

STREAM ASSESSMENT



MINNESOTA DEPARTMENT OF NATURAL RESOURCES DIVISION OF FISH AND WILDLIFE

Report Date: December 22, 2009

Region	Area	Stream Name	Tributary No.	Stream Length
3	Lake City	Cold Spring Brook	M-34-48	2.2 miles
County	Watershed Name, No.	Source (T, R, S)	Mouth (T, R, S)	
Wabasha	Zumbro River - 41	T110N.R14W.S25	T110N.R14W.S36	

Date(s) of Assessment: September 16, 2009

Assessment Purpose: Long-term monitoring – brook trout and brown trout populations
Natural reproduction check – brown trout population

Station	Similar Reach	Stream Mile	Length (ft)	Mean Width (ft)	Acres	Water Temp (F)	Air Temp (F)	Downstream UTM's	
								utm _x (↔)	utm _y (↓)
0.5	1	0.50	1,170	25.0	0.671	54	72	545185	4904438

Summary:

Station 0.50 on Cold Spring Brook is a Long-Term Monitoring (LTM) station in Wabasha County.

The brown trout population had an estimated 1,270 adults/mile and 696 recruits/mile (Table 1). There was an estimated 158 brown trout/mile ≥ 12 inches, 81/mile ≥ 14 inches, and 32/mile ≥ 16 inches. The total biomass of brown trout was 181.53 lbs/acre.

The brook trout population had an estimated 377 adults/mile and 115 recruits/mile. The estimated brook trout ≥ 10 inches was 9/mile and the total brook trout biomass was 20.9 lbs/acre.

There were no white suckers collected during this assessment.

Fishery Characteristics – Population Estimates

Population Metrics

Station	0.5 (LTM)		
Date	September 16, 2009		
Gear	Barge		
Method	Two pass depletion		
Station length (ft)	1,170		

Population Estimate in Station, Adults

Species	Number	Wt (lbs)	Number	Wt (lbs)	Number	Wt (lbs)
Brown trout	281	116.74				
95% CI	±6.92					
Brook trout	84	13.43				
95% CI	±4.59					
Rainbow trout	0	0				
95% CI	-					
Total trout	365	130.18				

Population Estimate in Station, Recruits (YOY or yearlings)

Species	Number	Wt (lbs)	Number	Wt (lbs)	Number	Wt (lbs)
Brown trout	154	5.15				
95% CI	±13.97					
Brook trout	25	0.62				
95% CI	±1.83					
Rainbow trout	0	0				
95% CI	-					
Total trout	179	5.77				

Population Estimate in Station, Total

Species	Number	Wt (lbs)	Number	Wt (lbs)	Number	Wt (lbs)
Brown trout	435	121.90				
Brook trout	109	14.05				
Rainbow trout	0	0				
Total trout	544	135.95				

Population Estimate in Station, White Suckers (LTM stations only)

Species	Number	Wt (lbs)	Number	Wt (lbs)	Number	Wt (lbs)
Adults	0					
95% CI	-					
Recruits	0					
95% CI	-					
Total white sucker	0					

Fishery Characteristics – Population Estimates (continued)

Population Estimate Summary

Station	0.5 (LTM)								
Date	September 16, 2009								
Species	No/Mile	No/Acre	Lbs/Acre	No/Mile	No/Acre	Lbs/Acre	No/Mile	No/Acre	Lbs/Acre
Brown trout	1,966	649	181.53						
Adults	1,270	419	173.86						
≥12 inches	158	52							
95% CI	±1.67	±0.55							
≥14 inches	81	27							
95% CI	±0	±0							
≥16 inches	32	10							
95% CI	±0	±0							
Recruits	696	230	7.67						
Brook trout	492	162	20.93						
Adults	377	124	20.00						
≥10 inches									
95% CI	±	±							
Recruits	115	38	0.92						
Rainbow trout	0	0	0						
Adults	-	-	-						
≥12 inches	-	-							
95% CI	-	-							
Recruits	-	-	-						
All trout	2,458	811	202.46						
Adults	1,647	543	193.86						
Recruits	811	268	8.60						

