth)	59.5	61.0	67.3	73.6
d) Length of Station	3500 ft.		3000 ft.	4000 ft.
e) Gear	Coffelt VVP 15 boom shocker; 200V; 10A.DC	Coffelt VVP 15 boom shocker; 200V; 10A. DC	Coffelt VVP 15 boom shocker; 200V; 10A.DC	Coffelt VVP 15 boom shocker, 200 V, 10 A. DC
f) Amt. of sampling effort	45 min.	40 min.	40 min.	45 min.

g) Species present	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
Bowfin	1	2.97						
Bigmouth buffalo							2	0.03
White sucker					57	17.62	8	0.26
Carp	28	211.45	21	112.89			13	34.61
Golden shiner			1	0.04	1	0.01	81	0.50
Spottail shiner					15	0.37		
Spotfin shiner					8	0.19		
Fathead minnow							2	0.01
Black bullhead							14	2.53
Yellow bullhead					3	1.78		
Northern pike	2	0.15	1	4.18			9	2.30
White bass	3	2.18	2	0.07	12	0.10	15	4.44
Largemouth bass	22	1.41	18	5.46	10	2.51	116	3.90
Smallmouth bass					1	2.09		
Pumpkinseed							1	0.05
Bluegill	4	0.24	15	1.37			37	3.20
Black crappie	1	0.18	1	0.07			4	.04
Walleye			1	0.04	5	1.65	9	1.05
Yellow perch					4	0.51	1	0.01
Logperch					7	0.25		
Johnny darter					1	0.01		
Freshwater drum	2	6.06	9	1.30	5	4.07	30	32.79
h) Gamefish young-of-year SPECIES:								
Bluegill					1	Tr.	16	0.04

Remarks: _____

Additional Pages? Yes No

34. Fishery Characteristics

a) Station No.	5	6	7	
b) Date	8/12/2004	9/13/2004	9/13/2004	
c) Loc. (miles from mouth)	82.0 mi.	99.4 mi.	106.1 mi.	
d) Length of Station (feet)	1000 ft.	1000 ft.	300 ft.	
e) Gear	Coffelt VVP 15 boom shocker, 200 v; 10 A. DC	Smith-Root Model gpp 5.0 barge shocker dc 5 amps, 120ppm	Smith-Root Model 12 back pack shocker, j-4 setting 200 v	
f) Amt. of sampling effort	30 min.	30 min.	30 min.	

g) Species present	No.	Wt.	No.	Wt.	Total	Total	Number
Bowfin			2	0.55	1	0.23	
White sucker	1	0.02					
Carp	3	0.04					
Fathead minnow			1	Tr.			
Black bullhead	9	1.32			2	0.06	
Largemouth bass					4	0.79	
Pumpkinseed					5	0.29	
Bluegill			1	0.01	55	3.22	
Black crappie					151	3.79	

Remarks: _____

Additional Pages? Yes ___ No x

35. Fish Sizes Length - Frequency Distributions

Species and Numbers of Fish in Length Groups

Total Length in Inches	Bowfin	Bigmouth buffalo	White sucker	Carp	Black Bullhead	Yellow bullhead	Northern pike	White bass	Largemouth bass
< 2.0									
2.0 - 2.4				1	2			1	3
2.5 - 2.9									
3.0 - 3.4		1			2			5	15
3.5 - 3.9		1	1		1			5	16
4.0 - 4.4			5	3				2	15
4.5 - 4.9			2	4					6
5.0 - 5.4				2					2
5.5 - 5.9					2				4
6.0 - 6.4					2				2
6.5 - 6.9					3				1
7.0 - 7.4			1		5		1		1
7.5 - 7.9				1	2				
8.0 - 8.4	2		2		5		1	1	2
8.5 - 8.9	2		1					1	
9.0 - 9.4			7						1
9.5 - 9.9			2			1	2		
10.0 - 10.4			8			1			
10.5 - 10.9			2				2		
11.0 - 11.4			5			1	4		1
11.5 - 11.9			1				1		
12.0 - 12.9								1	
13.0 - 13.9								1	
14.0 - 14.9								1	
15.0 - 15.9								1	
16.0 - 16.9									
17.0 - 17.9									1
18.0 - 18.9				2					
19.0 - 19.9				3					
20.0 - 20.9				4					1
21.0 - 21.9				6					
22.0 - 22.9				8					
23.0 - 23.9				3					
24.0 - 24.9	1			11					
25.0 - 25.9				6					
26.0 - 26.9				1					
27.0 - 27.9				6					
28.0 - 28.9							1		
29.0 - 29.9				2					
30.0 - 30.9				2					
31.0 - 31.9				1					
32.0 - 32.9									
Total	5	2	38	66	24	3	12	18	62

