Brown Trout Abundance in Seven Mile Creek

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Following habitat improvement projects in 2002, 2003, and 2007, an estimate of brown trout abundance was conducted 10 September 2008 in Seven Mile Creek in Nicollet county at Seven Mile County Park, sampling the same section (Population Estimate Reach) done in 2002, 2003, and 2005. Two passes were made with a Smith-Root backpack electrofisher, working upstream each time. All captured trout were removed from the sample reaches each run until the completion of the sampling. Sampling was done in low flow, groundwater only conditions.

The Population Estimate reach was sampled on 10 September 2008 from the full stream survey cross section number four near the southeast end of the county park fence at UTM Zone 15 4901893 N 417322 E, to a large rock on the north bank of the creek located at 4901757 N 417471 E. This section measures 850 feet long. The Upper Habitat Improvement reach was sampled on 10 September 2008 from UTM Zone 15 4901937 N 417217 E to the westernmost pedestrian footbridge located at 4901918 N 417288 E (321 feet). The lower reach was sampled on 11 September 2008 from the endpoint of the Population Estimate reach to the footbridge located at UTM Zone 15 4901628 N 417692 E (777 feet).

All stretches received two passes, and population estimates and catchability were calculated using Population Modular Statistical Software (Kwak 1992) with formulas taken from Seber (1982) and Bohlin et al. (1989). Catchability of 0.56 for trout < 150 mm (young of year fish) and 0.79 for trout > 150 mm (adult fish) was observed in the population estimate reach. Lower reach catchability of adult fish was 1, and young of year fish was 0.90. Upper reach catchability of adult fish was also 1, and young of year fish was 0.74. Trout abundance for the population estimate reach and upper and lower reaches are available in table 1 and table 2, respectively.

December 2007 habitat improvement work completed includes six banks shaped and reinforced with erosion control. The main pool in the population estimate reach was also deepened and five lunker structures were added. Elsewhere in the population estimate reach two cross vanes were added, a Hewitt ramp was added, and a channel deflector was put in place, to provide flow control, prevent channel braiding, and provide additional fish habitat.

Adult trout abundance is relatively unchanged from the 2005 assessment. Because only a few months have elapsed since the habitat improvement work was completed, it seems likely that adult trout have not yet reached carrying capacity. In this regard, juvenile trout would be expected to show a measurable increase in abundance more quickly than adult fish. Juvenile numbers have increased (0.52 fish per linear foot) since the last assessment. One fish, nearly nineteen inches, was caught in the assessment in the population estimate reach in the lunker structures. The largest fish caught were all sampled in the lunker structures located in the deepest pool, suggesting a positive response to the habitat improvement work. If future assessments sample more adult trout it would appear that carrying capacity has increased with additional habitat. The 2009 scheduled assessment will show if improved and expanded habitat will help with

overwinter survival of young-of-year fish and adult fish. Future habitat improvement projects should continue providing additional habitat and stabilizing banks.

Table 1. Abundance of brown trout in Seven Mile Creek population estimate reach in September 2002, 2003, 2005, and 2008.

	2002	2003	2005	2008
Adult Population Estimate (>150 mm)	76	18	115	121
Approximate 95% CI	72-80	18-18	114-116	114-128
Mean length (in.)	9.1	12.2	9.0	9.0
Minimum length	6.6	9.2	6.5	5.9
Maximum length	12.6	14.4	12.7	18.8
Trout per ft.	0.09	0.02	0.14	0.14
YOY Population Estimate (<150 mm)	142	627	328	438
Approximate 95% CI	141-464	606-649	297-359	384-491
Mean length (in.)	4.5	4.1	4.3	4.3
Minimum length	3.8	3.0	3.1	3.1
Maximum length	5.6	5.4	5.7	5.7
Trout per ft.	0.17	0.74	0.39	0.52
Total number per acre water	645	1912	1313	1655
Total number per linear ft.	0.26	0.76	0.52	0.66

Table 2. Catch and estimated abundance in upper portion of habitat improvement area and downstream of population estimate reach.

	Catch	Estimated Population	Trout per ft.
Upper Habitat Improvement reach			
Adult	7	7	0.02
YOY	182	196	0.61
Total	189	203	0.63
Lower reach			
Adult	2	2	---
YOY	88	89	0.11
Total	90	91	0.12