Population Estimate Summary (LTM stations only)

Species	No/Mile	No/Acre	Lbs/Acre	No/Mile	No/Acre	Lbs/Acre	No/Mile	No/Acre	Lbs/Acre
White sucker	0	0							
Adults	-	-							
Recruits	-	-							

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Fishery Characteristics – Length Frequency in Station (Actual Catch)

Species	Brown trout	Brook trout	
Station	0.5 (LTM)	0.5 (LTM)	
Date	September 16, 2009	September 16, 2009	
Length Class			
0 – 2.9			
3.0 – 3.4	10	1	
3.5 – 3.9	28	5	
4.0 – 4.4	50	15	
4.5 – 4.9	34	4	
5.0 – 5.4	15		
5.5 – 5.9	4		
6.0 – 6.4		11	
6.5 – 6.9	2	15	
7.0 – 7.4	10	20	
7.5 – 7.9	19	19	
8.0 – 8.4	50	11	
8.5 – 8.9	29	3	
9.0 – 9.4	53		
9.5 – 9.9	31		
10.0 – 10.4	30		
10.5 – 10.9	9		
11.0 – 11.4	6		
11.5 – 11.9	1		
12.0 – 12.4			
12.5 – 12.9	1	1	
13.0 – 13.4	7		
13.5 – 13.9	9	1	
14.0 – 14.9	6		
15.0 – 15.9	5		
16.0 – 16.9	5		
17.0 – 17.9	2		
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			
26.0 – 26.9			
27.0 – 27.9			
28.0 – 28.9			
29.0 – 29.9			
30.0+			
Sample Size	416	106	

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Fishery Characteristics – Non-game species

Species Sampled

Station	0.5 (LTM)		
Date	September 16, 2009		
Length (ft)	1,170		
Mean Width (ft)	25		
Species	Number	Number	Number
Sculpin, sp.	298		

Coldwater Index of Biotic Integrity (Mundahl and Simon 1998) for Station 0.5 (LTM)

Value	Score	Metric	IBI Rating Guidelines	
737		Total Captured		
3	10	Number of Species	105-120	Excellent
3	5	Number of Coldwater Species	70-100	Good
0	10	Number of Minnow Species	35-65	Fair
1	10	Number of Benthic Species	10-30	Poor
0	10	Number of Tolerant Species	0-5	Very Poor
20.73	5	Percent Salmonids as Brook Trout		
52.78	10	Percent Intolerant Individuals		
100	10	Percent Coldwater Individuals		
0	10	Percent White Suckers		
59.57	5	Percent Top Carnivores		
310	10	Number of Coldwater Individuals per 150m		
0	10	Number of Warmwater Individuals per 150m		
	105	TOTAL IBI SCORE (120 maximum)		
	87.5	Percent of maximum score		

Stream Characteristics – Minnesota Stream Habitat Assessment (MSHA)

(Fisheries Stream Survey Manual)

MSHA Metric	Component score maximum	Component score of station
Surrounding Land Use	5	3.75
Riparian Zone	15	9
Instream Zone – Substrate	27	16.4
Instream Zone – Cover	17	14
Channel Morphology	36	28
	100	Final score 71.15

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Discussion of Fishery:

Station 0.50 on Cold Spring Brook is a Long-Term Monitoring (LTM) station in Wabasha County. This station has been sampled annually since 1997 to assess the brown and brook trout populations (Table 1 & 2).

In 2009, the brown trout population had an estimated 1,270 adults/mile, which is similar to the 12-year fall mean (1,224/mile) but almost triple the amount in 2008 (431/mile) (Table 1). The estimated number of recruits was 696/mile, which is lower than the 12-year mean (2,028/mile) and the amount in 2008 (1,825/mile). There was an estimated 158 brown trout/mile ≥ 12 inches, 81/mile ≥ 14 inches, and 32/mile ≥ 16 inches. The number ≥ 12 inches was similar to the 12-year mean (161/mile). The biomass of brown trout (181.5 lbs/acre) was similar to the 12-year mean (184.6 lbs/acre).

