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DIVISION OF FISHERIES AND WILDLIFE

Completion Report

Fisheries Assessment of the Mississippi River in Wright, Stearns and Sherburne Counties 2007, River Miles 879 to 926.

By

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Montrose Area Fisheries

SUMMARY

Seven MNDNR Area Fisheries Offices conducted a survey of the Mississippi River from the headwaters to the Coon Rapids Dam in 2007. The 47 river miles within the Montrose management area in Wright, Stearns and Sherburne Counties was divided into six reaches. Each reach was sampled by electrofishing and trotlining. Electrofishing was conducted with a boat using Index of Biotic Integrity (IBI) protocols, and with a backpack unit. Water samples were also analyzed for standard parameters. In 2008 the geomorphology of the river was evaluated using a Level II Rosgen classification at five sites in the Montrose Area.

A total of 32 species were collected by all gear in 2007. Previous surveys collected 8 species in 1960, 31 species in 1974, and 26 species in 1990. In 2007, the most abundant species numerically were smallmouth bass, 20.0%; followed by shorthead redhorse, 14.2%; channel catfish, 12.2%; blackside darter, 10.0%; and common carp, 9.9%. Five species were collected for the first time in 2007 by DNR Fisheries: bigmouth buffalo, blackside darter, brassy minnow, green sunfish, and orangespotted sunfish. Sportfish sampled included smallmouth bass, channel catfish, walleye, and northern pike.

A total of 587 smallmouth bass were collected by electrofishing in 2007, which made it the most abundant sportfish at 21.7% of the electrofishing catch. Fish ranged between 2 and 18 inches and averaged 0.5 pound. In addition to electrofishing, trotlining was used for the first time in 2007 to target channel catfish. The combined total of 360 catfish represented 12.2% of the overall catch. Fish ranged from 1.6 to 31.0 inches. Channel catfish were stocked above the Coon Rapids dam in 1963 and 1974. Electrofishing sampled 49 walleye (3.4-27.1 in) and 10 northern pike (8.0-26.1 in). Catches of walleye and pike have been consistently low since 1960.

IBI scores at the ten sites ranged from 36 (poor) to 65 (good): one site was poor, eight were fair and one was good. All sites scored low (score of 0 or 2) on total number of species (8-17 species) reflecting possible human impacts such as dams and nonpoint pollutants. Eight sites scored low on number of invertivore species (3-7 species), and five sites scored low on percent of lithophilic spawners (35-38%). These scores reflect the turbidity of the river, which may be exacerbated by increased runoff from land use changes. The site rated as poor scored low on six of ten metrics.

Water levels were very low during sampling, July to September 2007. Water quality was consistent in the upper reaches of this section, but declined considerably below the confluence of the Crow River. Total phosphorus was double the level of the site upstream and chlorophyll a was seven times higher. Parts of the Crow River have been listed as impaired under the 303(d) section of the Clean Water Act for low oxygen, turbidity and fecal coliform. Habitats also changed from abundant islands upstream in the section to reaches of predominantly runs and riffles. The Rosgen classification categorized two sites as D3 and three sites as D4. Both stream types have braided channels, eroding banks and high width to depth ratios. Low discharge rates may have affected the classifications.

TABLE OF CONTENTS

Summary....2
List of Figures....4
List of Tables....5
List of Appendices....6
Introduction....7
Study Area....7
Methods....7
Results/Discussion....9
Recommendations....14
Acknowledgements....14
Literature Cited....15
Figures....16
Tables....20
Appendices....29

LIST OF FIGURES

Figure 1. Map of similar reaches sampled by electrofishing (EF) and trotlines (TL) on the Mississippi River in Wright, Stearns and Sherburne Counties, Minnesota, 2007.....17

Figure 2. Mean daily discharge (May – September 2007) and average discharge (1988 – 2007) for the Mississippi River below the St. Cloud Dam. Data is from the USGS gauging station in St. Cloud, Minnesota. 18

Figure 3. Map of similar reaches depicting IBI scores (by site) and Rosgen stream classification by reach for the Mississippi River in Wright, Stearns and Sherburne Counties, Minnesota. 19

LIST OF TABLES

Table 1. Presence or absence of fish species sampled in 1960, 1974, 1990 and 2007 (by reach) from the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota. 21

Table 2. Number of fish sampled by electrofishing and trotlining, by reach from the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007. 22

Table 3. Lengths and weights of fish sampled from the Mississippi River (Reaches 41 – 46), July 30 – August 29, 2007. 23

Table 4. Length frequency of smallmouth bass sampled from the Mississippi River by boat and backpack electrofishing from July 30 through August 15, 2007. 24

Table 5. Length frequency of channel catfish sampled from the Mississippi River by electrofishing and trotlines from July 30 through August 29, 2007. 25

Table 6. Index of Biotic Integrity metric data and scores for stations sampled in the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007. 26

Table 7. Water chemistry data collected from the Mississippi River, in Wright, Stearns, and Sherburne Counties, Minnesota, 2007. 28

Table 8. Stream morphology (Rosgen 1996) on the Mississippi River, in Wright, Stearns, and Sherburne Counties, Minnesota. 28

LIST OF APPENDICES

Appendix 1. Public accesses on the Mississippi River between St. Cloud and Dayton, Minnesota. 30

Appendix 2. Location and description of electrofishing sites sampled on the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007. 31

Appendix 3. Location and description of trotline sites sampled on the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007. 32

Appendix 4. Number of fish sampled by boat and backpack electrofishing by site from the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007..... 34

Appendix 5. Boat electrofishing catch in Reach 41 of the Mississippi River, August 13, 2007..... 35

Appendix 6. Boat electrofishing catch in Reach 42 of the Mississippi River, July 30-31, 2007..... 35

Appendix 7. Boat electrofishing catch in Reach 43 of the Mississippi River, August 8 and 14, 2007..... 36

Appendix 8. Boat electrofishing catch in Reach 44 of the Mississippi River, August 8 and 15, 2007..... 36

Appendix 9. Boat electrofishing catch in Reach 45 of the Mississippi River, August 1 and 3, 2007..... 37

Appendix 10 Boat electrofishing catch in Reach 46 of the Mississippi River, August 2, 2007..... 37

Appendix 11. Scientific and common names of fish sampled from the Mississippi River in Wright, Stearns and Sherburne Counties, Minnesota, 2007. 38

INTRODUCTION

A fisheries survey was conducted on the Mississippi River in 2007 to update information on species composition, distribution and relative health of the fish community. Seven area offices sampled the Mississippi River from the headwaters to the Coon Rapids Dam. The Montrose Office surveyed the 47 miles in its management area from the St. Cloud Dam to just below the confluence of the Crow River, near Dayton. Three previous surveys were conducted in this section in 1960 (MNDGF 1961), 1974 (Enblom 1977) and 1990 (MNDNR 1991).

STUDY AREA

The Mississippi River between St. Cloud and Dayton encompasses 47 river miles and is characterized by moderate bluff lands with areas of flood plain forest (Altena 2003). Land use in this section, based on 2001 land use data, consists primarily of agricultural land (59%) followed by forest (19%), residential (8.5%) and wetland (7%). This section has a gradient of 2.5 ft/mile, a sinuosity of 1.2, mean width of 866 ft, and a mean depth of 4.9 ft. Substrates within this section of river can range from boulder and cobble to sand and gravel.

The Mississippi River from St. Cloud to Clearwater is designated as a state Scenic River, while the section from Clearwater to Dayton is designated as a Recreational River. These designations were put in place to protect the unique nature of these areas (Altena 2003).

METHODS

The Mississippi River in the Montrose Area was divided into six reaches based on geomorphological changes (Figure 1). Reach 41 extended from the St. Cloud Dam, RM 926.0 to RM 921.0. Reach 42 extended from RM 921.0 to the confluence of Silver

Creek at RM 906.7. Reach 43 extended from RM 906.7 to RM 891.1. Reach 44 extended from RM 891.1 to RM 884.1. Reach 45 extended from RM 884.1 to 881.6 and Reach 46 extended from RM 881.6 to RM 878.8.

