Summer Profundal Index Netting (SPIN)
Fairy Lake
2021

File Report

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2021

An assessment of the Lake Trout population of Fairy Lake was done by staff from the Biodiversity and Monitoring Section in 2021. The assessment was not part of a planned monitoring project, but several days of time became available within their schedule and they were able to do a survey of a lake, convenient to the Bracebridge office. Fairy Lake was chosen by District staff due to the time elapsed since the last assessment (2005) and an interest in the status of the Lake Trout population in the absence of stocking (last stocked 2011, Table 1). Stocking was suspended in Fairy Lake as part of a management strategy for the Huntsville Lakes (Peninsula, Fairy and Vernon) and Mary Lake (OMNR 2009). The approach applied to Fairy Lake was to suspend stocking, in part to test whether stocking was impeding natural reproduction. The stocked Lake Trout in Fairy Lake were also receiving very little angling pressure.

Table 1 Lake Trout stocking history, Fairy Lake, 2001-2021.

Year	Number	Clip	Strain
2001	2500	Right Pectoral (RP)	Killala Lake
2004	2490	Left Ventral (LV)	Killala Lake
2006	4317	Right Pectoral (RP)	Killala Lake
2008	4300	Adipose (AD)	Killala Lake
2011	500	Right Pectoral (RP)	Killala Lake

The provincial SPIN protocol was used (Sandstrom and Lester 2009). Between June 14 and 17, 2021, a total of 35 two-hour sets were completed (Table 2, Figure 1). A total of 20 Lake Trout were caught in eight different nets; almost half (9) in a single set. The catch rate indicates that the abundance of Lake Trout is moderately low. The population size is decreasing as no new fish are entering the population (other than incidentally through emigration from neighbouring lakes).

Incidental catch included Northern Pike (1), Smallmouth Bass (4) and Yellow Perch (1). No Lake Whitefish or Cisco, the other coldwater species that are vulnerable to the SPIN gear, were caught. These species have been extirpated from the lake, probably due to interactions with invasive Rainbow Smelt, possibly in conjunction with other stresses (OMNR 2009). Smelt are generally too small to be caught in SPIN gear; therefore, we have no measures of their abundance, and whether it has changed since Lake Trout stocking ceased.

Most (16) of the Lake Trout were caught in the 10-20m stratum and the remainder in the 20-30m stratum. Even though there is abundant, well-oxygenated, deep-water habitat in the lake, it is not used extensively due to the relatively low water clarity (Secchi depth: 2.7m).

All Lake Trout captured had a fin clip indicating that they had been stocked. Ten years after the cessation of stocking, there continues to be no evidence of natural reproduction. The management review speculated that long-term supplemental stocking may have been a factor contributing to the decline in natural reproduction. The stopping of stocking would remove that stress, but other factors may continue to preclude successful reproduction, such as the absence of a suitable genetic strain and continued suppression by smelt. The stocking of different strains in the other lakes in the strategy, especially Mary, where fish from Lake of Bays have been stocked, may provide some insight.

