



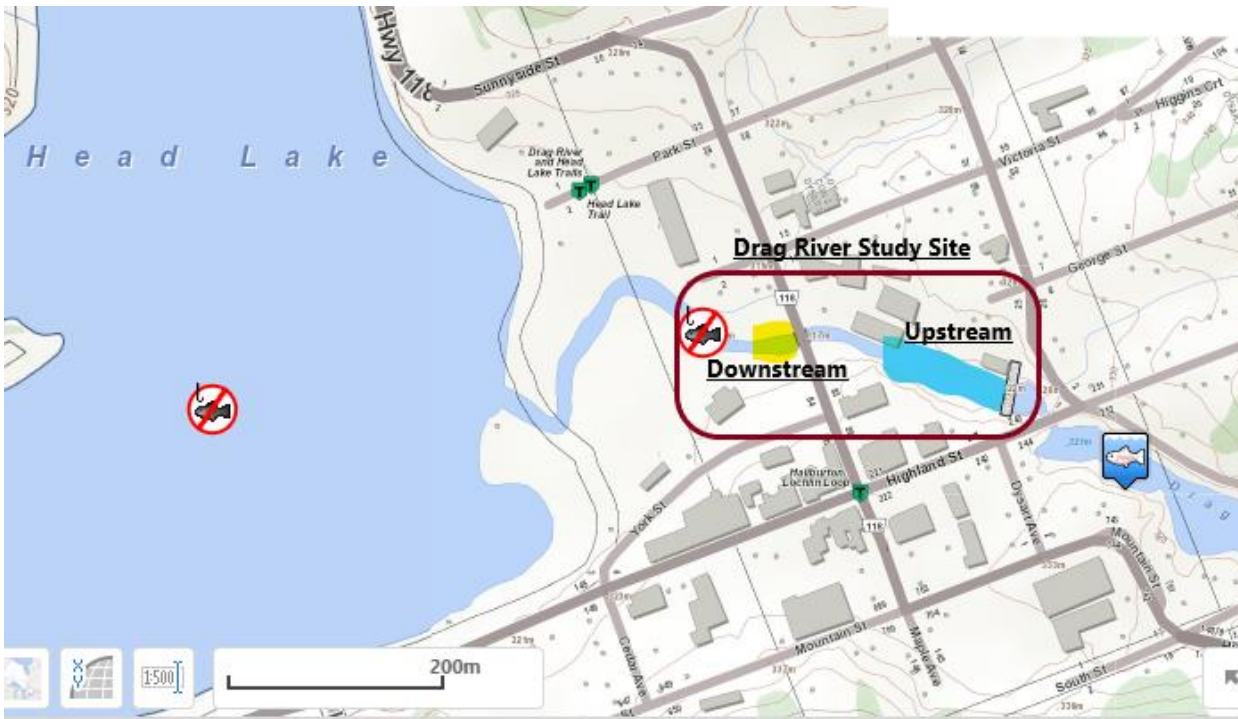
## Walleye Spawning Survey Report: Drag River, Haliburton, Ontario, 2021. Denis McGee , April 2021

### Introduction:

The river has been informally surveyed for the past 5 years but not surveyed every day of the spawning run. This is the first year a formal nighttime survey has been carried out from the start to the end of the run since the “Walleye Watch Program” started and coordinated by Dave Flowers, retired OMNRF Biologist. The “Walleye Watch Program” ran for almost 15 years in the early 2000’s. It is hoped with these standardized protocols and fixed survey areas, that this initial year will form a baseline of data for future years and may be comparable to past data collected in the “Walleye Watch Program”. The objective is to survey every year into the foreseeable future with these standardized protocols so that year to year data and trend over time data is comparable and may provide information to facilitate the management walleye in the Kashagawigamog chain of lakes.

### Survey Location:

The survey was performed on 2 sections of the Drag river below the Emmerson Dam in the town of Haliburton. The original survey area was only above the Highway 118 bridge but with rapid decreasing river flows the fish were observed also spawning below the bridge and the “Downstream” survey area was added by the 4<sup>th</sup> survey night. Luckily volunteers had noted numbers below the bridge on all except the 2<sup>nd</sup> night.



### Drag River Walleye Spawning Survey Study Site (Modified from Fish-Online OMNRF 2021)

Thus, 2 different sites were surveyed every night from the 4<sup>th</sup> night until the end of the run.



