

Larry Claggett, FH-4

26

Trout Stream Classification Checklist

(This checklist should be completed and accompany any trout stream classification changes. Check the items as appropriate and attach comments if desired.)

County Dane

Stream name, classification proposed, and portion classified

West. Branch Sugar River, German Valley Cr,

Badger Mill Cr, Upper Sugar River

Master Waterbody ID Code BB6100, 909200, 888100, 875300

Fish survey (including relative abundance, length distribution, and age structure) and habitat survey completed on water to be classified
Survey on file at what location SCR - Nevin, w/ Kurt Welke

7/7 Public notice published in local newspaper or other media sent 7-7 to Verona Press + Mt. Horeb Mail

7/7 Notice sent to all clerks of the county, town, city, or village in which the stream is located City of Verona town of Verona village of Mt Horeb chairpersons of townships

7/7 Notice sent to legislators in the affected districts

7/7 Notice sent to chairpersons of legislative committees with jurisdiction for natural resources issues

No hearing requested 30 days after public notice

Hearing requested, held, and classification recommended

Signed: Author of Checklist Kurt Welke
Fish Team Supervisor _____

cc - Bush
Stewart

LC

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: November 4, 2005

FILE REF: [Click here and type file ref.]

TO: Acting Regional Director – SCR, Don Bush, R. Scot Stewart, Margie Devereaux

FROM: Kurt Welke

SUBJECT: Reclassification of Badger Mill Creek

All:

Attached is the relevant text report, data, maps, tables, and figures that serve as the classification document for Badger Mill Creek to Class II trout stream.

I have submitted a signature block for your approvals below. Upon receipt of your approval, I will arrange and proceed with the protocols outlined in the fish management handbook (12-2) for public notice in the appropriate newspaper(s), clerks, and legislators.

Please return this original document to me .

Approved:

Jay Hochmuth 11/22/05 *Blondy Leeger 6/9/08*
South Central Regional Director

M. Devereaux *Ken Johnson 6/7/08*
Margie Devereaux, SCR Water Leader

Don Bush, SCR East Fish Team Supervisor

R. Scot Stewart
R. Scot Stewart, SCR Fisheries Expert

Cc: Larry Clagget, FM/4
Robert Hansis, GPSP Basin Leader



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South Central Regional Director

Margie Devereaux, SCR Water Leader



Don Bush, SCR East Fish Team Supervisor

R. Scot Stewart, SCR Fisheries Expert

Cc: Larry Clagget, FM/4
Robert Hansis, GPSP Basin Leader



Pursuant to NR 1.02(7)(c), WI. Adm. Code, the Department of Natural Resources plans to classify 4.8 miles of Badger Mill Creek in Dane County as Class II Trout Water. The classification will include the stream length from the perennial outflow in T6N, R8E, Section 13, Dane County, Wisconsin, to the confluence with the Upper Sugar River, in T6N, R8E, Section 28.

The trout stream classification is based on survey results that indicate Badger Mill Creek sustains a population of brown trout representing several year classes in sufficient numbers to sustain the population from year to year. The stream also displays other vital stream characteristics (cold temperature, good water quality and healthy aquatic life) that are necessary to sustain trout. Stocking is needed to supplement natural reproduction.

Trout stream classification is a Type III action under the Wisconsin Environmental Policy Act (WEPA).

The Department of Natural Resources shall waive any hearing on this classification unless a written request is received before _____, _____. Requests should be mailed to: Kurt Welke, Wisconsin Department of Natural Resources, 3911 Fish hatchery Rd., Fitchburg, WI 53711.

Badger Mill Creek
Fisheries Classification
WBIC # 888100

Kurt I. Welke
SCR, East Fisheries Team
November 4, 2005

Background

Badger Mill creek is a tributary to the Sugar River, south of the village of Verona in Dane Co. WI. The stream has had a history of impacts to, and recovery of, its 'cold water communities due to effluent discharges and impairments from changing land use. The stream has never had a codified fisheries classification.

On September 21, 2005, FH and WR staff from SCR surveyed Badger Mill Creek (BMC) to obtain current fisheries data. The last fisheries survey by DNR personnel was August 2000. The creek has been central to the issuance of a USA (Urban Services Amendment) permit which necessitates an accurate classification in regards to stormwater discharges.

A water resources classification effort (Amrhein, 2005) was concurrent to this fisheries classification in order to consistently reflect the stream condition and potential. The proposed WR designation for Badger Mill creek from the confluence with the Sugar River to the Lincoln Street Footbridge is Coldwater B- Class Iix. The stream reach from the Lincoln Street footbridge upstream to the MMSD effluent discharge is suggested as WR classification Diverse Fish and Aquatic Life- Coolwater.

