

Summary of Activities

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Subject: 2017 Beaver Lake - Walleye stocking success & recruitment survey

Location: Beaver Lake, Duck Mountain Provincial Park, 14U 373176 5740308

Background info: Over the last several years, great effort has gone into managing Beaver Lake as a remote walleye fishery. The lake has been a received walleye via the Beautiful Lake Walleye Transfer since 2011. During this time, this 20.5 hectare lake has become quite popular to many anglers. In 2016, a thorough review of past surveys and stocking efforts was completed and several suggestions/considerations have been incorporated into current management strategies specific to Beaver Lake. Please review the "2016 Beaver Lake - walleye stocking success & recruitment summary for more details on past work completed on Beaver Lake.

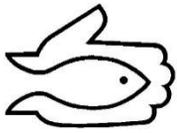
In review of 2016 recommendations include:

- 1) Continue further enhancing spawning habitat (shoals and "Keys Creek")
- 2) Continue with stocking walleye fingerlings (or larger fish) from Beautiful Lake with recommended rates/frequencies.
- 3) Collect more info on angling pressure and quality
- 4) Continue with annual recruitment surveys
- 5) Re-evaluate management objectives.

Results:

In 2017, SVSFE continued with annual recruitment surveys as this assessment is an efficient method to monitor stocked walleye and recruitment overtime. On September 7th, technicians attempted to replicate the 2015 & 2016 electrofishing surveys. Unfortunately, mechanical issues arose with the electrofishing boat and only two of the five transects were completed. Technicians returned on Sept 27th and completed the remaining three transects. Transects fished approximately 200m of shoreline for an average 523 seconds per transect. Effort was made to collect as many fish as possible. All walleye were sampled for length and weight and released. Structures were collected from a selected few walleye for ageing analysis. Yellow perch and white suckers were counted and released. Technicians did note size of yellow perch as either large, medium or small, with 15 sampled for fork length to gather an idea of the size of perch present.





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In terms of walleye, a total of 94 were captured. Of these fish, the mean length was 258 mm, with a good portion of the fish between 150-250 indicating good survival of the 2016 Beautiful Lake stocking. No fish in the designated protected slot were found, being comparative with past results... "high catches of recently stocked walleye but little sign of larger walleye". It is encouraging to state, one young of the year walleye was found in 2017.

The lake has received a total of 5,038 walleye from Beautiful Lake, ranging in sizes from 80 mm up to 400 mm at times. From 2011 to 2016, the lake received annual stocking (Table 1). Following the 2016 review, it was decided to change stocking frequencies to once every two years. This would help reduce age class suppression and lower intraspecific competition of walleye. The following are comparative figures from 2015 to 2017.

Table 1: Beaver Lake stocking history from 2011 to present

Year	2011	2012	2013	2014	2015	2016	2017	Total
# of fish	548	90	882	737	865	1,916	0	5,038
Average size	34.5cm	27.6cm	17.5cm	24.4 cm	32.2cm	17.0cm	24.5cm	

Over the three year period, walleye composition within the population has been on the incline as a result of annual stocking efforts. In 2017, the population was comprised of 24% walleye, 69% yellow perch and 6% white suckers (Figure 1). When evaluating the relative abundance of a population, catch per unit effort (CPUE) is used. CPUE of walleye has increased significantly after the 2016 stocking with 129 fish/per hour compared to 78.2 fish/hour and 52.8 fish/hour in 2016 and 2015 respectively. Yellow perch CPUE has increased slightly since 2016, while white suckers remained fairly consistent in the past two years (Table 2).

Figure 1: 2015-2017 Beaver Lake Species Composition

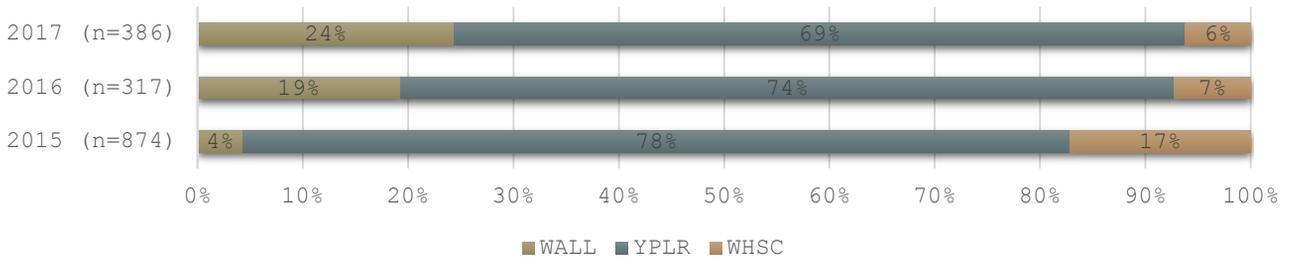
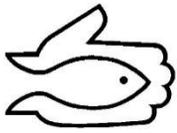


Table 2: CPUE of all species from 2015 - 2017

Catch per Unit Effort (# of fish/hour)			
	WALL	YLPR	WHSC
2015	52.8	952.8	208.3
2016	78.2	298.7	29.5
2017	129.2	368.4	33.0