### Upstream and Downstream Walleye Survey count sites (Modified from Fish-Online OMNRF 2021)

#### **Survey Procedure:**

1. The Drag River “Downstream”, “Upstream” sights were checked nightly starting March 28<sup>th</sup>, 2021 to determine the start of spawning run. Just a note after a chat with Dave Flowers... they use to check the river mouth also to determine when the fish were staging and getting ready to head upstream. I hope to follow/incorporate this practice next year.
2. Day 1, The run began April 2<sup>nd</sup>, 2021.
3. Day 2, April 3<sup>rd</sup>, 2021, we had a volunteer meeting/induction at the Drag river and did a count together. We identified the need for a bright light that was able to illuminate walleye eyes on the far (River Right) bank. Although a standardized light intensity would be best, we obviously couldn't expect volunteers to shell out money to purchase a special spotlight.
4. The survey started at the dam and moved down river sweeping the light beam back and forth slowly ensuring the entire river was covered using a “paint roller coverage” technique.
5. As seen in the satellite image above the “Upstream” survey area ended at a ribbon placed on a bush at the down river end. This location was picked since the riverbank vegetation became too dense to allow for proper fish spotting.
6. The “Downstream” survey area was surveyed from the Highway 118 bridge using the same light sweeping technique to the end of the cobble area just downstream of the bridge.
7. The level of sampling intensity was to run about 15-20minutes for the count depending on the number of fish to be counted.
8. Fish were tallied by species, with 2 separate counts, “Upstream” and “Downstream” and reported nightly via email.

9. The following were also recorded on a daily basis:

i. Water temperature at 5pm.

ii. Flow (qualitative description, Very high, high, medium, low, very low, very very low). Mac Ellis, retired Trent Severn Waterways (TSW) employee, is making arrangements to get actual flow data from TSW for us.

iii. Head lake ice condition

iv. Survey time and duration

v. Surveyors names

vi. Intermittent day time counts were also recorded the same as the night survey.

vii. Head Lake level in meters. Obtained from the TSW website.

viii. Comments

10. The survey was stopped when no walleye were observed in the river for 2 consecutive nights.

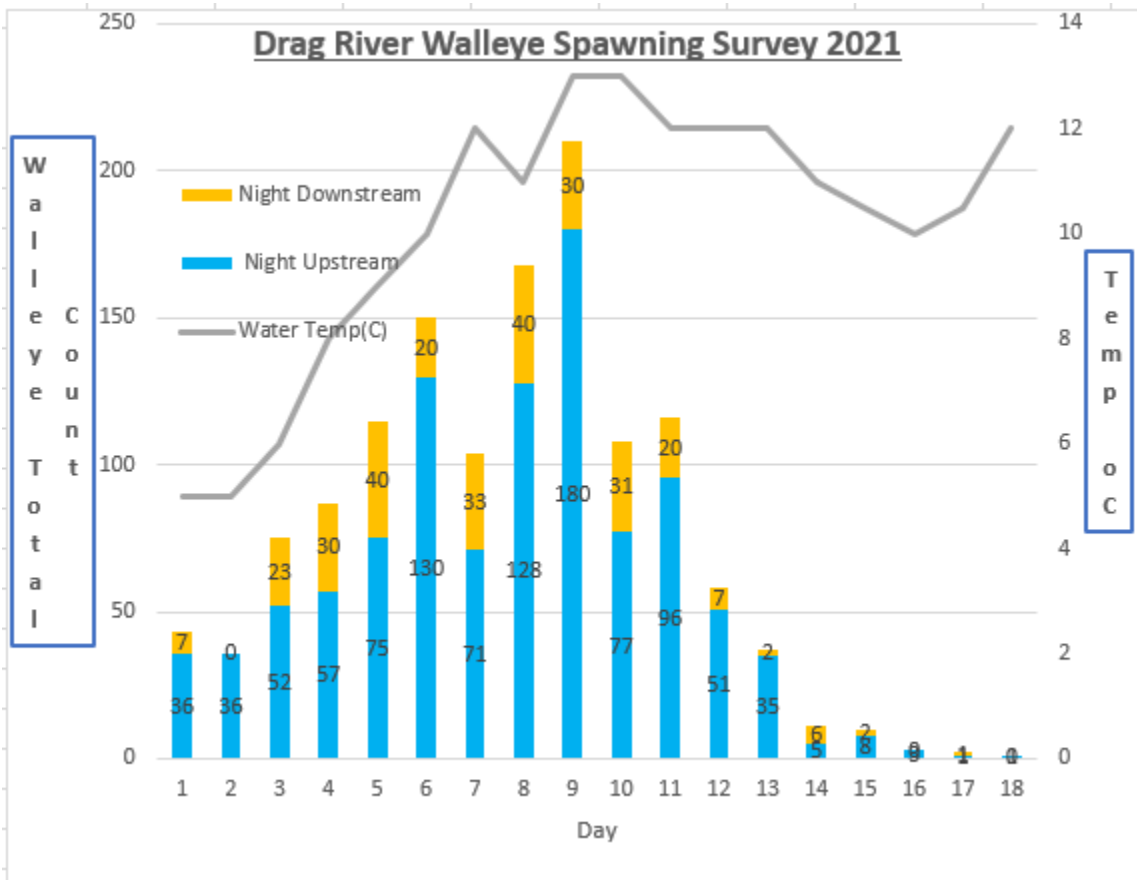
See the table in the results showing all the data collected.