Badger Mill creek receives 3 MGD of treated effluent discharged from the Madison Municipal Sewerage District (MMSD). This effluent discharge began in 1998. A 2001 re-classification (Marshall, 2001) suggested that BMC be classified as a COLD water resource based upon the presence of brown trout and mottled sculpin. That classification was not formally adopted subsequent to the addition of effluent. It is now felt that BMC has reached a biological and physical/chemical equilibrium and that a formal fisheries classification is warranted.

Badger Mill creek is stocked annually at the STH 69 bridge with 500 yearling (aver. length = 9") domestic strain brown trout. Since 2000, all stocked fish have received an adipose fin clip to identify them as of hatchery origin.

Methods

Fish were sampled at five stations (Table 1.) using a standard pulse DC current tow barge stream electro-fishing unit. Station lengths were always a minimum of 35X the stream

were never exceeded at the Bruce Street site. The majority of temperatures were between 18° and 20° C, Figure 3.

For the period of record 2003-2005, BMC temperatures fell within the preferred thermal range for brown trout of 53°F – 64°F for 44% of all observations. Oxygen concentrations at Bruce Street varied daily from approx 6 ppm to 12 ppm. On 5 days, the minimum concentration fell below 6 ppm, with a singular value of 4 ppm recorded on September 11,

Discussion

The standard criteria from the fish management handbook (1994) for designating trout water in Wisconsin are as follow:

Class 1: A class I trout stream is a stream or portion thereof with a self sustaining population of trout.

- a. Such a stream contains trout spawning habitat and naturally produced fry, fingerling, and yearling in sufficient numbers to utilize trout habitat, *or*
- b. Contains trout with 2 or more age groups, above the age of 1 year, and natural reproduction and survival of wild fish in sufficient numbers to utilize the available trout habitat and to sustain the fishery without stocking.

Class 2: A class II trout stream is a stream or portion thereof that:

- a. Contains a population of trout made up of one or more age groups, above the age of one year, in sufficient number to indicate substantial survival from one year to the next *and*
- b. May or may not have natural reproduction of trout occurring, however stocking is necessary to fully utilize the available trout habitat or sustain the fishery

Class III: A class III trout stream is stream or portion thereof that:

- a. Requires annual stocking of trout to provide a significant harvest , *and*
- b. Does not provide habitat suitable for the survival of trout throughout the year, or for the natural reproduction of trout

Given these set points, BMC meets the definition of a class II trout stream. This recommendation is based upon trout presence and relative abundance at all sample stations, evidence of annual carry over and multiple ages present, and the occurrence of young of year trout. Additional support for this classification is evident in the temperature and dissolved oxygen data.

Brown trout were sampled at a frequency ranging from 4 fish per station to as many as 50 individuals within a station. These collections establish trout presence at between 4% and

