

**Summer Sport Fisheries at
Figure Eight and Sulphur Lakes,
Alberta, 2011**

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Summer Sport Fisheries at
Figure Eight and Sulphur Lakes, Alberta, 2011

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EXECUTIVE SUMMARY

Put-and-take or stocked fisheries are a popular management tool used by fisheries managers to create additional angling opportunities. In Alberta, stocked fisheries support roughly 25% of all angling pressure province-wide. A priority for Alberta Sustainable Resource Development is to assess the effectiveness of these fisheries by monitoring angler participation. In the summer of 2011, we conducted creel surveys on two of these stocked fisheries; Figure Eight and Sulphur lakes. The goal of these surveys was to collect information on angling effort, catch rate, sport fish yield, and population structure, to facilitate future decisions regarding regulations and stocking rates, to ensure angler participation within these fisheries is maintained or increased.

Based on 697 angler interviews, angler effort at Figure Eight Lake was 105.0 h/ha (95%CI = 89.8-120.9). The total yield of rainbow trout (*Oncorhynchus mykiss*) was 686.4 kg (95%CI = 573.7-809.5) or 17.6 kg/ha (95%CI = 14.7-20.8). The sampled population had a length distribution ranging from 175 to 520 mm total length (TL) (n = 84), with the majority of the fish between 350 to 500 mm TL. The mean lengths (\pm SE) for sport-harvest and test-angled fish were 414 ± 7 mm (n = 60) and 336 ± 14 mm (n = 24), respectively. Of all the rainbow trout harvested and test-angled during the survey, 2.4% (2 of 84) were of quality size (>50 cm).

Based on 397 angler interviews, angler effort at Sulphur Lake was 51.0 h/ha (95%CI = 42.2-60.2). The total yield of rainbow trout was 448.3 kg (95%CI = 368.5-535.4) or 8.5 kg/ha (95%CI = 7.0-10.1). The lengths of the fish sampled ranged from 275 to 527 mm TL (n = 155), with three strong length-classes at 350, 400, and 500 mm TL. The mean lengths (\pm SE) for sport-harvest and test-angled fish were 391 ± 8 mm TL (n = 68) and 355 ± 5 mm TL (n = 87), respectively. Of all the rainbow trout harvested and test-angled during the survey, 3.2% (5 of 155) were of quality size (>50 cm). Total yield of brook trout (*Salvelinus fontinalis*) was 145.3 kg (95%CI = 120.4-171.7) or 2.7 kg/ha (95%CI = 2.3-3.2). The sampled population had a length distribution ranging from 182 to 465 mm TL (n = 93), with three strong length-classes at 250, 350, and 400 mm TL. The mean length (\pm SE) of brook trout was 369 ± 4 mm TL (n = 42) for sport-harvested fish and 266 ± 10 mm TL (n = 51) for test-angled fish.

Key words: rainbow trout, brook trout, creel survey, Figure Eight Lake, Sulphur Lake.

ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

Put-and-take or stocked fisheries are a popular management tool used by fisheries managers to create additional angling opportunities. In Alberta, stocked fisheries support roughly 25% of all angling pressure province-wide. A priority for Alberta Sustainable Resource Development (ASRD) is to assess the effectiveness of these fisheries by monitoring angler participation. This report summarizes the results of creel surveys we conducted on two stocked fisheries, Figure Eight and Sulphur lakes, during the summer of 2011. We collected information on angling effort, catch rate, sport fish yield, and population structure to facilitate future decisions regarding regulations and stocking rates, to ensure angler participation within these fisheries is maintained or increased.

Figure Eight Lake was designated a stocked fishery in 1971 and is stocked with about 12,000 rainbow trout (*Oncorhynchus mykiss*) fingerlings by ASRD each spring. Historically, brown trout (*Salmo trutta*) were also stocked into Figure Eight Lake but this has not occurred since 2003. Sulphur Lake was designated a stocked fishery in 1959. The lake has been stocked with rainbow trout since 1960 and brook trout (*Salvelinus fontinalis*) since 1975. The two trout species are stocked in alternate years by ASRD, with 10,000 rainbow trout fingerlings and 6,000 brook trout fingerlings. Alberta Conservation Association (ACA) aerates each lake in the winter as part of a Lake Aeration Program to increase the survival of stocked fish. Both lakes are managed as quality rainbow trout fisheries (10% of fish >50 cm total length), with a five-fish of any size daily bag limit regulation and are open to angling year-round (Fisheries Management 2008).

2.0 STUDY AREA

2.1 Figure Eight Lake

Figure Eight Lake (56°17'N, 117°54'W) has a surface area of 39 ha, a maximum depth of 6.2 m, and a mean depth of 3.0 m (Government of Alberta 2011). It is located in the Peace River drainage, approximately 45 km west of Peace River, Alberta (Figure 1). The area surrounding the lake is designated as a Provincial Recreation Area. Figure Eight Lake can be accessed by Highway 737 on the southwest side of the lake. A campground and boat launch are located on the west side of the lake.