### **Results:**

The walleye spawning run started on April 2<sup>nd</sup>, 2021 with a water temperature of 5°C , high flow and 90% grey ice cover on Head lake with open water at the Drag river mouth extending out roughly 250m. The walleye run lasted 18 days, ending April 20<sup>th</sup>, 2021 and can be seen in the Drag River Walleye Spawning Survey graph below.

#### *Walleye Spawning Run Count:*

The run seemed to peak day 8 and 9 with a maximum total number of fish in the river being 210, April 10<sup>th</sup>. This maximum is quite low, compared to the 600-1000 total counts reported by Dave Flowers, per night back in the “Walleye Watch” days. The minimum count was 1 walleye on the last 2 days of the run which seemed to be a lonely, confused male in the pool below the dam. The average number of walleye per night was 74 with the majority being below the dam at the top of the “Upstream” survey area. Note, that this average is calculated with no Downstream count on night 2, April,3rd. The total walleye count was 1334 for all nights combined. In the graph you can see the break down between Up and Downstream counts and the daily water temperature. The numbers for the last few days are hard to read in the graph but can be easily seen in the table.



**Drag River Walleye Spawning Survey Graph** (Note: the Night Downstream count on Day 2 of zero is actually not a zero observed, but there was no recorded survey of that section that night)

**Drag River Walleye Spawning Survey Table** (NR = no record)

Date	Walleye Day Count Upstream	Walleye Day Count Downstream	Walleye Night Count Upstream	Walleye Night Count Downstream	Walleye Night Count Total	Water Temp(C)	White Sucker	Survey time(min)	Head lake level(m)	Drag River Flow	Lake ice condition	Surveyors
02-Apr-21	11	0	36	7	43	5	0	17	1.116	high	grey with river flow	D. McGee
03-Apr-21	5	0	36	NR	36	5	0	17	1.102	med	grey with river flow	D. McGee
04-Apr-21	4	1	52	23	75	6	0	19	1.173	med/low	grey with river flow	R. Charter
05-Apr-21	6	1	57	30	87	8	0	19	1.151	low	70% ice cover	Dave, Nick
06-Apr-21	NR	NR	75	40	115	9	0	21	1.24	vlow	ice cover 40% and m	Nick, Sue
07-Apr-21	16	13	130	20	150	10	0	17	1.273	vlow	ice out today and la	Steve, Karen
08-Apr-21	10	0	71	33	104	12	0	15	1.295	vlow	open water	Dan, Ken
09-Apr-21	15	9	128	40	168	11	0	16	1.315	vlow	open water	Steve, Peter
10-Apr-21	NR	NR	180	30	210	13	0	25	1.329	vlow	open water	Paul and Randy
11-Apr-21	20	5	77	31	108	13	0	18	1.357	vlow	open water	Denis
12-Apr-21	NR	NR	96	20	116	12	0	16	1.387	vlow	open water	Nick, Sue
13-Apr-21	NR	1	51	7	58	12	0	18	1.404	vlow	open water	Nick, Sue
14-Apr-21	NR	NR	35	2	37	12	2	15	1.419	vlow	open water	Steve
15-Apr-21	NR	NR	5	6	11	11	0	20	1.427	vlow	open water	Dan/Brenda
16-Apr-21	0	0	8	2	10	10.5	4	10	1.439	vvlow only	open water	Steve
17-Apr-21	0	0	3	0	3	10	0	18	1.434	vvlow only	open water	Randy
18-Apr-21	NR	NR	1	1	2	10.5	0	15	1.428	vvlow only	open water	Denis
19-Apr-21	NR	NR	1	0	1	12	0	10	1.42	vvlow only	open water	Denis
20-Apr-21	NR	NR	0	0	0	10	0	10	1.438	vvlow only	open water	Denis
21-Apr-21	0	0	0	0	0	10	0	10	1.447	vvlow only	open water	Denis

Water Temperature:

The run started with a water temperature of 5°C, and steadily rose to a maximum of 13°C at the peak of the run. The number of fish in the river rose as the temperature rose to the peak April 10<sup>th</sup>. Colder weather with near freezing nighttime temperatures resulted in a decrease in water temperature and 10°C at the end of the run. Based on the literature 7-8°C are optimum spawning temperatures for walleye in our area.

