

INTEGRATED FISHERIES ASSESSMENT PHASE TWO



*Swan Valley Sport Fishing
Enhancement Inc.*

*Submitted by: Holly Urban & Melissa Badger
May 2013*

As the local sport fishing group in the Swan Valley area, SVSFE's mandate includes working with the community and surrounding partners to sustain and help manage fish for the future. With better understanding of our local fishery and the strong public awareness and education within our projects, SVSFE feels this objective can be met.



INTEGRATED FISHERIES ASSESSMENT - Phase Two

The Integrated Fisheries Assessment - Phase Two encompass both new and additional phases of past and projected programs and research for the Swan Valley Region conducted during 2012. This project was primarily funded through the Manitoba Fisheries and Enhancement Fund (FEF) and with support from project partners. Project activities included; fisheries and aquatic assessments on the Swan River, Wellman Lake, Beaver Lake, Marge Lake, Line Lake, North Steeprock Lake, Bell Lake, Whitefish Lake, No Name Lake, Red Shack Lake, Hoodoo Lake, Schade Lake and stocked trout rivers in the Porcupine Mountains. Furthermore, the adult walleye transfer and education & public awareness were part of the project activities.

The full report of activities within the IFA #2 report is available, but for simplicity reasons, the report has been sectioned by location/activity to aid in sourcing material related to fisheries within the Swan Valley area. This document contains a summary of activities on Wellman Lake completed in 2012/13.

Wellman Lake - Walleye Telemetry and Spawn Evaluation

Management efforts on Wellman Lake have recently been enhanced with evaluation of fish stocks via; live trap netting, radio telemetry tracking, tributary assessments, evaluating spawn success and adult walleye stocking. In 2012, SVSFE continued monitoring efforts on tagged walleye to understand requirements for improvement of spawning habitat at Wellman Lake. Furthermore, additional assessments focused on the walleye spawn; monitoring the enhanced spawning reef, the three tributaries (Loat Creek, Sucker Creek, unnamed Creek) and the East and South Shoreline.

3.1 Objective

SVSFE has been very involved with management and enhancement efforts on Wellman Lake. Activities include; enhancement of spawning reef, rearing walleye fry, evaluation of fish stocks by live trap netting, radio telemetry tracking, tributary assessments, assessing walleye spawning success and adult walleye stocking. Combined results from this work will provide information on the fishery and help SVSFE and Fisheries Branch better understand and manage enhancement & stocking efforts.

Ten Walleye in Wellman Lake were tagged in 2011 for the telemetry project. Three tagged in March and the remaining in October. These fish have been tracked since and display a range of habitat preferences & requirements.

To validate assumptions of where the walleye were spawning, guzzling for eggs in spawning areas took place in 2010, 2011 & 2012 along with mid summer seining on various locations

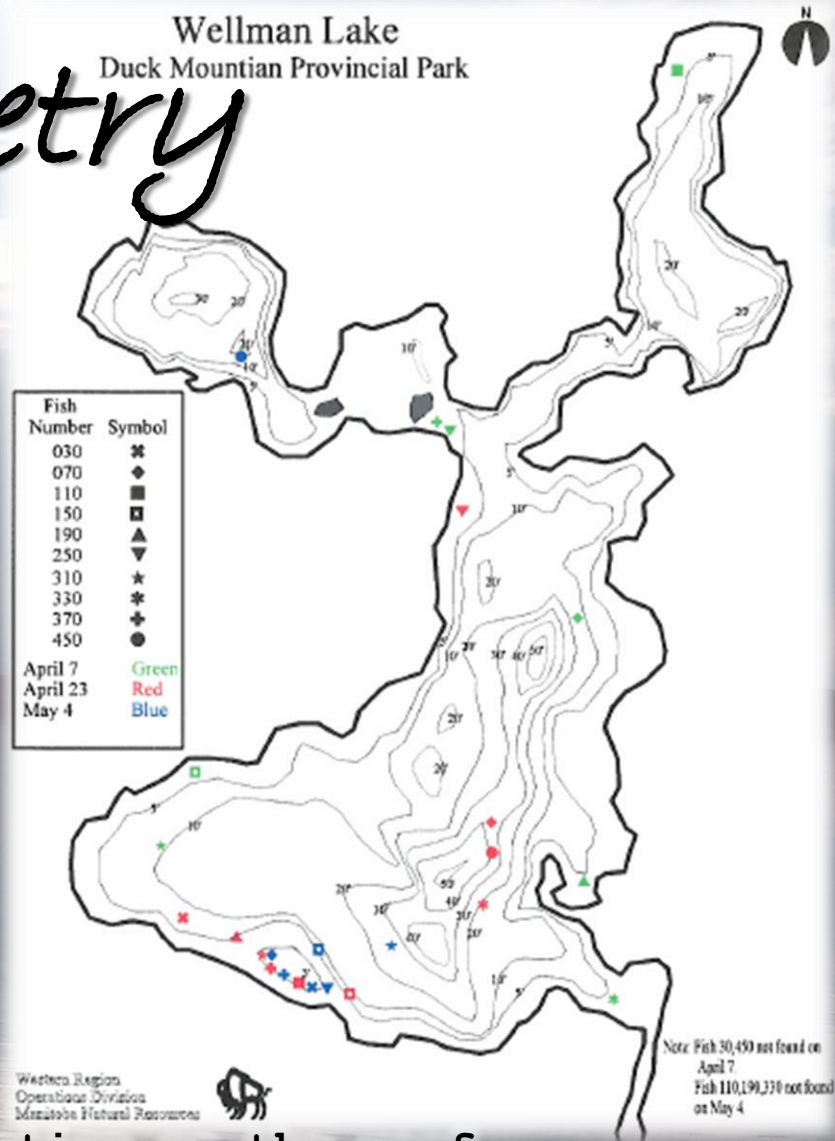
3.2 Past Telemetry

History

A telemetry study was attempted in 1995 - 1996 but due to equipment failure, it was repeated in 1997 - 1998. The intent of the project was to determine if walleye were using any area in the lake, besides the enhanced reef, for spawning (Yake, 1998).