Figure 1. Map of Badger Mill Creek Sampling Stations, September 2005

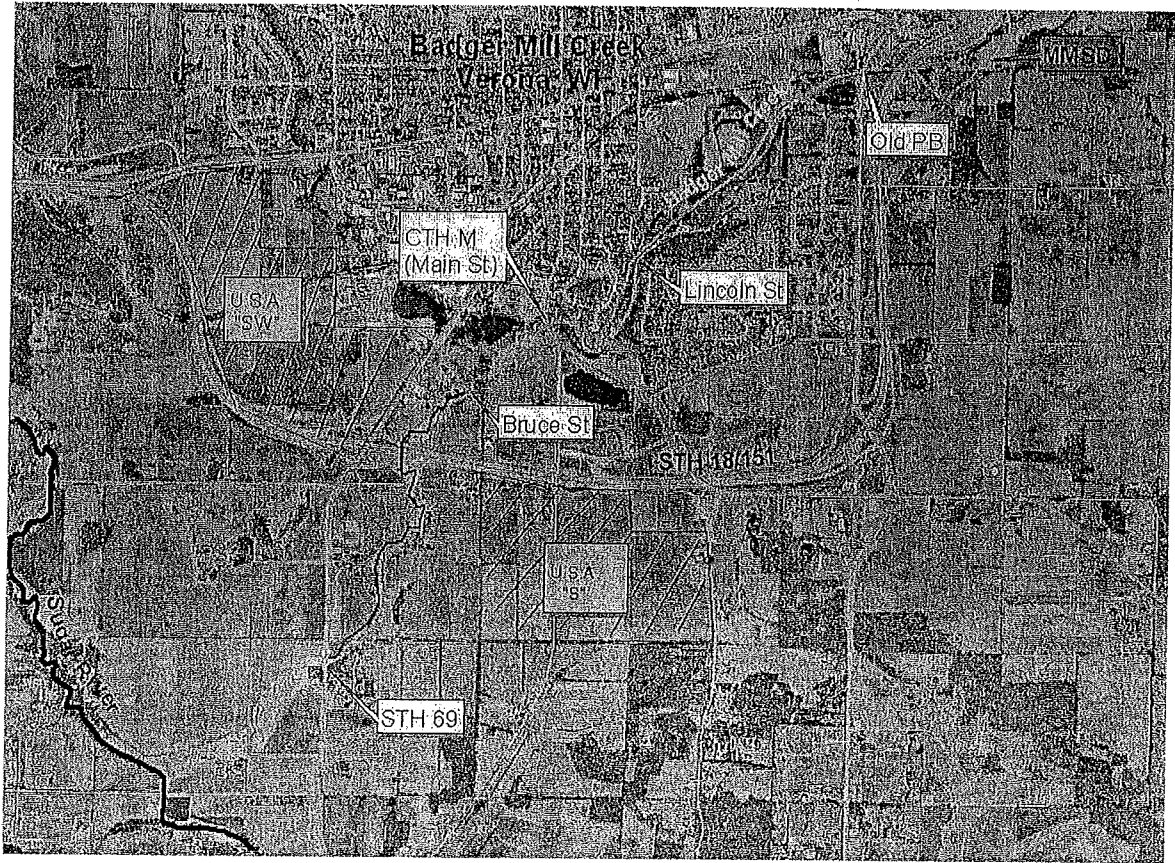


Figure 2. Brown Trout Length Frequency, Badger Mill Creek, all stations combined

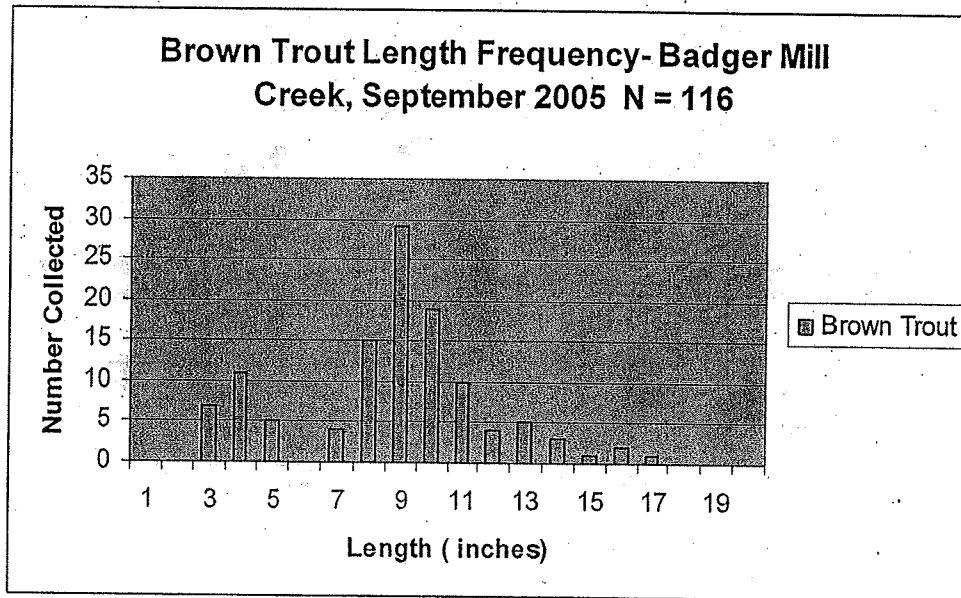
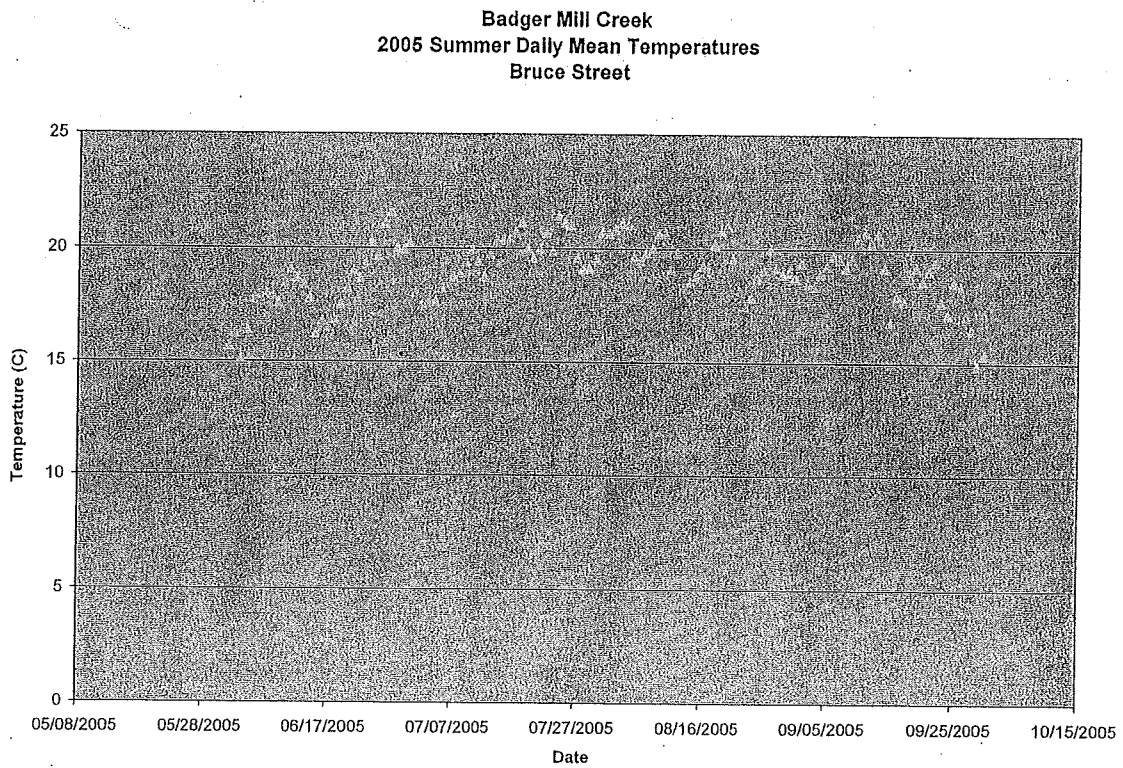