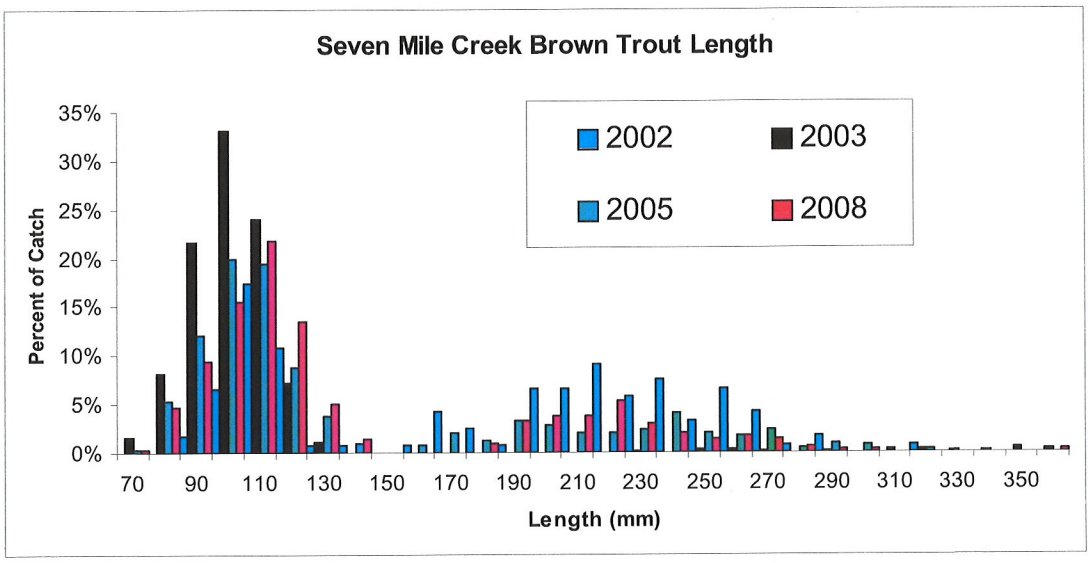
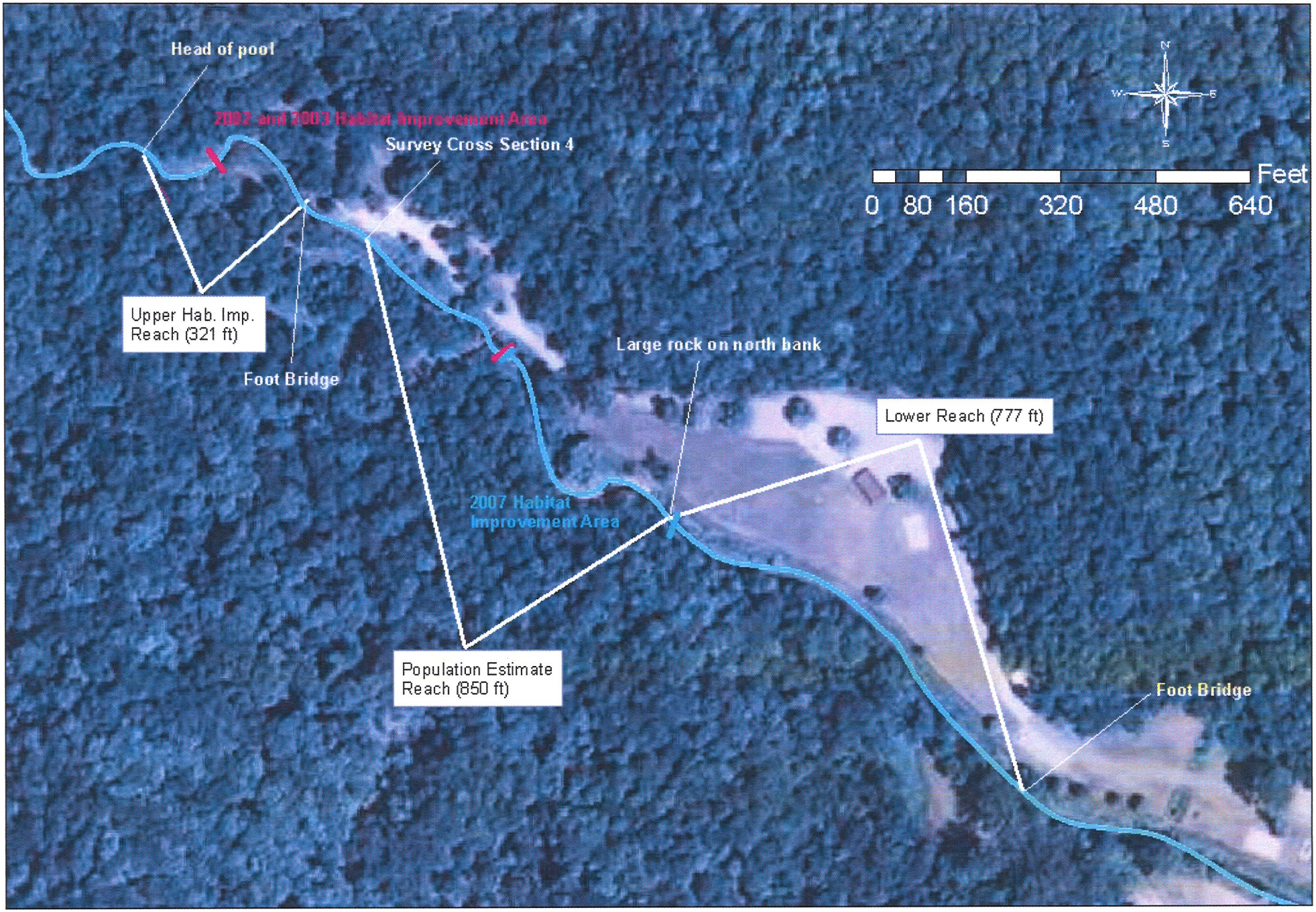


Figure 1. Length distribution of brown trout in Seven Mile Creek captured in the first electrofishing pass in the population estimate reach in 2002, 2003, 2005, and 2008.



Seven Mile Creek Sampling Areas

Located in Seven Mile Creek County Park

The population estimate reach was sampled in 2002, 2003, 2005, and 2008. The upper and lower sections were sampled in 2005 and 2008.

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References

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Kwak, T. J. 1992. Modular microcomputer software to estimate fish population parameters, production rates and assocated variance. Ecol. Freshwater Fish 1: 73-75.

Seber, G. A. F. 1982. The estimation of animal abundance and related parameters. Charles Griffin, London. 654 p.

Area Fisheries Supervisor _____ Date

Regional Fisheries Manager _____ Date