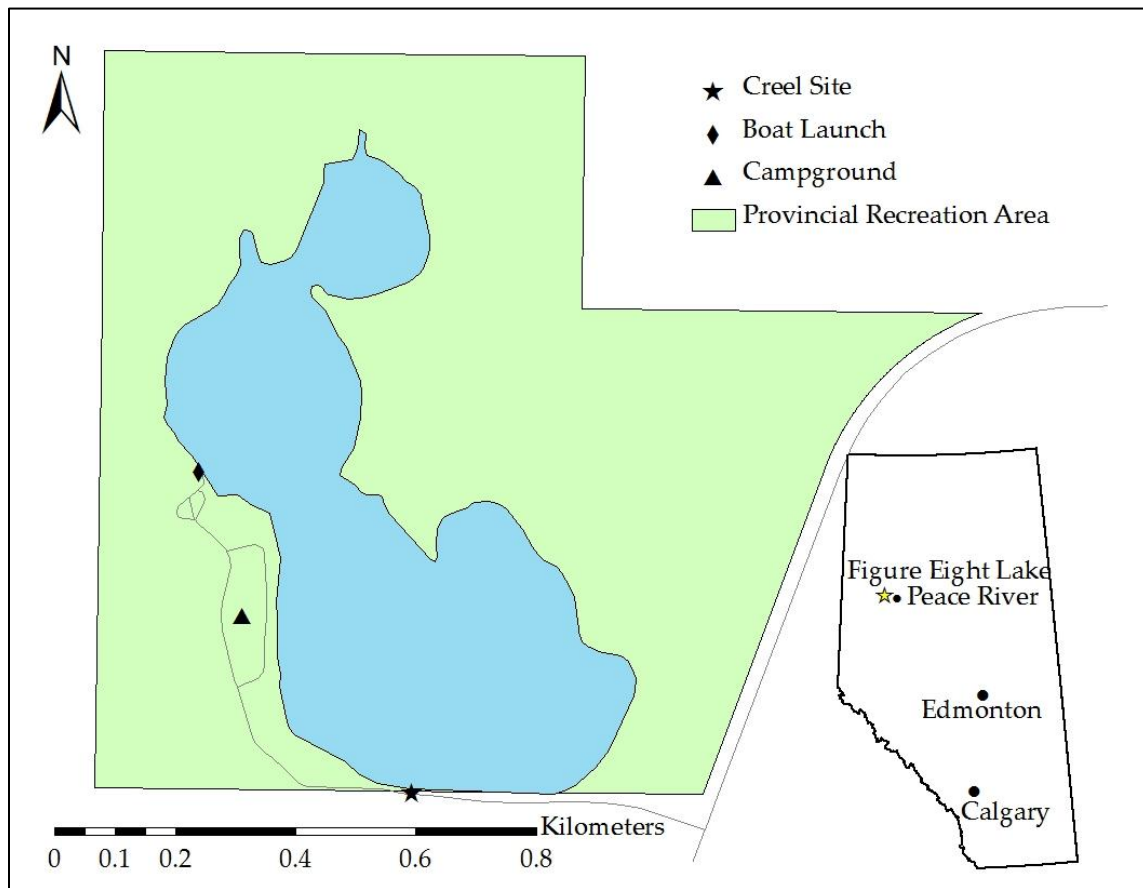


Figure 1. Map of Figure Eight Lake, Alberta showing the location of the creel site.

2.2 Sulphur Lake

Sulphur Lake (56°42'N, 118°18'W) has a surface area of 53 ha, a maximum depth of 7.3 m, and a mean depth of 3.3 m (Government of Alberta 2011). It is located in the Peace River drainage, approximately 120 km northwest of Peace River, Alberta (Figure 2). The area surrounding the lake is designated as a Provincial Recreation Area. Access to the lake is by Highway 35 and Township Road 874. A campground and boat launch are located on the east side of the lake.

