



Clearwater Lake Spawn Camp 2021

In part of reporting for FES Project 20-040
SVSFE Recreational Angling Initiatives 2021

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Background Information

Lake trout stocking in the province dates back to the 1920s (Leroux 2008) with the Clearwater Spawn Camp in operation since 1942. Leroux (2008) stated "Our provincial stocking program averages about 300,000 lake trout annually... Historically, Manitoba has provided lake trout eggs for other jurisdictions, including Alberta. At the present time, we now meet only our own needs and it is a very limited program."

Advance to recent years and the lake trout stocking program looks a lot different. Going from several hundred thousand to an average of nine thousand available for the whole province. This is mainly attributed to staff shortages. When Manitoba Hydro took over operations at the Grand Rapids Hatchery, the province lost the staff to run the spawn camp. There were discussions on utilizing brood stock closer to Winnipeg (West Hawk Lake), but ultimately, the time it would take to build a sufficient collection of disease testing and the concern of committing to the testing requirements for that population, justified committing to the Clearwater Lake operation.

"Fish health is a significant component of any culture facility's biosecurity plan. It is intended to provide a baseline of the health profile of the wild brood stock, minimize the introduction of disease into a hatchery, as well as back into the wild when offspring are released. This is why offspring are tested prior to both the spring and fall stocking events" (L. Janusz, email, March 2022). The province had a long disease testing history of the Clearwater population with stocking success from the wild stock. The hurdle to overcome was coordinating the manpower at just the right time to collect a sufficient spawn.

Between 2013 - 2019 lake trout stocking in the province was very limited. This was a combination of again staff shortages, also demand and/or production was not a priority over other stocking requests, poor catchments during the spawn or due to poor hatch success at times. In efforts to increase the success of the Clearwater Spawn Camp, many departments, institutes, and organizations partnered in this valuable program. SVSFE and Intermountain Sport Fishing Enhancement (ISFE) assisted in both the 2019 and 2021 operations thanks to support from the Fish & Wildlife Enhancement Fund (FWEF).

The following is a summary of recent results from Clearwater Lake Spawn Camps and lakes receiving stock.

Year	Clearwater Lake Spawn Camp		Lake Trout Stocking from Eggs Collected	
	Eggs Collected	Species Cultured	Lake Stocked	# Stocked (18+cm)
2015	10,000	Lake trout	Davidson Lake	9500
2019	12,636	Lake trout	Garner Lake	5000
			Childs Lake	6000
	10,854	Splake	East Blue Lake	2500
			Laurie Lake	2500
		Camp Lake	1000	

References: Mills, K.H., Dyck, M, and Harwood, LA. 2008. Proceedings of the Second Lake Trout Symposium 2005, Yellowknife, Northwest Territories. Can. Tech. Rep. Fish. Aquat. Sci. 2778: xi + 247 p.

Summary of 2021 Activities

The Clearwater Spawn Camp ran from September 27th to Oct 3rd 2021. A few participants, Faculty of Graduate Studies students from University of Winnipeg and University College of the North (UCN) technician monitored the status of the spawn while conducting other research (B. Howell, Behaviour/Physiological responses of trophy-sized lake trout to catch-and-release angling). This was a great benefit to the program and allowed other team members to prepare for their contribution in the camp.

SVSFE and ISFE technicians were largely a part of the fish collection efforts and assisted in egg collection/disease testing. Both organizations supplied trap nets, along with various sampling equipment, fish containment pens/troughs and angling gear. The crew had intended to utilize and operate Department of Fisheries & Oceans' (DFO) SR20 electrofishing boat as an additional method of catchment. Unfortunately, due to issues with the onboard generator, the boat was not operable during the fall of 2021. For this reason, fish collection methods were restricted to trap netting and angling (Figure 1).



