Upper Onion River Watershed
Brown Trout Survey – 2004
WBIC 51200
by
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ABSTRACT

The purpose of the 2004 trout survey of the upper Onion River watershed was to monitor changes in the brown trout population related to habitat restoration and stocking, and to evaluate the initial impact of more restrictive harvest regulations. Habitat restoration in the watershed has been fairly intense over the past few years. More restrictive regulations were enacted in the watershed upstream of CTH "E" in 2004. We electrofished 7 survey stations in September 2004 and had catch per efforts (CPE) between 31.4 – 131.6 brown trout/1000' of stream. The highest catch rates were at Stations 3 and 4 where the more restrictive regulations had the greatest impact on anglers. We found adipose clipped fish at the upper survey stations that were most likely present from the October 6, 2003 stocking of 891 brown trout from the Coon valley area of southwestern Wisconsin. The highest catches of young of the year browns were observed at Stations 4, 5, and 8 in the uppermost portion of the watershed. YOY catches at Station 8 indicated that habitat restoration at the Kamrath property is beginning to produce more brown trout for the system. In 2004 we observed the highest overall CPE for the upper watershed stations highest since the survey began in 1997. The 2004 CPE increase is hopefully an indication that management efforts are beginning to have significant positive impacts. The year to year CPE by station showed the greatest increases where the new regulation was in place during 2004. We hope that increased adult brown trout populations will lead to even greater natural recruitment in the watershed. The highest mean length of brown trout was observed at Station 3 where the more restrictive regulations were in place. I recommend that habitat restoration efforts continue, especially on Mill and Ben Nutt Creeks. Brown trout surveys should continue on at least an alternate year basis with Stations 2 and 3 surveyed each year to serve as benchmarks for the long-term data base.

INTRODUCTION

The purpose of the trout survey of the upper Onion River Watershed in 2004 was twofold. The first objective was to monitor changes in the brown trout population of the Onion River in relation to habitat improvements and wild trout stocking. The second objective was to determine the effect of a change in fishing regulations upstream (west) of CTH "E" (Figure 1).

Habitat improvement projects have been ongoing in the upper watershed in recent years. During the summer of 2004, habitat work was done on the Drewry farm immediately downstream of CTH "E" (Station 2, Figure 1). In 2003, habitat work was done between Winooski Road and CTH "U" (Station 1). Work was also done in 2004 on the Laack parcel upstream of CTH "E" (Station 3), and on the Bohnhoff farm upstream of Station 3.

A change in the trout fishing regulations took effect with the start of the general fishing season in 2004. The Onion River upstream of CTH "E", Mill Creek, Ben Nutt Creek, and their tributaries were regulated by a 15" minimum size, one daily bag limit and artificial lures only restrictions. Stations 3 through 8 were regulated by the more restrictive regulations.

Wild brown trout fingerling were stocked into the watershed in 1997, 1999 and 2000. 1,150 adult and juvenile brown trout were stocked into the Onion River in October, 1997 from the Coon Valley area in southwestern Wisconsin. Another 891 adult and juvenile wild browns from Coon Valley were stocked again on October 6, 2003. All of the wild fish stocked into the stream were clipped with an adipose fin clip to distinguish them from naturally reproduced fish.

