Cursory Fish Inventory of Watts Creek Watershed, Ottawa using Exploratory Backpack Electrofishing

Conducted by

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Synopsis: Three reaches of the Watts Creek watershed in the Kanata region of the City of Ottawa, Ontario were inventoried for fish assemblage structure using exploratory backpack electrofishing. The primary purpose of the inventory was to identify whether the fish community countained fish of aquate size and species complement to enable future research activities inteded to characterize movement, habitat use and sensititivy of fish to environmental disturbance and stress.

Surveys were conducted on July 28th 2011 and August 9th 2011 in three sections of Watts Creek (Figure 1; Table 1). Shocking efforts focused on the main channel as well as a more natural branch and an altered branch (see map for details) and used a Halltech backpack shocker with two netters. The creek was backpack electroshed to assess fish diversity and abundance over a two day span on July 28 and August 9 2011. The sampling team consisted of Keith Stamplecoskie, Alex Nadgrodski (Carleton University) and Miclelle Caputo (NCC). The first site sampled (Figure 2) was in the main channel, the second was in what is considered to be altered branch of the stream (Figure 3), and the third in more natural branch of the stream (Figure 4). All fish encountered were identified to species, measured (total length to nearest cm) and released alive at site of capture. No voucher specimens were retained given that all of the species were easily identified streamside. The three sites were shocked for roughly equal durations although the purpose was simply to identify relative abundance and size of fish within the system rather than determine site-specific patterns in abundance.

Site 1 (main channel) was approximatley 60 to 120cm deep with medium to high levels of submerged aquatic macrophytes. Site 2 (altered branch of the stream) was approximately 5 to 30 cm deep with heavy aquatic macrophyte cover. Sites 1 and 2 both had a very soft substrate that made wadding difficult (i.e., silt). The third site (more natural branch of the stream) was 60 to 120 cm deep, had little aquatic vegetation and was much rockier and firmer than the other 2 sites. A formal habitat assessment was not conducted as part of this cursory fish inventory.

Summary statistics for relative species abundance and size ranges (all reported in cm) for fish captured in various sites and on various sampling days are presented in Tables 2 through 6. Raw data for all species captured are included in the Appendix . Creek chub, white sucker and central mudminnow were the most commonly encountered species. None of the species encountered are considered as threatened provincially or federally, however, a number of sub-adult juvenile northern pike were captured which are a popular sportsfish and a species that is associted with coolwater systems. Although we did not capture any adult fish, the presence of juvenile pike suggests that the system serves as a rearing habitat for pike. The largest fish encountered was a 30cm white sucker which was likely an adult. Sampling efforts occurred in the summer months and all of the species that we inventoried in the stream spawn

in the spring. It is possible that adult sucker from the Ottawa River migrate into Watts Creek to spawn in the spring. Additional sampling in other locations in the watershed and at other times of year is necessary to clarify how different species and life-stages use various reaches of the Watts Creek watershed.

Overall, this preliminary inventory identified that there were adequate numbers of fish to enable more detailed research efforts that should focus on identifying habitat associations, mobility and the health and condition of fish in different reaches. Such information is necessary to identify the implications of various types of development activities throughout the watershed and to ensure that policies are effective in protecting the fish community in the Watts Creek watershed. We suggest that future research focus on northern pike, creek chub and white sucker, all of which are reasonably abundant and can serve as sentinel species for the broader fish community.

Table 1: Latitude and Longitude co-ordinates of the three backpack electrofishing sampling loactions at Watts Creek.

Site	Start Location	End Location
1	45°20'27.37"N 75°52'27.65"W	45°20'24.20"N 75°52'44.18"W
2	45°20'26.06"N 75°53'6.27"W	45°20'24.64"N 75°53'24.28"W
2B	45°20'24.07"N 75°53'28.53"W	45°20'23.49"N 75°53'32.28"W
3	45°19'47.59"N 75°53'19.13"W	45°19'45.35"N 75°53'18.32"W
3B	45°19'45.73"N 75°53'17.16"W	45°19'43.25"N 75°53'16.24"W

Table 2: Species captured by backpack electrofisher at Site 1, the main channel of Watts Creek on July 28th 2011. 1562 shocking seconds. All sizes reported in cm.

