



2022 Whitefish Lake Recruitment Survey

In part of reporting for FES Project 22-010
SVSFE Initiatives and Monitoring of Recreational
Fisheries in the Swan Valley Area

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Objective

At Whitefish Lake, SVSFE has been actively removing barriers to facilitate fish movement in both North Creek and Lagoon Creek since 2010 and is referred to as the Beaver Management Program. Removing barriers in the late winter ensures once spring water temperatures trigger walleye migrations, fish can travel to their traditional spawning habitats. SVSFE has been monitoring the success of the beaver management program since 2011. In 2017, it was determined the cheapest and most effective method of assessing success of the program was through an annual visit to each tributary mid-late spawn. Spring visits include travelling to pre-determined locations and kick sampling to quantify egg deposits. Furthermore, each fall technicians mark new barriers and identify priority dams for removal in following winter/early spring. Following is results from the 2022 assessments.

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Methods

Spawn Assessments

Spawn assessments are completed through kick sampling at various sites within both tributaries. The kick netting technique involves placing the net poles firmly on the creek bottom and disturbing the substrate by “kicking” the substrate upstream of the net. The kick net used is a 1 m² net with 0.5 mm (500 micron) mesh screening attached to two poles (Figure 1).

The current carries and distributes material onto the net. Each site was kick sampled for 60 seconds with one square meter of area sampled. Species, number of eggs and condition of eggs (alive, dead) were documented and placed back into the stream. With sites of high egg concentrations, counts are generally estimated and returned to the water as quickly as possible. While travelling to the site locations technicians document the reconstruction of beaver dams, egg presence/absence, fish presence/absence, while also ensuring as little disturbance to the substrate as possible during travel. In addition, water temperature, weather, substrate type present and additional comments are recorded.



Figure 1: Kick net

Beaver Dam Inventory

Inventory of barriers is typically conducted in the fall by travelling upstream creeks by boat and then by foot when boat access is restricted. Technicians flag each barrier and document; coordinates, barrier width, height, dam material plus take reference photos. All information is provided in digital and paper format for future reference while dam blasting occurs.



Figure 2: Inventory of North Creek barriers

Results

Spawn Assessments

On May 17th technicians travelled to Whitefish Lake with the intentions to conduct kick sampling surveys. Upon investigations, it was quickly determined fish were actively spawning therefore assessments would have to be postponed a few days. During this time barriers were found to be reconstructed following dam blasting efforts. It is important to note on Friday, May 13th, "communities near of the Porcupine Hills and Duck Mountain endured unprecedented flash-flooding conditions as a Colorado low stormwater poured down the Manitoba Escarpment" (Kives 2022). With the combination of heavy winter snow levels melting and heavy rains, flooding incapacitated travel to many areas, and increased velocity and discharge levels significantly. These conditions caused changes in several reaches of both North and Lagoon creek, exposing vital spawning habitat, clearing many obstructions, and changing the creek course in some areas.



Figure 3: Barrier on North Creek that was removed following extreme rainfall

North Creek

Technicians returned six days later to North Creek on May 23rd. The timing was perfect for evaluating egg deposits and fish usage. Typically, there are eight predetermined sites technicians conduct kick sampling. The spring event of 2022 exposed new habitat therefore two additional sites were evaluated for fish usage. Technicians travelled up North Creek first by boat, and then by foot. Water velocities were still favourable and barriers which were present just a few days prior had cleared naturally.

Both walleye and white suckers were found to utilize North Creek during the 2022 spawn. Walleye eggs were found at 4 of the 10 sites all within the first kilometer. White sucker eggs were found at all sites, with a few suckers still actively spawning. High densities of pelicans were also feeding in reaches where suckers were present.