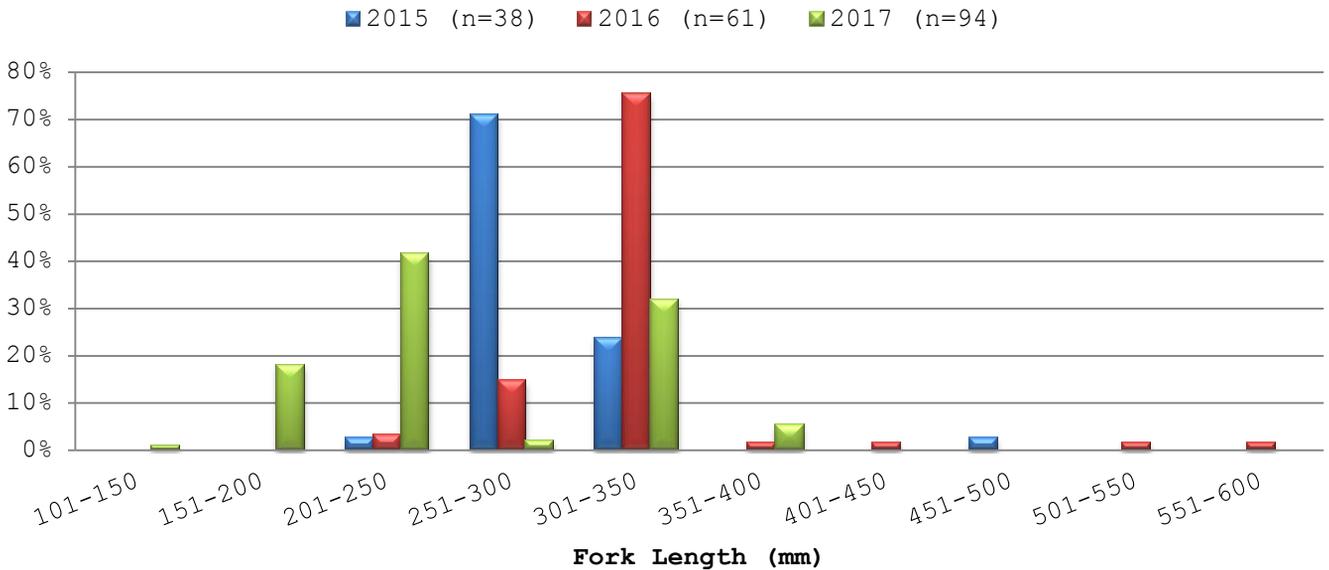
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Of the walleye sampled, 59% would be fish from the 2016 stocking. These fish are too small for anglers to harvest at the 200 mm size. Unfortunately, the strong size class of 300-350 mm (12-14") found in 2016 has significantly dropped. On a positive note, the occurrence of finding natural recruitment, though minimal, is reassuring. The 0+ walleye measured in at 135 mm and was located at the last transect, which happens to be the seine location where the original yoy was caught in 2013 and where one of the shoals were created in 2014.

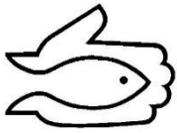


**Beaver Lake Length Frequencies
collected via electrofishing surveys 2015 -2017**



It is evident the walleye have impacted the once abundant perch and sucker populations, but these species appear to be maintaining consist levels, surprisingly even after a heavy stocking in 2016. Few forage species were caught during the survey in 2017. The fish were too small and many slipped through the mesh of dip nets. Technicians documented longnose dace and black-sided darters as the present forage.

When reviewing the size of walleye present in Beaver Lake, one obvious trend is apparent. There is a lack, or in the case of 2017, an absence of walleye over 450mm. This is a direct response to angling pressure, as walleye are being harvested prior to reaching the protected slot. Unfortunately, the lack of mature walleye significantly decreases the degree of recruitment.



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In regards to the considerations stated in 2016, there are a few initiatives that still require work

- 1) Habitat Improvements - enhancing the newly created shoals and beaver dam removal on the Keys Creek have not taken place. Both activities would commence during the closed water season. Beaver dam removal requires permission through Parks Branch and SVSFE still needs to inquire whether beaver dam blasting in the park would be permitted or viable. Placing additional rock on the shoals requires significant planning, funds and manpower. SVSFE has agreed to fine-tune one of the shoals to provide more suitable substrate and will be complete when time permits (~2018/19).
- 2) Stocking Strategies - currently the stocking prescription includes stocking fingerling (or larger) walleye on alternate years at a rate between 600-1000 walleye/year. Beaver Lake is scheduled to receive Beautiful Lake walleye in 2018. This is dependent on available stock following this winter, as Beautiful Lake will not receive fry in the spring of 2018. Over time, managers may be required to consider fry stocking if the transfer program ceases or road conditions limit access.
- 3) Angling Pressure - Because this lake is low profile or "off the beaten path", degree of use is unknown. Unfortunately collecting voluntary creel data can be very difficult and without having an individual monitoring the lake, it is hard to quantify both pressure and harvest accurately. SVSFE was not confident signage and traffic counters would provide valid data. What we do know is the fishing has been great and anglers are using it. This year many anglers noted large catches of small walleye, corresponding with the 2017 data. At this time, SVSFE has decided communication between the local fisherman will suffice.
- 4) Electrofishing Surveys - This survey is very time efficient in monitoring fish stocks. It is recommended to replicate this survey on a rotational basis of once every 5-6 years.



SVSFE is optimistic with continual stocking efforts and habitat improvements, this little lake will provide anglers with a secluded walleye fishery for years to come. Big thanks to our crew members this year; Tammy Forsachuk was an excellent first time dipper and dedicated trouble shooter when the eboat broke down. Ken Kansas for your ongoing mentoring and guidance on all our fishery initiatives.