Figure 1: Trap net being pulled on Clearwater Lake

Between September 15th through to October 15th the west side of Clearwater Lake is closed to fishing to protect spawning fish. The designated area is west of a line that extends from Spawn Camp Point to the west side of the inlet of Pike Bay (Figure 2). Trap nets were set in both the closed and open areas. This included sites #1 and #4 north of spawn camp and site #2 and #3 along the south shoreline of Spawn Camp Point (Figure 3). Note; trap #2 was used as a holding pen for lake trout following the first pull. Trap netting collected a total of 171 lake trout through 164 hours of effort (Table 1).

Table 1: 2021 Trap netting results

2021 Clearwater Spawn Camp - Trap Netting Results									
Project Method Code	Site	Date Time Set	Date Time Pull	Effort	Water Temp	LKTR	LKWH	NRPK	WSHC
CW-TR-21-001	1	2021-09-28 10:00	2021-09-29 10:25	24.42	13.3	14	10	0	0
CW-TR-21-002	2	2021-09-28 10:55	2021-09-29 11:13	24.30	13.6	39	1	4	1
CW-TR-21-003	3	2021-09-29 16:25	2021-09-30 11:08	18.72	14	7	0	18	3
CW-TR-21-004	1	2021-09-29 11:00	2021-09-30 18:45	31.75	14.5	61	1	1	5
CW-TR-21-005	1	2021-09-30 19:49	2021-10-01 9:30	13.68	13.5	24	0	0	73
CW-TR-21-006	3	2021-09-30 21:46	2021-10-01 13:30	15.73	13.9	8	0	13	1
CW-TR-21-007	3	2021-10-01 14:20	2021-10-02 7:24	17.07	13.6	15	0	29	0
CW-TR-21-008	4	2021-10-01 15:30	2021-10-02 10:03	18.55	14	3	0	1	1
Total				164.22		171	12	66	84



Figure 3: Clearwater Lake closed area between September 15th - October 15th



Figure 2: Trap netting sites located near Spawn Camp

Angling efforts were a lot harder to monitor but this method was a significant contributor to catches...specifically on Oct 1st and 2nd when spawning was at it's peak. Within those two days, gametes were collected from 49 of the total 70 females spawned. Angling crews typically consisted of three to four anglers per boat with three main vessels fishing the closed and open areas near spawn camp. Most angling sites were within 5km or less of camp. Angling would commence at/shortly before sunrise and typically end shortly after sunset. Peak angling was early to mid morning, and mid afternoon through to the evening. Again, it is difficult to document the total number of lake trout collected, as many were quickly released if not ripe or spent. The primary objective was to collect as many spawning lake trout for egg collection to meet stocking requests without harming the fish. Documenting angling success was not seen as a high priority. Though some efforts were recorded throughout angling, data was inconsistent at times, therefore evaluating CPUE could not be determined. However, one could confidently state several hundred lake trout were caught over the six days (Figure 4).



Figure 4: Lake trout caught angling

Gametes (eggs) were stripped from a total of 70 female lake trout. Ovarian fluid samples were completed for each batch of eggs collected. Eggs were either fertilized with wild lake trout milt or brood stock brook trout milt from the hatchery to produce splake. A total of 27 samples were fertilized for lake trout production and 53 samples for splake production. A sub-sample of 25 male and 25 female lake trout used for egg production were retained in live trap nets for holding until disease testing could be completed. Necropsies were completed by the fish culture team which arrived the last night of camp. The Fish Health Sampling Plan follows strict timelines as samples need to arrive in Fredericton, New Brunswick within a 48-hour window from the time fish are euthanized. Meeting these requirements can be a logistical challenge at times but the spawn camp team spent many hours working out the best management plan to execute this component of the program with ease.



Figure 5: Egg collection

This program is not only time sensitive but requires daily and even hourly adaptations and compromising along with an efficient and creative crew willing improvise on the spot. The 2021 Spawn Camp was just that! With crews monitoring the status of the spawn, hatchery staff were able to come at just the right time to collect eggs. Determining that official GO TIME can be difficult and many key lessons were learned throughout the program by all. Teams worked well by collaborating in catchment efforts and by adjusting methods to decrease stress on lake trout collected.