Table 1: North Creek 2022 kick sampling results

Site	UTM	Substrate	Eggs Present (Spp/#)	Depth (m)	Comments
1	14 U 321401 5803535	GR 80 SI 20	WALL 20+	0.7	ONLY KICKED FOR 5 SECS - LOTS OF WALLEYE EGGS
2	14 U 321492 5803701	GR 100	WALL 10+, WHSC 50+	0.5	
3	14 U 321542 5803769	GR 100	WHSC 100+, WALL 10	0.25	
4	14 U 321601 5803829	GR 100	WHSC 200+, WALL 10	1.0	NEW - EXPERIMENTED IN DEEPER WATER FOR EGGS. FOUND MORE WALLEYE & WHSC EGGS
5	14 U 321668 5803937	GR 100	WHSC 60+	0.6	
6	14 U 321648 5803995	GR 100	WHSC 200+	0.6	PELICAN HANGOUT
7	14 U 321440 5804164	GR 100	WHSC 100+	0.5	NEW
8	14 U 321238 5804275	GR 80 SA 20	WHSC 20+	0.3	PELICANS PRESENT - BEAVER DAM BLEW NATURALLY
9	14 U 321060 5804361	GR 60 CO 40	WHSC 150+	0.4	
10	14 U 321112 5804558	BO 5 CO 15 GR 80	WHSC 80+	0.3	WHSC ACTIVELY SPAWNING