Within each reach, one or two electrofishing sites were selected that represented the various habitats found within the reach (Figure 1). These were sampled between 30 July and 15 August 2007 by boat and backpack shockers. The boat had a bow-mounted Smith-Root GPP5 unit with two spider-array anode droppers. Pulsed DC current was set at 60 Hz and voltage on low range, 2-6 amps (typically 4 amps). The backpack unit was a Smith-Root Model 15D POW set at 200-400 volts.

Three electrofishing runs were made at each site with the boat (left and right banks, and center of channel), except for site 45-8 because of low water, and one run with the backpack shocker (either bank). Runs were approximately 500 m (Niemala and Feist 2002). Start and end locations were marked by a Garmin GPS Map76CSX and plotted with Arc Map 9.2. Attempts were made to collect all fish with two netters on the boat and one netter with the backpack. A total of 4.91 hours of effort were applied with the boat electrofisher and 1.86 hours with the backpack shocker (Appendix 1).

A total of 57 trotlines were set throughout the section to sample channel catfish. Each trotline was 150 ft long with 25 size 4/0 hooks on 1 ft dropper lines spaced 4 ft apart. Hooks were baited with pieces of redhorse (Moxostoma spp.). Trotlines were anchored by fence posts at both ends and set at a 45° angle downstream of the bank. Each set was 24 h.

All fish were identified and either individually weighed (g) and measured (mm) or bulk weighed and the range of lengths measured. Fish sampled by boat electrofishing were examined for deformities, eroded fins, lesions, and tumors. These data were compiled with boat electrofishing catch data to calculate an Index of Biotic Integrity (IBI) score (Niemala and Feist 2002). The IBI evaluates the health or integrity of a site based

on species richness and composition, trophic and reproductive function, and fish abundance and condition. The biotic integrity of sites with scores of 0-19 are termed “very poor”, 20-39 “poor”, 40-59 “fair”, 60-79 “good”, and over 80 “very good”.

A grab sample of water was taken at an access site within each reach. These were taken on 5 September 2007 and sent to the Department of Agriculture Laboratory. Standard water chemistry analysis was done for total phosphorus, chlorophyll a, total alkalinity, pH, total dissolved solids, conductivity, and chloride. Mean daily discharge was obtained from the USGS gauging station in St. Cloud.

Stream geomorphology was evaluated during September 2008 using a Level II Rosgen (1996) classification. One site was surveyed in each reach for channel cross-section, longitudinal profile and substrate particle composition. Longitudinal profiles were approximately 1,600 ft long. A Garmin 178 chart-plotter was used to survey non-wadable depths of cross-section and longitudinal profiles. A transducer was attached to the boat transom and calibrated with a surveying rod. The chart-plotter recorded depths at one-second intervals and measured the distance between readings. Water surface elevations were surveyed with a laser level and surveying rod at the cross-section and at both ends of the longitudinal profile. RiverMorph© 4.1.1 software was used to analyze data and calculate stream classifications (Stream Restoration Software (2001-1007)).

RESULTS/DISCUSSION

A total of 42 species have been collected in the Montrose Area of the Mississippi River (Table 1). The 2007 survey sampled 32 species (Table 2) which was 76.2% of the total, compared to 8 species (19.4%) in 1960, 31 species (73.8%) in 1974 and 26 species (61.9%) in 1990. Eight species were collected in all four surveys. Eleven species were not sampled in 2007 that had been previously collected from this section. Five species were collected for the first time in 2007 by DNR Fisheries: bigmouth

buffalo, blackside darter, brassy minnow, green sunfish, and orangespotted sunfish. Thirteen species were collected from all reaches in 2007.

A total of 2,943 fish were sampled in 2007 (Table 2). This was comparable to 982 fish in 1960; 2,362 fish in 1974 and 1,206 fish in 1990 (plus an estimated 3,731 additional fish by seining). In 2007, the most abundant species numerically were smallmouth bass, 20.0%, followed by shorthead redhorse, 14.2%, channel catfish, 12.2%, blackside darter, 10.0%, and common carp, 9.9%. Of the fish with recorded weights, the most abundant were common carp, 38.5%, followed by shorthead redhorse, 21.4%, channel catfish, 14.2%, silver redhorse, 13.0%, and smallmouth bass, 5.2% (Table 3).

Electrofishing was used in all four surveys, but protocols and effort varied considerably. Four species were sampled by backpack electrofishing only in 2007: hybrid and orangespotted sunfish, creek chub, and yellow perch. Boat electrofishing sampled 28 species (range of 12-19 species by reach), six of which were also sampled by trotlining. The number of fish sampled by boat electrofishing ranged from 150, Reach 41, to 516, Reach 44. Catch rates ranged from 290.6/hr, Reach 45, to 461.0/hr, Reach 42. Four common sportfish collected in this section of river were smallmouth bass, channel catfish, walleye, and northern pike.

Smallmouth bass were collected in all reaches by boat and backpack electrofishing, totaling 587 fish (Table 4). Of these, 560 were collected by boat electrofishing at an overall rate of 110.1/hr (85.1-132.8/hr by reach), and 27 were collected by backpack at an overall rate of 14.5/hr (6.3-28.5/hr by reach). Bass ranged between 2 and 18 inches and averaged 0.5 lbs. One smallmouth bass was collected by trotlining. Smallmouth bass were the most abundant sportfish and comprised 21.7% of the electrofishing catch. This was similar to 1990 and 1974, 19.5% and 24.3%, respectively. In 1960, smallmouth bass were only 6.3% of the electrofishing catch.

Changes in sampling protocol make real differences in catch difficult to discern. In 2007, 90% of the smallmouth bass sampled were less than 12 inches which was similar to 1990 (89%).

This section of the Mississippi River is known for having an excellent smallmouth bass fishery. In order to protect that fishery a special regulation was put in place in 1990 protecting smallmouth bass between 12 – 20 inches from Clearwater to Elk River. This regulation was extended in 1999 to include the area from St. Cloud to the confluence of the Crow River in Dayton. This regulation was made permanent in 2008.

Channel catfish were collected in all reaches in 2007 by boat electrofishing and trotlining (Table 5). Boat electrofishing sampled 129 catfish at an overall catch rate of 25.4/hr (3.6 to 46.5/hr by reach), and trotlining sampled 231 catfish at an overall catch rate of 4.4/lift (2.8 to 7.0/lift by reach). Catfish ranged between 1.6 and 31 inches and 0.2 and 10.6 lbs. Boat electrofishing caught fewer and smaller catfish than trotlining, which targeted catfish habitats. No catfish were collected by backpack shocking.

Channel catfish were initially stocked above the Coon Rapids Dam in 1963 and then again in 1974. Previous surveys only sampled with electrofishing and no channel catfish were collected in 1960 or 1974. In 1990, 38 channel catfish were collected, which was 3.2% of the electrofishing catch, compared to 4.8% in 2007. Average size has also increased from 17 inches in 1990 to 19 inches in 2007. With the addition of trot lines in 2007, channel catfish increased to 12.2% of the total catch.

As in the three previous surveys, walleye and northern pike were collected in low numbers in 2007. A total of 49 walleye were collected from all reaches by electrofishing, which was less than 2% of total fish collected. Fish ranged between 3.4 and 27.1 in with a mean weight of 0.7 lbs. Electrofishing catch rates have been similar in all four surveys between 1.6-2.5%of the electrofishing sample. Anecdotal evidence suggests that walleye anglers have had good success. A total of ten northern pike were collected from

the five lower reaches by electrofishing, and one pike was collected on a trot line in Reach 43. Fish ranged between 8.0 and 26.1 in with a mean weight of 2.1 lbs. Only 14 total northern pike were collected in the three previous surveys, but these fish may have low susceptibility to electrofishing gear. We have only a single record of a 34 inch muskellunge captured by the DNR during electrofishing in 1999 below the St. Cloud Dam. Excel Energy biologists sampled a 46 inch fish in April 1990 near Monticello.