Figure 3. Daily Water temperatures, Badger Mill Cr eek @ Bruce Street, June – September 2005.



Appendix A. Badger Mill Creek, September 2005

- Copies of field data collection sheets
- Length Frequency Histograms of brown trout by station
- Fahrenheit – Celsius temperature conversion table

STREAM ELECTROFISHING DATA COLLECTION SHEET

Form 3600-183

Rev. 4

Run #: 1 Page #: 1 OF 1

Water: BADDERMILL MWB Code: 888100 Date: 9/21/05 County: DANE (13) Collector: KW SH RK AR
 Target Fish: 2100 Survey Type: 101 Mark Given: N/A H₂O Temp: 60°F Time: 0910

Starting Location: STH. 69 Ending Location: GPS 42.9675 89.5448 Station: # 2 SITE # 7
 Township: 6N Range: 8E Sections: 28 1/16 Section: NE 1/4 Section: SE Latitude: _____ Longitude: _____

Weather: _____ H₂O Conduct: _____ H₂O Level (low/normal/high) _____ H₂O Clarity (clear/turbid/very turbid) _____

Volts: 220 Amps: 6 Current Type (AC/DC/Pulsed DC) DC Dippers: (1/2/3) 1 Dipnet Mesh: 1/8"

Pulse Rate: _____ Duty Cycle: _____ Type of Pass: (Up/Down) Down

Gear Type: Swm Boat Start Time: 0904 End Time: 10:20 Distance Shocked: 470M (T.N)

GPS START
42.9675
89.5448
GPS END
42.9675
89.5448

STATION	SPECIES	LENGTH	COUNT	WEIGHT	STATION	SPECIES	LENGTH	COUNT	WEIGHT
1	Brown Trout	10.8	Brown Trout	10.1	41	White Sides	7.2	30, 39	Brown Trout 10.7
2	Trout	9.4	w/ADChp	10.3	42	18, 57	40, 15, 4	23	LPChp
3	4.8	11.2		12.5	43	13, 13, 15	13, 10, 20	17, 30	
4	4.5	9.2		11.0	44	52, 28	22, 10, 5		
5		12.8		10.5	45				
6		13.6		13.5	46				
7		12.9		13.4	47				
8		10.4			48				
9		10.9			49	Mottled Sculpin			
10		11.1			50				
11		9.7			51	16			
12		11.7	WWIBT = 24		52				
13		12.7			53				
14		9.7			54	Brook Stickleback			
15		10.9			55				
16		9.4	CWIBT = 10 POOR		56				
17		10.4			57	43, 27, 24, 14, 22			
18		10.7			58	21, 39			
19		5.1			59	Johnny darter			
20		4.0			60				
21		10.2			61				
22		12.9			62				
23		9.9			63	Fantail darter			
24		11.4			64				
25		9.2			65				
26		10.1			66	Creek chub			
27		9.8			67				
28		7.2			68				
29		7.8			69	Bluntnose minnow			
30		4.2			70				
31		3.9			71	Fathead minnow			
32		9.5			72				
33		4.3			73	Bluegill	5.8, 5.6		
34		4.3			74				
35		5.0			75				
36		4.7			76	Green Sunfish			
37		4.6			77	6.2	4.0	3.3	2.9
38		3.9			78	3.2	3.8	2.5	
39		3.9							

STREAM ELECTROFISHING DATA COLLECTION SHEET

Form 3600-183

Rev. 1

Run #: 1 Page #: 1 OF 1

Water: BRIDGE CREEK MWB Code: 888100 Date: 9/21/05 County: DANE (13) Collector: Mrs. JA, MT

