An Assessment of the Warmwater Fish Community in Lake St. Clair (Thurston County) June 2000

by

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Abstract

Lake St. Clair was surveyed from June 12-14, 2000. Multiple gear types (electrofishing, gill, and fyke netting) were used to maximize the number, size, and types of fish sampled during the survey. Sampling gears were fished in relatively equal proportions to one another to reduce any gear induced bias in the data. Total effort included 15 electrofishing sections, 8 gill net nights, and 6 fyke net nights. Largemouth bass and rainbow trout were the most abundant species sampled both numerically (57.0 and 23.1%, respectively) and in terms of biomass (35.0 and 21.0%, respectively). Other species sampled, in order from highest to lowest abundance, include rock bass, bluegill, cutthroat, black crappie, bullhead, pumpkinseed, and coho. Presently, the warmwater fish community in Lake St. Clair is fair. Abundances of stock size (minimum length of recreational value) warmwater fish (primarily largemouth bass) is high, however few quality size (size anglers like to catch) and larger fish exist in Lake St. Clair (except yellow perch). However, actual abundances of quality size and larger warmwater fish (primarily largemouth bass) may be underestimated due to environmental conditions (low conductivity and lake morphometry) effecting sampling. Management recommendations call for additional investigations to be conducted on Lake St. Clair. Additional investigations include a population estimate on selected warmwater fish and a creel survey.

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Introduction

Lake St. Clair (Thurston County) lies within a highly developed residential community east of Lacey. Approximately 220 near-shore homes reside around the lake. Further, about 55-65% of the land surrounding Lake St. Clair is privately owned (Bortleson et al., 1976). Near-shore residents still rely on the lake as their domestic water supply. Similar to other Olympia area lakes (i.e., Long, Scott, and Lawrence), Lake St. Clair has a homeowners group (Lake St. Clair Organization) that monitors water quality. There are two public access sites on Lake St. Clair. Both sites are owned by the Washington Department of Fish and Wildlife (WDFW) and located across from one another off Rehklau Road.

Recreational use at Lake St. Clair is high. Olympia and outlying area residents use Lake St. Clair for boating, fishing, and swimming. The WDFW manages Lake St. Clair as a mixed species fishery. Annually, the WDFW stocks rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarkii*), and kokanee (*Oncorhynchus nerka*). Warmwater fish available to anglers include bass and panfish. Recreational boating, in excess of 5 mph, is restricted to the south arm of Lake St. Clair during the hours from 11:00 am until sunset.

Study Area

Lake St. Clair is divided into two arms (north and south) that, collectively, covers 268 surface acres (Figure 1). Both arms are deep with maximum depths of 21.3 and 33.5 meters for the north and south arms, respectively. The shoreline development value for the north arm is 4.0 which describes this portion of Lake St. Clair as highly irregular in shape with several shoreline irregularities. Conversely though, the shoreline development value for the south arm is 2.2 which describes this portion of lake as oblong in shape with few shoreline irregularities. Lake St. Clair is fed by Eaton Creek, but is not drained by any outlet.

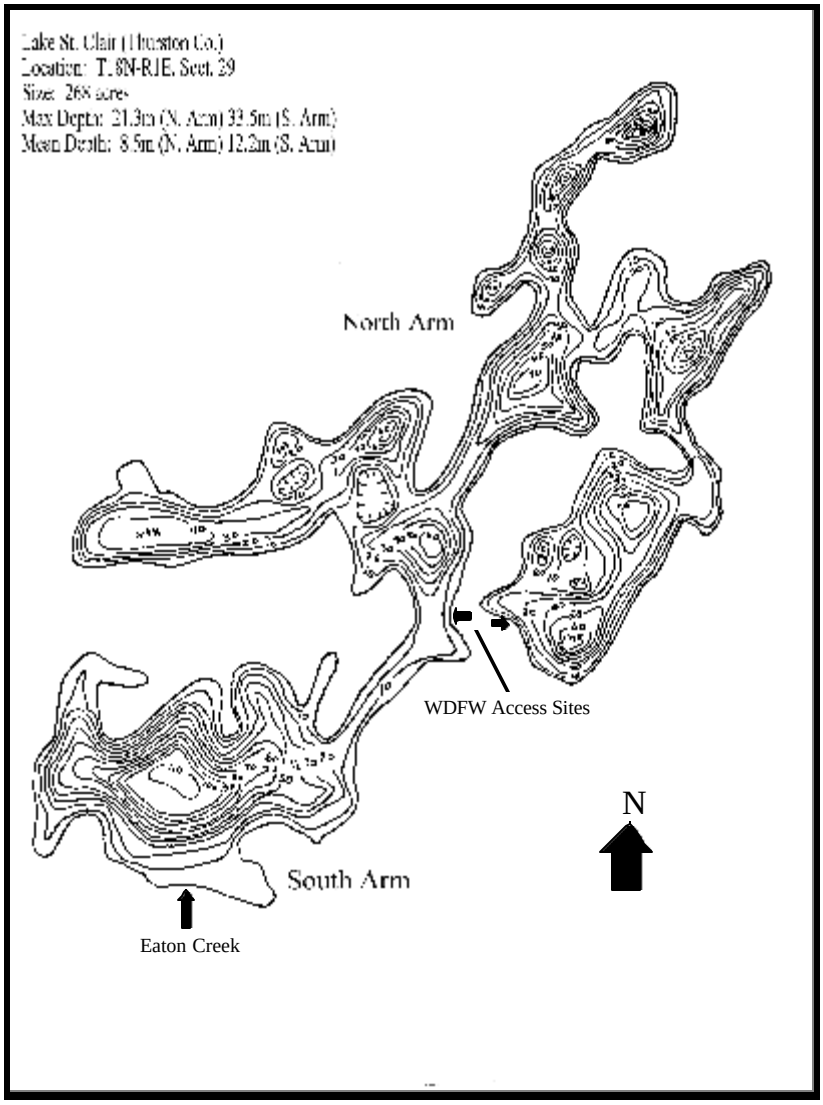

Figure 1. Map of Lake St. Clair, Thurston County.