Figure 6: Collection site set up at Spawn Camp

The 2021 Clearwater Spawn Camp was a great success. Over 96,000 eggs were collected. The spawn camp is one of the many stages in the stocking program and unfortunately there is always some loss of involved. At current, there are 57,900 splake eggs at the hatchery but the eggs collected for lake trout stocking experienced a 100% loss. This is unfortunate but a part of the fish culture world. It is anticipated there will be 22,000 splake available for 2023. Requests for the Swan Valley area include Laurie Lake, Two Mile Lake and Gull Lake all within the Duck Mountain Provincial Park. There are requests for each region and managers will determine which of these fisheries are priority for receiving stock.

The 2021 Spawn Camp was beneficial in ironing out many logistics involved in the program (Refer to considerations for the 2023 Spawn Camp). We feel the knowledge gained will make the 2023 Spawn Camp that much more successful. SVSFE looks forward to working with crew members again.



Figure 7: 2021 Clearwater Lake Spawn Camp Collection Crew



Considerations for the 2023 Spawn Camp and notes from 2021

1. Need More Gear
 - a. Large fish troughs (110 Gals) were excellent for holding fish on board boats when angling. Water was exchanged frequently with 5gal pails. Need approx. four troughs.
 - b. Fish totes/transfer tanks were great for holding fish onshore at the egg collection site. Two totes were left up at camp but it would be beneficial to have two more to separate necropsy fish until they can be transferred over to the retainer pen (trap nets with gap tied shut).
 - c. Trap nets have more uses then just catching the trout. The traps were excellent retaining pens. Holding pens are too small and stress the fish causing mortality. The large traps can be tied shut at the gap and set without leads and are secure so that fish will not escape. Need 2 traps for necropsy fish (1 for males, 1 for females), 2 trap nets for actual fish capture is sufficient. Possibly one extra one to hold lake trout to ripen if crew feels necessary but found most lakers harden up when

held in pens too long. Better to release fish and hope to catch again.

- d. Submersible pumps, a garden hose and valve adaptors are great for water circulation in fish totes. Need two systems
 - e. You can never have too many fish gloves, dip nets, 5 gal pails or extra fishing rods/hooks. Best lures included a variety of swim baits and spoons. Single barbless hooks work tremendously for processing fish safely and efficiently.
2. Monitoring crews are essential - Crew members should be knowledgeable in the handling and identification of spawning lake trout. It is crucial not to attempt spawn (squeeze) the fish until egg collection time.
 3. Coordinate necropsy sampling to follow egg collection. There was a lot of conversations on coordinating the collection of necropsy fish. As mentioned, there are strict timelines in getting samples to the lab along with difficulties in coordinating travel and flight options. In the end, it was determined that the lake trout can be spawned (males and females) prior to necropsies and held live in trap nets until the necropsy team arrived. Crews set retainer nets in a protected area close to camp (south side) and checked them daily. An additional benefit is the collection crew can assist with the necropsy process and clean up.
 4. Combining capture methods of trap netting and angling make for long but efficient workday. If electrofishing was added to the regime, crews may need to consider allocating a specific night crew.
 5. Document the magic date. "Go Time" in 2021 was September 30th and peak spawning continued through to Oct 1st and 2nd. This date was usually around September 27th and documenting each year helps crews predict and plan for future camps. Also noted; the bigger females showed up after the smaller ones.
 6. Always remember to guard your eggs. You can never be too cautious or overprotective (right Ian). Items you can use as a barricade include a big truck, nets, totes lids, cinder blocks, and soup cans for a bear alarm. Might want to improve this technique.
 7. Ensure you have an eagle feather for the fertilization process for good luck. (Jon, the feather must contain more than just a quill)
 8. Designate someone to have coffee available throughout the day. Fish (Devin), you surpassed this job requirement.