*Water Flow:*

Since the water temperature was below optimum, the main trigger for the start of the run could have been the high water flows in The Drag river for 2 days prior to when the walleye first appeared. Since no real time water flow data was available it was simply recorded qualitatively, at the same time water temperature was taken daily. As already mentioned, Mac Ellis will be providing actual water flows in the near future and this report will be updated. The run started with a high flow, with the 2 large boulders at the based of the dam being covered in white water and started a gradual decline on the second day with medium flows, part of the boulders visible and decreased gradually to low with 75% of the boulders visible at the peak of the run April 10<sup>th</sup>. The flow decreased everyday until April 16<sup>th</sup> and then leveled off with very, very low water and no water coming over the logs in the Emmerson dam and the only water flowing was coming from between the dam logs. The 2 large boulders were 95% above water at this time but water depth was maintained by the rising Head lake water level backwatering the river.

On April 16<sup>th</sup>, with very low water flow there were large masses of white walleye eggs visible in the shallow cobble in the middle of the river just below the dam. After checking with Dave Flowers, it seems this is a normal location and abundance for these eggs. They were still covered with water and just became visible because of the reduced water flow and water depth.



Walleye Egg Accumulation Area Below the Emmerson Dam, (Modified from Fish Online OMNRF 2021)



**The Water Flow at the Emmerson Dam:** Note the very low flow with only water coming through the logs not over them. The orange area shows the walleye egg accumulation area, April 16<sup>th</sup>, 2021.

*Head Lake Level:*

The run started with high river flows and lower lake levels of 1.116m and gradually increased to a lake level of 1.44m at the end of the run with an average of 1.34m. As mentioned above this increase of 0.33m or 33cm over the 18 days allowed for river water depth to be maintained, keeping all eggs and spawning area water covered.

*Head Lake Ice Cover:*

Head lake was still 95% frozen with grey old ice, with the shore ice melted, when the run started but the high flows in the Drag River had opened up the river mouth ice and that opening extended almost to Halbiem Point.

*Survey Time:*

Fourteen HHOA and other volunteers carried out the survey nightly over 25 nights, including prior to and after the run had finished. The survey took place at first total darkness which usually ran from 8:45 pm to 9:30ish. The average survey time of the Up and Downstream areas was 16.3 minutes with a maximum survey time of 25 minutes, April 10<sup>th</sup>, the night of the maximum count of 210 walleye. The minimum time was 10 minutes when there were no walleye left in the river at the end of the run.

*Other Fish Species Observed:*

Common White Suckers showed up for the first time in the river in the Downstream section on April 14<sup>th</sup>, the 13<sup>th</sup> day of the walleye run and as the walleye run was ending. The water temperature was 12°C well past their desired 8-10°C preferred temperatures. They were observed during the day actively spawning in the cobble of the Downstream section and a heads up was emailed out to surveyors. That night there was a count of 2 and then 4 on the night of April 16<sup>th</sup>. The total walleye count for that night was 10. Suckers were not seen again, night or day, for the duration of the survey.

*Other Observations/ Comments:*

There was some evidence of potential poaching attempts with 2 white plastic jigs observed on the river bottom that appeared between the start and end of the run. OMNRF No fishing signs with applicable dates may help. Similar signs were/are posted during the walleye run at the locks in Lindsay, Ontario.

Two dead walleye were observed in the upstream section. One was on the bank and one was in the river just downstream of the egg accumulation area.

The cobble/boulder/ gravel is about 50% embedded in the "Downstream Section". The fine sediment(sand) between the spawning substrate probably originates from winter sand applied to the road, bridge and adjacent parking lots where small sand piles are next to the river. Dave Flowers mentioned that they use to have an arrangement with the Fire Department and they would "fire hose"/clean the spawning substrate every 2 years to remove the fines.

Dave Flowers comments on the Kash Chain lakes walleye ( potential action items/steps for HHOA):

1. Tagging studies show that fish spawning in the Drag River come from the entire chain of Kash lakes indicating it is the single greatest site for walleye production in the Kash Chain.
2. The Drag river spawning areas were traditionally cleaned by volunteers with fire pumps and hoses borrowed from the OMNRF Haliburton Fire Base every 2 years.
3. Fifteen years of Drag River Walleye Watch and Kash lakes walleye sampling data is available and digital at the Minden, OMNRF.
4. The OMNRF had a Water Management Agreement/Plan with TSW, that provided a prescribed minimum water flow during the spawn and for 2-3 weeks after the spawn. There was daily mandatory flow data reporting by TSW during this time.
5. Dave sees the Drag River as the main and most important walleye production site in the Kash lakes chain and advises, restoration efforts be concentrated here ... Prime site management and the biggest bang for your buck.

Summary:

The walleye spawning survey was done over 25 nights and the spawning run lasted 18 days (April 2nd to April 19<sup>th</sup>, 2021) with a total count of 1334 walleye in the 2 survey locations. The maximum one night count was 210 walleye.

We would like to thank all volunteers who participated in the survey and look forward to next years walleye spawning run and survey and welcome any constructive criticism/ input that would improve the process in the future. Send input to mcgeedenis@gmail.com

Tight lines and all the best, Denis