



2022 Big Bobs Lake Stock Assessment

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

Executive Summary

SVSFE applied to the Fish and Wildlife Enhancement Fund to investigate walleye stock on Big Bobs Lake, a secluded backcountry lake in the Duck Mountain Provincial Park. The lake received one planting of 200,000 walleye fry in 2011. This report is an overview of findings from the first stock assessment and bathymetric survey completed in the fall of 2022.

Big Bobs Lake has an area of 134.0 hectares, 62% being littoral (<3m) with structure suitable for both walleye and yellow perch. Results found a very bountiful walleye population and numerous attractive yellow perch in this hidden fishery. A total of 510 walleye, 30 yellow perch, and 9 suckers were sampled during the assessment and fish were in great condition. Growth and age analysis validate successful natural recruitment with strong age classes of 4+, 5+, and 6+ year-old walleye. Walleye growth is also comparable with other walleye lakes in the Duck Mountains and perch populations are favourable for anglers.

At current, Big Bobs Lake could be considered one of the best walleye/perch fisheries in the Duck Mountains. It is predicted this exceptional fishery will fluctuate over the years. The lake has a history of periodic winterkills and high-water years could re-introduce pike to the system. Not many are aware of this unique fishery. The lake is approximately a 20km ATV ride in from the mountain boundary and can be difficult to access on wet years. The access limitations are likely what limited angling pressure and even awareness of the fishery. There are a handful of locals that truly value what this fishery has offered over the years. The Bullock family and friends have been visiting the lake for over 80 years and helped initiate the walleye stocking back in 2011.

It is expected over time, more anglers will discover this fishery and conditions should be monitored through angler reports and winter dissolved oxygen testing. If managers are faced with another severe winterkill situation, considering a short-term rainbow trout introduction during the re-establishment of walleye might be of value. This lake possesses many qualities to create an excellent fishery for anglers whether it be a stocked trout or walleye/perch fishery. As conditions change, management strategies should adapt. Understanding when these conditions occur will give managers the opportunity to stock species at the ideal time, with the end result providing one of the most exceptional backcountry fisheries in the Duck Mountain Provincial Park.

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Study Area

Big Bobs Lake is a backcountry fishery located 32.75 km southeast of Swan River, MB on the north edge of the Duck Mountain Provincial Park (Figure 1). To access the lake, anglers are required to ATV ~20 kms from the forest boundary along Route W (Figure 2). This trail is somewhat maintained thanks to the locals and snowmobile club. Summer access can be quite difficult on wet years. Winter access from PR#366 via the snowman trail is preferable. The access point can facilitate small watercraft and crosses through a permitted eco-tourism hunting/fishing camp (Figure 3). The lake is 134 hectares with a maximum depth of 6.4 meters, mean depth of 2.35 meters and 82.9 hectares of littoral habitat (62%). The lake has one tributary connected to Little Bobs Lake and the one main outflow has downstream continuity to the Roaring River. Targetable fish species currently present are walleye and yellow perch.



Figure 1: Big Bobs Lake, Duck Mountain Provincial Park

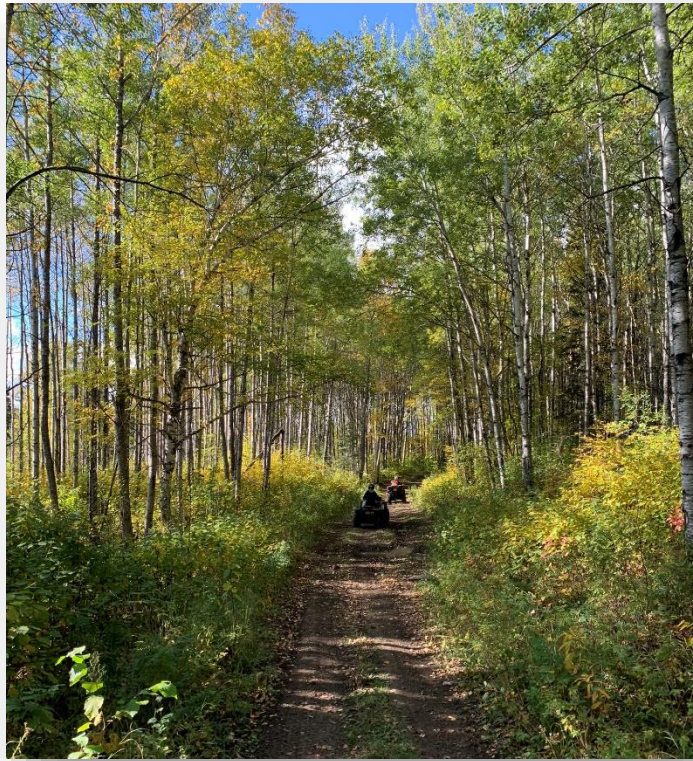


Figure 2: ATV trail to Big Bobs Lake



Figure 3: Lake access near trappers' cabin

Background Information

Big Bobs Lake is a backcountry fishery accessible by ATV or snowmobile on the northern edge of the Duck Mountain Provincial Park. The first trappers cabin built at the lake was Bob Burby's, who the lake was said to be named after (Bullock, 2022). Historically, Big Bob's Lake was considered a characteristic Duck Mountain pike/perch fishery. Winterkill occurrences over the years have altered the composition from time to time, though pike and perch were the dominate species.