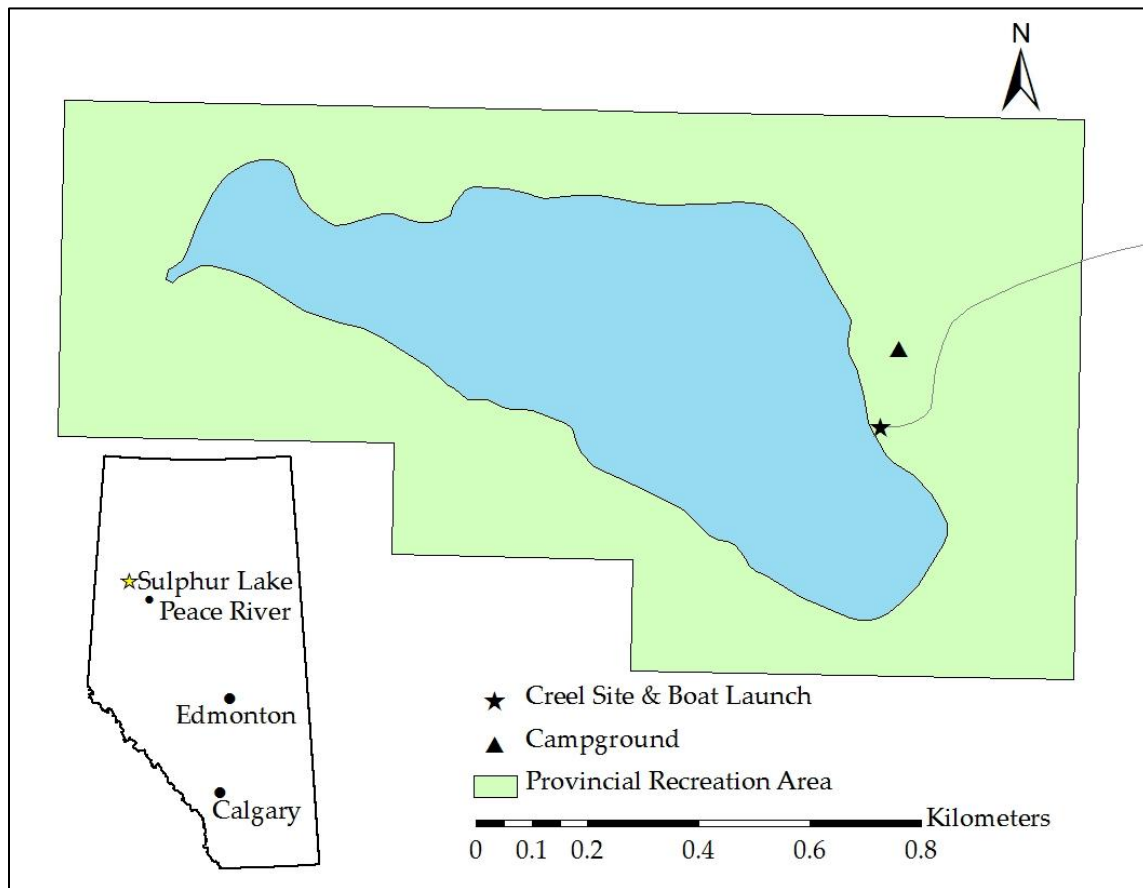


Figure 2. Map of Sulphur Lake, Alberta showing the location of the creel site.

3.0 MATERIALS AND METHODS

3.1 Angler Survey

We conducted a reduced-effort creel survey (Pollock et al. 1994) from a single access point on Figure Eight and Sulphur lakes from 20 May to 31 August 2011. The boat launch was the only suitable shore angling location on Sulphur Lake and thus served as the access point. However, Figure Eight Lake has numerous shore angling access points along the west side of the lake, so we situated at a vantage location on the southwestern shore to monitor all access points simultaneously. The survey was stratified into four temporal sampling units; weekday and weekend strata and morning (08:00-15:30) and evening (15:30-23:00) strata. Sunday evenings were classified as weekday evenings and Friday evenings as weekend evenings, because Friday evenings displayed angling effort more typical of weekend evenings (high) and Sunday evenings were more typical of weekday evenings (low). At each of the lakes, 57 (27%) of the possible 208 temporal sampling units were surveyed (Tables 1 and 2). We used data from sampled strata to calculate estimates of creel survey parameters for the strata that were not surveyed.

Table 1. Number of available sample units and the number of units sampled during the creel survey of Figure Eight Lake, 2011.

Strata	# Available	# Surveyed	% Surveyed
Weekday morning	71	18	25
Weekday evening	71	18	25
Weekend morning	33	11	33
Weekend evening	33	10	30

Table 2. Number of available sample units and the number of units sampled during the creel survey of Sulphur Lake, 2011.

Strata	# Available	# Surveyed	% Surveyed
Weekday morning	71	13	18
Weekday evening	71	12	17
Weekend morning	33	16	48
Weekend evening	33	16	48

We asked anglers a series of questions regarding the number of hours fished, the number of fish harvested and released, along with questions regarding their fishing methods (see Appendix 1). When permitted, we collected biological data from fish harvested by anglers including fork length (FL, mm), total length (TL, mm), and weight (g).

3.2 Test-angling

Due to sport anglers' bias towards keeping larger fish, we generated length data on smaller fish by test-angling throughout the creel survey. We recorded the number of hours fished, and the species, FL, and TL of fish caught (Appendices 2 and 3).

3.3 Data management and analysis

Prior to data analysis, we used length-weight plots to identify and omit outliers if measurement or recording error was suspected.

A bootstrap technique was used to derive estimates and associated 95% confidence intervals (CI) for the number of angler trips, angling hours, angling effort, angler harvest, and angler catch for rainbow trout and brook trout (Sullivan 2004). We calculated yield of harvested fish as the product of the average weight of sampled fish and the estimated number of harvested fish. Angler catch rates were calculated as total ratio estimators (Malvestuto 1983). Flow charts describing the steps for determining estimates for angler survey parameters are presented in Appendix 4. To remove test-angling catch rate bias, we used the sport-harvest total catch rate for the test-angled length-frequency data.

We estimated release mortality by multiplying the estimated number of each species released, by a mortality rate based on previous studies (Schill 1996; Schisler and Bergersen 1996). For rainbow trout and brook trout, we used release mortality rates of 3.9% for fish caught on a fly, 21.6% for active fishing with bait, 32.1% for passive fishing with bait, and 5.0% for both active and passive fishing with no bait (Schill 1996; Schisler and Bergersen 1996). For release mortality yield, we multiplied the predicted number of mortalities by the calculated average weight of sampled fish.

4.0 RESULTS

4.1 Figure Eight Lake

4.1.1 Angler survey

During the creel survey at Figure Eight Lake, we interviewed 697 anglers that fished for a combined total of 1137.0 h (Appendix 5). Forty-nine people were observed angling but were not available to be surveyed. The total number of trips and associated fishing hours were 2,477 trips (95%CI = 2,185-2,786) and 4,095 h (95%CI = 3,501-4,717), respectively. Total angling effort was 105.0 h/ha (95%CI = 89.8-120.9).

4.1.2 Rainbow trout harvest and yield

Anglers at Figure Eight Lake harvested 722 rainbow trout (95%CI = 617-831) at a rate of 0.2 fish/h and released 1,722 rainbow trout (95%CI = 1,473-1,984) at a rate of 0.4 fish/h. The total catch rate was 0.6 fish/h. Of the released fish, 178 (95%CI = 152-205) died as a result of release mortality. The mean weight of a harvested fish was 763 g/fish (95%CI = 691-832), resulting in a harvest yield of 14.1 kg/ha (95%CI = 12.8-15.4). Total yield of rainbow trout (harvest + release mortality) was 686.4 kg (95%CI = 573.7-809.5) or 17.6 kg/ha (95%CI = 14.7-20.8). We suspect there was a high rate of incidental mortality due to birds and wildlife observed at the lake, including pelicans, cormorants, loons, herons, eagles, ospreys, and otters. Biological data collected from angler harvested rainbow trout is included in Appendix 6.