Aquatic vegetation is the most abundant habitat type in the lake covering between 30-40% of the surface area. Plant species present in Lake St. Clair include common bladderwort (*Ultricularia vulgaris*), large leaf pondweed (*Potamogeton amplifolius*), common pondweed (*Elodea canadensis*), common water-nymph (*Najas quadalupensis*), northern water milfoil (*Myriophyllum sibiricum*), robbins pondweed (*Potamogeton robbinsii*), stonewort (*Char spp*)., common duckweed (*Lemna minor*), curly leaf pondweed (*Potamogeton crispus*), fragrant water lily (*Nymphaea odorata*), brittlewort (*Nitella spp*.), berchtolds pondweed (*Potamogeton berchtoldii*), yellow water lily (*Nuphar polysepalum*), tapegrass (*Vallisneria americana*), and leafy pondweed (*Potamogeton foliosus*). Other habitat types in Lake St. Clair include submerged timber and residential docks.

Methods and Materials

Data Collection

The warmwater fish community in Lake St Clair was surveyed from June 12-14, 2000. Fish were sampled using electrofishing, gill and fyke netting techniques. Electrofishing utilized a Smith-Root SR-16 boat with a 5.0 GPP pulsator unit. While electrofishing, pulsed DC current at 120 cycles per second was used at 3-6 amps power. Experimental gill nets measured 45.7 and 2.4 meters in length and width, respectively, and were constructed of variable-size (13, 19, 25, and 51 mm stretch) monofilament mesh. Fyke nets consisted of a series of 5-1.2 meter hoops and a 2.4 meter cod-end covered with 6 millimeter nylon mesh. Attached to the mouth of the first hoop is a 30.5 meter lead net and two 7.6 meter wings.

Sampling gears were fished in relatively equal proportions to one another to reduce any gear induced bias in the data. An equal proportion of sampling effort of gear types for warmwater surveys entails 1800 seconds of electrofishing, 2 gill net, and fyke net nights (24 hours) (Fletcher et al. 1993). Sampling occurred during evening hours to maximize the number, size, and type of fish sampled. Sampling sections are designated by dividing the lake shoreline into 400 meter sections. Sampling sections are then chosen randomly (for each gear type) using a random numbers generator in a spreadsheet program or a calculator. Electrofishing occurred along the shallows within a sampling section for a total of 600 seconds or until the end of the section was reached, whichever came first. Gill nets were set perpendicular to the shoreline (within a sampling section) for approximately 24 hours or 1 net night. Fyke nets were set in a similar fashion, except the two wings connected to the first hoop were pulled back towards shore at a 45E angle from the lead net. Additionally, fyke nets were set so that the top of each hoop was no more than 1 meter below the water surface. At times, shortening the lead was necessary to meet the appropriate depth requirement. Total sampling effort for the Lake St. Clair survey was 15 electrofishing sections, 8 gill net sets, and 6 fyke net sets.

All fish sampled, except sculpin (family Cottidae), were identified to species. Each fish was measured to the nearest millimeter and weighed to the nearest gram. However, if a sample contained several hundred, or more, similar sized fish (i.e., young of the year or juvenile fish) a sub-sample (n = 100) was measured and weighed and rest counted. Scale samples were taken from five fish per 1 centimeter size class (i.e., 20-29 cm, 30-39 cm, etc.) per species.

Water quality data was collected on June 12, 2000 at noon from the deepest location on the lake. Water quality parameters were measured using a Hydrolab® probe and digital recorder at 1 meter intervals throughout the water column. Water quality parameters collected include dissolved oxygen (mg/l), temperature (EC), pH, turbidity (NTU), and conductivity (Fs/cm).

Data Analysis

Species composition of fish captured during the survey was expressed by their contribution to the sample in terms of biomass and by number. Species composition by weight (biomass) is calculated by dividing the total weight of a fish species by the total weight of the sample. Similarly, species composition by number was determined by dividing the total number of a fish species by the total number in the sample. Only fish determined to be age 1 and older were included in species composition analysis.

Catch per unit of effort (CPUE) was calculated for each species and gear type to describe their relative abundance. Electrofishing CPUE (fish per hour), for each sample section, was determined by dividing the sample size of a species (stock size and larger) by the total electrofishing time (600 seconds). Gill and fyke net CPUE was determined similarly, except the sample size of a species (stock size and larger) was divided by a net unit (~ 24 hours) and expressed as the number of fish per net night. An average CPUE, calculated from each section, was determined for all species and gear types. Average CPUE's are accompanied by 80% confidence intervals (Gustafson 1998).

Size structure of each species was described using length frequency histograms. Length frequency histograms are constructed using individuals that are age one and older and calculated as the number of species in a given size class divided by the total of individuals of that species sampled.