Fish: 2/100 Survey Type: IBS Mark Given: _____ H₂O Temp: 60°F Time: 9:00

Starting Location: Bruce St Ending Location: Bow Island RIVER Station: # 3

Township: 6N Range: 8E Sections: 22 1/16 Section: NW 1/4 Section: SW Latitude: _____ Longitude: _____

Weather: Sunny, warm 72°F H₂O Conduct: _____ H₂O Level (low/normal/high) _____ H₂O Clarity (Clear/turbid/very turbid) _____

Volts: 100 Amps: +10.0 Current Type (AC/DC/Pulsed DC) DC # Dippers: (23) Dipnet Mesh: 48"

Pulse Rate: _____ Duty Cycle: _____ Type of Pass: Down

Gear Type: Shim beat Start Time: 9:07 End Time: 10:40 Distance Shocked: 326m. (T.N.)

GPS START
42.97715
89.53916
GPS END
42.97868
89.53651

STATION	SPECIES	LENGTH	COUNT	WEIGHT	STATION	SPECIES	LENGTH	COUNT	WEIGHT
1	Brown	14.1		Bluegill	41	Mottled Sculpin			
2		9.1		5.0	42				
3		10.0		4.9	43				
4		16.5		4.6	44	Creek Chub			
5		8.5		5.0	45				
6		11.4		3.6	46				
7		14.3		5.4	47				
8		9.7		4.0	48	Blacknose Minnow			
9		9.3		5.2	49				
10		9.0		4.5	50				
11		9.6			51	Green Sunfish			
12		10.5			52				
13		8.5			53				
14		5.3			54				
15		9.0			55	Broad Whitefish			
16		8.7			56				
17		9.1			57				
18		8.0			58	Johnny Darters			
19		9.8			59				
20		9.2			60				
21		9.9			61				
22		3.6			62	Painted Darters			
23		7.6			63				
24		8.2			64				
25		8.6			65				
26		11.0			66	Central Stoneworm			
27		10.5			67				
28	Brown	3.6			68				
29					69	Fathead Minnow			
30					70				
31					71				
32	Brown Trout	28	54	classes present	72	Blackchin shiner			
33	3.6"-4.5"	7"-9"	9.1"-11.4"	14"	>16.5"	73			
34					74				
35					75	White Suckers	47, 180		
36					76				
37					77				
38					78				
39					79				
40					80				

#150745

ENTERED 9/22/05 CK

Department of Natural Resources

STREAM ELECTROFISHING DATA COLLECTION SHEET

Form 3600-183

Rev. 4-

Run #: 1 Page #: 1 OF

Water: BADDERMILL CREEK MWB Code: 388100 Date: 9/2/05 County: Dane (13) Collector: MS, JA, MT

Fish: Z100 Survey Type: IBI Mark Given: _____ H₂O Temp: 68°F Time: 1340

Starting Location: ETH MAIN 20M upstream Ending Location: END GPS Station: #4

Township: 6N Range: 8E Sections: 22 1/16 Section: SE 1/4 Section: NW Latitude: _____ Longitude: _____

Weather: BSPF, Sunny H₂O Conduct: _____ H₂O Level: (B) normal/high H₂O Clarity: (C) clear turbid/very turbid

Volts: 100 Amps: 10+ Current Type: (DC) Pulsed DC # Dippers: (1/2/3) Dipnet Mesh: .125

Pulse Rate: _____ Duty Cycle: _____ Type of Pass: (Up) Down

Gear Type: STR. BOAT Start Time: 1340 End Time: 1440 Distance Shocked: 283 M (T.N.)

GPS START
42.98037
89.53378
GPS END
42.97919
89.53149

STATION	SPECIES	LENGTH	COUNT	WEIGHT	STATION	SPECIES	LENGTH	COUNT	WEIGHT
1	Trout	8.7		GSEYBG Blugill	41	White Suckers			
2		8.7		6.5 5.6	42	12, 17, 43			
3		9.2		5.4 5.0	43				
4		10.6		3.4	44				
5		9.5			45				
6		10.6			46				
7		9.3			47				
8		9.3	WWIBI = 24	poor	48	Black Bullhead			
9		9.4			49				
10		7.0			50				
11		8.0			51				
12		9.5	WWIBI = 10	poor	52				
13		8.0			53	Creek Chub			
14		11.8			54				
15		9.6			55				
16		9.6			56				
17		9.8			57				
18		10.1			58	Fathead Minnow			
19		4.6			59				
20		8.4			60				
21		8.4			61				
22		8.7			62	Green Sunfish			
23		11.3			63				
24		3.7			64				
25		5.4			65				
26					66	Brook Stickleback			
27					67				
28	Species Present				68				
29					69	Mottled Sculpin			
30	Brown Trout		25		70				
31	Blugill		2		71				
32	GSEYBG		3		72				
33	White Suckers		243		73	Johnny Darters			
34	Black Bullhead		5		74				
35	Creek Chub		27		75				
36	Fathead Minnow		4		76	Central Suckers			
37	Green Sunfish		9		77				
38	Brook Stickleback		37		78				
39	Mottled Sculpin		3		79				
40	Johnny Darters		10		80				