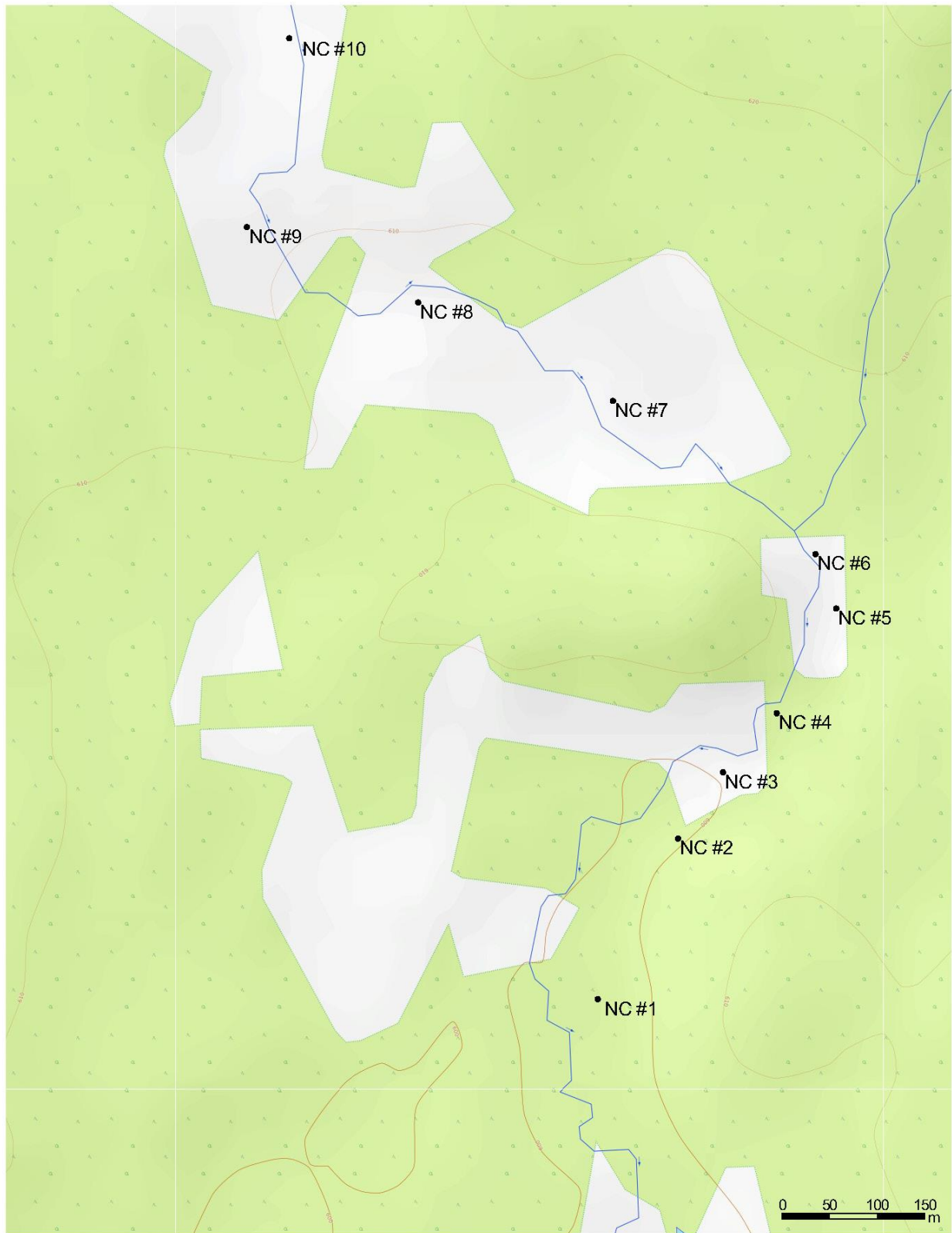


Figure 4: North Creek 2022 kick sampling sites

Lagoon Creek

Lagoon Creek was also assessed on May 23rd, 2022. Similar to North Creek, several barriers had been removed by natural means and several reaches upstream of the Eagle Branch Lake creek confluence now possessed exposed gravel, cobble and boulder substrate. Before the 2022 event, many areas were covered with a substantial silt/muck layer. Several new sites were assessed due to the new available habitat and a total of nine of the ten were evaluated. Technicians travelled up Lagoon Creek primary by boat which is typically not possible. Boulder substrate restricted boat travel on the last few hundred meters.

Both walleye and white suckers were found to utilize Lagoon Creek during the 2022 spawn. Walleye eggs were found at two of the ten sites within the first kilometer upstream of the Lagoon marina. White sucker eggs were found at six sites, with a few suckers still actively spawning. Fewer birds were present at Lagoon Creek but there was evidence of their presence, along with a large northern pike carcass found on the banks. Abundance and survival of walleye eggs found in Lagoon creek were significantly lower than North Creek. One unidentified egg was documented in the upper reaches at site #8 but technicians could not confirm it was a walleye egg. Site #6 was documented as the transition for consistent exposed gravel beds and cobble/boulder substrate.

Table 2: Lagoon Creek 2022 kick sampling results

Site	UTM	Habitat	Eggs Present (Spp/#)	Depth (m)	Comments
1	14 U 324218 5801779	DE 50 GR 50	0	0.4	NEW - SOFT SUBSTRATE WITH GR LAYER ON TOP
2	14 U 324273 5801858	GR 100	WALL 30	0.4	NEW
3	14 U 324431 5802032	GR 100	WALL 60 WHSC 10	0.3	~20% OF EGGS DEAD
4	14 U 324558 5801927	GR 40 SA 60	WHSC 15	0.4	NEW
5	14 U 324731 5802032				DID NOT KICK SAMPLE - HABITAT CHANGED
6	14 U 324811 5802049	SA 40 SI 40 GR 20	0	0.5	NEW
7	14 U 325303 5801900	MU 50 GR 50	WHSC 15	0.1-0.2	SMALL BED
8	14 U 325307 5801874	GR 50 SA 50	WHSC 50 UNKNOWN 1	0.4	NEW - AS GOOD AS IT GETS
9	14 U 325307 5801851	BO 10 CO 40 GR 50	WHSC 125	0.5	
10	14 U 325393 5801815	BO 15 CO 35 GR 50	WHSC 50	0.6	NEW