There is limited historical information in the Manitoba Fisheries files. Fortunately, the Bullock family, who operate the hunting/fishing camp, were quite helpful in providing some great insight on the fishery. George Bullock has been visiting and fishing the lake for over 81 years. They first built the cabin in 1953, which was rebuilt in 1992 after an unfortunate winter fire. In the earlier years, George stated they would only catch pike. Time to time the lake would winterkill but the pike would always return at some point. George and wife Gin recall the lake winterkilling about four times over the 70+ years they spent there and usually occurs on a 20-year cycle.

From their many years on the lake, they gained significant knowledge about the fishery. They believe it was around 2004 when the last winterkill occurred. This was followed by several years of no fish being caught. Following this, family friend Darrell Ray, suggested stocking walleye. With top predators and competitors absent from the system this was a great opportunity to increase stocking success. Darrell was instrumental in acquiring approvals and organizing the stocking event. On May 22nd 2011, the Bullock's and Darrell assisted Fisheries Branch staff in stocking 200,000 walleye fry supplied from the Swan Creek Hatchery. Gin explained this wasn't as simple task as it was a very wet spring, and the trail was in poor condition. Determined, Darrel took extra measures and brought a rubber boat/barge in to cross a beaver flood and then backpacked the fry the last 1.5 miles to the lake. George and Gin assisted with stocking fry from their boat. This partnership event was the introduction of walleye to Big Bobs Lake.

Little follow-up assessments were completed. In 2013 SVSFE technicians completed one dissolved oxygen testing on February 7th. Levels were fair with readings of 4.12 mg/L at 1.5 m below the surface (tolerable levels are >3mg/L - Colby, 1979). George and Gin remember some winters with excess shrimp and brown water but don't recall it having any connections with winterkills. Following this, the lake somewhat fell under the radar. It wasn't until years later, in reviewing lakes requiring contour data collection, Big Bobs Lake was added to SVSFE's master list. This then determined it was also long overdue for a stock assessment.

Objectives

The main objective during the 2022 fall assessment on Big Bobs Lake was to evaluate the results from the 2011 walleye fry planting and gather an up-to-date inventory of the fishery. In addition to the stock assessment, contour data was collected to create a bathymetric map of the lake. Findings would then be shared with fisheries management to review current and future management strategies.

Methods

Depth and Habitat Mapping

To create a depth map for lake users, SVSFE technicians utilized a Garmin EchoMap UHD75sv to sound the lake. Transects were run both east-west and north-south to gather a sufficient dataset. During this time, habitat features were also documented. Once depth sounding was complete, the raw data was submitted to volunteer GIS analyst, Eric Wienckowski of the University of Minnesota. Eric has developed contour data files (pdf, jpeg, kmz, gpx) for SVSFE over the years which provide managers and anglers with various options to interpret lake bathymetrics.

Stock Assessments

The methodology used to assess the Big Bobs Lake fishery was a variation of Ontario's End of Spring Trap Netting (ESTN). This live release method was the sole method of capture and sites were chosen according to depth suitability (gap 1.7-3.6m). The assessment was initially designed to set four overnight trap nets fishing for a minimum of 21 hours. Due to unforeseeable high catches, effort was decreased to two overnight sets to decrease the stress on fish as additional nets would be in close proximity. The nets used were standard Lake Superior trap nets which consisted of a 6'x 6' x 11'4" crib and 150' lead. Information recorded at set time included: project site code, UTM coordinates of set location, site type (general substrate, fish cover), net set crew, set date & time, lead length, distance offshore, angle to shore, start depth, mid depth, gap depth, and any comments. Information recorded at net pull consisted of; net lift crew, lift date & time, effort status, duration of set, water parameters, and weather conditions.

As the trap net was pulled, the crew would process a handful of fish at a time by placing them in an onboard live-well, leaving the remaining fish in the trap to swim freely. All game fish caught were identified by species, sampled for fork and total length and weight. A subsample of walleye age structures (scales) were collected. Once fish were sampled, they were released, and trap nets were removed.