Stock density indices (i.e., proportional and relative stock density) were calculated for warmwater gamefish species sampled during the survey. Proportional and relative stock density indices (PSD and RSD) were calculated for each warmwater gamefish species and gear type according to Anderson and Neuman (1996). PSD and RSD calculations are accompanied by an 80% confidence interval.

The condition or health of each species was evaluated using relative weights. Relative weights (Wr) were calculated for each species according to Anderson and Neuman (1996). Wr formulas and minimum lengths for several species are listed in Anderson and Neuman (1996).

Age and growth of warmwater fishes were evaluated according to DeVries and Frie (1996), where age is determined by counting the number of annuli on a hard part and growth is determined by back calculation. Back calculated length at age was determined by using both the direct proportion and the Fraser-Lee modification of the direct proportion methods. Back calculated length at age for each warmwater species was then compared to a state average.

Results

Water Quality

Water quality parameters were collected from both the north and south arms of Lake St. Clair. Both arms showed distinct thermal stratification, but at different depths (Table 1). Water quality in the epilimnion are within optimal limits for warmwater fish (Piper et al. 1992). However, water quality in the hypolimnion is less suitable for warmwater fish. The hypolimnion in both arms becomes anoxic at approximately 17 meters. Conductivity readings were slightly below optimal levels (100-400 Fs/cm) for electrofishing efficiency according to Willis (1998).

Table 1a. Water quality measurements taken from Lake St. Clair (N. Arm) June 12, 2000.

Water Quality (North Arm)					
Depth (m)	**Temp (C)**	**pH**	**Do2 (mg/l)**	**Turb. (NTU)**	**Cond. (Fs/cm)**
Surface	17.9	8.4	9.9	10.2	87.6
1	17.9	8.3	9.6	9.1	87.7
2	17.8	8.2	9.4	8.5	87.4
3	17.3	8.4	9.6	17.8	88.0
4	13.5	7.4	4.6	15.3	83.1
5	9.5	6.8	3.2	8.9	79.9
6	8.0	6.6	3.4	8.3	78.8
7	7.2	6.6	3.2	8.2	79.5
8	6.9	6.5	4.1	8.1	78.9
9	6.4	6.5	4.4	8.2	79.3
10	6.0	6.4	4.2	8.9	79.6
11	5.8	6.4	4.4	8.0	79.7
12	5.7	6.4	4.4	10.4	79.1
13	5.5	6.4	4.4	8.5	79.2
14	5.5	6.3	3.6	8.7	79.7
15	5.4	6.3	3.2	8.6	79.9
16	5.4	6.2	2.3	9.4	80.5
17	5.3	6.2	0.7	10.7	82.4
18	5.3	6.2	0.3	12.0	84.8
19	5.3	6.2	0.2	13.9	91.0
20	5.3	6.3	0.2	9.6	105.6
21	5.3	6.6	0.1	11.9	145.3

Table 1b. Water quality measurements taken from Lake St. Clair (S. Arm) June 12, 2000.

Water Quality (South Arm)					
Depth (m)	**Temp (C)**	**pH**	**Do2 (mg/l)**	**Turb. (NTU)**	**Cond. (Fs/cm)**
Surface	17.2	9.1	12.9	20.3	96.4
1	16.9	9.1	13.3	19.9	97.0
2	15.1	7.5	7.6	29.7	98.1
3	12.4	6.8	6.5	13.2	96.4
4	10.4	6.4	2.4	9.4	88.5
5	8.0	6.4	4.6	8.7	83.7
6	6.8	6.4	4.2	9.2	82.5
7	6.3	6.4	4.2	9.3	82.1
8	5.9	6.4	3.7	9.8	82.1
9	5.6	6.3	3.8	9.9	82.1
10	5.4	6.3	3.7	9.9	82.1
11	5.3	6.3	3.7	9.6	82.4
12	5.3	6.3	3.8	9.6	82.2
13	5.3	6.3	3.3	9.7	82.6
14	5.2	6.3	3.3	9.5	82.5
15	5.2	6.3	3.1	9.6	82.4
16	5.1	6.2	2.9	9.7	82.8
17	5.1	6.2	2.1	10.4	83.2
18	5.1	6.2	1.5	11.3	83.6
19	5.1	6.2	1.0	11.6	83.9
20	5.1	6.1	1.1	11.6	83.9
21	5.1	6.1	0.6	12.6	83.9
22	5.1	6.1	0.4	12.8	84.5
23	5.1	6.1	0.2	13.5	84.8
24	5.1	6.1	0.2	14.7	84.8
25	5.1	6.1	0.3	16.7	86.1
26	5.1	6.1	0.2	17.8	86.4
27	5.1	6.1	0.1	24.2	87.7
28	5.1	6.1	0.1	32.5	89.3
29	5.2	6.5	0.1	12.1	268.4
30	5.3	6.9	0.1	18.4	425.0

Species Composition and Relative Abundance

A total of 654 fish, representing 10 species, were sampled from Lake St. Clair (Table 2). Fishes sampled from Lake St. Clair include brown bullhead (*Ictalurus nebulosus*), black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), kokanee (*Oncorhynchus nerka*), cutthroat trout, largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), rainbow trout, rock bass (*Ambloplites rupestris*), and yellow perch (*Perca flavescens*). Of those, largemouth bass and

rainbow trout are the most abundant, numerically, at 57.0% and 23.1%, respectively. Similarly, largemouth bass and rainbow trout were the most abundant in terms of biomass at 35.0% and 21.0%, respectively.