Other noteworthy fish collected in 2007 included common carp, shorthead redhorse and blackside darter. Common carp catch has declined since 1960 from 51.9% of the electrofishing catch, to 24.1% in 1974, 11.3% in 1990 and 10.7% in 2007. Shorthead redhorse were collected in all four surveys and ranged from 12.0% of the electrofishing catch in 1960 to 35.1% in 1990. In 2007 shorthead redhorse were 15.5% of the electrofishing catch. The number of sucker species has ranged between three species in 1960 and 1974 to five species in 1990 and 2007. The percentage of the electrofishing catch of sucker species has ranged from 38.2% in 1960, to 3.0% in 1974, 60.9% in 1990, and 23.3% in 2007. Blackside darter were collected for the first time in 2007 and at all sample sites and comprised 10.9% of the catch. Again, changes in sampling protocol make direct comparisons among surveys difficult.

Twenty intolerant species and have been collected in the Upper Mississippi River watershed (Niemela and Feist 2002), six of which were sampled in the Montrose Area in 2007 (Table 1). Smallmouth bass were found in all reaches. Twelve tolerant species are also found throughout the watershed, six of which were collected in this section in 2007. White sucker, green sunfish, bluntnose minnow, and common carp were collected in all reaches.

IBI scores at the ten sites ranged from 26 (poor) to 69 (good): one site was poor, 5 were fair and 4 were good (Table 6 and Figure 3). All sites scored low (score of 0 or 2) on total number of species (8-17 species) reflecting possible human impacts such as

dams and nonpoint pollutants. Seven sites scored low on number of invertivore species (3-7 species), and six sites scored low on percent of lithophilic spawners (8-38%). These scores reflect the turbidity of the river, which may be exacerbated by increased runoff from changes in land use. The site rated as poor, 45-9, scored low on six of ten metrics. Only eight species were sampled by boat electrofishing at this site. This site typically has poor fish habitat: low gradient, sandy substrate and little cover.

Discharge at St. Cloud was below average during sampling, 30 July-30 August 2007 (Figure 2). Mean daily discharge was 1,300 cfs, whereas mean daily discharge for 1988-2007 was 4,500 cfs for the same timeframe. Water quality was generally consistent in Reaches 41-45 (Table 7), but declined markedly in Reach 46, below the confluence of the Crow River. In particular, total phosphorus almost doubled from 0.130 to 0.236 ppm. Chlorophyll a showed a seven-fold increase from 31.4 to 227.0 ppb between the two sites. Parts of the Crow River have been listed as impaired since 2002 for aquatic life, consumption and recreation by the Minnesota Pollution Control Agency (MPCA) under Section 303(d) of the Clean Water Act. Specific parameters of impairment were low oxygen, turbidity and fecal coliform (MPCA 2002).

Data were collected for a Level II Rosgen classification at six sites, five of which were in the Montrose Area. The sixth site was in the West Metro Area, which analyzed that data. Bankfull widths at the five Montrose Area sites ranged from 444 to 631 ft (Table 8). Flood-prone widths ranged from 487 to 733 ft at these sites. Width to depth ratios were high, 71.8 to 125.2, and entrenchment ratios were low, 1.04 to 1.17. Gravel was the dominant substrate at three sites, which RiverMorph© classified as type D4. Cobble was dominant at the remaining two sites, which were classified as D3.

RECOMMENDATIONS

It is recommended that the DNR Fisheries coordinates with the Minnesota Pollution Control Agency on a survey protocol and schedule, such as IBI electrofishing every ten years, with each agency offset by five years to maximize data collection and facilitate trend analysis. Discussions should include methodology that includes more sampling in shallow areas that are likely under-sampled by boat electrofishing. Considerations should also be given to sampling all of the Mississippi River in Minnesota during a survey, from the headwaters to the Iowa border, and in writing one report, which analyzes data by similar reach, rather than Area boundaries.

ACKNOWLEDGEMENTS

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RiverMorph, LLC. (2007) RiverMorph (stream restoration software – professional edition), version 4.1.1 www.rivermorph.com. Copyright © 2001 – 2007 RiverMorph LLC, Louisville, KY.

FIGURES

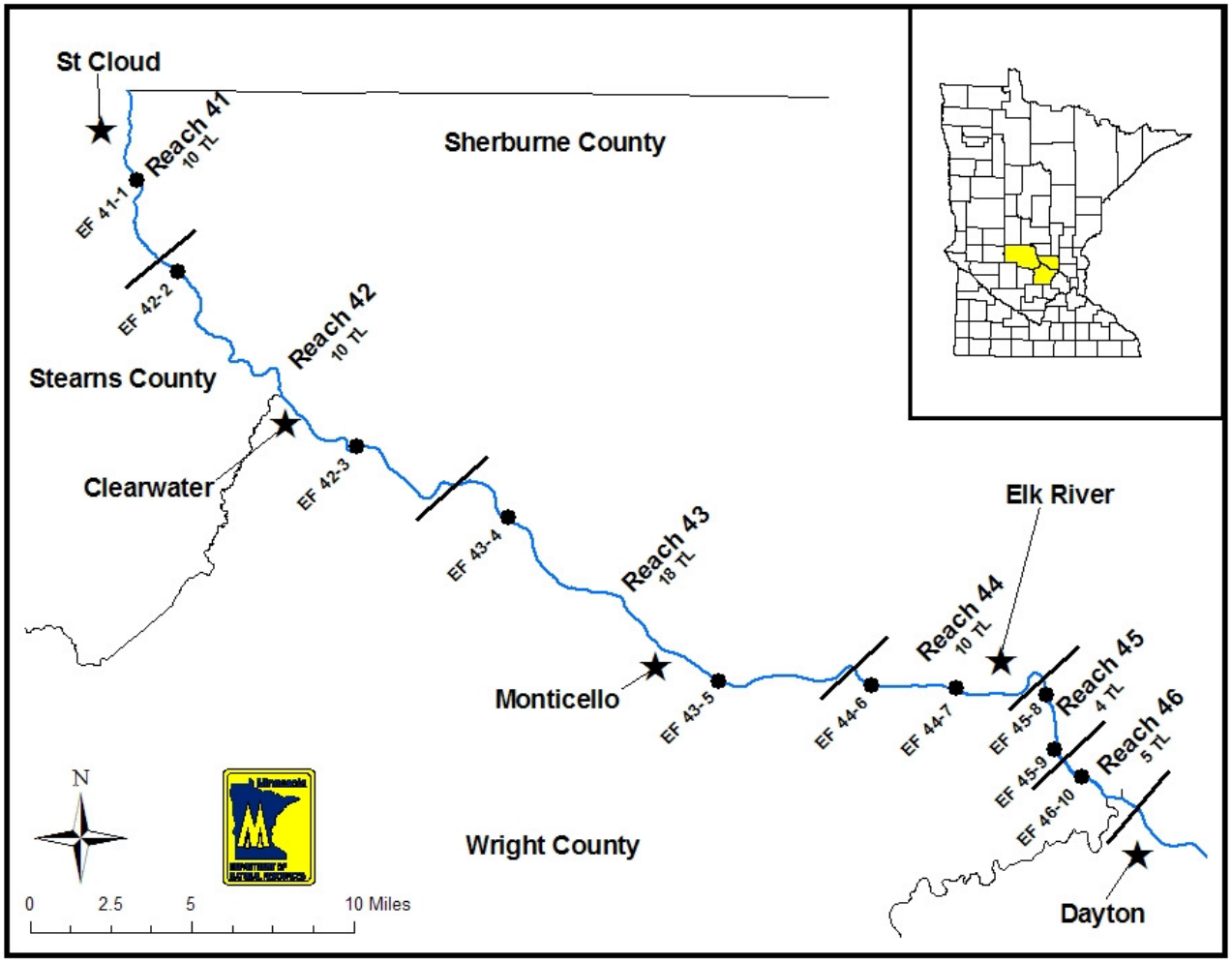

Figure 1. Map of similar reaches sampled by electrofishing (EF) and trotlines (TL) on the Mississippi River in Wright, Stearns and Sherburne Counties, Minnesota, 2007.