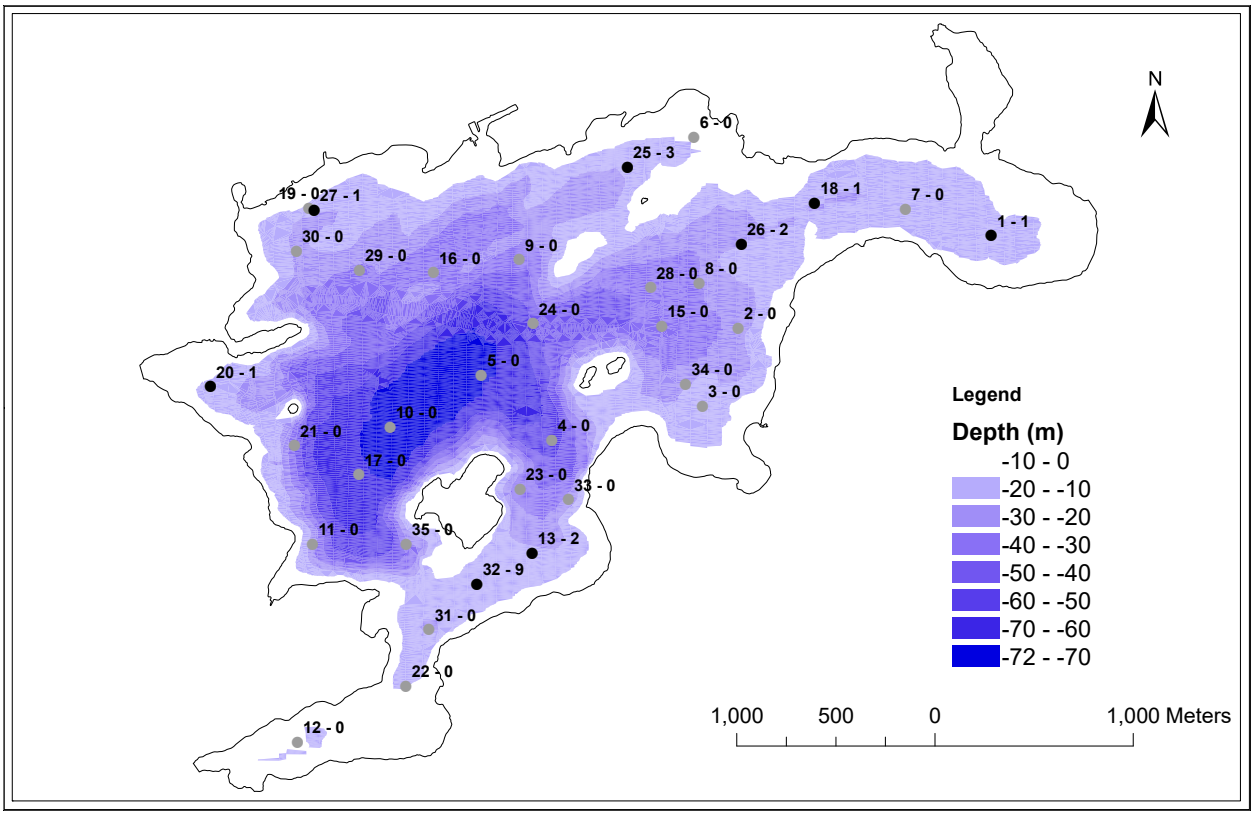


Figure 1 Net set locations, Fairy Lake, SPIN, 2021. Sets where Lake Trout were caught shown as black circles. Labels denote net set number and number of Lake Trout caught.

The size range of the Lake Trout caught was quite narrow. The youngest stocked fish would be 11 years old. By that age, Lake Trout typically have reached maturity and growth slowed as fish devote more energy to reproduction. In the absence of larger-bodied prey species such as whitefish and Cisco, Lake Trout will not usually grow much greater than the approximately 600mm observed in this survey.

Despite the fin clips, the ages of the Lake Trout could not be determined with certainty due to a combination of multiple stocked cohorts with the same clip (and overlapping size of fish of greatly different ages) and the possibility of emigration from connected lakes (Peninsula and Vernon). Possible ages, based on the fish stocked directly into Fairy Lake ranged from 11 to 27 years, though most were probably between 14 and 18 years old.

In the absence of stocking or natural reproduction the abundance of Lake Trout will continue to decline; in 5 to 10 years there will be very few remaining. Since stocking was discontinued, there have been minimal public inquiries regarding the fishery; indicating that continuing to not stock is appropriate unless some other compelling reason emerges. The strategy speculated that the abundance of smelt may increase as a consequence of reduced Lake Trout abundance, with potential impact to other species. To date, the information required to make that determination hasn't been collected.

Table 2 Net set details, Fairy Lake, SPIN, 2021.

Effort	Day (June)	Latitude	Longitude	Start Depth (m)	Mid Depth (m)	End Depth (m)
1	14	45.334	-79.152	17	16	16
2	14	45.330	-79.169	28	28	25
3	14	45.326	-79.171	14	10	12
4	14	45.325	-79.181	59	55	53
5	14	45.328	-79.185	72	71	70
6	14	45.338	-79.171	9	8	7
7	14	45.335	-79.158	18	18	18
8	15	45.332	-79.171	35	34	33
9	15	45.333	-79.183	32	36	40
10	15	45.325	-79.191	72	72	73
11	15	45.320	-79.196	21	26	30
12	15	45.311	-79.198	9	9	10
13	15	45.320	-79.182	19	16	16
14	15	45.324	-79.692	10	8	6
15	15	45.330	-79.173	38	37	36
16	15	45.332	-79.188	38	40	40
17	15	45.323	-79.193	69	69	69
18	16	45.335	-79.163	20	20	20
19	16	45.336	-79.196	24	25	26
20	16	45.328	-79.203	11	14	16
21	16	45.325	-79.197	40	50	55
22	16	45.314	-79.190	16	12	10
23	16	45.323	-79.183	39	36	34
24	16	45.330	-79.182	53	48	48
25	16	45.337	-79.175	20	17	16
26	16	45.333	-79.168	26	21	20
27	16	45.335	-79.196	11	18	20
28	17	45.332	-79.174	40	38	37
29	17	45.333	-79.193	31	34	36
30	17	45.334	-79.197	21	22	22
31	17	45.316	-79.189	21	21	21
32	17	45.318	-79.186	16	16	17
33	17	45.322	-79.180	30	28	27
34	17	45.327	-79.172	23	25	25
35	17	45.320	-79.190	38	36	30

Table 3 Catch summary, sorted by species, Fairy Lake SPIN, 2021.

Effort	Species	Fish #	FLEN (mm)	RWT (g)	Clip	Possible age based on fin clip*	Sex	Gonad Condition
1	81	1	700					
13	81	3	610		AD	14		
13	81	4	560		LV	18		
18	81	7	625		RP	11,16,21		
20	81	8	540		AD	14		
25	81	12	570		AD	14		
25	81	13	555		AD	14		
25	81	14	530		LV	18		
26	81	15	565	2300	AD	14	2	20
26	81	16	615	2600	AD	14	1	20
27	81	17	560		RP	11,16,21		
32	81	18	560		AD	14		
32	81	19	520		LV	18		
32	81	20	540		AD	14		
32	81	21	595		LP	27		
32	81	22	550		RP	11,16,21		
32	81	23	545		AD	14		
32	81	24	605		RP	11,16,21		
32	81	25	610	3350	RP	11,16,21	1	20
32	81	26	560	2850	AD	14	2	20
14	131	5	550					
6	316	2	430					
14	316	6	280					
22	316	9	435					
22	316	10	345					
22	331	11	230					

* Based on fish stocked into Fairy Lake; doesn't account for possibly emigration from other lakes.

References

OMNR, 2009. A fisheries management review for Fairy, Mary, Peninsula and Vernon Lakes. Ontario Ministry of Natural Resources, Bracebridge, Ontario.

Sandstrom, S. J. and N. Lester. 2009. Summer Profundal Index Netting Protocol; a Lake Trout Assessment Tool. Ontario Ministry of Natural Resources. Peterborough, Ontario. Version 2009.1. 22 p. + appendices.