

Summary of Activities

Date: December 2018

To: Ian Kitch
MB Sustainable Development
SVSFE Board

From: Holly Urban & Brock Koutecky
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Fishing Enhancement
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Subject: Wellman Lake Walleye Recruitment Surveys 2018

Location: Wellman Lake, Duck Mountain Provincial Park, 14U 369224 5741842

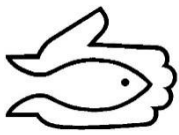
Wellman Lake is a popular destination come opening day in the Duck Mountain Provincial Park. Recreational use on the lake has expanded, and likewise has the angling pressure. Monitoring walleye stocks, harvests, natural recruitment, and stocking success has aided in management practices over the years. The lake possesses suitable walleye habitat and knowledge of the fishery helps tailor management practices. The main focus over the years has been to create a walleye fishery for recreational users.

History: Understanding the benefits of walleye fry stocking versus natural recruitment has been a topic of interest for SVSFE and lake managers for decades. Supplemental fry stocking is a common stocking practice in the Western Region, but the return to the fishery, is not always easily understood. For this reason, understanding stocking success and natural recruitment success can provide some perspective on appropriate stocking guidelines. Historically, Wellman Lake is typically stocked with ~200,000 fry on an annual basis. In most recent years, the lake has also received fingerling to sub-adult walleye annually via the Beautiful Lake Transfer Program between 2009 - 2017.

In the early 1990's it was determined Wellman Lake exhibited a lack of ideal walleye spawning habitat. For this reason, the spawning reef was enhanced by adding clean substrate to the structure. The work was completed in March of 1993 and walleye were found to successfully utilize the reef the following two years.

There was no documentation on the reef following 1995 until 2010. In 2014 a comprehensive spawn assessment determined the reef now had two issues limiting walleye usage and egg survival. (1) the rock used was too large and consisted of more boulder-cobble than clean gravel, and (2) the substrate over the last 20+ years had silted over. It was recommended a "light enhancement" be completed with the use of small diameter clean gravel.

In April of 2016, SVSFE applied for funding through the Recreational Fisheries Conservation Partnerships Program (RFCPP). The proposal was to add a thin layer (2-4") of smaller diameter clean gravel to the 1.3 m contour or less in order to provide walleye with a substrate to promote egg survival. The project was approved and the reef was re-enhanced on March 3rd and 4th, 2017.



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Figures: 2017 reef enhancement

Objective: SVSFE's two main objectives over the years from Wellman Lake has been to;

- 1) Improve walleye spawning habitat and monitor success - via annual guzzling of the enhanced reef.
- 2) Evaluate walleye recruitment by studying the success of natural recruitment vs supplemental stocking - via three-year OTC detection study.

SVSFE has been monitoring the reef since 2010. The basic guzzling survey has been efficient in monitoring changes over the past eight years. With the recent improvements to the reef, this assessment would prove valuable for monitoring results.

To understand recruitment of natural versus stocked walleye, the OTC detection study utilizes walleye fry marked with Oxytetracycline (OTC). After stocking, young of the year walleye are collected in the fall via electrofishing. These walleye would then be further analyzed to evaluate the composition of stocked (marked) walleye to natural (unmarked) walleye. From there, basic guidelines would be followed and rates applied for future stocking. Initiating the OTC detection study has been attempted over the past three years. Unfortunately, in 2016, 2017 and now 2018, the Whiteshell Fish Hatchery was unable to supply OTC marked fry. Due to the circumstances, SVSFE's technical staff recommended to carry on with the recruitment survey, as findings would still provide insight on natural recruitment for 2018.