4.1.3 Rainbow trout population structure

Length distribution of rainbow trout captured by anglers and during test-angling ranged from 175 to 520 mm TL (n = 84), with the majority of the fish between 350 and 500 mm TL (Figure 3). The mean length (\pm SE) was 414 ± 7 mm (n = 60) for sport-harvest fish and 336 ± 14 mm (n = 24) for test-angled fish. Of all the rainbow trout sampled during the survey, 2.4% (2 of 84) were of quality size.

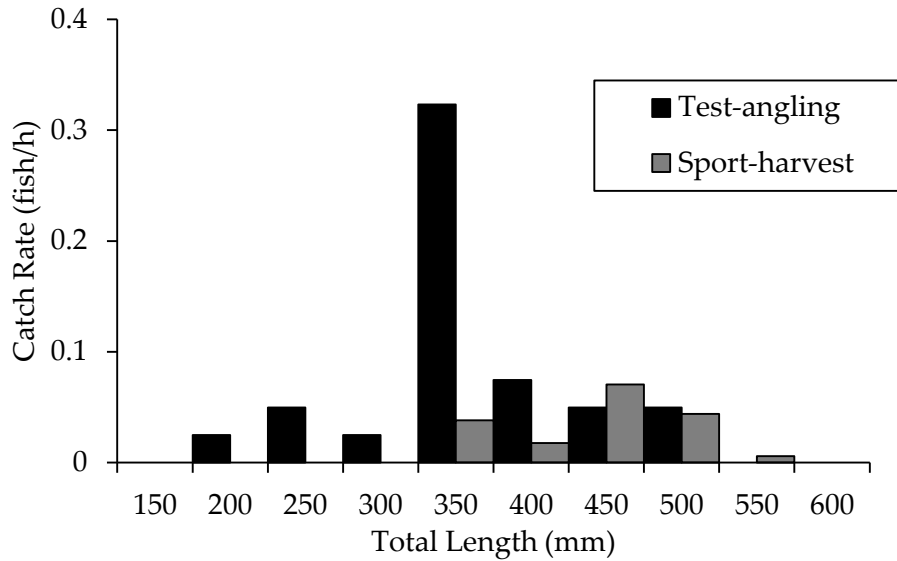


Figure 3. Length distribution of rainbow trout caught during test-angling and sport-harvest at Figure Eight Lake, 2011. Test-angling n = 24, sport-harvest n = 60.

4.2 Sulphur Lake

4.2.1 Angler Survey

At Sulphur Lake, 397 anglers fished for a combined total of 904.3 hours (Appendix 7). Eleven people were observed angling but were not available to be surveyed. The total number of trips and associated fishing hours were 1,161 trips (95%CI = 962-1,365) and 2,703 h (95%CI = 2,237-3,189), respectively. Total angling effort was 51.0 h/ha (95%CI = 42.2-60.2).

4.2.2 Rainbow trout harvest and yield

Anglers at Sulphur Lake harvested 660 rainbow trout (95%CI = 546-778) at a rate of 0.2 fish/h and released 1,120 rainbow trout (95%CI = 927-1,321) at a rate of 0.4 fish/h. The total catch rate was 0.6 fish/h. Of the released fish, 75 (95%CI = 62-88) died as a result of release mortality. The mean weight of a harvested fish was 611 g/fish (95%CI = 547-675), resulting in a harvest yield of 7.6 kg/ha (95%CI = 6.8-8.4). Total yield of rainbow trout (harvest + release mortality) was 448.3 kg (95%CI = 368.5-535.4) or 8.5 kg/ha (95%CI = 7.0-10.1). Biological data collected from angler harvested rainbow trout is included in Appendix 8.

4.2.3 Rainbow trout population structure

Length distribution of rainbow trout captured by anglers and during test-angling ranged from 275 to 527 mm TL (n = 155), with three strong length-classes at 350, 400, and 500 mm TL (Figure 4). The mean length (\pm SE) was 391 ± 8 mm TL (n = 68) for sport-harvest fish and 355 ± 5 mm TL (n = 87) for test-angled fish. Of all the rainbow trout sampled during the survey, 3.2% (5 of 155) were of quality size.

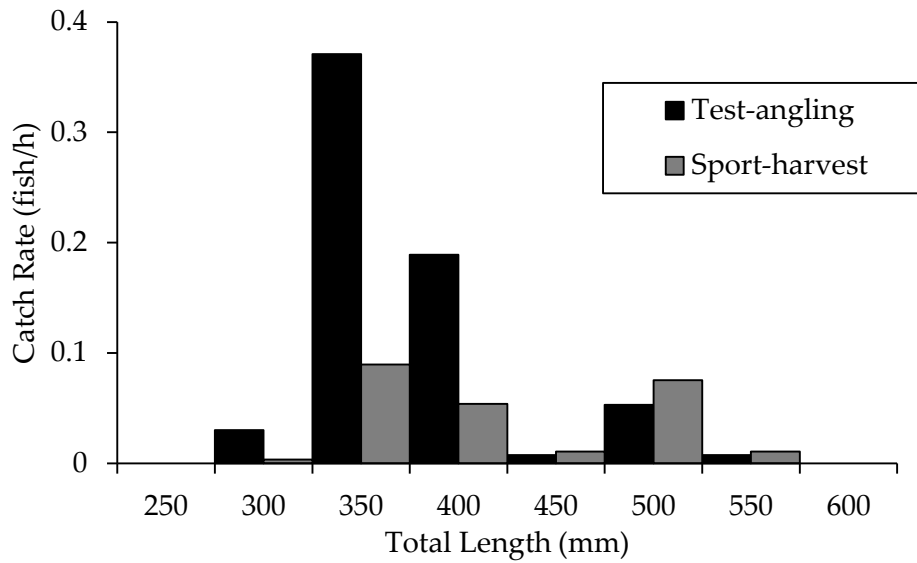


Figure 4. Length distribution of rainbow trout caught during test-angling and sport-harvest at Sulphur Lake, 2011. Test-angling n = 87, sport-harvest n = 68.