Results

Depth and Habitat Mapping

Collection of contour data and habitat parameters were completed on September 26th and 28th (Figure 4 & 5). Depth information and promotional photos taken during the survey have been uploaded to the SVSFE website under the "Go Fishing Page". The data and photos have also been shared with Robert Moszynski (ARD) who updates Manitoba's "Lake Information for Anglers" website with the new data. At current, lake information is available to anglers for the upcoming hard water season at <https://swanvalleysportfishing.com/go-fishing/>

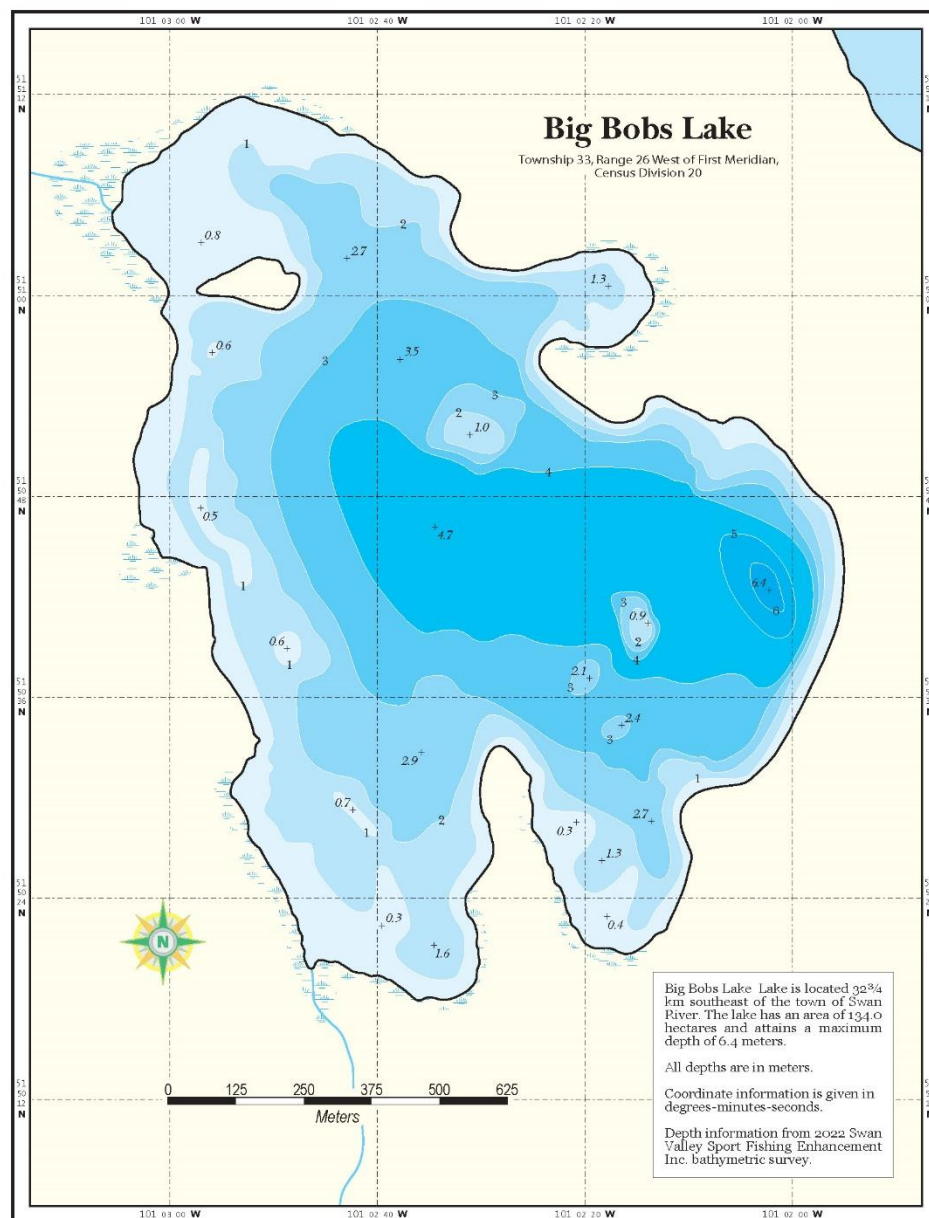


Figure 4: Big Bobs Lake bathymetric map

Vegetation

emergent	Submergent
A - cattails	a - chara
B - sedges	b - cabbage
C - pondweed	c - coontail
D - bulrush	
Bo - Boulder	
Co - cobble	
Gr - gravel	
SA - Sand	
SI - Silt	
MU - muck/detritus	