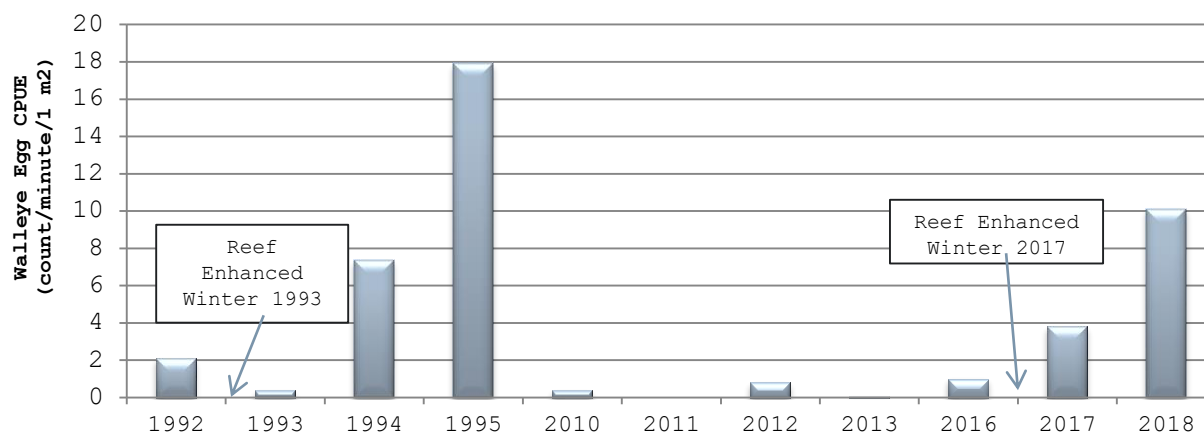


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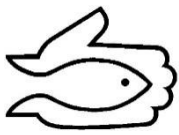
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Guzzling Surveys on the Enhanced Reef: In terms of quantifying reef utilization, guzzling for walleye eggs has been the primary method over the years. The reef was guzzled on May 23rd, 2018. Ten random sites were selected and guzzled for 60 seconds each, followed by a 30 second flush. Walleye eggs were found at eight of the ten sites. Total CPUE for 2018 equated to 10.1 eggs per minute. This rate is the highest its been since 1995. The comparison from 1992-2018 can be viewed in the figure below, along with the site specific results from 2018 in the table below.

**WELLMAN LAKE REEF GUZZLING RESULTS
COMPARISON BY YEAR**



SITE	SITE		DEPTH	EFFORT (MINS)	Comments	HABITAT				EGGS			CPUE (LIVE EGGS) (Eggs/Min)
	X	Y				BOULDER	COBBLE	GRAVEL	SA/SI	ALIVE	DEAD	Casings	
1	368881	5742248	0.75	1	ENHANCED PORTION	0	25	75	0	9	2	0	9
2	368876	5742259	0.85	1	ENHANCED PORTION	0	25	75	0	9	0	1	9
3	368880	5742269	0.95	1	ENHANCED PORTION	0	15	85	0	9	3	3	9
4	368896	5742274	0.95	1	ENHANCED PORTION	0	10	90	0	16	2	0	16
5	368912	5742293	1.08	1	1/2 OF PLOT ON ENHANCED PORTION	25	25	25	25	0	0	0	0
6	368903	5742300	0.95	1	ENHANCED PORTION	0	25	75	0	37	14	3	37
7	368896	5742303	1	1	ENHANCED PORTION	0	20	80	0	5	2	0	5
8	368889	5742296	0.9	1	ENHANCED PORTION	0	0	100	0	0	0	0	0
9	368893	5742282	0.83	1	ENHANCED PORTION	0	25	75	0	6	48	16	6
10	368881	5742287	0.98	1	ENHANCED PORTION	0	40	60	0	10	12	5	10
TOTAL				10						101	83	28	10.10



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Figures Above: Sample of eggs found on reef.



Figure: Example of a square meter site guzzled on the enhanced artificial reef. Intake end of the guzzler on the boat



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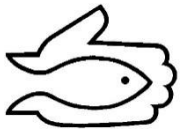
Fall Recruitment Surveys via Electrofishing: On Sept 13th, the twelve sites within the annual recruitment survey were replicated. Young of the year walleye were found at six of the twelve sites. Results are as follows;

Wellman Lake E-Fishing Walleye Summary							
		2016		2017		2018	
Site	Site #	0+	1+	0+	1+	0+	1+
East Shore	1	0	0	0	0	0	0
Nudest Beach	2	1	1	1	0	2	1
Thompkin Bay	3	0	2	4	1	2	2
Pickrel Bay (S)	4	0	0	1	1	0	0
Main Beach	5	0	2	1	0	8	1
Narrows	6	1	0	0	0	1	0
Regatta Beach	7	1	0	7	0	4	0
Regatta Camp	8	0	1	0	0	0	1
Bass Point	9	0	0	0	0	0	0
Teal Beach	10	0	0	0	0	0	0
Baptist Camp	11	0	0	0	0	1	0
Reef	12	0	0	0	0	0	0
Totals:		3	6	14	2	18	5

Note: 0+ are young of the year (yoy) walleye 1+ includes all age walleye >1+



Catches have slightly increased since 2016. Each year, technicians aim to replicate surveying methods to the best of their abilities. Weather, water conditions and sampling methods can effect results years to year. In 2018, technicians fished slightly deeper water at site #5 which resulted in an exponential increase in catches. Whether this indicates a true increase in recruitment, can not be determined but just simply noted at this time.