4.2.4 Brook trout harvest and yield

Anglers at Sulphur Lake harvested 253 brook trout (95%CI = 209-298) at a rate of 0.1 fish/h and released 232 brook trout (95 CI = 192-274) at a rate of 0.1 fish/h. The total catch rate was 0.2 fish/h. Of the released fish, 17 (95%CI = 14-20) died as a result of release mortality. The mean weight of a harvested fish was 538 g/fish (95%CI = 507-574), resulting in a harvest yield of 2.6 kg/ha (95%CI = 2.4-2.7). Total yield of brook trout (harvest + release mortality) was 145.3 kg (95%CI = 120.4-171.7) or 2.7 kg/ha (95%CI = 2.3-3.2). Biological data collected from angler harvested brook trout is included in Appendix 8.

4.2.5 Brook trout population and structure

Length distribution of brook trout captured by anglers and during test-angling ranged from 182 to 465 mm TL (n = 93), with three strong length-classes at 250, 350, and 400 mm TL (Figure 5). The mean length (\pm SE) was 369 ± 4 mm TL (n = 42) for sport-harvest fish and 266 ± 10 mm TL (n = 51) for test-angled fish.

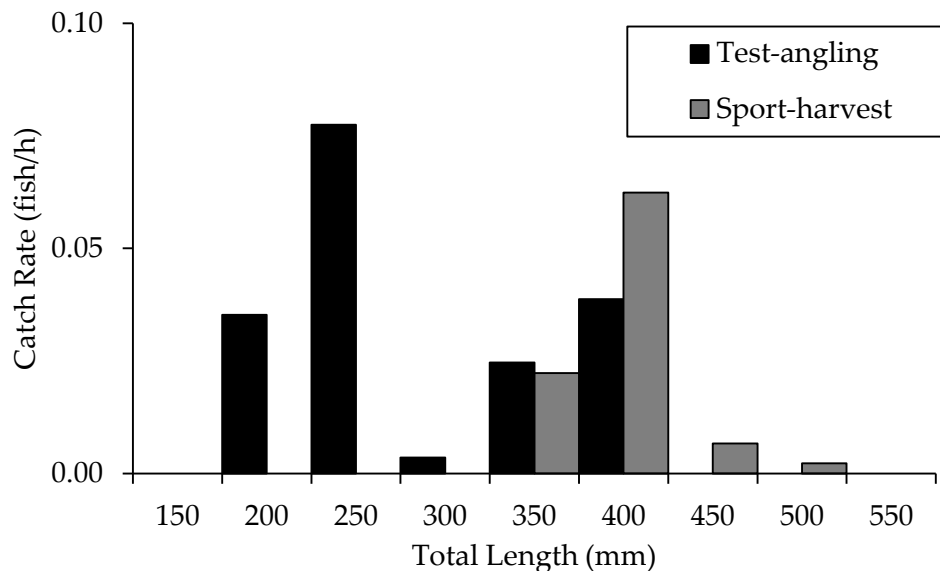


Figure 5. Length distribution of brook trout caught during test-angling and sport-harvest at Sulphur Lake, 2011. Test-angling n = 51, sport-harvest n = 42.

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Appendix 2. Biological information collected from fish during test-angling, Figure Eight Lake, 2011. (RNTR = rainbow trout)

Species	Sample #	Fork Length (mm)	Total Length (mm)
RNTR	1	314	327
RNTR	2	169	175
RNTR	3	345	365
RNTR	4	309	323
RNTR	5	317	336
RNTR	6	305	321
RNTR	7	325	338
RNTR	8	311	328
RNTR	9	336	353
RNTR	10	305	323
RNTR	11	309	321
RNTR	12	328	346
RNTR	13	315	331
RNTR	14	421	447
RNTR	15	420	438
RNTR	16	440	457
RNTR	17	315	322
RNTR	18	301	315
RNTR	19	295	310
RNTR	20	233	245
RNTR	21	340	358
RNTR	22	239	255
RNTR	23	233	249
RNTR	24	440	469

Appendix 3. Biological information collected from fish during test-angling, Sulphur Lake, 2011. (RNTR = rainbow trout, BKTR = brook trout)

Species	Sample #	Fork length (mm)	Total length (mm)
RNTR	2	460	485
RNTR	4	415	438
RNTR	7	440	464
RNTR	12	293	307
RNTR	15	264	275
RNTR	29	325	342
RNTR	35	312	337
RNTR	41	302	334
RNTR	42	324	338
RNTR	44	320	336
RNTR	45	318	340
RNTR	91	330	348
RNTR	92	345	367
RNTR	94	280	292
RNTR	95	286	306
RNTR	96	316	333
RNTR	99	323	341
RNTR	101	345	364
RNTR	102	280	295
RNTR	103	370	388
RNTR	106	472	500
RNTR	107	343	360
RNTR	110	365	385
RNTR	111	316	334
RNTR	112	305	317
RNTR	113	345	369
RNTR	114	339	355
RNTR	115	364	388
RNTR	50	302	320
RNTR	51	460	485
RNTR	52	316	334
RNTR	53	301	321
RNTR	54	307	325
RNTR	55	440	466
RNTR	56	302	316
RNTR	57	444	476
RNTR	58	305	337

Appendix 3. Continued.