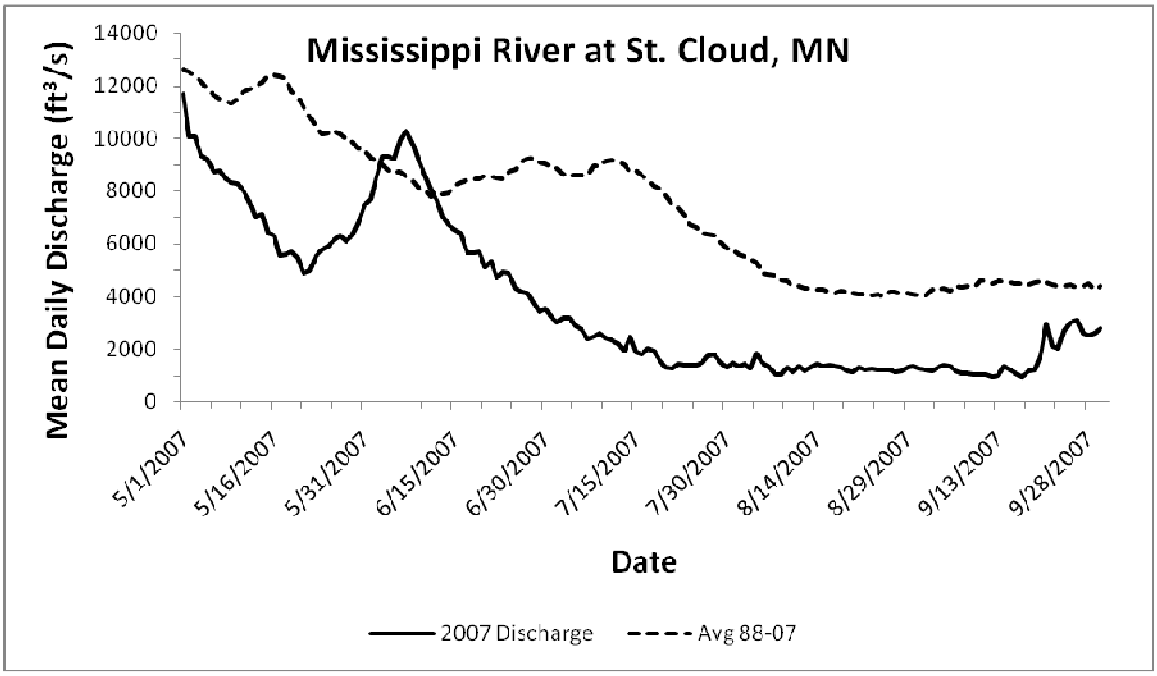

Figure 2. Mean daily discharge (May – September 2007) and average discharge (1988 – 2007) for the Mississippi River below the St. Cloud Dam. Data is from the USGS gauging station in St. Cloud, Minnesota.

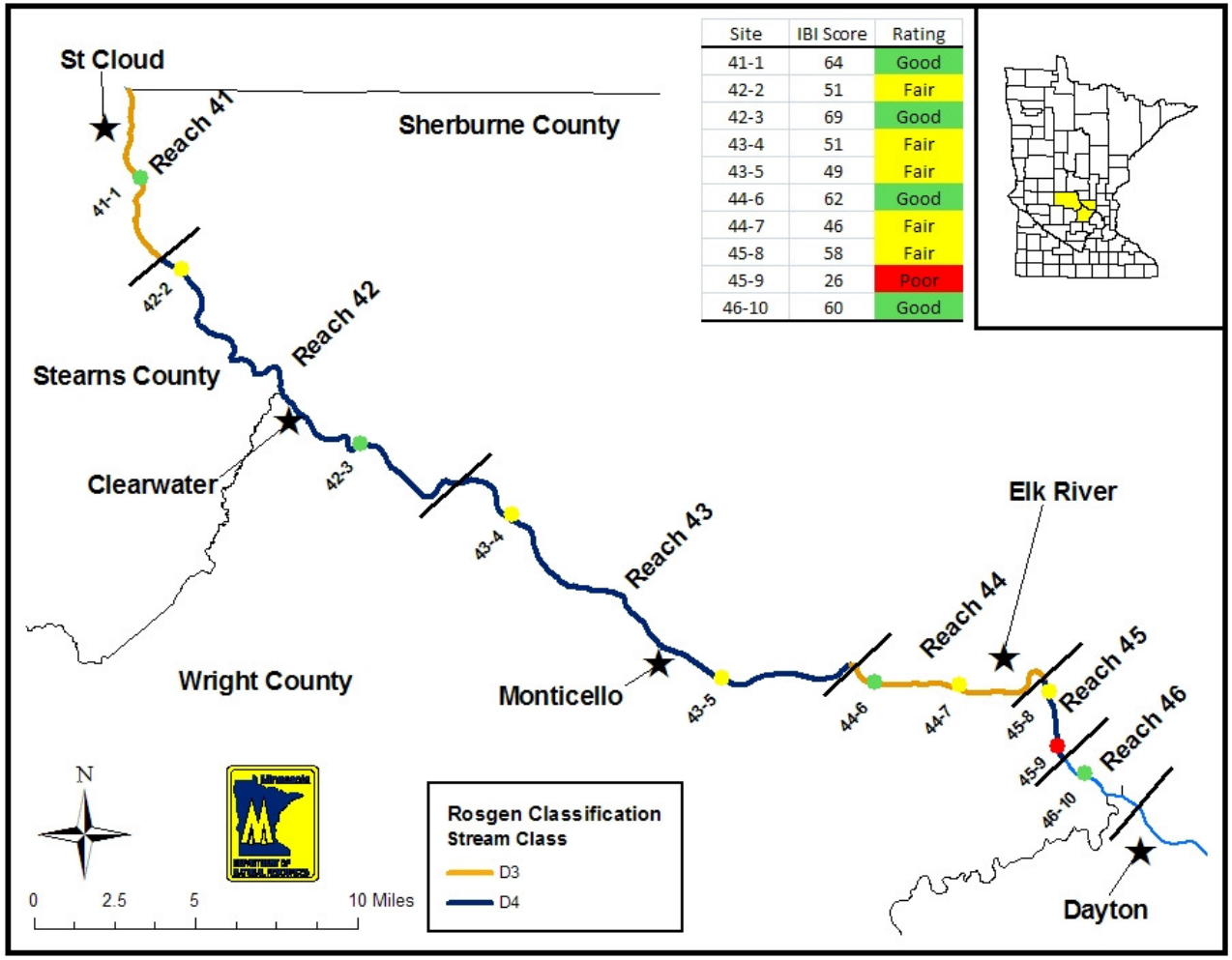

Figure 3. Map of similar reaches depicting IBI scores (by site) and Rosgen stream classification by reach for the Mississippi River in Wright, Stearns and Sherburne Counties, Minnesota.

TABLES

Table 1. Presence or absence of fish species sampled in 1960, 1974, 1990, and 2007 (by reach) from the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, by MNDGF and MNDNR.

	1960	1974	1990	2007 Reaches					
Species				**41**	**42**	**43**	**44**	**45**	**46**
Amiidae									
Bowfin		X		X		X	X	X	
Atherinidae									
Brook silverside			X		X				
Catostomidae									
Bigmouth buffalo[2]				X	X	X		X	
Greater redhorse[1]			X						
Northern hogsucker[1]			X	X	X	X	X		X
Shorthead redhorse	X	X	X	X	X	X	X	X	X
Silver redhorse	X	X	X	X	X	X	X	X	X
White sucker[2]	X	X	X	X	X	X	X	X	X
Centrarchidae									
Black crappie		X	X	X	X				X
Bluegill		X	X	X	X	X	X	X	X
Green sunfish[2]				X	X	X	X	X	X
Largemouth bass		X	X						
Orangespotted sunfish									X
Pumpkinseed sunfish		x							
Rock bass[1]	X	X	X	X	X	X	X		
Smallmouth bass[1]	X	X	X	X	X	X	X	X	X
White crappie		X	X						
Cyprinidae									
Bigmouth shiner		X							
Bluntnose minnow[2]		X	X	X	X	X	X	X	X
Brassy minnow									X
Common carp[2]	X	X	X	X	X	X	X	X	X
Creek chub[2]		X			X		X	X	
Common shiner		X						X	
Fathead minnow[2]		X							
Horneyhead chub[1]		X			X	X	X	X	X
Longnose dace[1]		X							
Mimic shiner[1]				X	X	X	X		X
Sand shiner			X	X	X	X	X	X	X
Spotfin shiner		X	X		X	X	X	X	X
Spottail shiner[1]		X	X		X			X	
Esocidae									
Northern pike	X	X	X		X	X	X	X	X
Gadidae									
Burbot		X	X	X	X			X	
Ictaluridae									
Black bullhead[2]		X	X						
Channel catfish			X	X	X	X	X	X	X
Tadpole madtom		X							
Yellow bullhead		X	X						
Percidae									
Blackside darter				X	X	X	X	X	X
Johnny darter		X	X	X	X	X	X	X	X
Logperch		X	X	X	X	X	X	X	
Walleye	X	X	X	X	X	X	X	X	X
Yellow perch		X							X
Percopsidae									
Trout-perch		X	X						

[1] Intolerant species (Niemela and Feist 2002)
[2] Tolerant species (Niemela and Feist 2002)

Table 2. Number of fish sampled by electrofishing (EF) and trotlining (TL), by reach from the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007.