BIG BOBS LAKE HABITAT SKETCH 2022

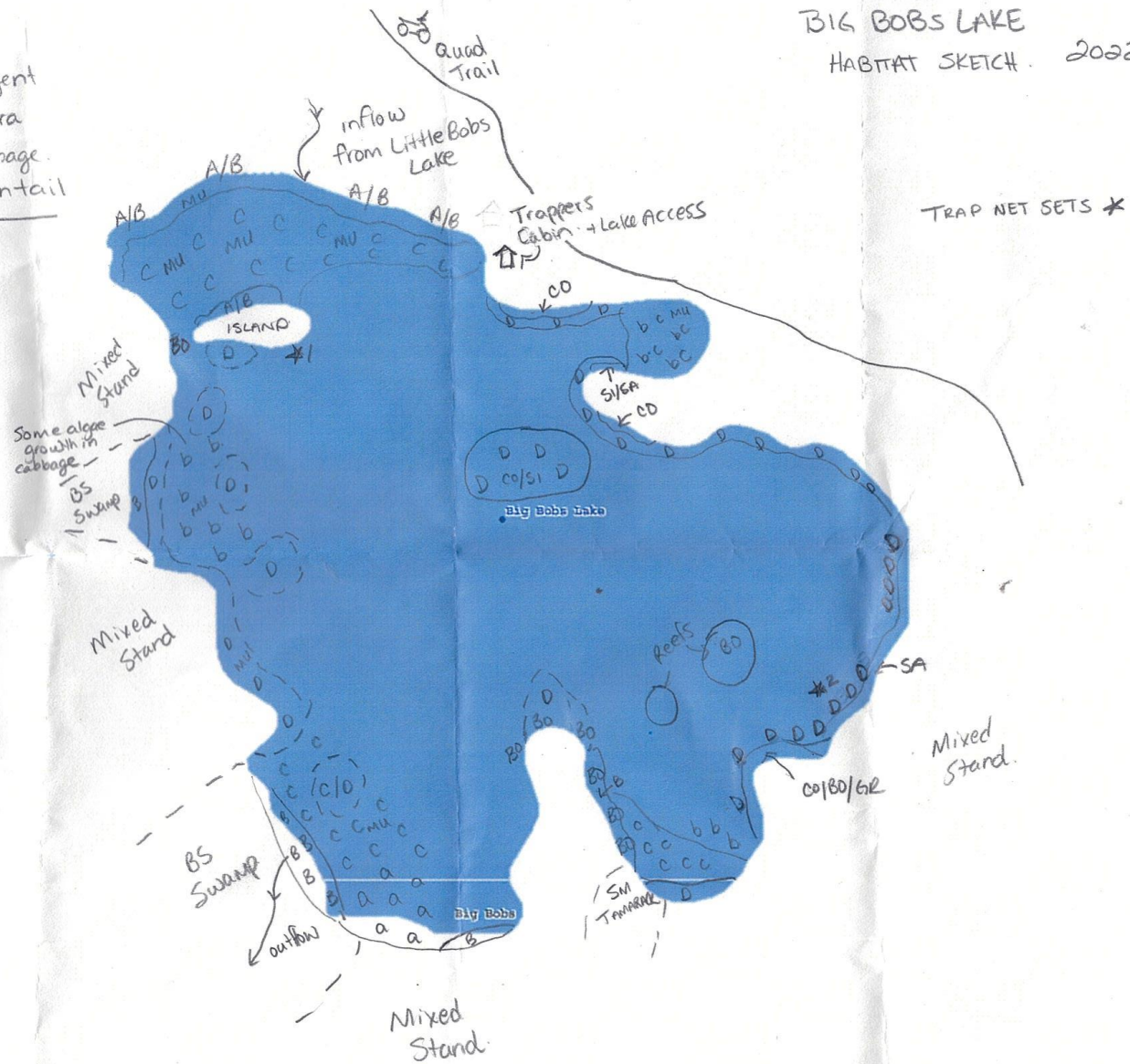


Figure 5: Big Bobs Lake habitat sketch

Stock Assessment

Netting occurred on September 26th and 27th, 2022. Two trap net sets were completed, and effort equated to 47.25 fishing hours (Figure 6). This yielded a total catch of 549 fish with 93% of the population being walleye, 5% yellow perch and 2% white suckers (Figure 7). Site #1 yielded the highest catches of walleye and yellow perch. Weather remained fair with water surface temperatures of 10°C and southwest winds up to 15km/h. Catch results are summarized as follows.