Species	Sample #	Fork length (mm)	Total length (mm)
RNTR	59	318	334
RNTR	60	296	314
RNTR	61	315	329
RNTR	62	299	319
RNTR	63	330	346
RNTR	64	309	325
RNTR	65	447	468
RNTR	66	322	338
RNTR	67	283	296
RNTR	68	313	332
RNTR	69	325	342
RNTR	70	308	324
RNTR	71	313	327
RNTR	72	300	314
RNTR	74	300	315
RNTR	75	310	328
RNTR	76	319	335
RNTR	77	280	304
RNTR	78	316	335
RNTR	79	312	330
RNTR	80	331	345
RNTR	81	330	344
RNTR	82	286	n/a
RNTR	83	318	332
RNTR	85	332	350
RNTR	87	295	315
RNTR	88	310	325
RNTR	89	325	341
RNTR	116	350	366
RNTR	117	333	352
RNTR	118	339	361
RNTR	119	330	348
RNTR	121	304	324
RNTR	122	374	392
RNTR	123	334	351
RNTR	124	355	375
RNTR	125	333	351
RNTR	126	339	358

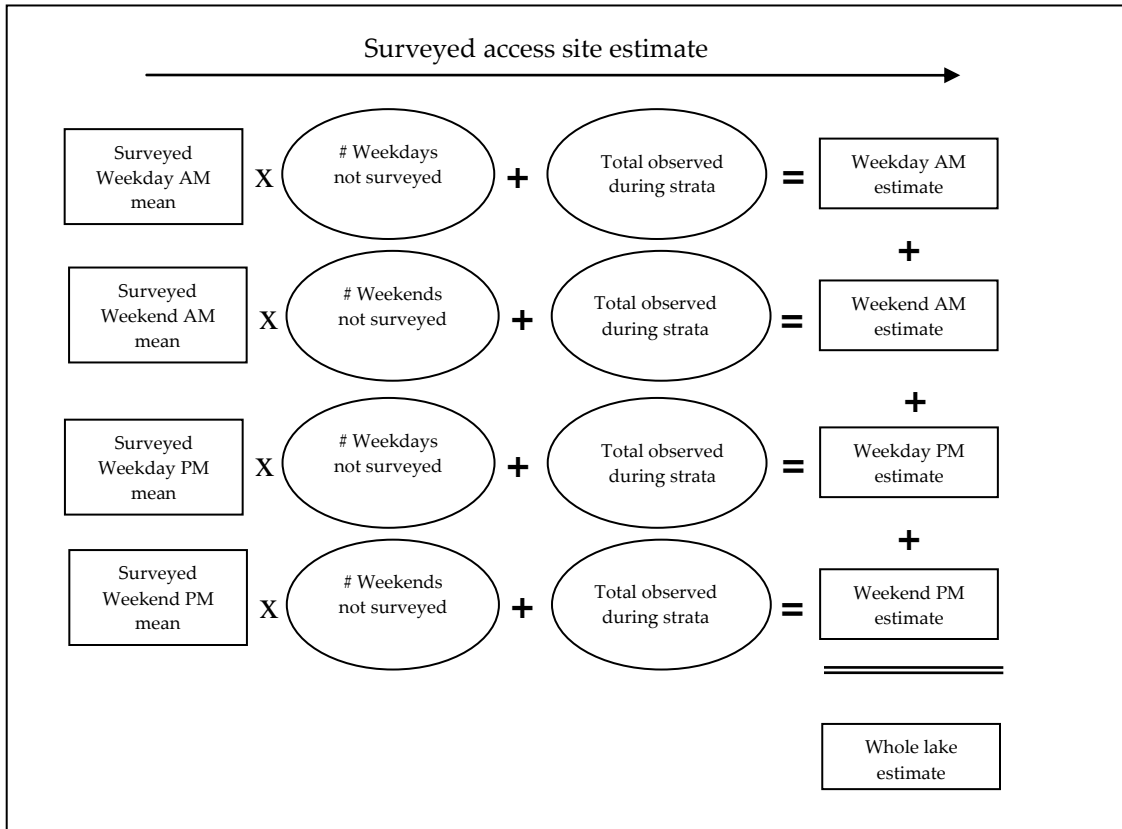
Appendix 3. Continued.

Species	Sample #	Fork length (mm)	Total length (mm)
RNTR	127	327	347
RNTR	128	330	349
RNTR	129	350	364
RNTR	130	349	371
RNTR	131	354	373
RNTR	132	359	380
RNTR	133	349	369
RNTR	134	491	518
RNTR	135	347	366
RNTR	136	335	356
RNTR	137	320	338
RNTR	138	335	353
RNTR	139	375	395
BKTR	1	318	331
BKTR	3	319	334
BKTR	5	335	349
BKTR	6	355	365
BKTR	8	304	320
BKTR	9	304	324
BKTR	10	350	359
BKTR	11	361	370
BKTR	13	335	345
BKTR	14	370	382
BKTR	16	366	384
BKTR	17	216	229
BKTR	18	174	182
BKTR	19	188	196
BKTR	20	188	192
BKTR	21	180	191
BKTR	22	212	220
BKTR	23	200	208
BKTR	24	205	213
BKTR	25	206	213
BKTR	26	218	222
BKTR	27	178	186
BKTR	28	225	233
BKTR	30	202	214
BKTR	31	224	230

Appendix 3. Continued.