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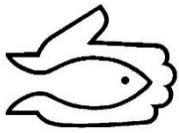
Summary: During the 2018 surveys on Wellman Lake, it is evident that walleye spawning activity has increased considerably since the addition of rock in 2017. From this information, the improvements can be considered successful in enhancing spawning habitat and attracting fish. However, it is still unknown at this time if the amount of recruitment can support the fishery naturally.

Wellman Lake is a fishery that has been manipulated for several years without truly gaining any definite results on stocking strategies. Numerous initiatives have been embarked on in efforts to increase the walleye populations; fry stocking, use of a limno-corral to raise fry, fingerling stocking, advanced fingerling stocking, stocking adult walleye from Verrall and Beautiful Lake, utilizing Loat Lake to rear walleye and releasing via Loat Creek, pike removal via the Gator Bowl derby, reef enhancement, beaver dam removal on Loat Creek. The lake has quite the history.

In attempt to better understand the fishery, various surveys have been pursued. Past trap netting programs have suggested a fair distribution of both mature and "harvestable" sized walleye. Telemetry studies have proven the reef as preferred spawning habitat. Spawn assessments have displayed usage of the reef following enhancement in both 93' and 2017. Angler recaps found fair survival of walleye transfer from Beautiful Lake, but stocking success is not fully understood. Nevertheless, the big question still remains; what is the most efficient practice for managing this walleye fishery to its greatest potential?

What is important moving forward:

- 1) Monitor the Spawning Reef: Improvements to the reef have proven to attract fish and increase spawning success both in the 90s and today. Studies have indicated that it may take two to three years for walleye to fully utilize artificial spawning shoals (Newburg 1975, Weber and Imler 1974, Bassett 1987). This habitat will benefit the fishery and over the years will require maintenance. Following the enhancement in 1993, the reef was only monitored for two years, therefore it is unknown when spawning success decreased and habitat degraded. Through a simple, half day survey of guzzling on an annual basis, SVSFE can help fisheries managers keep "tabs" on the reef.
- 2) Outline Stocking Objectives: To truly understand what works best for Wellman Lake, strategies need to be applied, tested and reviewed. Arguably, an OTC detection study is the most efficient way to accurately understand stocking success. At this time, marked walleye fry have not been obtainable on an annual basis. Once fry do become readily available, the OTC study should be of priority. In the meantime, it is recommended to continue stocking Wellman Lake with the traditional 200,000 walleye fry but on an alternate year basis.



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Outline Stocking Objectives cont'd: If fry are not available, an alternate method would be to stock Beautiful Lake fingerlings. Stocking rates should be developed with achievable targets if managers choose this practice. Rates throughout jurisdictions should be reviewed. For example, the Walleye Stocking as a Management Tool in Ontario's Inland Lakes recommends, annual stocking programs should generally be discouraged and only considered for introductions in the first few years. The guidelines for fingerling and adult walleye stocking are as follows:

- Advanced Fingerlings: 25-50 fish/ha
- Adult/Sub-Adult Walleye for small lakes 80-450 ha: 150-200 fish total

The advanced fingerlings would be 0+ walleye from Beautiful. The lower end of this rate equates to 10,375 fingerlings. This rate would not be achievable through the program, therefore a more suitable target should be decided if fingerling stocking is preferred. Stocking sub-adult/adult walleye at a rate of 150-200 fish total on years where walleye >1+ are available, is targetable, but only if these fish are available that year.

Interestingly, 2018 marks the first year Wellman Lake has not received any method of stocking since 1987. That is 31 years of stocking walleye at variable rates and life stages. Following this occurrence could provide some interesting data, considering the recent improvements to preferred spawning reef. In summary, with clear project objectives and coherent stocking practices tested over time, soon managers will be able to acquire a walleye management strategy specific to Wellman Lake.

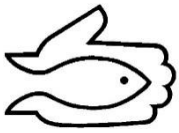
Acknowledgements: Projects like this could not be completed without continued partnerships, financial support and assistance from the various organizations/individuals who continually support SVSFE. Thank you to the Fish & Wildlife Enhancement Fund, Manitoba Sustainable Development - Fisheries Branch, Department of Fisheries & Oceans, eboat captain - Ken Kansas and SVSFE Director - Duane Fleming for this assisting in this year's survey.

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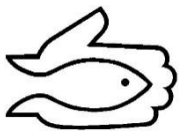


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2018 Guzzling Locations





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2018 Electrofishing Locations