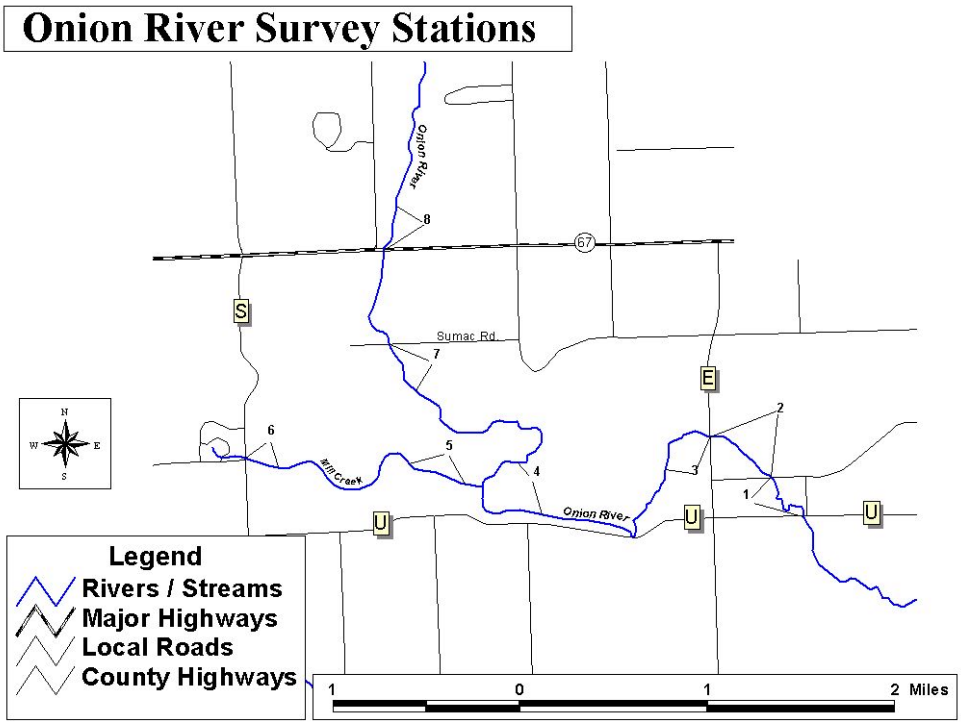

Figure 1. Survey Stations in the upper Onion River Watershed.

METHODS

We electrofished Stations 1, 2, and 3 on September 14th; Stations 4, 7, and 8 on September 15th;and a portion of Station 5 on September 22nd (Figure 1). We conducted a single catch per unit effort (CPUE) run at each station. Station 5 was reduced to 650' due to electrical problems. A standard stream electrofishing unit with two probes was used at each site. Adipose clipped fish were noted at each station.

RESULTS AND DISCUSSION

Catch Per Effort

The catch per effort (CPE) of brown trout at the seven survey stations ranged from 31.4 to 131.6 fish/1000' of stream in 2004 (Table 1). The highest catch rates were at Stations 3 and 4 as expected. Those stations generally had the highest catch rates indicating that they likely contain the best habitat for trout in the system at this time. The fact that fishing regulations were more restrictive at Stations 3 through 8 than at Stations 1 and 2 was also a major factor in the higher catch rates.

Table 1. Catch per effort and mean length of brown trout – Onion River Watershed - 2004

Station	1	2	3	4	5	7	8
Station Length	2960’	2200’	2580’	2120’	650’	2200’	1220’
Total # Caught	93	71	193	279	24	130	26
Total/1000’	**31.4**	**32.3**	**74.8**	**131.6**	**36.9**	**59.1**	**21.3**
Adipose #	4	4	14	12	0	19	9
Adipose/1000’	**1.4**	**1.8**	**5.4**	**5.7**	**0**	**8.6**	**7.4**
YOY #	7	2	2	28	9	15	12
YOY/1000’	**2.4**	**0.9**	**0.8**	**13.2**	**13.8**	**6.8**	**9.8**
Mean Length	8.8”	9.2”	10.0”	8.9”	7.3”	9.2”	7.8”
Adult Mean L.	9.2”	9.4”	10.1”	9.5”	8.9”	9.8”	10.9”
# Rainbows	13	14	6	3	0	0	0
# Brooks	0	0	0	0	3	2	0

The CPE of adipose clipped brown trout was highest at Stations 3, 4, 7, and 8 (Table 1). Most of the adipose clipped fish were likely part of the stocking of 891 brown trout juveniles and adults from Coon Valley streams in southwestern Wisconsin on October 6, 2003. Those fish were stocked upstream of the above stations and moved downstream into those areas.

The CPE of young-of-the-year (YOY) brown trout was highest at Stations 4, 5 and 8 (Table 1). Station 4 generally had one of the highest YOY catch rates of the survey stations in past years, indicating that area’s proximity to spawning/nursery habitat. The habitat at Station 4 may have also been better suited to juveniles. Station 4 has several large riffle areas that tend to hold more juveniles than yearling and adult browns. Station 5 is located at the downstream end of Mill Creek, an important reproduction and nursery area.

Station 8 is a short distance downstream of the Kamrath tributary. The finding of YOY browns at that station is an important indication that recruitment is beginning to take place in the Kamrath tributary. We hope to see a steady increase in recruitment from that tributary as adults find and utilize the high quality spawning habitat available in the former Kamrath property. Three dams were removed and a new stream channel was constructed on the Kamrath property. Those actions allowed fish to access the high quality habitat and significantly improved the water temperature regime in that tributary and in the downstream Ben Nutt Creek where Station 8 is located.

Table 2. Catch per effort of brown trout in fall at Onion River sample stations during the years of 1997 – 2003. Catch/1000’ – all fish.