Table 2. Species composition by weight and number for fish sampled from Lake St. Clair, June 2000.

	Species Composition					
	by Weight		by Number		Size Range (mm TL)	
Species	**(kg)**	**(% w)**	**(#)**	**(%n)**	**Min**	**Max**
Largemouth bass	54.4	57.0	231	35.0	55	557
Rainbow trout	22.1	23.1	139	21.0	45	364
Yellow perch	7.3	7.7	82	13.0	28	244
Rock bass	6.3	6.6	114	17.0	55	222
Bluegill	3.7	3.8	72	11.0	45	213
Cutthroat trout	0.9	0.9	10	2.0	155	255
Black crappie	0.4	0.4	3	0.5	192	212
Brown bullhead	0.4	0.4	1	0.2	298	298
Pumpkinseed	0.0	0.0	1	0.2	112	112
Kokanee	0.0	0.0	1	0.2	120	120

Electrofishing proved to be the best method for sampling warmwater fish in Lake St. Clair. While electrofishing, largemouth bass and rock bass were encountered the most frequently with CPUE's of 67 and 32 fish per hour, respectively (Table 3). Gill nets sampled fewer fish than did electrofishing. Gill nets were most effective at capturing rainbow trout and yellow perch with CPUE's of 6 and 4 fish per net night, respectively. Fyke nets were ineffective at sampling warmwater fish.

Table 3. Average catch per unit effort for fish sampled from Lake St. Clair, June 2000.

	Electrofishing			Gill Netting			Fyke Netting		
Species	**(#/hour)**	**80% CI**	**Sample Sites**	**#/net night**	**80% CI**	**# net nights**	**#/net night**	**80% CI**	**# net nights**
Largemouth	67.0	14.0	15	1.0	1.0	8	0	0	6
bass	32.0	6.0	15	0.3	0.2	8	1	1	6
Rock bass	27.0	6.0	15	0.0	0.0	8	0	0	6
Bluegill	16.0	6.0	15	6.0	4.0	8	0	0	6
Rainbow trout	11.0	3.0	15	4.0	3.0	8	0	0	6
Yellow perch	1.0	1.0	15	0.1	0.2	8	0	0	6
Black crappie	0.4	0.5	15	0.0	0.0	8	0	0	6
Pumpkinseed	0.4	0.5	15	0.1	1.0	8	0	0	6
Cutthroat	0.4	0.5	15	0.0	0.0	8	0	0	6
Brown bullhead	0.0	0.0	15	0.1	0.2	8	0	0	6
Kokanee									

Summary by Species

Largemouth Bass

Largemouth bass size ranged from 55-557 mm total length (Figure 2). Size structure is fair with most individuals residing in a strong year class of stock size fish (200-300 mm). Recruitment beyond stock size appears limited. Largemouth bass PSD is 9 (± 3) which indicates a low density of quality size ($ 300 mm) and larger fish and that the predator population is out of balance with the prey population.

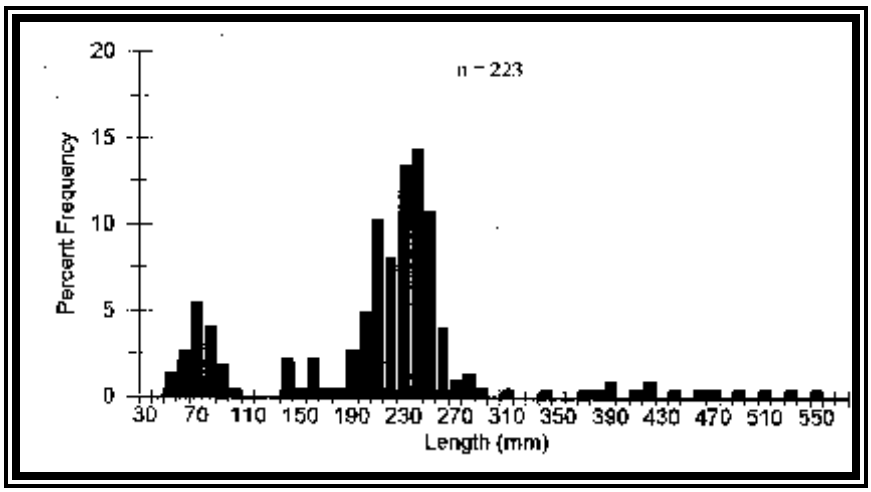

Figure 2. Elecrofishing length frequency distribution of largemouth bass from Lake St. Clair, June 2000.

Largemouth bass condition is good with most individuals above, at, or near the national average (Figure 3). Largemouth bass growth is above the state average (Table 4). Older largemouth bass ($ 7 years) were weakly represented in our sample.

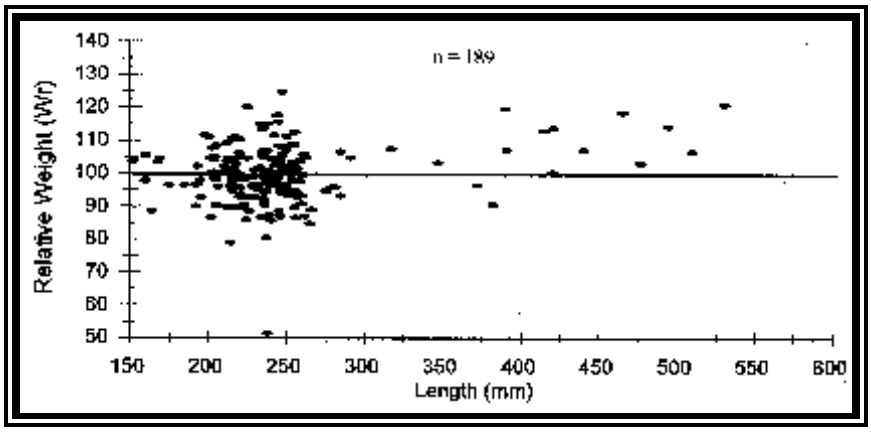

Figure 3. Condition (Wr), as compared to the national average (100), of largemouth bass from Lake St. Clair, June 2000.