Species Captured	Number Captured	Mean Length	Min Length	Max Length	Standard Deviation
Central mudminnow	16	6.3	4	10	1.89
Common shiner	6	12.2	11	13	0.82
Creek chub	12	13.8	4	17.5	3.49
Northern pike	6	14.6	10	17	2.58
Pumpkinseed	1	6.0	6	6	na
White sucker	48	15.2	5	30	3.81
Yellow perch	2	10.5	7	14	4.95

Table 3: Species captured at Site 2, the altered branch upstream of the main channel in Watts Creek on July 28th 2011. 1000 shocking seconds. All sizes reported in cm.

Species	Number Captured	Mean Length	Min Length	Max Length	Standard Deviation
Banded killifish	3	6.3	6	7	0.57
Blackchin shiner	1	3.5	3.5	3.5	na
Brook stickleback	2	4.5	4.5	4.5	0
Central mudminnow	31	6.5	2	11.5	0.49
Creek chub	31	12.3	9.5	16.5	1.59
Northern pike	1	20	20	20	na
Pumpkinseed	1	12	12	12	na
White sucker	41	13.4	2	17	3.37

Table 4: Species captured at Site 2B, the altered branch upstream of the main channel in Watts Creek on August 9th 2011. 339 shocking seconds. All sizes reported in cm.

Species	Number Captured	Mean Length	Min Length	Max Length	Standard Deviation
Banded killifish	2	7.5	7	8	0.71
Central mudminnow	66	7.7	2	14	3.25
Redside dace	1	10	10	10	na
White sucker	1	8	8	8	ma

Table 5: Species captured at Site 3, the more natural branch upstream of the main channel in Watts Creek on July 28th 2011. 500 shocking seconds. All sizes reported in cm.

Species	Number Captured	Mean Length	Min Length	Max Length	Standard Deviation
Blackchin shiner	8	4	4	4	0
Creek chub	37	12.1	5	16	2.55
Longnose dace	7	9.1	5	12.5	2.37
White sucker	20	13.9	9	22	3.73

Table 6: Species captured at Site 3B, the more natural branch upstream of the main channel in Watts Creek on August 9th 2011. 1227 shocking seconds. All sizes reported in cm.

Species	Number Captured	Mean Length	Min Length	Max Length	Standard Deviation
Brook stickleback	1	5	5	5	na
Creek chub	143	9.2	3	20	4.66
Longnose dace	23	7.3	2	12	2.67
White sucker	74	12.4	3	20	4.5

Figure 1: Watts Creek with all three sampling sites.

Figure 2: Watts Creek sampling site one (main channel).