Species	Sample #	Fork length (mm)	Total length (mm)
BKTR	32	200	211
BKTR	33	226	232
BKTR	34	365	377
BKTR	36	215	225
BKTR	37	229	235
BKTR	38	210	216
BKTR	39	185	190
BKTR	40	315	338
BKTR	43	348	360
BKTR	93	190	203
BKTR	97	222	229
BKTR	98	350	373
BKTR	100	225	232
BKTR	104	245	253
BKTR	105	223	231
BKTR	108	385	398
BKTR	109	193	198
BKTR	46	179	185
BKTR	47	183	194
BKTR	48	215	225
BKTR	49	213	220
BKTR	73	376	393
BKTR	84	229	236
BKTR	86	190	199
BKTR	90	223	228
BKTR	120	361	380

Appendix 4. Flow chart outlining the process used to calculate a whole lake estimate for a single access creel survey, Figure Eight and Sulphur lakes, 2011. Circles represent values with no variance (i.e. observed data) and rectangles represent data with variance.



Appendix 5. Summary of information collected from anglers during the creel survey, Figure Eight Lake, 2011. (RNTR = rainbow trout)

Date (d/m/y)	Number of anglers	Fishing effort (h)	RNTR harvested	RNTR released
27/05/11	16	19.25	1	1
28/05/11	43	94.75	26	20
29/05/11	45	79.75	31	84
30/05/11	20	45	11	5
31/05/11	14	35.75	8	21
07/06/11	11	24	0	12
08/06/11	16	44	5	39
09/06/11	5	10	0	0
13/06/11	10	19	5	4
14/06/11	13	27	3	8
15/06/11	0	0	0	0
16/06/11	3	1.5	0	0
17/06/11	11	9.25	0	8
20/06/11	5	7.5	0	0
21/06/11	2	3.5	1	0
22/06/11	15	32.5	3	12
23/06/11	8	11.5	1	3
24/06/11	0	0	0	0
25/06/11	35	34.75	10	13
26/06/11	25	46.75	3	22
27/06/11	15	24	2	40
28/06/11	2	2.5	5	8
06/07/11	28	57.75	12	44
07/07/11	10	13.5	8	19
08/07/11	0	0	0	0
09/07/11	10	5.5	1	1
10/07/11	14	16.75	4	6
11/07/11	15	25.25	14	29
14/07/11	1	1	0	0
15/07/11	4	2.25	3	0
16/07/11	36	60.5	4	4
17/07/11	15	31.75	3	8
19/07/11	5	5.5	2	0
20/07/11	2	1.5	0	0
21/07/11	4	2.5	0	5
27/07/11	13	26.5	5	1

Appendix 5. Continued.

Date (d/m/y)	Number of anglers	Fishing effort (h)	RNTR harvested	RNTR released
29/07/11	3	2	1	0
30/07/11	19	19.25	3	9
31/07/11	47	90.5	21	21
01/08/11	26	24.5	4	1
02/08/11	0	0	0	0
03/08/11	4	3.5	0	0
09/08/11	11	27.5	1	2
10/08/11	2	3.5	1	0
11/08/11	2	4.25	1	2
14/08/11	12	11	0	12
16/08/11	10	13.75	2	15
17/08/11	7	7	0	2
19/08/11	9	9.5	0	19
20/08/11	19	23.5	3	15
21/08/11	28	28	4	21
27/08/11	27	46.75	3	31

Appendix 6. Biological information collected from angler harvested fish during the creel survey, Figure Eight Lake, 2011. (RNTR = rainbow trout)

Species	Sample #	Fork length (mm)	Total length (mm)	Weight (g)
RNTR	1	389	410	730
RNTR	2	305	310	330
RNTR	3	340	357	N/A
RNTR	4	410	421	840
RNTR	5	435	455	925
RNTR	6	293	306	280
RNTR	7	443	469	1140
RNTR	8	405	431	775
RNTR	9	425	450	1005
RNTR	10	392	417	785
RNTR	11	437	458	1105
RNTR	12	443	465	1080
RNTR	13	305	322	345
RNTR	14	410	430	795
RNTR	15	447	463	895
RNTR	16	292	310	295
RNTR	17	311	326	370
RNTR	18	293	308	310
RNTR	19	436	457	1070
RNTR	20	437	458	980
RNTR	21	328	346	450
RNTR	22	320	335	355
RNTR	23	325	341	420
RNTR	24	499	520	1285
RNTR	25	483	501	1240
RNTR	26	385	405	740
RNTR	27	305	324	370
RNTR	28	413	430	850
RNTR	29	471	496	1000
RNTR	30	425	445	855
RNTR	31	417	439	899
RNTR	32	412	423	754
RNTR	33	415	432	1000
RNTR	34	408	429	850
RNTR	35	420	442	1010
RNTR	36	427	445	790
RNTR	37	466	492	1280

Appendix 6. Continued.

Species	Sample #	Fork length (mm)	Total length (mm)	Weight (g)
RNTR	38	415	433	830
RNTR	39	432	454	1050
RNTR	40	415	437	850
RNTR	41	354	372	550
RNTR	42	321	340	410
RNTR	43	373	396	620
RNTR	44	412	420	810
RNTR	45	410	437	700
RNTR	46	425	447	960
RNTR	47	429	455	1010
RNTR	48	449	466	1030
RNTR	49	335	360	470
RNTR	50	425	448	1000
RNTR	51	297	315	330
RNTR	52	330	346	460
RNTR	53	478	499	970
RNTR	54	416	440	810
RNTR	55	401	421	770
RNTR	56	430	448	920
RNTR	57	451	482	1080
RNTR	58	342	358	460
RNTR	59	333	354	420
RNTR	60	451	463	1260

Appendix 7. Summary of information collected from anglers during the creel survey, Sulphur Lake, 2011. (RNTR = rainbow trout, BKTR = brook trout)