Species	Reach						Total
	41	42	43	44	45	46	
Amiidae							
Bowfin (EF)				1			1
Bowfin (TL)	3		1		1		5
Atherinidae							
Brook silverside		1					1
Catostomidae							
Bigmouth buffalo	2	2	6		3		13
Northern hogsucker	16	28	3	3		2	52
Shorthead redhorse	36	113	99	132	10	29	419
Silver redhorse (EF)	16	64	12	9	13	15	129
Silver redhorse (TL)	1						1
White sucker	3	6	1	2	2	1	15
Centrarchidae							
Black crappie	1	3				1	5
Bluegill	1	2	1	1	4	6	15
Green sunfish	1	7	1	36	3	1	49
Hybrid sunfish		1				1	2
Orangespotted sunfish						1	1
Rock bass	16	1	1	1			19
Smallmouth bass (EF)	43	109	132	181	57	65	587
Smallmouth bass (TL)				1			1
Cyprinidae							
Bluntnose minnow	19	27	29	37	1	31	144
Brassy minnow						5	5
Common carp (EF)	13	66	51	99	31	29	289
Common carp (TL)			1				1
Creek chub		6		1	1		8
Common shiner					1		1
Horneyhead chub		2	1	4	2	5	14
Mimic shiner	7	4	5	74		22	112
Sand shiner	4	27	1	7	23	13	75
Spotfin shiner		14	2	16	15	28	75
Spottail shiner		37			20		57
Esocidae							
Northern pike (EF)		2	1	1	3	3	10
Northern pike (TL)				1			1
Gadidae							
Burbot	1	2			10		13
Ictaluridae							
Channel catfish (EF)	6	17	26	60	3	17	129
Channel catfish (TL)	63	39	60	37	11	21	231
Percidae							
Blackside darter	31	135	25	36	24	44	295
Johnny darter	27	17	8	8	1	4	65
Logperch	4	36	1	2	10		53
Walleye	3	6	1	19	17	3	49
Yellow perch						1	1
Total	317	774	469	769	266	348	2,943
Number of species	21	27	21	22	21	23	32

Table 3. Lengths and weights of fish sampled by electrofishing (EF) and trotlining (TL) from the Mississippi River (Reaches 41 – 46), July 30 – August 29, 2007.

		Length (mm)			Weight (g)	
Species	**Number**	**Min**	**Max**	**Mean TL**	**Mean Wt**	**Total Wt**
Bigmouth buffalo	13	224	563	459	1,786	23,214
Brook silverside[2]	1	51	51	51	---	---
Black crappie[2]	5	58	196	114	110	220
Bluegill[2]	15	36	183	127	112	1,235
Bluntnose minnow[1,2]	144	19	77	---	2	12
Bowfin (EF)	1	605	605	605	2,200	2,200
Bowfin (TL)	5	518	630	569	1,820	9,100
Brassy minnow[1,2]	5	41	50	---	2	8
Blackside darter[1,2]	295	38	87	---	2	162
Burbot[1,2]	13	45	104	---	2	27
Common carp[1] (EF)	289	371	795	---	2,173	627,925
Common carp (TL)	1	513	513	513	1,600	1,600
Channel catfish (EF)	129	40	668	486	1,236	159,450
Channel catfish (TL)	231	273	788	556	329	72,400
Creek chub[1,2]	8	31	114	---	---	---
Common shiner	1	74	74	74	5	5
Green Sunfish[1,2]	49	37	108	---	---	---
Horneyhead chub[1,2]	14	34	118	---	---	---
Hybrid sunfish[2]	2	72	111	92	---	---
Johnny darter[1,2]	65	31	54	---	---	---
Logperch[1,2]	53	54	113	---	8	348
Mimic shiner[1,2]	112	38	67	---	1	14
Northern hogsucker[1,2]	52	371	482	---	1,108	56,525
Northern pike[2] (EF)	10	204	664	458	936	8,425
Northern pike (TL)	1	606	606	606	1,000	1,000
Orangespotted sunfish[2]	1	69	69	69	---	---
Rock bass[2]	19	41	193	131	75	1,194
Sand shiner[1,2]	75	14	68	---	1	44
Spotfin shiner[1,2]	75	41	84	---	2	121
Shorthead redhorse[1,2]	419	55	524	---	839	349,736
Silver redhorse[1] (EF)	129	156	640	---	1,636	210,995
Silver redhorse (TL)	1	570	570	570	2,000	2,000
Smallmouth bass[2] (EF)	587	50	462	178	237	83,861
Smallmouth bass (TL)	1	496	496	496	1,800	1,800
Spottail shiner[1,2]	57	48	86	---	---	---
Walleye[2]	49	86	688	253	518	15,549
White sucker[1,2]	15	60	448	331	828	7,451
Yellow perch[2]	1	64	64	64	---	---

[1]Bulk measured and/or weighed
[2]Some fish not weighed

Table 4. Length frequency of smallmouth bass sampled from the Mississippi River by boat and backpack electrofishing from July 30 through August 15, 2007.

Size Group (in)	Reach												Total	
	41		42		43		44		45		46			
	BP	BO	BP	BO	BP	BO	BP	BO	BP	BO	BP	BO	BP	BO
< 3.0	1		7	10	1	5		1	2	1	1	8	12	25
3.0-3.9		2	2	17	1	27	9	30		14		20	12	110
4.0-4.9	1	2		1	1	24	1	23		1		7	3	58
5.0-5.9				3		3		5						11
6.0-6.9		2		22		5				4		2		35
7.0-7.9		9		22		23		29		23		11		117
8.0-8.9		10		6		14		46		10		8		94
9.0-9.9				1		9		14		1		3		28
10.0-10.9		3		2		3		3		1				12
11.0-11.9		3		6		3		4				1		17
12.0-12.9		2		2		2		2				1		9
13.0-13.9		1				1		2				1		5
14.0-14.9		3		1		1		2						7
15.0-15.9		2		4		2		2				2		12
16.0-16.9		2				4		7						13
17.0-17.9				2		3		1						6
18.0-18.9				1										1
Total	2	41	9	100	3	129	10	171	2	55	1	64	27	560
Min TL (in)	2.6	3.3	2.0	2.0	2.9	2.5	3.0	2.9	2.6	2.7	2.9	2.0	2.0	2.0
Max TL (in)	4.0	16.9	3.3	18.2	4.5	17.7	4.1	17.2	2.6	10.0	2.9	15.9	4.5	18.2
Mean TL (in)	3.3	9.6	2.6	7.1	3.7	7.0	3.4	7.6	2.6	6.5	2.9	5.9	3.1	7.2
CPUE	6.3	85.1	22.6	93.7	6.5	129.0	28.5	132.8	10.3	86.4	7.2	104.2	14.5	110.1

Table 5. Length frequency of channel catfish sampled from the Mississippi River by boat electrofishing (BO) and trotlines (TL) from July 30 through August 29, 2007.