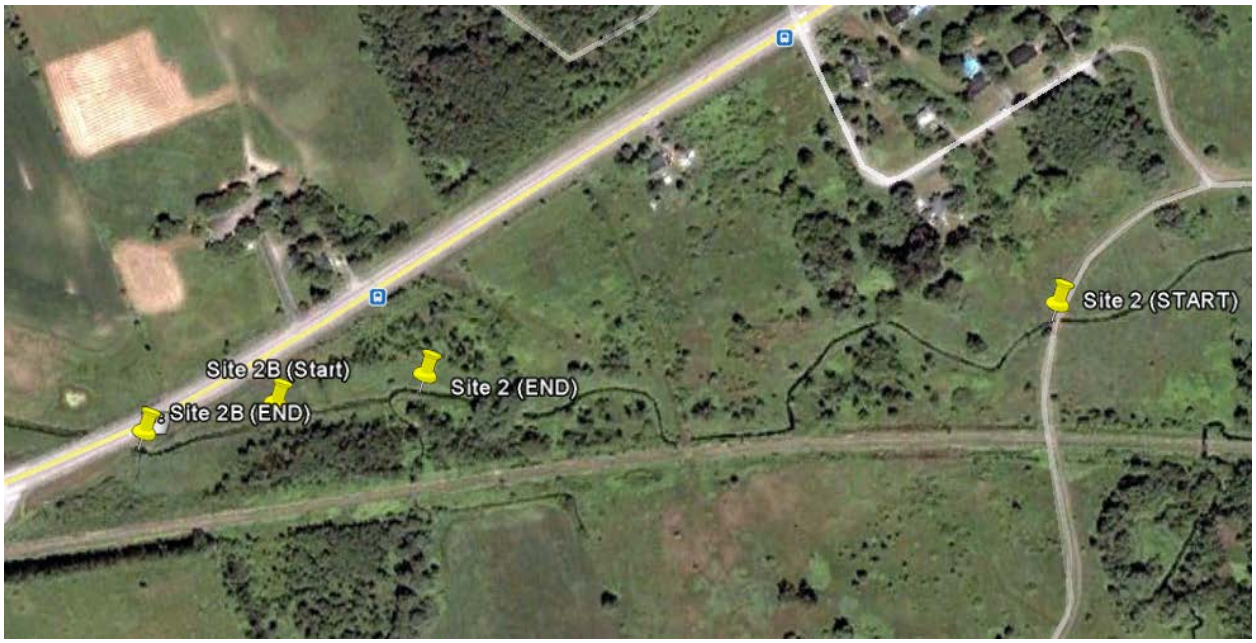

Figure 3: Watts Creek sampling site two (altered branch upstream of the main channel in Watts Creek.

Figure 4: Watts Creek sampling site three (the more natural branch upstream of the main channel in Watts Creek).

Appendix 1

Raw data for species captured at Site 1, the main channel of Watts Creek on July 28th 2011. 1562 shocking seconds.

	Fish Length (cm)						
Fish #	Central mudminnow	Common shiner	Creek chub	Northern pike	pumpkinseed	White sucker	Yellow perch
1	6	11.5	14.5	10	6	8	7
2	6	12	14.5	17		13	14
3	7	12.5	14	17		30	
4	5	11	11.5	15		5	
5	9	13	4	14.5		15	
6	9	13	14	14		16	
7	5		14			30	
8	5		14			15	
9	5		15.5			13.5	
10	5		17.5			14	
11	9		17.5			14	
12	10		15			13	
13	5					14	
14	6					15	
15	4					15	
16	5					15	
17						15	
18						17.5	
19						14	
20						15	
21						13.5	
22						15	
23						13	
24						15	
25						15	
26						15.5	
27						15.5	
28						13.5	
29						16	
30						13	
31						16	
32						12.5	
33						18.5	
34						15	
35						16	

36	14
37	14
38	17
39	16
40	16
41	15
42	14.5
43	15
44	15
45	15
46	18.5
47	18
48	13.5

Raw data for species captured species captured at Site 2, the altered branch upstream of the main channel in Watts Creek on July 28th 2011. 1000 shocking seconds.

	Fish Length (cm)							
Fish #	Banded killifish	Blackchin shiner	Brook stickleback	Central mudminnow	Creek chub	Northern pike	Pumpkinseed	White sucker
1	6	3.5	4.5	5	15.5	20	12	15.5
2	6		4.5	3	11.5			15
3	7			3	12			14
4				2	14			13.5
5				2	11			14.5
6				3	12			4
7				4	15			2
8				3	13			4
9				7	13.5			14.5
10				9	11.5			14
11				8.5	12.5			16
12				9	11.5			15
13				3	11			14.5
14				5	12			13
15				9	11			14
16				8	9.5			14.5
17				7	11.5			6
18				6	12			14.5
19				6	12.5			15.5
20				5	11			14.5
21				10.5	11			16
22				11.5	16.5			17
23				9	14			16.5
24				8	10			15
25				7.5	14			15
26				5.5	13			12
27				4	11.5			13.5
28				10	11			13
29				8.5	11			14.5
30				9	13			11
31				9	13			15.5
32								13.5
33								14.5
34								14
35								12.5
36								16.5
37								14.5

38	13.5
39	14.5
40	14.5
41	14

Raw data for species captured species captured at Site 2B, the altered branch upstream of the main channel in Watts Creek on August 9th 2011. 339 shocking seconds.