Figure 6: Trap net set locations

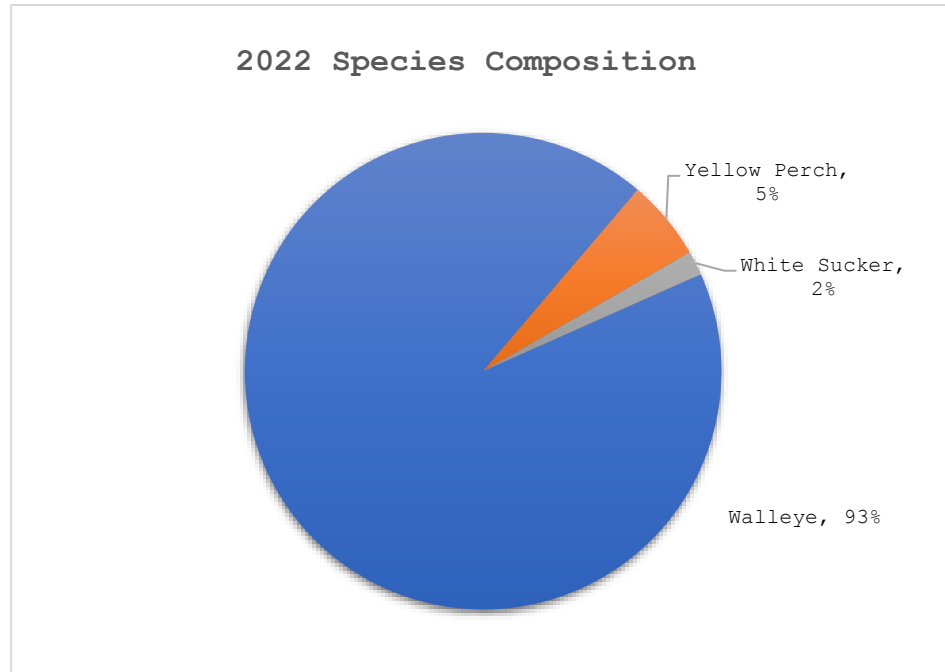


Figure 7: 2022 species composition

Table 1: 2022 Catch Summary

2022 Catch Summary									
Sample #	Hours Fished	Total Fish caught	Total CPUE	WALL		YLPR		WHSC	
				Count	CPUE	Count	CPUE	Count	CPUE
1	21.3	404	19.00	374	17.6	30	1.4	0	0.0
2	26.0	145	5.58	136	5.2	0	0.0	9	0.3
TOTAL		549		510		30		9	



Figure 8: Sample of walleye caught in trap nets

Walleye captured during the assessment ranged from 245 mm (9.6") to 715 mm (28.1") in fork length with an average of 385 mm (15"). Weights ranged from 150 g (0.3 lbs) to 3600 g (7.9lbs). Seventy percent of walleye were found to be in excellent condition (>1 CF), 24% of good condition ($0.9 - 1.0$ CF) and 6% found to be of poor condition (<0.9 CF).