Table 4. Back calculated length at age of largemouth bass from Lake St. Clair, June 2000.

Year Class	n	Mean Length at Age (mm) I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1999	14	64										
1998	18	56	157									
1997	13	65	149	204								
1996	26	52	142	202	249							
1995	6	51	138	220	260	292						
1994	8	59	179	248	321	370	404					
1993	1	63	185	256	319	366	437	465				
1992	1	58	160	269	331	376	411	445	477			
1991	1	71	141	225	265	362	431	474	497	510		
1990	0	0	0	0	0	0	0	0	0	0	0	
1989	1	64	167	262	352	410	437	479	496	521	541	557
Average		60	152	214	270	346	412	466	490	515	541	557
State Average		60	146	222	261	289	319	368	396	440	485	472
Fraser-Lee Avg.		71	159	219	271	348	413	467	491	516	542	557

Rock Bass

Rock bass size ranged from 55-222 mm total length (Figure 4). Size structure is good with several size groups represented in the sample. Rock bass PSD is 15 (± 5) which indicates a low number of quality size ($ 150 mm) and larger fish exist in Lake St. Clair.

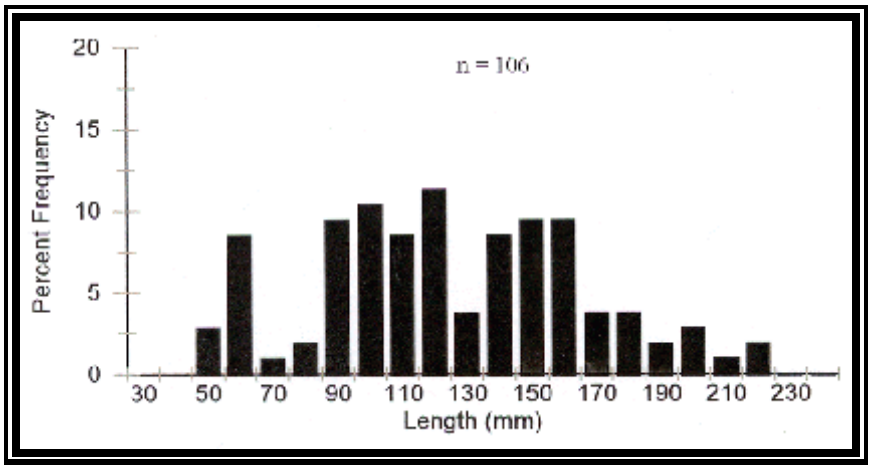

Figure 4. Electrofishing length frequency distribution of rock bass from Lake St. Clair, June 2000.

Rock bass condition is poor with nearly all individuals below the national average (Figure 5). However, rock bass growth is above the state average (Table 5). No fish from the 1999 year class were sampled during the survey.

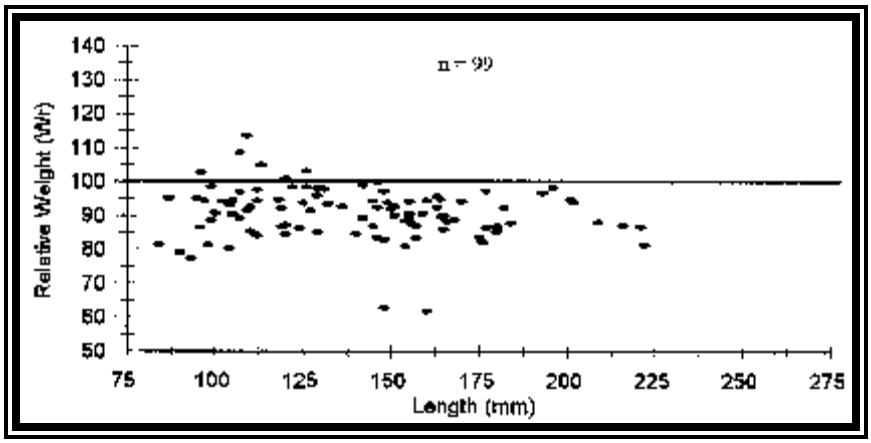

Figure 5. Condition (Wr), as compared to the national average (100), or rock bass from Lake St. Clair, June 2000.

Table 5. Back calculated length at age of rock bass from Lake St. Clair, June 2000.

		Mean Length at Age (mm)						
Year Class	**n**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**
1999	0	0						
1998	24	30	84					
1997	16	33	80	140				
1996	10	25	74	136	174			
1995	3	35	96	166	196	215		
1994	2	26	72	129	166	194	209	
1993	1	24	62	112	150	170	186	196
Average		30	81	140	176	200	201	196
State Average		29	70	118	152	178	193	203
Fraser-Lee Average		49	91	144	178	202	202	196

Yellow Perch

Yellow perch size ranged from 28-244 mm total length (Figure 6). However, size structure is poor with most individuals residing in two distinct year classes (age 1 and 3 fish). Recruitment beyond both year classes appear limited. Yellow perch electrofishing and gill net PSD's are 57 (± 12) and 68 (± 11), respectively, which indicates a high number of quality size and larger fish.