The estimated number of adult brook trout per mile (377/mile) was similar to the 12-year fall mean (363/mile). The brook trout population had an estimated 115 recruits/mile (Table 1), which is lower than the 12-year mean of 979/mile and the estimate in 2008 (721/mile) (Table 2). The estimated brook trout ≥ 10 inches was 9/mile, compared to 2008 when there was an estimated 32/mile ≥ 10 inches. Total brook trout biomass was 20.93 lbs/acre, which is greater than the amount in 2008 (12.39 lbs/acre).

There were no white suckers collected during this assessment.

There are currently no special or experimental regulations on Cold Spring Brook. This stream is currently managed with the general southeast Minnesota angling regulation of 5 trout in the daily limit with one of those ≥ 16 inches.

The Stream Management Plan goals for Cold Spring Brook are to maintain a fishery for wild brook and brown trout, averaging 650 adult brooks, and 500 adult browns per mile (fall estimate). Also, to maintain a population of brook trout and brown trout with 15% of the adult fish longer than 10 and 12 inches, respectively. The adult brown trout population was estimated at 1,270/mile, which is well above the 500/mile goal, but only 12% of the adults were estimated to be ≥ 12 inches (Table 1). The estimated number of adult brook trout (377/mile) was below the goal (650 adults/mile), which has never been met since sampling in 1998 (Table 2). Of the brook trout adults present, only 2% of them were ≥ 10 inches in length.

The Coldwater Index of Biotic Integrity (Mundahl and Simon 1998) score in 2009 was 105, similar to previous years (Table 3). The high score was due to a low number of benthic, minnow and tolerant species, the absence of white suckers, and the high percent and number of coldwater individuals. The only non-game species collected was sculpin.

In 2009, the MSHA (Minnesota Stream Habitat Assessment) score was 71.15, higher than the 2008 value of 68.15 (Table 3). The stream is characterized by little bank erosion, moderate shade, embeddedness, instream cover, channel stability, and sinuosity, and good channel development.

Credits and Signatures:

Field Crew:

Jason Roloff, Melissa Konsti, Derrick Casper, James Melander, Doug Dieterman

Report completed by:


Name:	Title:	Date:
Melissa L. Konsti	Fisheries Specialist	December 22, 2009

Approved by:

Fisheries Supervisor's Signature

Regional Fisheries Manager's Signature

Date:



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Field Crew:

Jason Roloff, Melissa Konsti, Derrick Casper, James Melander, Doug Dieterman

Report completed by:

Name:	Title:	Date:
Melissa L. Konsti	Fisheries Specialist	December 22, 2009

Approved by:

Fisheries Supervisor's Signature	Regional Fisheries Manager's Signature	Date:
		3-6-14

Table 1. Trends in brown trout population metrics for Cold Spring Brook, years 1997-2009

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥12 in.)	No./mile (≥14 in.)	No./mile (≥16 in.)	lbs/acre (all sizes)
0.50	0.50	1	9/16/2009	1,270	696	158	81	32	181.53
0.50	0.50	1	10/1/2008	431	1,825	262	81	27	133.11
0.50	0.50	1	9/27/2007	1,029	47	164	106	55	153.73
0.50	0.50	1	10/5/2006	489	4,395	251	120	41	200.8
0.50	0.50	1	9/27/2005	757	266	246	59	9	142
0.50	0.50	1	9/24/2004	1,506	1,727	120	27	5	178.3
0.50	0.50	1	9/22/2003	2,072	1,637	82	5	5	204
0.50	0.50	1	9/20/2002	1,318	3,017	137	27	9	193.7
0.50	0.50	1	9/21/2001	1,405	2,507	150	68	45	207.7
0.50	0.50	1	9/26/2000	1,403	3,118	150	55	27	230.7
0.50	0.50	1	9/30/1999	1,407	3,020	113	57	20	210.22
0.50	0.50	1	9/28/1998	1,598	2,080	97	63	36	179.7
			Fall Mean	1,224	2,028	161	62	26	184.6
0.50	0.50	1	3/25/2004	2,892	2,845	148	45	5	474
0.50	0.50	1	3/27/2003	689	4,629	50	5	0	245.32
0.50	0.50	1	4/1/2002	968	1,709	90	23	5	184.33
0.50	0.50	1	3/23/2001	945	2,431	92	5	0	190
0.50	0.50	1	3/23/2000	1,082	2820	74	9	0	193.6
0.50	0.50	1	3/23/1999	2,256	1,179	68	23	5	240.4
0.50	0.50	1	3/23/1998	1,475	7,611	135	75	34	275.6
0.50	0.50	1	4/11/1997	391	96	248	83	41	122.5
			Spring Mean	1,337	2,915	113	34	11	240.7