Size Group (in)	Reach												Total	
	41		42		43		44		45		46			
	BO	TL	BO	TL	BO	TL	BO	TL	BO	TL	BO	TL	BO	TL
< 3.0					2								2	
3.0-3.9														
4.0-4.9														
5.0-5.9														
6.0-6.9														
7.0-7.9							1						1	
8.0-8.9														
9.0-9.9														
10.0-10.9												1		1
11.0-11.9														
12.0-12.9						1	1						1	1
13.0-13.9														
14.0-14.9		2	1	1			1						2	3
15.0-15.9		3					3				1		4	3
16.0-16.9	1	7	2		2		5				1	1	11	8
17.0-17.9	1	2	1	1	7	4	8	2	1	1	4	2	22	12
18.0-18.9	2	9	4	4	3	4	12	2			3	3	24	22
19.0-19.9		4	5	5	5	7	3	4		1	2	3	15	24
20.0-20.9	1	8	2	3		9	6	2			1	3	10	25
21.0-21.9	1	9		2	3	3	4	3	1	1	1	2	10	20
22.0-22.9		1		6	2	6	6	3				1	8	17
23.0-23.9		4	1	5	1	3	6	3		1	2	3	10	19
24.0-24.9		6		6	1	6	4	6		2	1	1	6	27
25.0-25.9		4		2		5		5	1	2	1		2	18
26.0-26.9			1	3		5		4		2		1	1	15
27.0-27.9		2		1		4		2						9
28.0-28.9		1				2				1				4
29.0-29.9						1		1						2
30.0-30.9														
31.0-31.9		1												1
Total	6	63	17	39	26	60	60	37	3	11	17	21	129	231
Min TL (in)	16.9	14.7	14.3	14.7	1.6	12.8	7.5	17.7	17.5	17.3	15.7	10.7	1.6	10.7
Max TL (in)	21.7	31.0	26.3	27.8	24.5	29.5	24.3	29.1	25.3	28.6	25.0	26.4	26.4	31.0
Mean TL (in)	19.0	20.7	19.2	22.1	17.9	22.4	19.4	23.3	21.4	23.9	19.9	20.2	19.1	21.9
CPUE[1]	12.5	7.0	15.9	3.9	26.0	4.0	46.5	3.7	3.6	2.8	27.9	4.2	25.4	4.4

[1]CPUE/hr EF and CPUE/lift TL

Table 6. Index of Biotic Integrity metric data and scores for stations sampled in the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007.

Reach	41		42				43			
Station	1		2		3		4		5	
Metric[1]	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score
Species richness & composition										
Total number of species	12	0	15	2	15	2	12	0	8	0
Number of darter, sculpin, & madtom species	2	5	2	5	2	5	2	5	1	2
Number of intolerant species	3	7	2	5	2	5	2	5	2	5
Percent tolerant species	10%	10	25%	7	7%	10	27%	7	6%	10
Trophic & reproductive function										
Number of invertivore species	6	2	6	2	8	5	5	2	3	0
Percent omnivore species	10%	10	25%	5	7%	10	27%	5	5%	10
Number of piscivore species	4	5	5	5	4	5	4	5	2	0
Percent simple lithophils	47%	5	51%	5	66%	7	38%	2	39%	2
Fish abundance & condition										
Number of fish per 100 meters	10	10	11	10	17	10	10	10	11	10
Percent DELT anomalies	1%	10	2%	5	0%	10	1%	10	0%	10
Overall Score	**64**		**51**		**69**		**51**		**49**	
Rating	**Good**		**Fair**		**Good**		**Fair**		**Fair**	

[1] Niemela and Feist 2002.

Table 6. Continued.

Reach	44				45				46	
Station	6		7		8		9		10	
Metric	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score
Species richness & composition										
Total number of species	17	2	8	0	16	2	8	0	16	2
Number of darter, sculpin, & madtom species	3	7	0	0	2	5	2	5	1	2
Number of intolerant species	3	7	2	5	2	5	1	2	3	7
Percent tolerant species	27%	7	15%	10	15%	10	38%	5	14%	10
Trophic & reproductive function										
Number of invertivore species	8	5	3	0	6	2	4	0	8	5
Percent omnivore species	24%	5	15%	7	14%	7	38%	2	14%	7
Number of piscivore species	6	7	3	2	4	5	3	2	5	5
Percent simple lithophils	28%	2	36%	2	38%	2	8%	0	25%	2
Fish abundance & condition										
Number of fish per 100 meters	12	10	17	10	27	10	2	0	13	10
Percent DELT anomalies	0%	10	0%	10	0%	10	0%	10	1%	10
Overall Score	**62**		**46**		**58**		**26**		**60**	
Rating	**Good**		**Fair**		**Fair**		**Poor**		**Fair**	

Table 7. Water chemistry data collected from the Mississippi River, in Wright, Stearns, and Sherburne Counties, Minnesota, 2007.

Location	Total Phosphorus (ppm)	Chlorophyll A (ppb)	Total Alkalinity (ppm)	pH	Total Dissolved Solids (ppm)	Conductivity (µS)	Chloride (ppm)
Reach 41 St. Cloud	0.068	17.8	161	8.41	200	379	15.0
Reach 42 Clearwater	0.081	23.2	162	8.27	212	387	15.8
Reach 43 Monticello	0.076	13.4	164	8.59	220	397	16.8
Reach 44 Otsego	0.087	20.3	168	8.45	244	416	19.2
Reach 45 Elk River	0.130	31.4	174	8.49	252	440	23.4
Reach 46 Dayton	0.236	227.0	242	8.53	368	640	45.5

Table 8. Stream morphology (Rosgen 1996) on the Mississippi River, in Wright, Stearns, and Sherburne Counties, Minnesota.

Reach-Station	Location (RM)	Bankfull Width (ft.)	Mean depth (ft)	Bankfull XS Area (ft^2)	Width/depth Ratio	Flood Prone Width (ft)	Entrenchment Ratio	D50 Substrate Type	Water Surface Slope (ft/mile)	Sinuosity	Rosgen Stream Type
41-1	923.8	537	4.9	2,631	109.6	563	1.05	Cobble	3.17	1.11	D3
42-3	912.1	631	5.0	3,177	125.2	733	1.17	Gravel	3.70	1.28	D4
43-5	895.5	535	5.6	2,969	96.5	554	1.04	Gravel	4.22	1.15	D4
44-7	887.5	509	7.1	3,610	71.8	531	1.04	Cobble	7.92	1.16	D3
45-8	884.0	444	6.2	2,736	71.9	487	1.10	Gravel	1.58	1.03	D4

APPENDIX

Appendix 1. Public accesses on the Mississippi River between St. Cloud and Dayton, Minnesota.

Name	Location	Ramp Type	Parking Spaces
St. Cloud West side	Below St. Cloud Dam Beaver Islands Trailhead	Concrete	4*
Clearwater Landing	North of Highway 24 East Side	Concrete	10
Snuffy's Landing	Off County Road 8 East Side near Becker power plant	Concrete	10
Montississippi Park	Off County Road 75 North of Monticello	Concrete	10
Ellison Park	In Monticello West Side Near Highway 25	Concrete	5
Kadler Avenue	Off County Road 39 East of Monticello	Gravel	4*
Nashua Avenue	Off County Road 39 West of Otsego	Gravel	4*
Otsego Park	In Otsego Park	Carry in	4
Elk River	Off Highway 10 Babcock Park	Concrete	5
Dayton	Confluence of Crow and Mississippi Rivers West Side	Concrete	12

* Estimates on parking spaces available, some areas have overflow parking

Appendix 2. Location and description of electrofishing sites sampled on the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007.