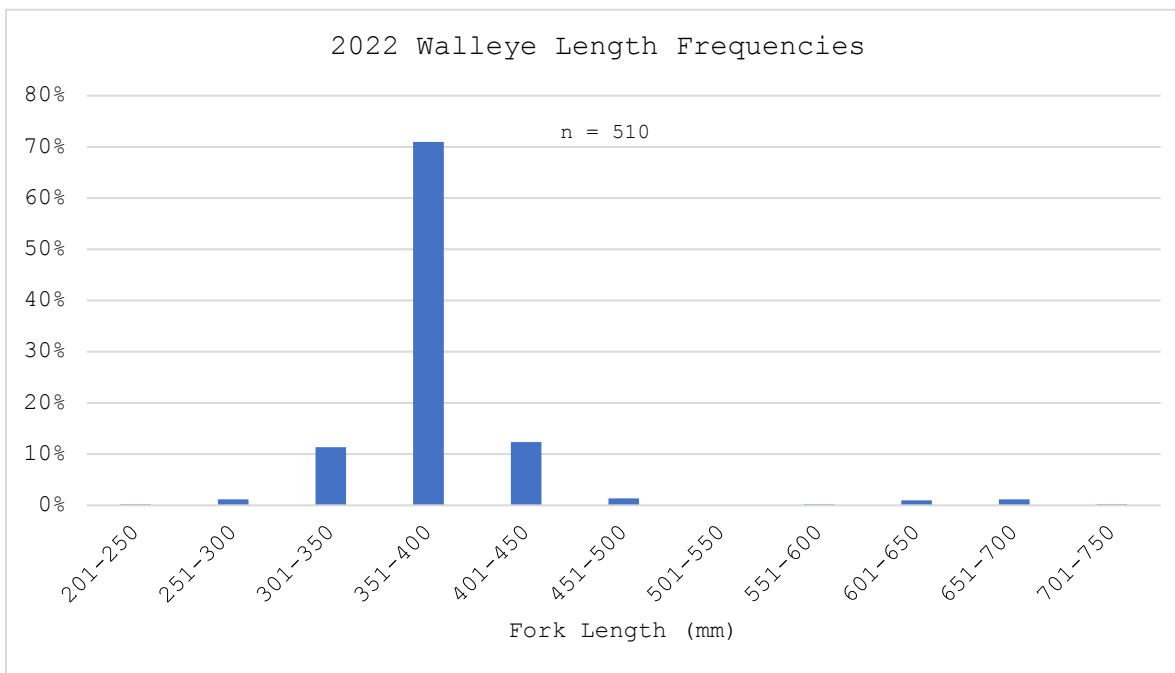


Figure 10: 2022 Walleye Length Frequencies

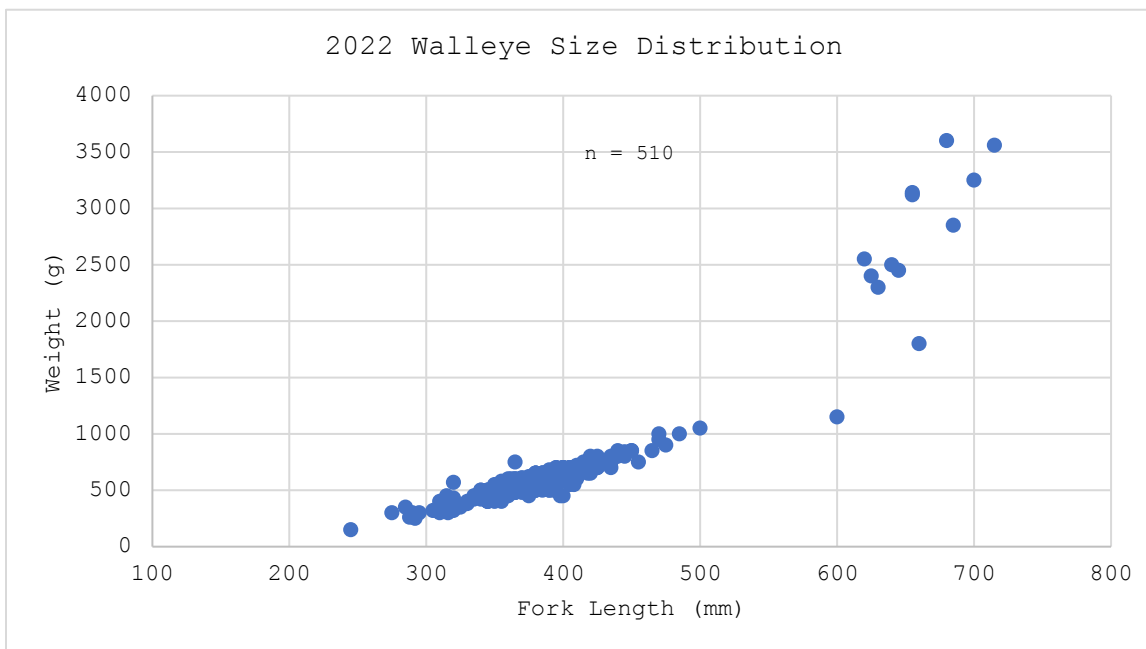


Figure 9: 2022 Walleye Size Distribution

Of the 510 walleye caught, age structures were collected on 69. From these samples, age estimates displayed a strong age five class. Walleye ranged from two to ten years of age. Size of walleye at age varied and is summarized in the Table 2.

When comparing walleye from Bobs Lake to other Duck Mountain walleye fisheries walleye were generally in similar condition to other walleye lakes (**Error! Reference source not found.**). There is a slight decrease in growth for age 5 walleye and exceptional growth displayed for older walleye (7+) (Figure 11).

Table 2: Walleye Length at Age

Walleye Fork Length at Age			
Age	Min (mm)	Max (mm)	Mean (mm)
2	285	295	289.5
3	292	390	344.0
4	360	455	394.6
5	345	500	390.8
6	375	485	417.5
7	620	620	620.0
8	600	685	653.3
9	625	640	632.5
10	630	700	665.0