Yellow perch condition is good with most individuals above, at, or near the national average (Figure 7). Yellow perch growth is above the state average (Table 6). Older yellow perch ($ 4 years) were weakly represented in our sample.

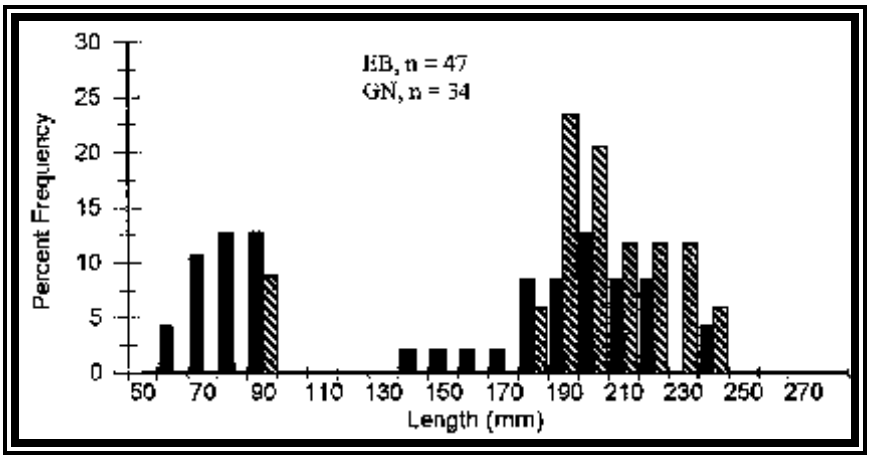

Figure 6. Electrofishing (dark bars) and gill netting (stripped bars) length frequency of yellow perch from Lake St. Clair, June 2000.

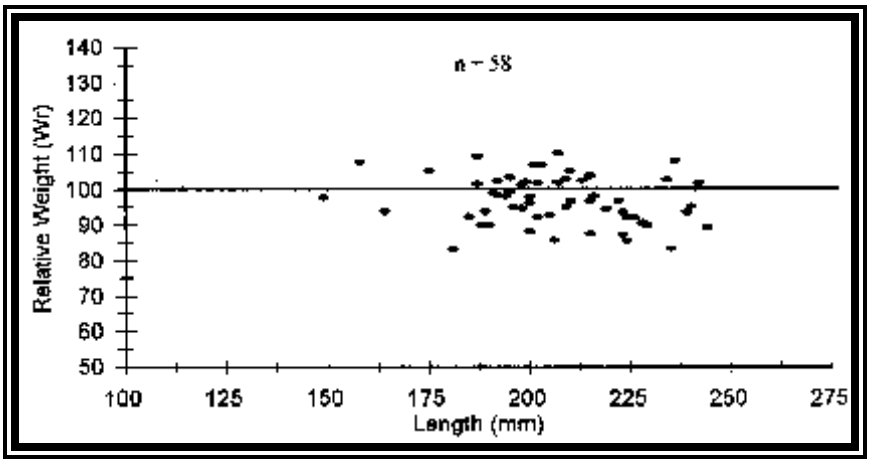

Figure 7. Condition (Wr), as compared to the national average (100), of yellow perch from Lake St. Clair, June 2000.

Table 6. Back calculated length at age of yellow perch from Lake St. Clair, June 2000.

Year Class	n	Mean Length at Age (mm) I	II	III	IV	V	VI
1999	14	67					
1998	3	49	138				
1997	25	53	127	194			
1996	2	52	132	185	221		
1995	4	45	119	184	216	240	
1994	1	47	125	188	220	233	242
Average		56	127	192	218	239	242
State Average		60	120	152	193	206	197
Fraser-Lee Average		74	139	195	221	239	242

Bluegill

Bluegill size ranged from 45-213 mm total length (Figure 8). Size structure is good with several size groups represented in the sample. Bluegill PSD is 25 (± 7) which indicates a fair number of quality size (150-200 mm) and larger fish exist in Lake St. Clair.

Bluegill condition is excellent with most individuals at or above the national average (Figure 9). Bluegill growth starts slow, but increases at age 3 (Table 7). Bluegill age 3 and older are above the state average for growth. No fish from the 1999 year class were sampled during the survey.

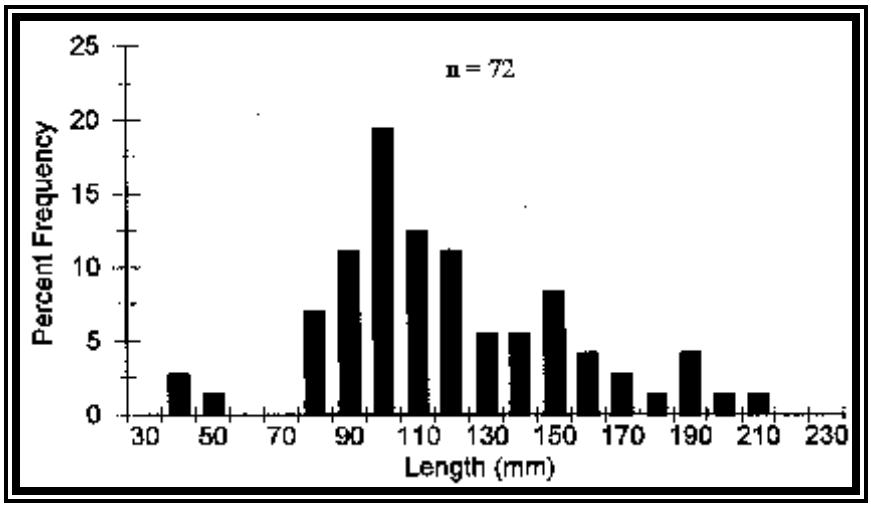

Figure 8. Electrofishing length frequency distribution of bluegill from Lake St. Clair, June 2000.