Year\Station	1	2	3	4	5	7	8	Average
1997	8.4	11.8	7.0	20.9	30.3	36.8	0.0	**17.6**
1998	24.7	---	43.4	65.9	---	52.7	---	**46.7**
1999	8.8	---	38.8	72.3	---	38.3	7.4	**33.1**
2000	34.5	32.7	23.6	42.2	---	63.6	1.3	**33.0**
2001	27.4	---	45.0	112.2	39.8	70.5	5.7	**50.1**
2002	33.4	33.2	44.6	73.0	---	---	---	**46.1**
2003	16.6	19.1	39.1	51.9	---	---	---	**43.2**
2004	31.4	32.3	74.8	131.6	36.9	59.1	21.3	**55.3**
Average	**23.2**	**25.8**	**39.5**	**71.3**	**35.7**	**53.5**	**7.1**	**36.6**

The highest overall annual CPE for brown trout in the upper Onion River watershed was found in 2004 (Table 2). That finding was an indication that management efforts restoration in the watershed are beginning to positively impact the brown trout population in the stream.

A significant factor in the improved CPE is likely due to the more restrictive angler harvest restrictions being enacted in spring, 2004 for all waters upstream of CTH “E”. Stations 3 and above were affected by

that regulation. CPE values were generally greater at Stations 3 and 4 in the past (Table 2). However, the difference in CPE was greater in 2004 than in previous years. CPE was 2.4x greater at Station 3 than Station 1 and 4.2x greater at Station 4 than at Station 1 in 2004. We hope that the trend towards greater CPE will continue to grow in coming years so that more adult brown trout will be available to increase natural recruitment in the system.

The CPE at Station 8 was far greater in 2004 than previously reported (Table 2). The average CPE at Station 8 prior to 2004 was only 3.6 fish/1000' compared to 21.3/1000' in 2004. As mentioned above, the CPE at Station 8 in 2004 is an important indication that habitat restoration in that portion of the watershed is beginning to yield significant benefits to the entire Onion River system.

Length Frequency Distribution

Length modes in the length frequency distribution of brown trout from all of the stations surveyed in 2004 were obvious at the 3"-4" and 8" length groups (Figure 2). The 3"-4" fish were age 0+ browns. The 8" fish were age I+ browns. We hope to see further improvements in the size structure of the brown trout population as the 15" minimum size limit protects the yearling and older fish under that size limit.

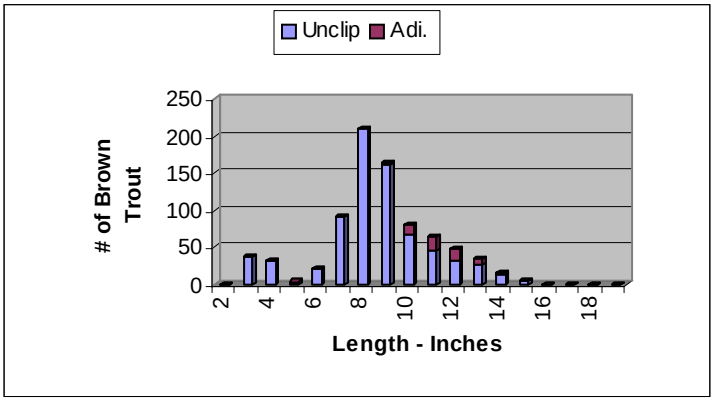

Figure 2. Length frequency distribution of brown trout, upper Onion River watershed, 2004.

The highest mean length of brown trout was found at Station 3 (Table 1). One can surmise that the 15" minimum size restriction was largely responsible for the higher average size.

Other Trout Species

Only 36 rainbow trout and 5 brook trout were captured at all stations during the 2004 survey (Table 1). The rainbows originated from private stocking in the spring of 2004. The brook trout were from natural reproduction within the system. The low number of brook trout was an indication that limited natural reproduction and possibly poor survival are suppressing the brook trout population.

Management Recommendations

Habitat restoration in the upper Onion River watershed should continue so that more instream habitat is available to the developing population. The focus of that work will shift from the mainstem of the river to the major tributaries in coming years. The habitat in Mill Creek and Ben Nutt Creek will be especially important to promote natural reproduction success. However, both streams are large enough to hold adult fish and should be managed to produce high quality holding cover as well. Brushing is especially needed at both Ben Nutt and Mill Creeks.

The continuation of the trout population surveys provides important information on the success of various management actions. The surveys should continue on at least an alternate year schedule. Stations 2 and 3 should be sampled annually as benchmarks for the system. Another creel survey should be conducted in 2010 to document the impact of the more restrictive regulations on angler use and success.

NOTED AND APPROVED

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E. Randy Schumacher, Inland Fisheries Supervisor Date