Figure 12: Larger walleye found at Big Bobs Lake

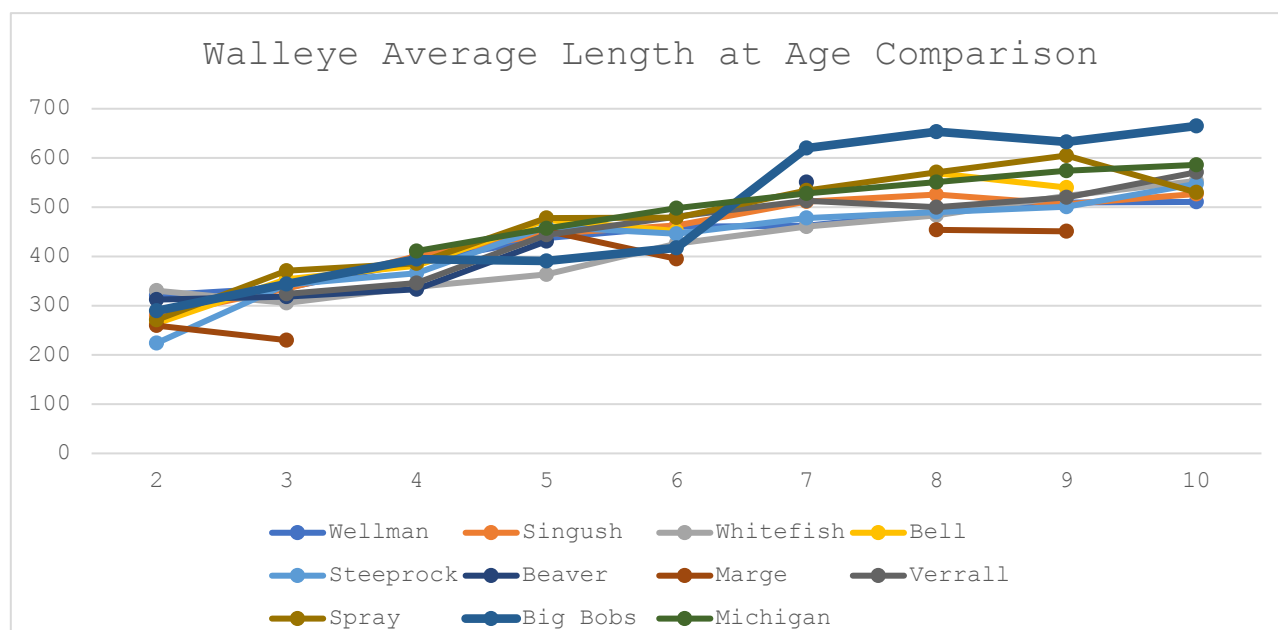


Figure 11: Walleye Average Length at Age Comparison

Yellow perch made up five percent of the catch and were only found in sample one. All perch were clear of any parasites and ranged from 220 mm to 310 mm in fork length. Of the perch sampled, over 83% were excellent specimens larger than 270 mm (10") with a few masters (Figure 13 & 14). Only a handful of white suckers were found in sample two, making up two percent of the species composition.

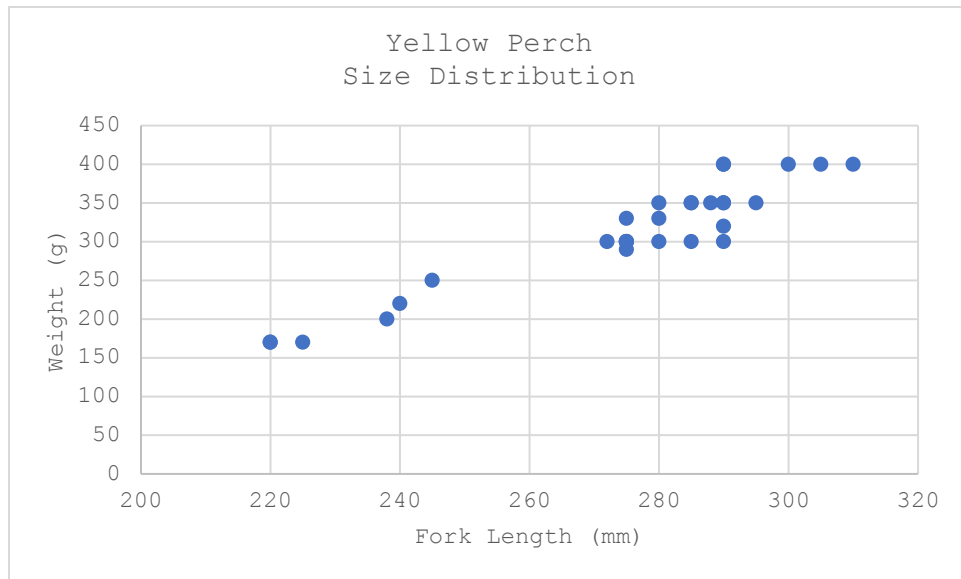


Figure 13: 2022 Yellow perch size distribution



Figure 14: Sample yellow perch

Discussion

Trap netting results found a surprising abundance of walleye, along with sizable yellow perch. The catch CPUES are one of the highest for walleye lakes in the Duck Mountains. With one net yielding over 400 walleye of various sizes, it was decided to decrease effort as netting stress was expected if additional nets were set. The objective was to gather an up-to-date inventory on the walleye stocks and 549 walleye was a sufficient sample size.