Table 2. Trends in brook trout population metrics for Cold Spring Brook, years 1997-2009

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥10 in.)	lbs/acre (all sizes)
0.50	0.50	1	9/16/2009	377	115	9	20.93
0.50	0.50	1	10/1/2008	50	721	32	12.39
0.50	0.50	1	9/27/2007	221	139	5	12.0
0.50	0.50	1	10/5/2006	191	611	96	31.3
0.50	0.50	1	9/27/2005	232	72	27	22.7
0.50	0.50	1	9/24/2004	210	1,638	14	29.0
0.50	0.50	1	9/22/2003	406	99	14	21.64
0.50	0.50	1	9/20/2002	578	1,232	23	43.0
0.50	0.50	1	9/21/2001	340	1,633	14	30.6
0.50	0.50	1	9/26/2000	541	928	9	34.4
0.50	0.50	1	9/30/1999	600	3,525	36	53.17
0.50	0.50	1	9/28/1998	612	1,030	23	29.8
			Fall Mean	363	979	25	28.4
0.50	0.5	1	3/25/2004	490	508	9	49.1
0.50	0.50	1	3/27/2003	267	811	5	27.0
0.50	0.50	1	4/1/2002	186	856	5	28.1
0.50	0.50	1	3/23/2001	332	518	36	29.1
0.50	0.50	1	3/23/2000	425	1,409	9	42.4
0.50	0.50	1	3/23/1999	667	739	14	38.2
0.50	0.50	1	3/23/1998	152	1,725	20	23.9
0.50	0.50	1	4/11/1997	130	192	90	22.1
			Spring Mean	331	845	23	32.5

Stream	Cold Spring Brook
Tributary number	M-34-48
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Table 3. Trends in Index of Biotic Integrity (Mundahl and Simon 1998), and Minnesota Stream Habitat Assessment (Fisheries Stream Survey Manual 2007) or Quality Habitat Evaluation Index (QHEI) scores for Cold Spring Brook, years 2003-2009

Station	River Mile	Similar Reach	Date	IBI	Land Use	Riparian Zone	Instream Substrate	Instream Cover	Channel Morphology	Final Score
0.50	0.50	1	9/16/2009	105	3.75	9	16.4	14	28	71.15
0.50	0.50	1	10/1/2008	105	2.5	7.5	17.15	13	28	68.15
0.50	0.50	1	9/27/2007	85	3.5	7	17.05	13	28	67.55
0.50	0.50	1	10/05/2006	100	-	-	-	-	-	-
0.50	0.50	1	9/27/2005	105	5*	10*	18.6*	12*	23*	68.6*
0.50	0.50	1	3/25/2004	105	-	-	-	-	-	-
0.50	0.50	1	9/24/2004	105	-	-	-	-	-	-
0.50	0.50	1	9/22/2003	100	-	-	-	-	-	-
0.50	0.50	1	3/27/2003	105	-	-	-	-	-	-

*Quality Habitat Evaluation Index (QHEI) scores were used for this habitat assessment and are calculated differently than the MSHA scores

References

Fisheries Stream Survey Manual. 2007. Special Publication No. 165. Minnesota Department of Natural Resources.

Mundahl, N.D., and T.P. Simon. 1998. Development and application of an index of biotic integrity for coldwater streams of the upper Midwestern United States. Pages 383-415 In Thomas P. Simon (ed.). Assessing the Sustainability and Biological Integrity of Water Resources Using Fish Communities. CRC Press, Boca Raton, Florida.