Additional pages: Yes x No

35. Fish Sizes Length - Frequency Distributions
 Species and Numbers of Fish in Length Groups

Total Length in Inches	Smallmouth bass	Pumpkin seed	Bluegill	Black crappie	Walleye	Yellow Perch	Freshwater Drum		
< 2.0									
2.0 - 2.4		2	4	3			1		
2.5 - 2.9									
3.0 - 3.4			3	25		1			
3.5 - 3.9			12	37			3		
4.0 - 4.4		1	16	8			6		
4.5 - 4.9		3	20						
5.0 - 5.4			13	1	1				
5.5 - 5.9			9		3				
6.0 - 6.4			4	1	3	2			
6.5 - 6.9				1	6	1			
7.0 - 7.4						1	1		
7.5 - 7.9							1		
8.0 - 8.4							1		
8.5 - 8.9							3		
9.0 - 9.4							1		
9.5 - 9.9							3		
10.0 - 10.4									
10.5 - 10.9							1		
11.0 - 11.4					1				
11.5 - 11.9									
12.0 - 12.9							2		
13.0 - 13.9							5		
14.0 - 14.9							6		
15.0 - 15.9	1				1		5		
16.0 - 16.9							5		
17.0 - 17.9							1		
18.0 - 18.9							1		
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 - 30.9									
31.0 - 31.9									
32.0 - 32.9									
Total	1	6	77	73	15	5	46		

Additional pages: Yes ___ No x

36. Age and Growth of Gamefish**a) Age class distributions**

Species	Sample Size	Subsample Size	Number of fish in age group							
			0	I	II	III	IV	V	VI	VI+
Northern pike	12	12	7	4			1			
Largemouth bass	62	38	10	22	4	1				1
Bluegill	77	42	3	4	34	1				
Pumpkinseed	6	6	2	2	2					
Black crappie	73	24	5	15		4				
White bass	18	17	11	2	1		1	2		
Walleye	15	14	12	1		1				

b) Growth of gamefish

Calculated mean total length at time of last annulus								
Species	I(N)	II(N)	III(N)	IV(N)	V(N)	VI(N)	VII(N)	VIII(N)
Northern pike	8.0(5)	13.5(1)	19.6(1)	23.6(1)				
Largemouth bass	2.0(28)	5.4(6)	6.7(2)	8.2(1)	10.2(1)	13.0(1)	14.7(1)	16.2(1)
Bluegill	3.7(39)	4.9(35)	5.8(1)					
Pumpkinseed	2.4(4)	3.7(2)						
Black crappie	2.7(19)	3.7(4)	4.7(4)					
White bass	3.9(6)	6.4(4)	9.6(3)	11.6(3)	13.1(2)			
Walleye	6.8(2)	9.1(1)	12.5(1)					

Remarks:**Additional Pages?** Yes ___ No x

39. History of Stream and Fishing Conditions:

a) Comparisons with past investigations and surveys: The same stations were sampled as were completed in the 1994 survey. There were 22 species sampled compared 24 captured in 1994. This survey was dominated by young game fish with many captured below Schmidtke dam and below Rice Lake . The 1994 survey was dominated by yearling and young of the year gamefish, which indicates the importance the river is as a nursery. The 1994 survey reported 41% of the fish sampled were rough fish, 15% game fish, and 44% non game species compared to 67% game fish, 18% rough fish and 15% non game fish species. Over all, species diversity changed little between the two surveys. The fish sampling in 2004 was very effective with adequate flows to sample five of the seven stations with the boom shocking boat; 2004 was the third wettest summer ever recorded.