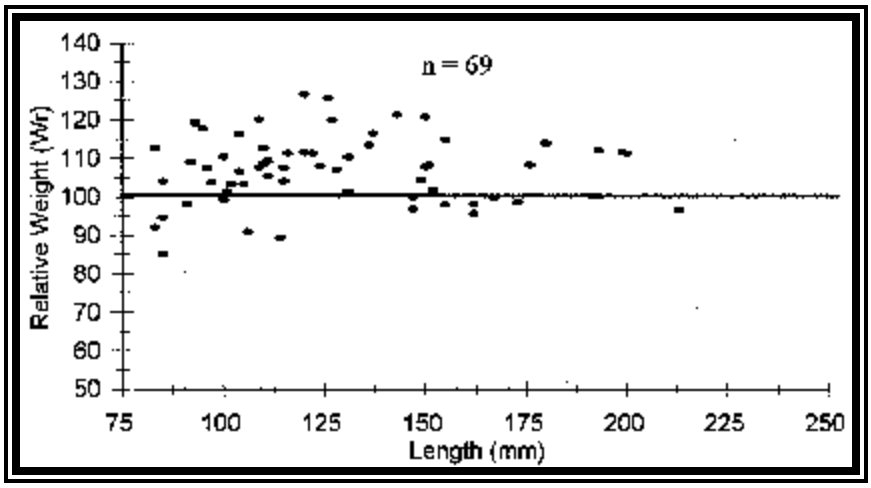

Figure 9. Condition (Wr), as compared to the national average (100), of bluegill from Lake St. Clair, June 2000.

Table 7. Back calculated length at age of bluegill from Lake St. Clair, June 2000.

Year Class	n	Mean Length at Age (mm) I	II	III	IV	V	VI
1999	0	0					
1998	29	18	75				
1997	15	19	65	145			
1996	4	17	77	150	187		
1995	0	0	0	0	0	0	
1994	1	14	42	105	165	196	209
Average		19	71	144	183	196	209
State Average		37	97	132	148	170	201
Fraser-Lee Average		36	80	147	184	197	209

Black Crappie

Too few black crappie (n = 3) were sampled to warrant any analysis. Of those fish captured, their average length and weight is 205 mm and 139 grams, respectively. Black crappie condition is high with Wr's averaging 105. All three black crappie sampled were age 3 fish with above state average growth.

Pumpkinseed

Too few pumpkinseed (n = 1) were sampled to warrant any analysis. The singular pumpkinseed sampled measured 112 mm total length and has a Wr of 120. This fish was aged as a two year old and exhibited growth faster than the state average.

Brown Bullhead

Too few brown bullhead (n = 1) were sampled to warrant any analysis. The singular brown bullhead sampled measured 298 mm total length and has a Wr of 105. Age and growth analysis was not performed for this brown bullhead.

Rainbow Trout

Rainbow trout size ranged from 45-364 mm total length (Figure 10). Two distinct size groups of rainbow trout are represented in the sample. The first group are fish from the 2000 fry plant and average 80 mm in total length. The second group are fish from the 1999 fry plant that have entered into the fishery. Rainbow trout PSD is 0 which indicates that no quality size (≥ 450 mm) or larger rainbow trout (carry-overs) exist in Lake St. Clair.

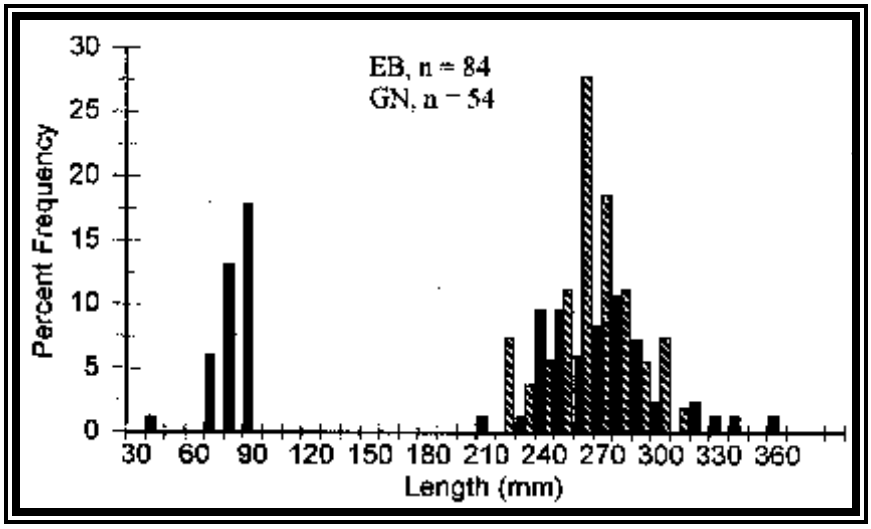

Figure 10. Electrofishing (dark bars) and gill netting (stripped bars) length frequency distribution of rainbow trout from Lake St. Clair, June 2000.