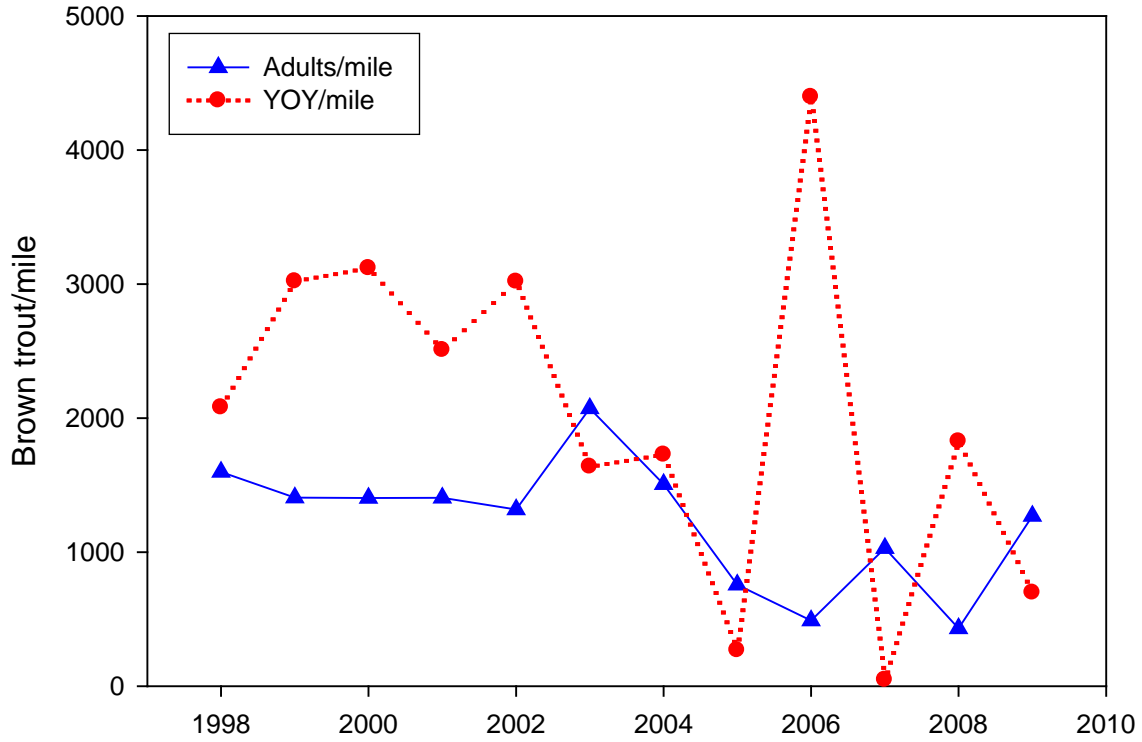


Figure 1. Abundance of brown trout adults and recruits (YOY) in Cold Spring Brook, fall 1998-2009