b) History of fishing conditions: The fishery in the Cannon River is as dynamic as the lakes it passes through. Fishing conditions typically reflect the presence or absence of strong year classes of game fish found in the lakes adjoining the river.. Angling tends to be concentrated below the four major dams found in the Waterville Fisheries area. These sites concentrate fish during spring spawning movements. These dams have historically been the principal fishing areas since their placement in the 1930”s.

c) Records of past management**Fish Stocking**

Year	Species	Size	Number or Pounds
1958	Walleye	Fry	1,000,000
1959	Walleye	Fry	1,000,000
1960	Smallmouth bass	FGL	910
1962	Smallmouth bass	FGL	1,760
1969	Crappie	YRL	800
1971	Crappie	YRL	960
1977	Channel catfish	FGL	5,012
1989	Smallmouth bass	FGL	25,342

Rough Fish Removal

Year	Species	Size	Number or Pounds
1946-1962	Bullheads		54,200
1946-1961	Buffalo		4,731
1946-1962	Carp		133,753
1980	Sucker		3,000
1980	Buffalo		5,000
1980	Carp		8,000
1988-1992	Carp		40,200

Special Regulations: none

Habitat improvement:

Year Installed	Type and Amount	Location (mile to mile)	Cost	Present Condition
none				

40. Discussion of Fishery

a) General characteristics: The Cannon River fishery was dominated by young gamefish that moved down from the lakes during the unusually high summer flows. Bluegill, crappie, and largemouth bass were well represented. The two lower stations which are impoundments (King Mill and Bully – Wells) were dominated by large carp. The Cannon River is an important spring fishery with good angling for white bass below Morristown in recent years and walleye angling below the dams. Angling for bullheads has declined in recent years as younger anglers target other species; bullheads have declined in abundance in the Cannon River chain of lakes, which is probably due to lack of significant winter-kills.

b) Fish management problems: Problems currently limiting the Cannon River fishery in the Waterville area include: dams on the river and at the outlets of the adjoining lakes, poor water quality, destabilized flows, with the resulting loss of aquatic habitat and decrease in species diversity of aquatic plants and animals. Historically, fish moved freely from the Mississippi River to Shields Lake and today four dams block their movement. Poor land use practices within the watershed have resulted in degradation of water quality and loss of in-stream habitat through erosion, siltation, pollution and flooding. Low flows during dry periods and adverse impacts of feedlot runoff and inadequate sewage disposal systems all contribute to the poor water conditions, which limit gamefish numbers.

The Cannon River has not been stocked directly but receives walleye from the stocking of adjoining lakes. The Cannon chain is stocked with walleye fry three out of four years and has been successful in generating a sport fishery throughout the Cannon chain..

41. Ecological Classification of Waterway: II ((Warmwater Gamefish)

42. Summary and Recommendations:

a) Summary: The Cannon River represents an important recreational fishery in the Waterville area . Most of the fishing occurs at dam sites at Morristown and Faribault. The fishery has been dominated by black bullheads, but more white bass, walleye and black crappie have been caught in recent years. The walleye strategy adopted in 1987 appears to be working and stocking walleye fry three out of four years in the Cannon River should continue.

b) Additional information on stations:

Station No.1:

Station No.2:

Station No.3:

Station No.4:

Date 7/28/2004

Stream: Cannon River

43. CREDITS AND SIGNATURES

a. Funding: F-29-R

b. Field work by:

Name of crew leader: Craig Berberich

Name of aide(s): Todd Kolander, Mel Kuball, Steve Shroyer

c. Completed report by:

Name: Craig Berberich

Title: NR Specialist

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

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