Date (d/m/y)	Number of anglers	Fishing effort (h)	RNTR harvested	RNTR released	BKTR harvested	BKTR released
20/05/11	4	9.5	0	4	0	2
21/05/11	14	46.5	4	43	4	15
22/05/11	27	70.75	20	29	12	0
23/05/11	1	0.5	0	0	0	0
10/06/11	7	5.5	3	2	0	0
11/06/11	33	66.25	11	23	13	11
12/06/11	22	43.75	9	5	5	6
13/06/11	7	31.5	3	1	5	0
14/06/11	0	0	0	0	0	0
29/06/11	6	15	8	6	12	0
30/06/11	3	4	2	3	1	0
01/07/11	35	66.5	21	33	5	1
02/07/11	38	108.5	20	35	3	13
03/07/11	15	27.5	2	2	0	0
08/07/11	0	0	0	0	0	0
09/07/11	0	0	0	0	0	0
10/07/11	8	26	16	13	6	3
11/07/11	1	1	0	0	0	0
12/07/11	0	0	0	0	0	0
22/07/11	2	9.25	1	4	1	2
23/07/11	14	24	7	6	1	0
24/07/11	27	59.75	28	28	13	6
25/07/11	16	42.5	18	13	0	2
26/07/11	6	10.5	0	8	0	0
10/08/11	6	11.5	2	3	0	3
11/08/11	0	0	0	0	0	0
12/08/11	10	15.5	0	44	0	5
13/08/11	33	84.75	16	113	2	22
14/08/11	9	16	7	4	3	0
19/08/11	8	21.5	17	16	2	4
20/08/11	25	49.25	18	24	3	0
21/08/11	14	25	6	5	2	2
22/08/11	0	0	0	0	0	0
23/08/11	6	12	0	6	0	1

Appendix 8. Biological information collected from angler harvested fish during the creel survey, Sulphur Lake, 2011. (RNTR = rainbow trout, BKTR = brook trout)

Species	Sample #	Fork length (mm)	Total length (mm)	Weight (g)
RNTR	3	319	334	380
RNTR	4	303	320	330
RNTR	5	435	455	825
RNTR	6	445	470	875
RNTR	7	310	325	310
RNTR	8	445	467	865
RNTR	11	438	459	915
RNTR	12	448	464	930
RNTR	13	460	484	1000
RNTR	17	300	315	345
RNTR	18	445	472	820
RNTR	19	331	350	425
RNTR	20	302	317	325
RNTR	21	288	303	280
RNTR	22	295	307	315
RNTR	23	280	296	280
RNTR	26	430	440	900
RNTR	28	390	422	730
RNTR	29	325	350	350
RNTR	32	442	461	960
RNTR	33	430	461	770
RNTR	34	464	492	975
RNTR	35	431	466	830
RNTR	72	324	336	430
RNTR	75	323	340	440
RNTR	77	437	455	940
RNTR	78	450	480	1010
RNTR	81	447	468	970
RNTR	82	482	505	1120
RNTR	83	346	364	450
RNTR	84	340	356	530
RNTR	85	322	340	415
RNTR	87	336	352	440
RNTR	88	352	369	540
RNTR	89	307	323	380
RNTR	36	453	477	965
RNTR	37	446	465	820

Appendix 8. Continued.

Species	Sample #	Fork length (mm)	Total length (mm)	Weight (g)
RNTR	42	457	489	1095
RNTR	44	305	322	385
RNTR	49	293	310	335
RNTR	50	303	318	350
RNTR	52	314	330	385
RNTR	54	310	325	420
RNTR	55	320	333	430
RNTR	56	336	352	470
RNTR	58	304	320	365
RNTR	59	311	325	410
RNTR	60	312	332	405
RNTR	61	327	344	455
RNTR	67	338	353	475
RNTR	68	345	364	475
RNTR	69	464	486	975
RNTR	91	343	364	490
RNTR	92	340	353	510
RNTR	96	334	353	440
RNTR	98	484	507	1260
RNTR	99	501	527	1335
RNTR	100	350	369	495
RNTR	101	333	345	460
RNTR	102	335	351	405
RNTR	103	438	464	915
RNTR	104	444	467	940
RNTR	105	324	342	415
RNTR	106	385	409	700
RNTR	107	341	362	460
RNTR	108	345	369	455
RNTR	109	339	357	425
RNTR	110	439	462	900
BKTR	1	332	349	440
BKTR	2	364	379	620
BKTR	9	351	367	520
BKTR	10	340	359	420
BKTR	14	357	367	470
BKTR	15	334	346	400
BKTR	16	445	465	945

Appendix 8. Continued.

Species	Sample #	Fork length (mm)	Total length (mm)	Weight (g)
BKTR	24	342	356	465
BKTR	25	320	336	435
BKTR	27	330	345	440
BKTR	30	355	374	455
BKTR	31	329	344	370
BKTR	71	362	377	600
BKTR	73	388	402	725
BKTR	74	348	357	570
BKTR	76	345	363	560
BKTR	79	385	398	660
BKTR	80	387	403	585
BKTR	86	366	382	565
BKTR	90	356	372	555
BKTR	38	370	390	575
BKTR	39	333	346	485
BKTR	40	332	350	450
BKTR	41	346	364	515
BKTR	43	332	366	540
BKTR	45	345	359	495
BKTR	46	351	368	520
BKTR	47	364	383	615
BKTR	48	337	358	550
BKTR	51	350	365	570
BKTR	53	345	356	545
BKTR	57	318	329	445
BKTR	62	353	368	500
BKTR	63	358	370	530
BKTR	64	368	385	660
BKTR	65	345	357	545
BKTR	66	338	355	445
BKTR	70	330	345	415
BKTR	93	420	444	910
BKTR	94	364	381	470
BKTR	95	357	374	555
BKTR	97	340	350	480

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