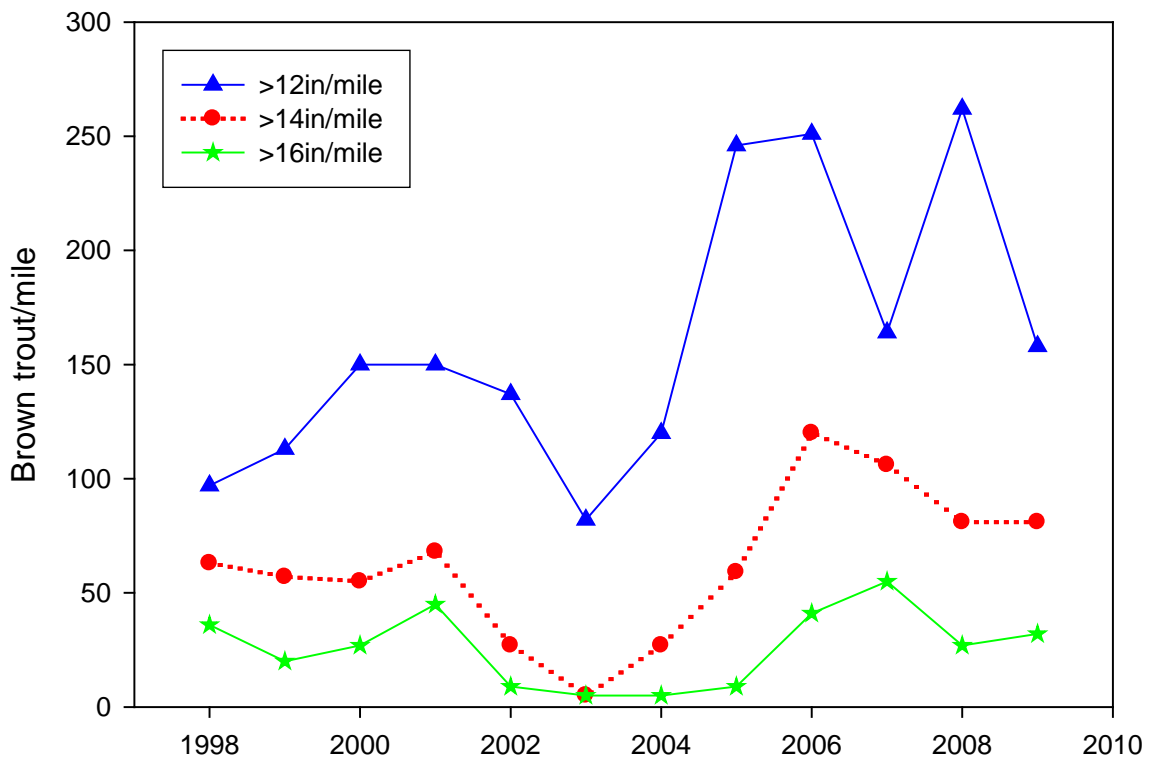


Figure 2. Abundance of brown trout ≥ 12 inches, ≥ 14 inches, ≥ 16 inches in Cold Spring Brook, fall 1998-2009