130747

ENTERED 9/22/2005 JK

Department of Natural Resources

STREAM ELECTROFISHING DATA COLLECTION SHEET

Form 3600-183

Rev. 4

Run #: 1051 Page #: 1 of 1

Water: ~~TRUCKEE RIVER~~ CARMWB Code: 888100 Date: 9/21/05 County: Lane (13) Collector: KW, SH, RK, AR

Net Fish: 2100 Survey Type: IBI Mark Given: H2O Temp: 23°C / 73°F Time: 12:30

Starting Location: OLD PD Ending Location: GPS Station: #6

Township: 6N Range: 8E Sections: 14 1/16 Section: NW 1/4 Section: SE Latitude: Longitude:

Weather: H2O Conduct: H2O Level (low/normal/high) H2O Clarity (clear/turbid/very turbid)

Volts: 75 Amps: 7-9 Current Type (AC/DC/Pulsed DC) # Dippers: (10/3) Dipnet Mesh: 1/8"

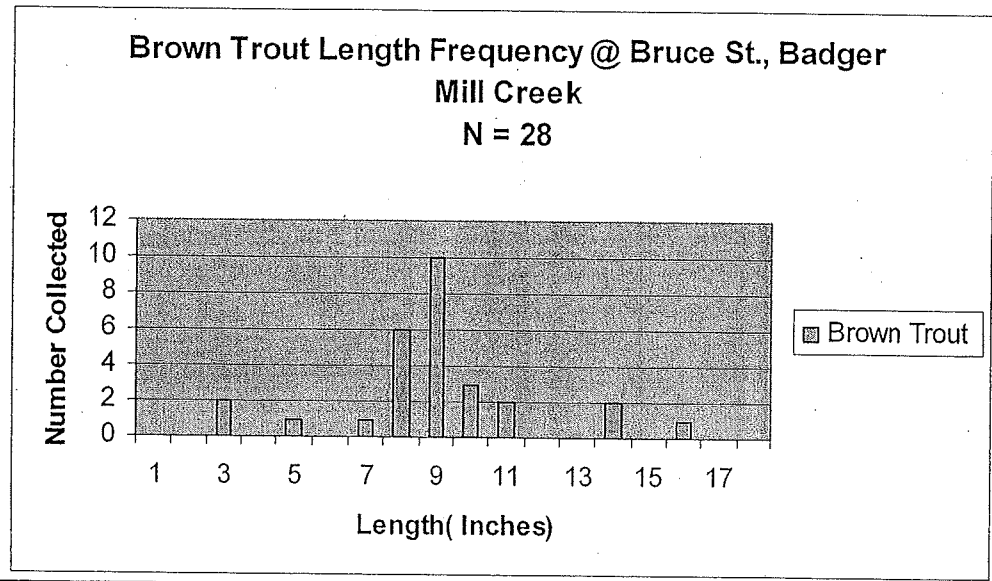
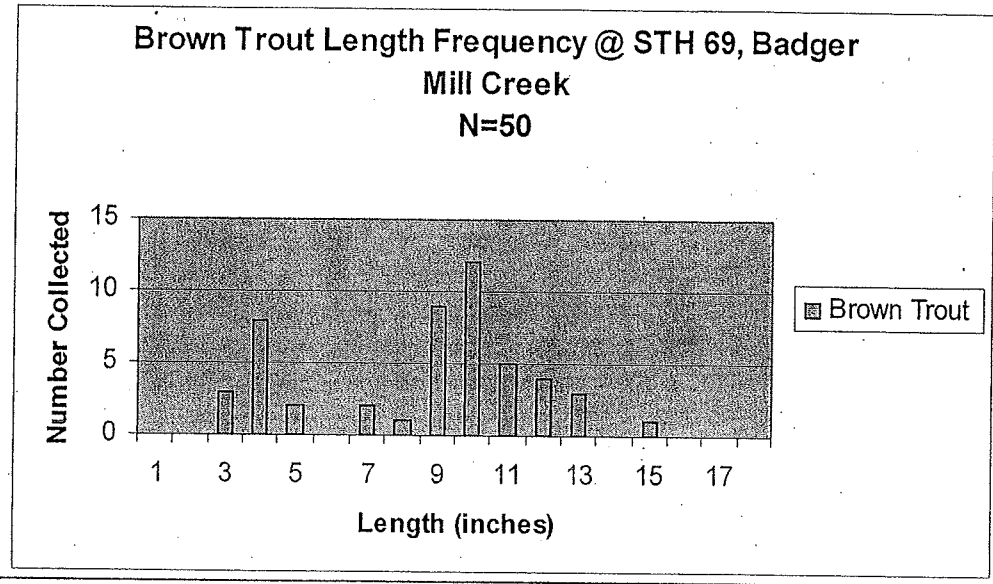
Pulse Rate: Duty Cycle: Type of Pass: (Up/Down)