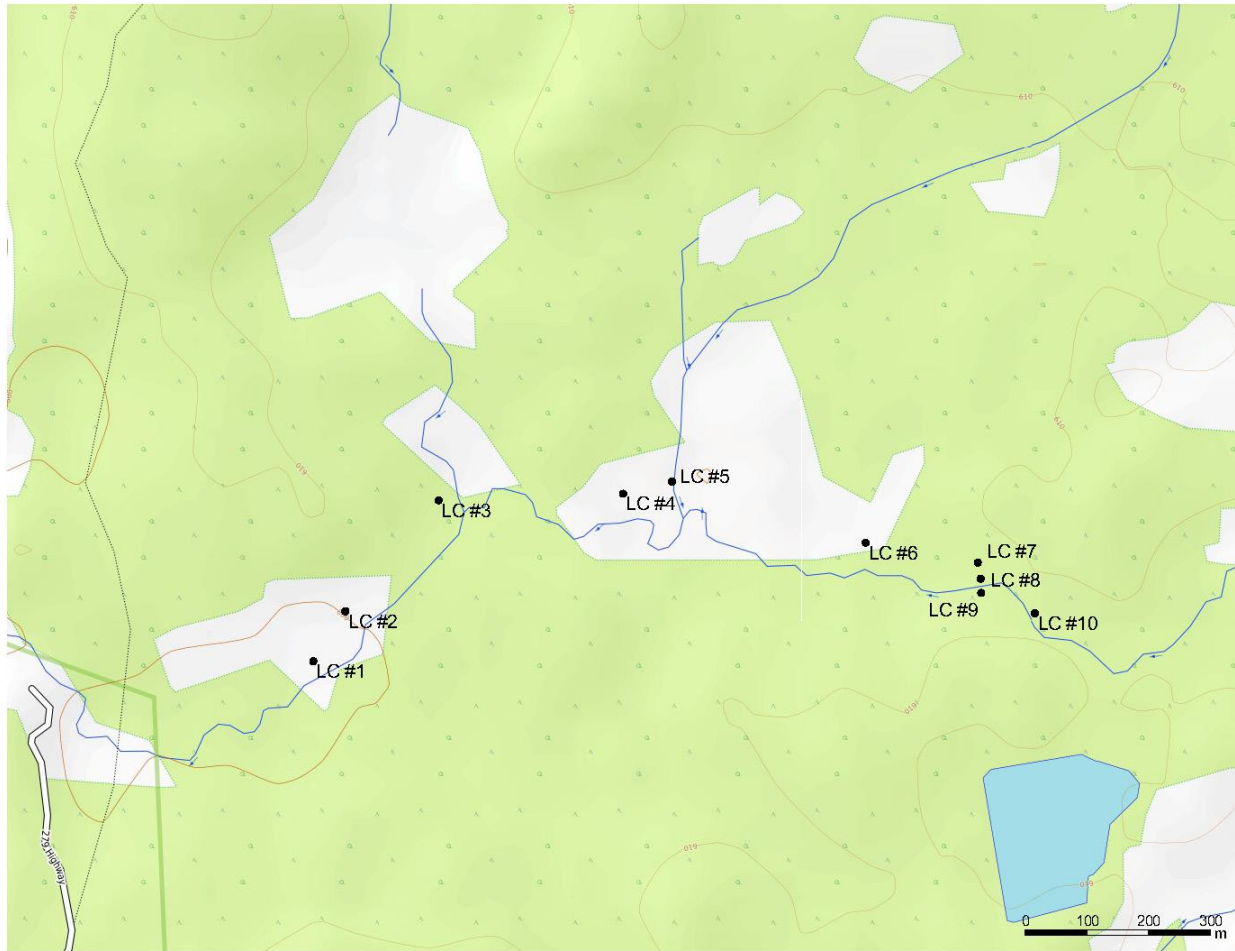


Figure 5: Lagoon Creek kick sampling sites

Beaver Dam Inventory

On September 29th, 2022 barriers on North Creek and Lagoon Creek were identified and marked. Only three priority dams were identified for removal on North Creek, while seven barriers were identified on Lagoon Creek. This is the lowest number of barriers recorded on North Creek since beaver management began in 2011.



Figure 6: North Creek barrier found in 2022



Figure 7: Lagoon Creek barriers found in 2022

Discussion

Overall, the 2022 walleye spawn was successful at Whitefish Lake. Walleye and suckers were present in both tributaries and kick sampling results indicate both species utilize the available habitat for spawning purposes. It is apparent that walleye typically prefer habitat in the first kilometer or so as higher frequencies of egg deposits are found in these reaches year after year. The spring of 2022 received some unprecedented rainfall and snow melt which was a great advantage to the efforts put forth over the last decade. The combination of high velocities and beaver management efforts exposed crucial spawning habitat. This is a significant improvement and benefit to the fishery as the last few years have been extremely dry resulting in lower egg survival. Lagoon Creek still requires more effort to expose silted over gravel beds, but through continued beaver dam removals spawning fish are still able to access reaches where habitat has improved immensely over the last few years.

In summary, the 2022 beaver management program was able to enhance several reaches of both Lagoon and North Creek thanks to an extra boost from mother nature. Barrier removals are scheduled for early April 2023, and spawn assessments are anticipated in mid-May. There has been no further correspondence with the local trapper as current efforts appear to be adequate. Throughout the past twelve years SVSFE has monitored the fishery and actively maintained vital spawning habitat. Angler reports express these efforts are valuable and angling success has been outstanding. SVSFE intends to continue with annual recruitment surveys and management of fish barriers on this self-sustaining fishery for years to come.

References

Kives, B. (2022) Everything, everywhere, all at once: The 2022 flood season in Manitoba, CBC News, CBC Manitoba, Posted May 26, 2022 <https://www.cbc.ca/news/canada/manitoba/flood-2022-manitoba-analysis-1.6465372>