Walleye caught during the survey were in fair condition. When correlating size at age data, Bobs Lake walleye growth is comparable to other Duck Mountain walleye fisheries. One difference was older walleye (7 or older) displayed a higher growth rate than walleye in other lakes. This is likely a reflection of a developing walleye population with little predation and ample forage during the first few years of establishment. Age five walleye were found to have slightly less growth compared to other walleye lakes. With more than 70% of walleye estimated at age 4 or 5, decrease in growth is expected. An inverse relationship between walleye population density and growth has been documented by several authors (Carlander (1948), Carlander and Whitney (1961), Koshinsky (1965), and Beeton(1966)). As density increases, growth decreases.



Angling reports from Bobs Lake have been minimal. As mentioned, this lake can be extremely difficult to access on wet years and a long enough quad ride on good years. It is believed the lack of fishing reports and difficult access is likely why few anglers put effort in or were aware of the fishery. Managers had heard the "odd" walleye was being caught but little was known about angling quality. It wasn't until SVSFE starting inquiring about Bobs Lake that the well keep secret of this exceptional walleye fishery was discovered. One can understand why. The connection the Bullock family has with Bobs Lake can be easily understood by a short conversation with the couple. The years they have spent there and stories they share bring a special respect for the area. Without their insight on the fishery, the lake wouldn't be what it is today.

At current the lake angling regulations fall under the Duck Mountain Provincial Park limits of four walleye and none may exceed 55cm. This regulation is suitable considering the density of walleye present. The current biomass of fish within this smaller lake could use pressure to some degree but on the other hand, could be easily impacted in a short period. Past walleye introductions on small lakes with similar regulations have shown how rapidly a population can deteriorate from heavy angling pressure (i.e. Beaver Lake). Increased angling pressure may help decrease intraspecific competition of sizeable walleye and in turn increase the growth and health of the fish.



Angling pressure can also affect the perch populations but possibly more rapidly. There are a limited number of lakes in the area that supply anglers with parasite free perch suitable for the frying pan and high frequencies of trophy perch. With a limit of 25, perch populations could decline quickly. It would be beneficial to re-evaluate whether the regulations are effective in managing the fishery for both perch and walleye and adjust in future. The proposed regulation change would be to lower the walleye limit from 4 to 2 and lower the perch limit from

25 to 10 with a size restriction. This would protect spawning and trophy fish.

Big Bobs Lake is unique as it possesses several qualities that offer a productive walleye fishery. It has high quality littoral habitat similar to Beautiful Lake and is full of "cabbage" (pondweed), coontail, bulrush and sedge lined shorelines. There is also underwater reefs adjacent to deep water and a hidden sandy beach on the east shore similar to Wellman Lake. The bulrush patches that offer mid lake feeding areas and cover are similar to Singush Lake. The combination of these features has been supporting the growth and recruitment of walleye in Bobs Lake for over the last decade.

Winterkill is an unfortunate occurrence, but it also poses opportunity. George Bullock stated the winterkills seem to happen on average every 20 years. With the last winterkill occurring in 2004, we could anticipate another one soon. A reset to any system, it opens-up possibilities. Possibilities to start fresh if unpreferred species are present (i.e. if pike re-establish) and opportunities to introduce different species if the demand is present. As mentioned, Big Bobs Lake is presently providing habitat for walleye and perch. It could continue to do so again following a future winterkill, but it could also offer valuable habitat for a short-term rainbow trout fishery.

The lake is similar in both size and habitat to Beautiful Lake and could potentially provide a high-quality trout fishery for multiple years while walleye populations are developing. If trout growth is anywhere near the growth seen at Beautiful Lake, Bobs Lake will become a backcountry



destination. Introducing a new species involves ironing out a few logistics, especially when considering a species that is new to the lake. First and foremost, approvals are required through both Fisheries Introductions and Transfers, Manitoba Parks, and the idea should be reviewed with all stakeholders. Further assessments may be required but if blessings were granted, requests to the Whiteshell Hatchery and coordination of the stocking event itself would require additional consideration. At this point, introducing trout is simply an idea, but if planned right, could offer unique angling opportunities to both walleye and trout anglers.

For future monitoring considerations it is recommended to:

- 1) Monitor winter dissolved oxygen to document occurrences of winterkill and follow up with angler reports. It is believed that a winterkill will re-occur on occasion. Understanding when these conditions occur will give managers the opportunity to implement stocking strategies.
- 2) Consider a proactive management approach to the anticipated increase in angling pressure. At the time of writing this report, word on Big Bobs Lake had already spread. Anglers in pursuit of both walleye and yellow perch have visited the lake frequently. Discussions with managers are in the works and new regulations are under review.

It is believed Big Bobs Lake will cycle through various phases. At current it is arguably the best walleye/perch fisheries in the Duck Mountains. How long-lived this will be is uncertain. Although, with stocking strategies outlined for different scenarios, this exceptional backcountry lake hidden in the Duck Mountain Provincial Park will continue to provide angling opportunities for years to come.

References

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