Gear Type: SHIM BOAT Start Time: 12:30 End Time: 12:45 Distance Shocked: 102 M (T.N)

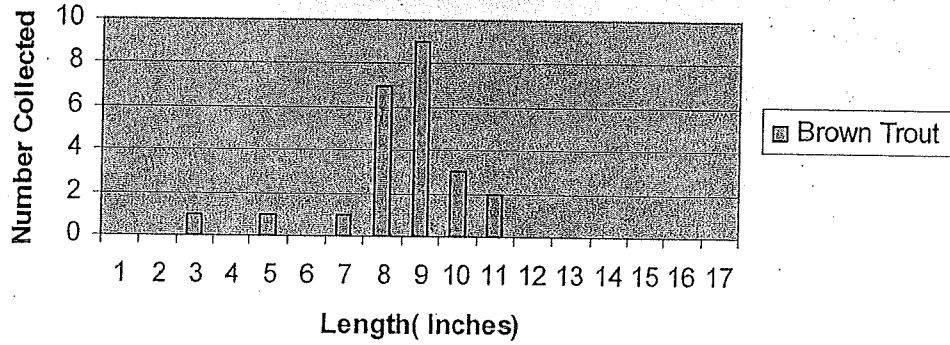
GPS START
42.9919
89.5136
GPS END
42.9920
89.5125

STATION	SPECIES	LENGTH	COUNT	WEIGHT	STATION	SPECIES	LENGTH	COUNT	WEIGHT
1	Brown	14.0	Brow		41	Bluegill	5.5	5.8	5.3
2	Trout	17.8	Trout		42		5.3	5.4	5.6
3		10.2	AD Chip		43		6.2	6.7	4.2
4		13.7			44		6.2	4.0	4.0
5		16.1			45		5.8	4.2	5.6
6		13.2			46		6.6	5.7	6.1
7		8.4			47		6.1	4.7	5.5
8					48		6.6	4.9	4.7
9					49		6.7	5.4	4.2
10					50		6.5	6.6	
11					51		6.1	6.3	
12					52				
13					53	Green Sun Fish	6.2		
14					54		3.4		
15					55		6.3		
16					56		3.3		
17					57		6.2		
18					58		5.2		
19					59				
20					60				
21					61	White Sucker		54	
22					62				
23					63				
24					64	Creek Chub	2		
25					65				
26					66				
27					67	LMB	4.3		
28					68				
29					69	Black bull head	5.5		
30					70				
31					71				
32					72	Black Crappie	1		
33					73				
34					74				
35					75				
36					76				
37					77				
38					78				
39					79				
40					80				

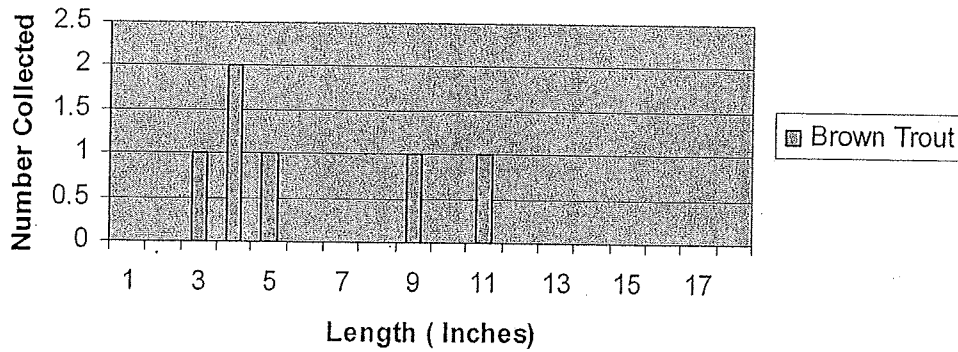
Appendix A. Length Frequency Histograms of Brown Trout, by Station, Badger Mill Creek, September 2005