Station						Upstream GPS		Downstream GPS		
Number	Length (ft)	Width (ft)	Date	Electrofishing Gear	River Mile	Easting	Northing	Easting	Northing	Effort (min)
41-1	1,512	525	08/13/2007	Boat	924	410779	5041296	411042	5040876	29
41-1	1,512	525	08/13/2007	Backpack	924	410779	5041296	411042	5040876	19
42-2	1,607	394	07/31/2007	Boat	920	412761	5036820	413118	5036472	34
42-2	1,607	394	07/31/2007	Backpack	920	412761	5036820	413118	5036472	11
42-3	1,607	295	07/30/2007	Boat	911	421561	5027797	421947	5028089	30
42-3	1,607	295	07/30/2007	Backpack	911	421561	5027797	421947	5028089	13
43-4	1,515	404	08/14/2007	Boat	904	429187	5024401	429597	5024191	31
43-4	1,515	404	08/14/2007	Backpack	904	429187	5024401	429597	5024191	13
43-5	1,512	361	08/08/2007	Boat	895	439650	5016388	440106	5016221	31
43-5	1,512	361	08/08/2007	Backpack	895	439650	5016388	440106	5016221	14
44-6	1,591	400	08/15/2007	Boat	890	447185	5016062	447652	5015975	28
44-6	1,591	400	08/15/2007	Backpack	890	447185	5016062	447652	5015975	10
44-7	1,512	361	08/09/2007	Boat	887	451372	5015934	451785	5015737	49
44-7	1,512	361	08/09/2007	Backpack	887	451372	5015934	451785	5015737	11
45-8	1,545	400	08/01/2007	Boat	884	455975	5016063	456034	5015566	12
45-9	1,568	591	08/03/2007	Boat	882	456647	5012811	456829	5012366	27
45-9	1,568	591	08/03/2007	Backpack	882	456647	5012811	456829	5012366	12
46-10	1,614	328	08/02/2007	Boat	881	457683	5011481	458159	5011400	37
46-10	1,614	328	08/02/2007	Backpack	881	457683	5011481	458159	5011400	8

Appendix 3. Location and description of trotline sites sampled on the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007.

Reach	Number	Set Date	Lift Date	River Mile	Easting	Northing
41	1	08/20/07	08/21/07	926.1	410464	5044443
	2	08/20/07	08/21/07	925.1	409931	5042870
	3	08/20/07	08/21/07	923.7	411012	5040870
	4	08/20/07	08/21/07	923.5	410953	5040676
	5	08/20/07	08/21/07	922.8	410698	5039593
	6	08/20/07	08/21/07	922.4	410908	5039023
	7	08/20/07	08/21/07	921.7	411194	5038044
	8	08/20/07	08/21/07	921.4	411502	5037550
	9	08/20/07	08/21/07	924.5	410675	5041999
	10	08/20/07	08/21/07	926.1	410373	5044402
42	11	08/16/07	08/17/07	920.1	413107	5036409
	12	08/16/07	08/17/07	918.3	413732	5033889
	13	08/16/07	08/17/07	916.5	415377	5032216
	14	08/16/07	08/17/07	914.3	417915	5031171
	15	08/16/07	08/17/07	911.0	421363	5028077
	16	08/16/07	08/17/07	910.3	422110	5028113
	17	08/16/07	08/17/07	909.0	423548	5026722
	18	08/16/07	08/17/07	908.7	423979	5026393
	19	08/16/07	08/17/07	908.0	424809	5025792
	20	08/16/07	08/17/07	907.3	425767	5025705
43	21	08/21/07	08/22/07	906.3	427051	5026145
	22	08/21/07	08/22/07	905.3	428420	5025784
	23	08/21/07	08/22/07	904.2	429390	5024340
	24	08/21/07	08/22/07	903.9	429754	5024160
	25	08/21/07	08/22/07	903.2	430524	5023412
	26	08/21/07	08/22/07	903.0	430408	5023062
	27	08/21/07	08/22/07	902.2	431038	5021844
	28	08/21/07	08/22/07	901.3	432170	5021012
	29	08/21/07	08/22/07	900.4	433512	5020625
	30	08/27/07	08/28/07	898.5	435989	5019172
	31	08/27/07	08/28/07	898.1	436291	5018727
	32	08/27/07	08/28/07	897.0	437581	5017620
	33	08/27/07	08/28/07	896.2	438740	5017119
	34	08/27/07	08/28/07	895.1	440311	5016231
	35	08/27/07	08/28/07	893.6	442420	5016605
	36	08/27/07	08/28/07	892.8	443779	5016489
	37	08/27/07	08/28/07	891.6	445554	5016523
	38	08/27/07	08/28/07	891.3	446024	5016893

Appendix 3. Continued

Reach	Number	Set Date	Lift Date	River Mile	Easting	Northing
44	39	08/27/07	08/28/07	890.9	446504	5017044
	40	08/28/07	08/29/07	889.7	448008	5015947
	41	08/28/07	08/29/07	889.1	448928	5015874
	42	08/28/07	08/29/07	888.3	450148	5016108
	43	08/28/07	08/29/07	887.9	450858	5016268
	44	08/28/07	08/29/07	887.0	452083	5015572
	45	08/28/07	08/29/07	886.4	453044	5015640
	46	08/28/07	08/29/07	885.8	453914	5015995
	47	08/28/07	08/29/07	884.8	455491	5016085
	48	08/28/07	08/29/07	884.5	455672	5016674
45	49	08/29/07	08/30/07	883.7	455973	5015455
	50	08/29/07	08/30/07	883.4	456199	5015092
	51	08/29/07	08/30/07	883.1	456515	5014669
	52	08/29/07	08/30/07	882.1	456506	5013079
46	53	08/29/07	08/30/07	881.5	456920	5012300
	54	08/29/07	08/30/07	881.2	457336	5011904
	55	08/29/07	08/30/07	880.4	458537	5011447
	56	08/29/07	08/30/07	879.9	458918	5010734
	57	08/29/07	08/30/07	879.8	458980	5010433

Appendix 4. Number of fish sampled by boat and backpack electrofishing by site from the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007.

Species	Reach										Total
	41-1	42-2	42-3	43-4	43-5	44-6	44-7	45-8	45-9	46-10	
Amiidae											
Bowfin						1					1
Atherinidae											
Brook silverside			1								1
Catostomidae											
Bigmouth buffalo	2	2		6				3			13
Northern hogsucker	16	13	15	3		2	1			2	52
Shorthead redhorse	36	40	73	51	48	48	84	10		29	419
Silver redhorse	16	41	23	10	2	1	8	12	1	15	129
White sucker	3	4	2	1			2	2		1	15
Centrarchidae											
Black crappie	1	1	2							1	5
Bluegill	1	1	1	1		1		1	3	6	15
Green sunfish	1	4	3		1	34	2		3	1	49
Hybrid sunfish[1]		1								1	2
Orangespotted sunfish[1]										1	1
Rock bass	16	1		1		1					19
Smallmouth bass	43	44	65	66	66	86	95	40	17	65	587
Cyprinidae											
Bluntnose minnow	19	13	14	29		9	28	1		31	144
Brassy minnow										5	5
Common carp	13	50	16	43	8	57	42	16	15	29	289
Creek chub[1]		1	5			1			1		8
Common shiner								1			1
Horneyhead chub			2		1		4		2	5	14
Mimic shiner	7		4	5			74			22	112
Sand shiner	4	14	13	1			7		23	13	75
Spotfin shiner		3	11	2		14	2	7	8	28	75
Spottail shiner		37						20			57
Esocidae											
Northern pike		2		1		1		2	1	3	10
Gadidae											
Burbot	1		2						10		13
Ictaluridae											
Channel catfish	6	12	5	3	23	15	45	1	2	17	129
Percidae											
Blackside darter	31	53	82	11	14	20	16	4	20	44	295
Johnny darter	27	11	6	8		4	4		1	4	65
Logperch	4	10	26	1		2		9	1		53
Walleye	3	2	4	1		12	7	17		3	49
Yellow perch[1]										1	1
Total	250	360	375	244	163	309	421	146	108	326	2,703
Number of species	20	23	22	19	8	18	16	16	15	23	32

[1]Sampled by backpack electrofishing only.

Appendix 5. Boat electrofishing catch in Reach 41 of the Mississippi River, August 13, 2007.

Total On-time: 0.48 hrs				**Number of runs:** 3
Species	**Number**	**CPUE**	**Mean TL (mm)**	**Mean Wt (g)**
Bigmouth buffalo	2	4.1	396	992
Bluegill	1	2.1	165	120
Blackside darter	1	2.1	51	---
Common carp[1]	13	27.0	---	1,615
Channel catfish	6	12.4	482	963
Johnny darter	1	2.1	33	---
Northern hogsucker[1]	16	33.2	445	916
Rock bass	15	31.1	136	68
Shorthead redhorse[1]	36	74.7	389	971
Silver redhorse[1]	16	33.2	539	1,794
Smallmouth bass	41	85.1	243	289
Walleye	2	4.1	319	304
Total	**150**	**311.2**		

[1]Bulk measured-mean TL from individually measured fish only.