	Fish Length (cm)			
Fish #	Banded killifish	Central mudminnow	Redside dace	White sucker
1	7	12	10	8
2	8	9		
3		7		
4		10		
5		8		
6		5		
7		5		
8		10		
9		12		
10		4		
11		12		
12		10		
13		10		
14		12		
15		10		
16		9		
17		8		
18		7		
19		10		
20		3		
21		5		
22		8		
23		8		
24		8		
25		8		
26		8		
27		9		
28		10		
29		11		
30		10		
31		13		
32		14		
33		7		
34		7		
35		7		
36		8		
37		8		

38	8
39	10
40	12
41	8
42	12
43	7
44	8
45	10
46	14
47	7
48	10
49	9
50	9
51	9
52	10
53	3
54	2
55	3
56	3
57	3
58	3
59	3
60	3
61	3
62	3
63	3
64	3
65	3
66	3

Raw data for species captured species captured at Site 3, the more natural branch upstream of the main channel in Watts Creek on July 28th 2011. 500 shocking seconds.

	Fish Length (cm)			
Fish #	Blackchin shiner	Creek chub	Longnose dace	White sucker
1	4	14	12.5	15.5
2	4	15.5	9	22
3	4	12	8	14
4	4	13.5	5	18.5
5	4	15	9.5	16
6	4	8.5	11	14
7	4	14.5	8.5	14
8	4	16		14
9		14		14.5
10		16		21
11		11		14
12		15		14
13		12		14
14		14		14
15		11.5		14
16		8		9
17		12		9
18		9		9
19		10.5		9
20		14.5		9
21		11		
22		5		
23		13		
24		13		
25		13		
26		13		
27		13		
28		13		
29		13		
30		13		
31		13		
32		13		
33		9		
34		9		
35		9		
36		9		

37 9

Raw data for species captured species captured at Site 3B, the more natural branch upstream of the main channel in Watts Creek on August 9th 2011. 1227 shocking seconds.

	Fish Length (cm)			
Fish #	Brook stickleback	Creek chub	Longnose dace	White sucker
1	5	6	7	13
2		6	5	4
3		6	6	4
4		6	8	6
5		6	4	15
6		8	8	10
7		8	6	16
8		8	3	15
9		8	2	11
10		8	8	8
11		3	6	9
12		13	5	3
13		12	4	3
14		12	8	20
15		11	12	19
16		9	10	17
17		5	11	18
18		5	10	16
19		4.5	8	15
20		4.5	9	15
21		4	10	16
22		3	10	17
23		12	9	15
24		15		15
25		12		17
26		11		12
27		11		15
28		11		12
29		10		12
30		12		15
31		13		17
32		12		12
33		7		13
34		3		12
35		3		10
36		3		17
37		3		17

38	3	17
39	3	12
40	3	17
41	3	10
42	16	15
43	10	11
44	11	15
45	15	17
46	3	15
47	3	17
48	3	17
49	3	17
50	3	13
51	3	13
52	3	17
53	3	11
54	3	12
55	3	12
56	3	12
57	8	13
58	8	14
59	7	14
60	15	14
61	16	12
62	12	14
63	20	15
64	17	5
65	15	5
66	17	6
67	13	15
68	12	4
69	11	5
70	12	5
71	15	5
72	15	5
73	12	4
74	12	15
75	16	
76	12	
77	3	
78	19	
79	15	
80	4	

81	10
82	8
83	7
84	16
85	17
86	17
87	18
88	11
89	15
90	16
91	15
92	19
93	17
94	14
95	13
96	13
97	11
98	13
99	13
100	13
101	16
102	9
103	12
104	9
105	8
106	6
107	6
108	13
109	5
110	9
111	5
112	5
113	5
114	8
115	16
116	10
117	5
118	5
119	5
120	5
121	5
122	5
123	5

124	5
125	5
126	5
127	4
128	5
129	5
130	10
131	11
132	12
133	14
134	10
135	12
136	10
137	10
138	11
139	8
140	11
141	6
142	5
143	5