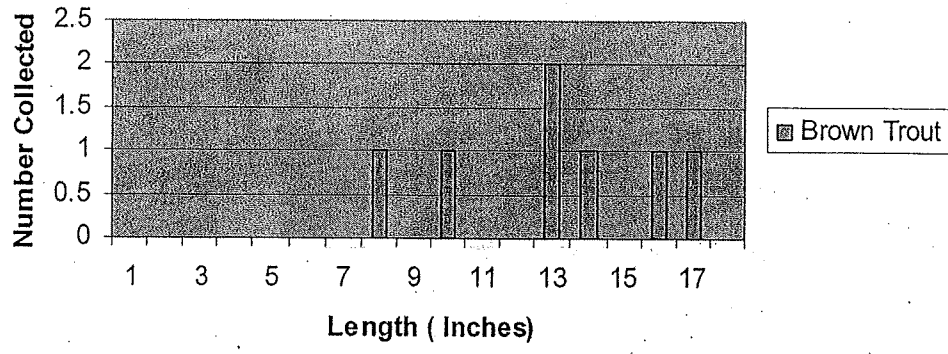
Brown Trout Length Frequency @ CTH M, Badger Mill Creek
N = 24



Brown Trout Length Frequency @ Lincoln Street, Badger Mill Creek
N = 6



Brown Trout Length Frequency @ Old Pb, Badger
Mill Creek
N = 7

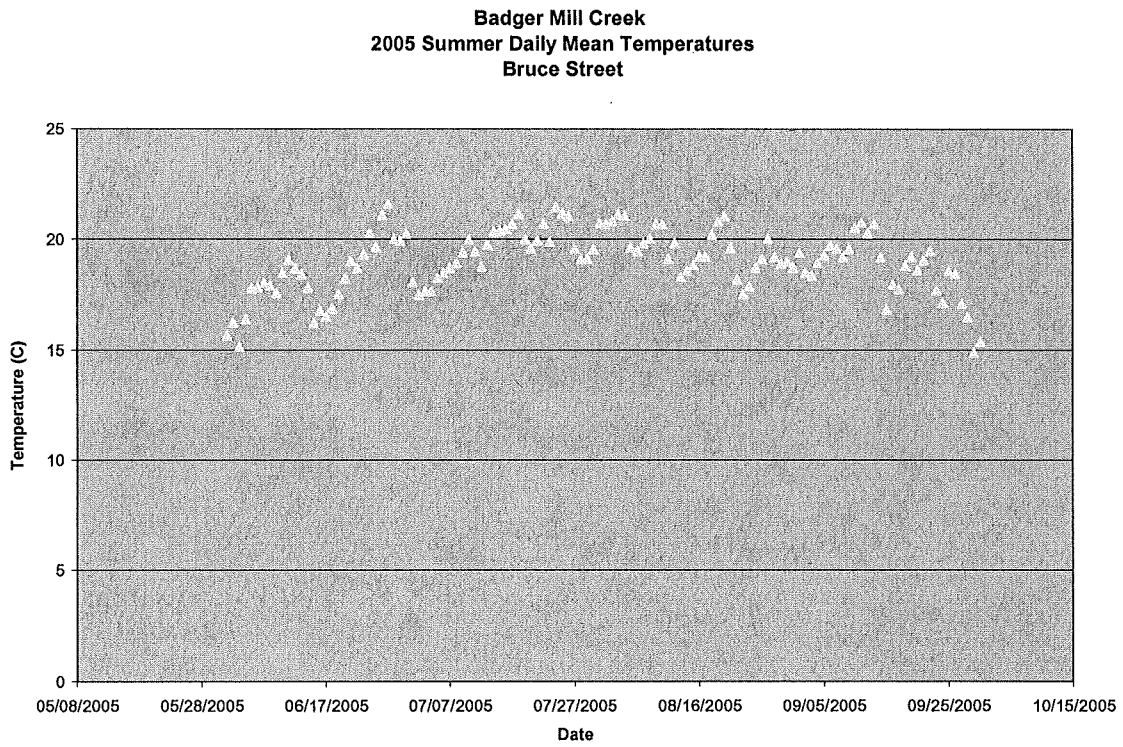


Appendix A. Temperature Conversion: Centigrade to Fahrenheit

C°	F°
-5	23.0
-4	24.8
-3	26.6
-2	28.4
-1	30.2
0	32.0
1	33.8
2	35.6
3	37.4
4	39.2
5	41.0
6	42.8
7	44.6
8	46.4
9	48.2
10	50.0
11	51.8
12	53.6
13	55.4
14	57.2
15	59.0
16	60.8
17	62.6
18	64.4
19	66.2
20	68.0

C°	F°
21	69.8
22	71.6
23	73.4
24	75.2
25	77.0
26	78.8
27	80.6
28	82.4
29	84.2
30	86.0
31	87.8
32	89.6
33	91.4
34	93.2
35	95.0
36	96.8
37	98.6
38	100.4
39	102.2
40	104.0
41	105.8
42	107.6
43	109.4
44	111.2
45	113.0

Figure 3. Daily Water temperatures, Badger Mill Cr eek @ Bruce Street, June – September 2005.



Appendix A. Badger Mill Creek, September 2005

- Copies of field data collection sheets
- Length Frequency Histograms of brown trout by station
- Fahrenheit – Celsius temperature conversion table