Appendix 6. Boat electrofishing catch in Reach 42 of the Mississippi River, July 30-31, 2007.

Total On-time: 1.07 hrs				**Number of runs:** 6
Species	**Number**	**CPUE**	**Mean TL (mm)**	**Mean Wt (g)**
Bigmouth buffalo	2	1.9	546	2,650
Brook silverside	1	0.9	51	---
Black crappie	1	0.9	196	120
Bluegill	1	0.9	157	90
Bluntnose minnow	2	1.9	60	1
Blackside darter	45	42.2	---	1
Burbot	1	0.9	104	5
Common carp	66	61.8	---	2,126
Channel catfish	17	15.9	487	1,260
Logperch	32	30.0	---	9
Northern hogsucker	28	26.2	428	1,261
Northern pike	1	0.9	350	230
Sand shiner	1	0.9	46	---
Spotfin shiner	10	9.4	---	2
Shorthead redhorse	113	105.9	222	717
Silver redhorse	64	60.0	539	1,560
Smallmouth bass	100	93.7	181	135
Walleye	3	2.8	449	821
White sucker	4	3.7	419	876
Total	**492**	**461.0**		

[1]Bulk measured-mean TL from individually measured fish only.

Appendix 7. Boat electrofishing catch in Reach 43 of the Mississippi River, August 8 and 14, 2007.

Total On-time: 1.0 hrs				**Number of runs:** 6
Species	**Number**	**CPUE**	**Mean TL (mm)**	**Mean Wt (g)**
Bigmouth buffalo	6	6.0	426	1,588
Blackside darter[1]	17	17.0	58	---
Common carp[1]	51	51.0	645	1,998
Channel catfish	26	26.0	456	1,160
Green sunfish	1	1.0	92	---
Hornyhead chub	1	1.0	97	---
Logperch	1	1.0	108	---
Northern hogsucker	3	3.0	440	1,083
Northern pike	1	1.0	535	662
Shorthead redhorse[1]	99	99.0	385	1,080
Silver redhorse[1]	12	12.0	556	2,000
Smallmouth bass	129	129.0	178	161
Walleye	1	1.0	688	3,300
White sucker	1	1.0	434	880
Total	**349**	**349.0**		

[1]Bulk measured-mean TL from individually measured fish only.

Appendix 8. Boat electrofishing catch in Reach 44 of the Mississippi River, August 8 and 15, 2007.

Total On-time: 1.29 hrs				**Number of runs:** 6
Species	**Number**	**CPUE**	**Mean TL (mm)**	**Mean Wt (g)**
Bluegill	1	0.8	78	10
Bluntnose minnow[1]	5	3.9	---	2
Bowfin	1	0.8	605	2,200
Blackside darter[1]	3	2.3	---	3
Common carp[1]	99	76.9	562	2,371
Channel catfish	60	46.6	493	1,267
Green sunfish	1	0.8	48	---
Johnny darter	2	1.6	42	---
Logperch	1	0.8	113	10
Northern hogsucker	3	2.3	417	567
Northern pike	1	0.8	468	506
Rock bass	1	0.8	193	170
Spotfin shiner[1]	7	5.4	---	2
Shorthead redhorse[1]	132	102.5	263	757
Silver redhorse[1]	9	7.0	524	1,433
Smallmouth bass	171	132.8	192	165
Walleye	18	14.0	275	317
White sucker	1	0.8	448	1,000
Total	**516**	**400.7**		

[1]Bulk measured-mean TL from individually measured fish only.

Appendix 9. Boat electrofishing catch in Reach 45 of the Mississippi River, August 1 and 3, 2007.

Total On-time: 0.64 hrs				**Number of runs:** 4
Species	**Number**	**CPUE**	**Mean TL (mm)**	**Mean Wt (g)**
Bigmouth buffalo	3	4.7	508	2,133
Bluegill	4	6.3	174	144
Bluntnose minnow	1	1.6	77	---
Blackside darter[1]	5	7.9	---	2
Common carp[1]	31	48.7	505	2,107
Channel catfish	3	4.7	544	1,670
Common shiner	1	1.6	74	5
Logperch[1]	10	15.7	69	5
Northern pike	3	4.7	585	1,823
Spotfin shiner[1]	7	11.0	---	2
Shorthead redhorse[1]	10	15.7	---	388
Silver redhorse[1]	13	20.4	472	1,562
Smallmouth bass	55	86.4	164	64
Spottail shiner[1]	20	31.4	---	---
Walleye	17	26.7	188	145
White sucker	2	3.1	421	750
Total	**185**	**290.6**		

[1]Bulk measured-mean TL from individually measured fish only.

Appendix 10. Boat electrofishing catch in Reach 46 of the Mississippi River, August 2, 2007.

Total On-time: 0.61 hrs				**Number of runs:** 3
Species	**Number**	**CPUE**	**Mean TL (mm)**	**Mean Wt (g)**
Black crappie	1	1.6	189	100
Bluegill	5	8.1	134	88
Brassy minnow[1]	4	6.5	---	2
Blackside darter[1]	5	8.1	---	4
Common carp[1]	29	47.2	580	2,229
Channel catfish	17	27.7	499	1,239
Mimic shiner[1]	10	16.3	---	1
Northern hogsucker	2	3.3	419	813
Northern pike	3	4.9	410	519
Sand shiner[1]	8	13.0	---	1
Spotfin shiner[1]	23	37.5	---	2
Shorthead redhorse[1]	29	47.2	467	794
Silver redhorse[1]	15	24.4	513	1,683
Smallmouth bass	64	104.2	150	95
Walleye	3	4.9	331	338
White sucker	1	1.6	373	568
Total	**219**	**356.6**		

[1]Bulk measured-mean TL from individually measured fish only.

Appendix 11. Scientific and common name of fish sampled from the Mississippi River in Wright, Stearns, and Sherburne Counties, Minnesota, 2007.

Scientific Name	Common name
Amiidae	
Amia calva	Bowfin
Atherinidae	
Labidesthes sicculus	Brook silverside
Catostomidae	
Catostomus commersoni	White sucker
Hypentelium nigricans	Northern hogsucker
Ictiobus cyprinellus	Bigmouth buffalo
Moxostoma macrolepidotum	Shorthead redhorse
Moxostoma anisurum	Silver redhorse
Centrarchidae	
Ambloplites rupestris	Rock bass
Lepomis macrochirus	Bluegill
Lepomis humilis	Orangespotted sunfish
Lepomis cyanellus	Green sunfish
Micropterus dolomieui	Smallmouth bass
Pomoxis nigromaculatus	Black crappie
Cyprinidae	
Cyprinus carpio	Common carp
Hybognathus hankinsoni	Brassy minnow
Luxilus cornutus	Common shiner
Nocomis biguttatus	Horneyhead chub
Notropis hudsonius	Spottail shiner
Notropis spilopterus	Spotfin shiner
Notropis stramineus	Sand shiner
Notropis volucellus	Mimic shiner
Pimephales notatus	Bluntnose minnow
Semotilus atromaculatus	Creek chub
Esocidae	
Esox lucius	Northern pike
Gadidae	
Lota lota	Burbot
Ictaluridae	
Ictaluris punctatus	Channel catfish
Percidae	
Etheostoma nigrum	Johnny darter
Perca flavescens	Yellow perch
Percina caprodes	Logperch
Percina maculata	Blackside darter
Sander vitreus	Walleye

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MINNESOTA DEPARTMENT OF NATURAL RESOURCES

DIVISION OF FISHERIES AND WILDLIFE

Completion Report

Fisheries Assessment of the Mississippi River in Wright, Stearns and Sherburne Counties 2007, River Miles 879 to 926.

By

Joseph D. Stewig and Bobbi Chapman

Montrose Area Fisheries

Submitted by: _____ Date: _____

Approved by: _____ Date: _____
Area Fisheries Supervisor

Approved by: _____ Date: _____
Regional Fisheries Supervisor