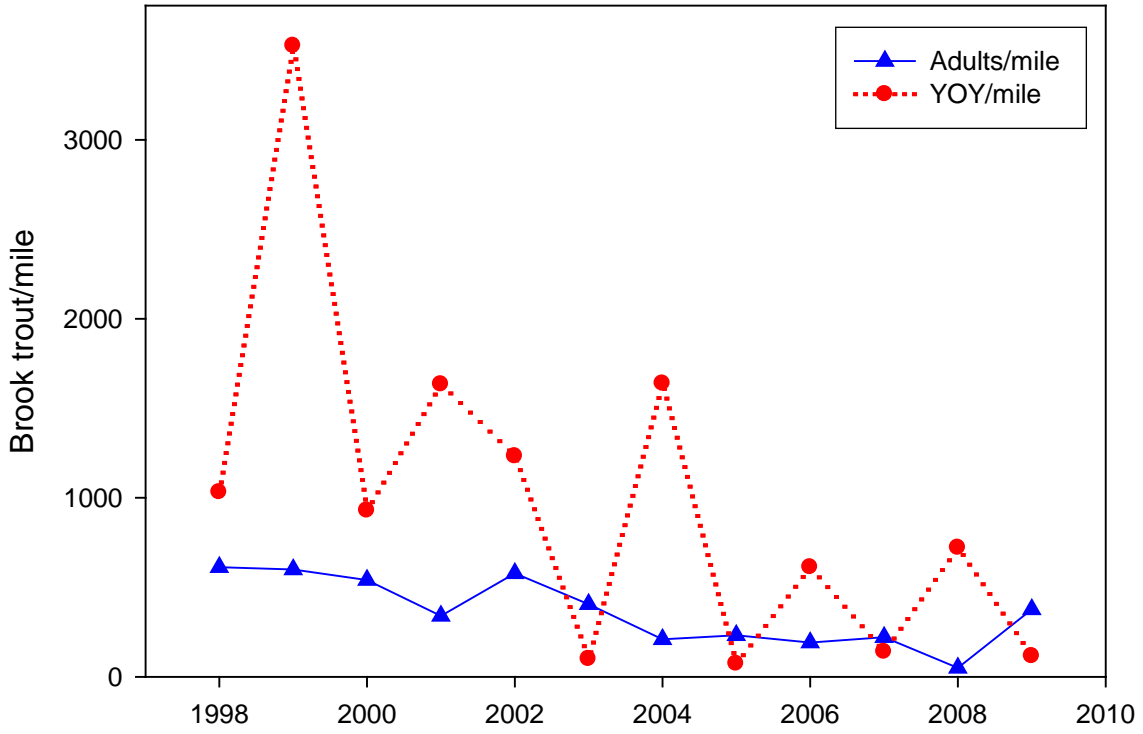


Figure 3. Abundance of brook trout adults and recruits (YOY) in Cold Spring Brook, fall 1998-2009

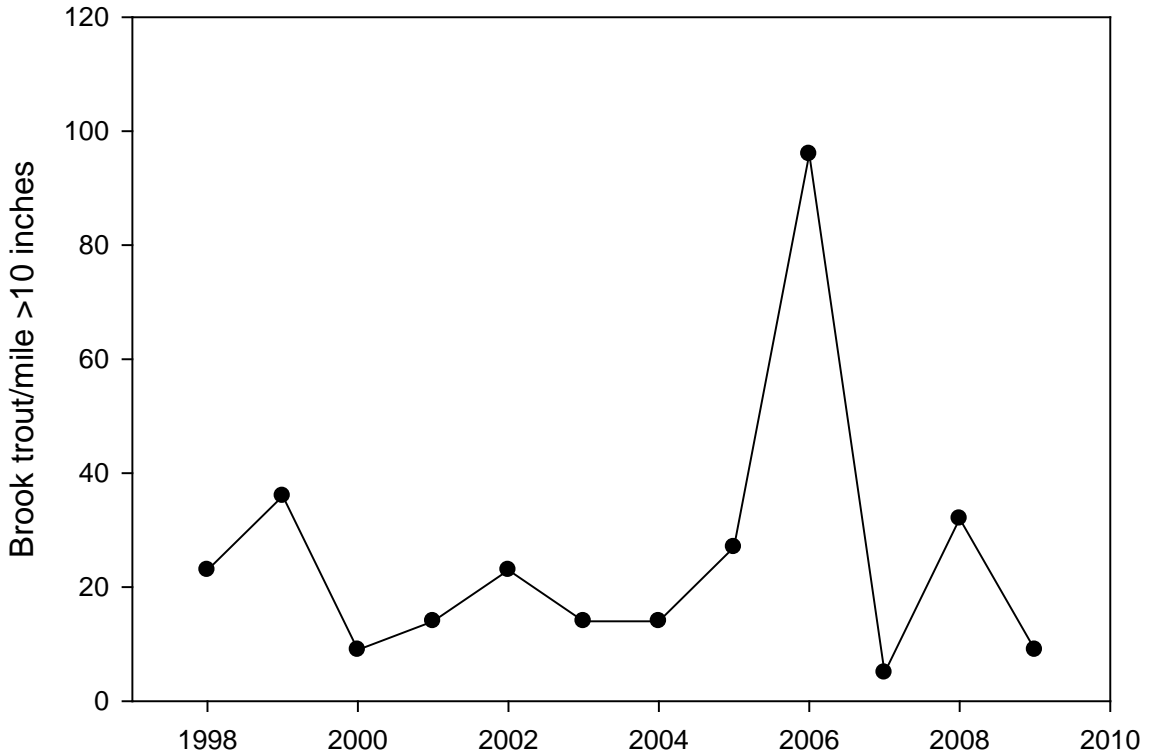


Figure 4. Abundance of brook trout ≥ 10 inches in Cold Spring Brook, fall 1998-2009

Cold Spring Brook

M-34-48

Date: December 10, 2009
Map For: Population Assessment
Prepared By: Jim Melander
Fisheries Office: Lanesboro
Mouth TRS: 110-14-36
Source TRS: 110-13-30
Counties: Wabasha

Reach Code	
	1
	1A
	1B
	1C
	2
	2A
	2B
	3
	3A
	3B
	4
	5
	6
	7
	8



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Division of Fisheries

Electrofishing Station Location



0 0.07 0.14 0.21 Miles