Rainbow trout condition is poor with nearly all individuals below the national average (Figure 11). Age and growth analysis were not performed for rainbow trout.

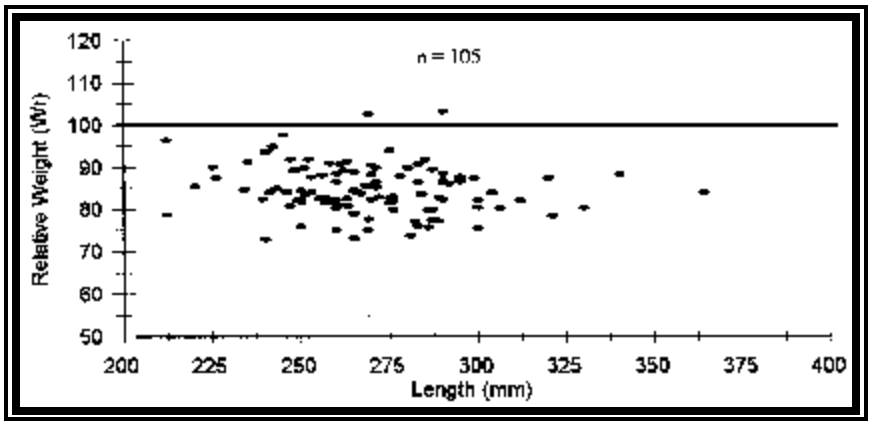

Figure 11. Condition (Wr) as compared to the national average (100), or rainbow trout from Lake St. Clair, June 2000.

Cutthroat Trout

Too few (n = 10) cutthroat trout were sampled to warrant any analysis. Of those fish captured, their average length and weight is 207 mm and 87 grams, respectively. Cutthroat trout condition is poor with Wr's averaging 90. Age and growth analysis was not performed for cutthroat trout.

Kokanee

Too few (n = 1) kokanee were sampled to warrant any analysis. The singular kokanee sampled measured 120 mm total length. Condition, age, and growth analysis were not performed for kokanee. This fish is most likely a hatchery plant from last year.

Discussion and Conclusion

Overall, the warmwater fish community in Lake St. Clair is fair. Abundances of stock size (minimum length of recreational value) warmwater fish is high, however few quality size (size anglers like to catch) and larger fish exist in Lake St. Clair (except yellow perch). The actual abundance of quality size and larger warmwater (primarily largemouth bass) fish may be underestimated due to environmental conditions effecting sampling. Environmental conditions effecting sampling include low conductivity and lake morphometry (i.e., steep shorelines). Low conductivity (< 100 Fs/cm) reduces the efficiency in which electrical current is transferred from the water into a fishes body (Reynolds, 1996). Peak electrofishing effectiveness, where electrical current transfer from the water to a fishes body is optimal, occurs when water conductivity is between 100-400 Fs/cm (Willis, 1998). Average conductivity in the littoral zone at Lake St. Clair (92.4 Fs/cm) was below optimal levels. Steep shorelines reduce the amount of littoral habitat available to sample and allows for quick escape of fish to deeper water where the electrical field is weak or nonexistent (Reynolds, 1996). While electrofishing, dip-netters observed several larger warmwater fish (primarily largemouth bass) escaping the electrical field into deeper water. Further, steep shorelines may have reduced the sampling efficiency of our gill and fyke nets. Due to the severe drop-offs around most the lake and the declining water quality at depth, one quarter to a third of the mesh panels may have been fishing in water too anoxic for fish to live. Steep shorelines reduced the amount of littoral shoreline where fyke nets are most effective at sampling fish.

Few warmwater investigations have been conducted on Lake St. Clair in comparison to other Olympia area lakes (i.e., Black and Long lakes). Although considered fair, the warmwater fish community in Lake St. Clair is considerably better than Black and Long lakes (i.e., size structure and higher densities of stock size and larger fish) where most of the warmwater investigations have occurred (Jackson, 1999 & 2000). Further investigation is warranted at Lake St. Clair to describe the warmwater fish community. Additional investigations at Lake St. Clair may include a creel survey and population estimated on selected warmwater fish. A creel survey would determine total effort of anglers fishing for warmwater fish and harvest of these species. A population estimate would provide information on densities, specifically stock size and larger, of warmwater fish.

Management Recommendations

Resurvey Lake St. Clair in 2-3 Years

Continue to monitor the warmwater fish community during the spring. Manipulating the electrofishing boat to account for low conductivity conditions at Lake St. Clair should be considered as well as floating gill nets to keep the mesh panels out of anoxic waters. Due to the lack of littoral or shallow water habitat, fyke nets can be abandoned from the survey.

Warmwater Fish Population Estimate

During the spring conduct a population estimate on largemouth bass, bluegill, and rock bass. A population estimate would describe densities of warmwater fish of interest and could be compared to other warmwater lakes where density estimates have been made.

Conduct a Creel Survey

To assess total angler effort on Lake St. Clair and harvest of warmwater fish a creel survey should be conducted. The creel survey should start in early spring (April 1) and end in late fall (October 31). Additionally, exploitation rates could be obtained if warmwater fish (mainly largemouth bass, rock bass, and bluegill) are tagged with sport reward tags.

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