Results indicated:

- Apparent that fish had preferred wintering areas
- General migration around the lake prior to spawning, then a concentration on the reef
- Post spawn distribution, walleye remained in or near shallows for a period of time, probably for intensive feeding
- It was concluded that 8 of 10 walleye used the enhanced reef area for spawning in 1998



3.3 2011 -2013 Telemetry

Our results from 2011 - 2013 indicated:

- Most recent study validates walleye have specific requirements during the winter season. During both winter seasons walleye remained within small areas throughout each winter
- Three walleye first tagged (211, 231 & 271) in 2011 have provided two years of spawning information to date. Of these three only one fish (231) appeared to use the reef for two consecutive years. The other two did visit the reef during the spawning period but only one year out of the two. Five of the remaining seven walleye have each displayed using the reef or close proximity during the 2012 spawn. The remaining two fish (537 & 588) became inactive shortly following their release in the fall of 2011 giving SVSFE a total of 8 active fish.

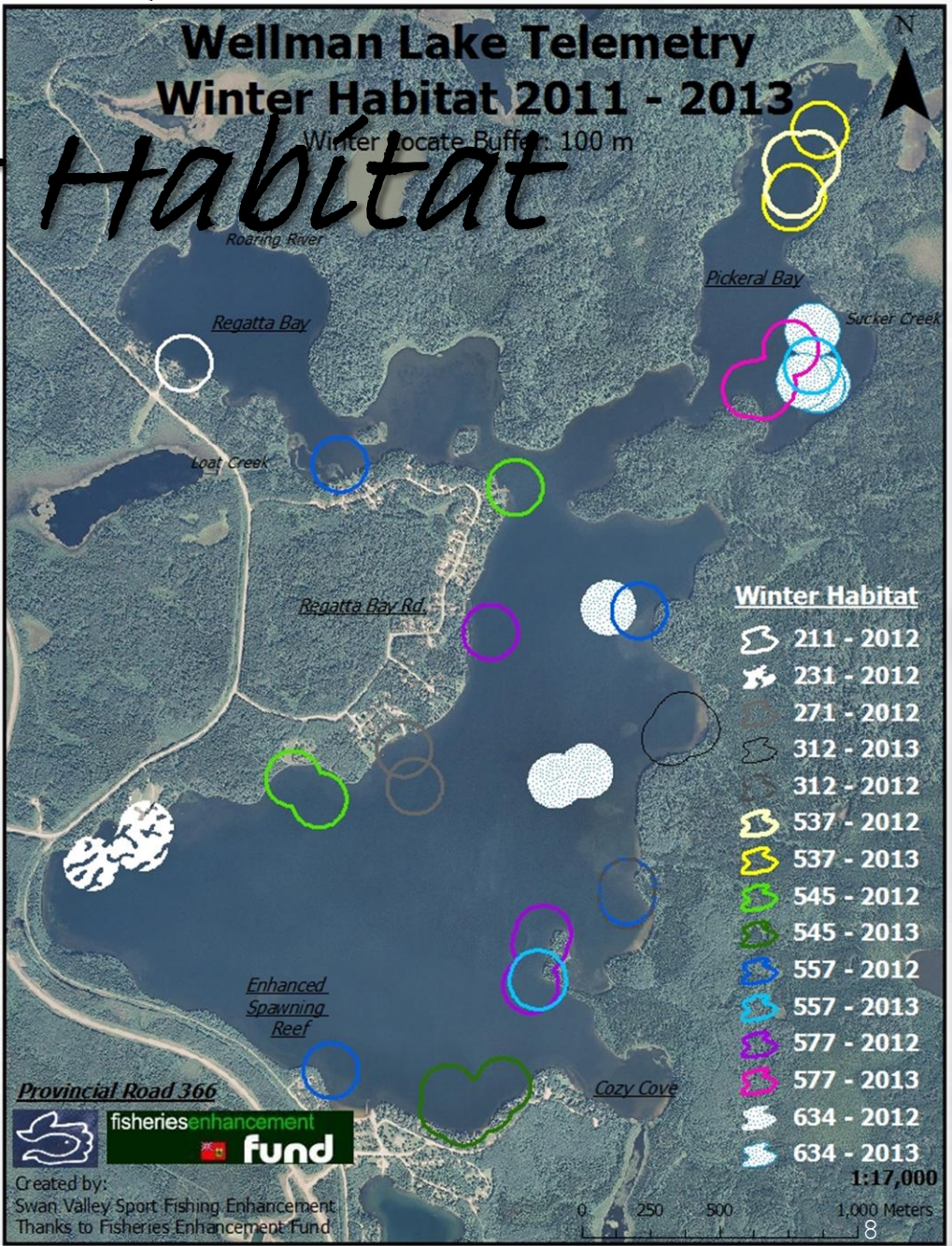


3.4 Winter Habitat

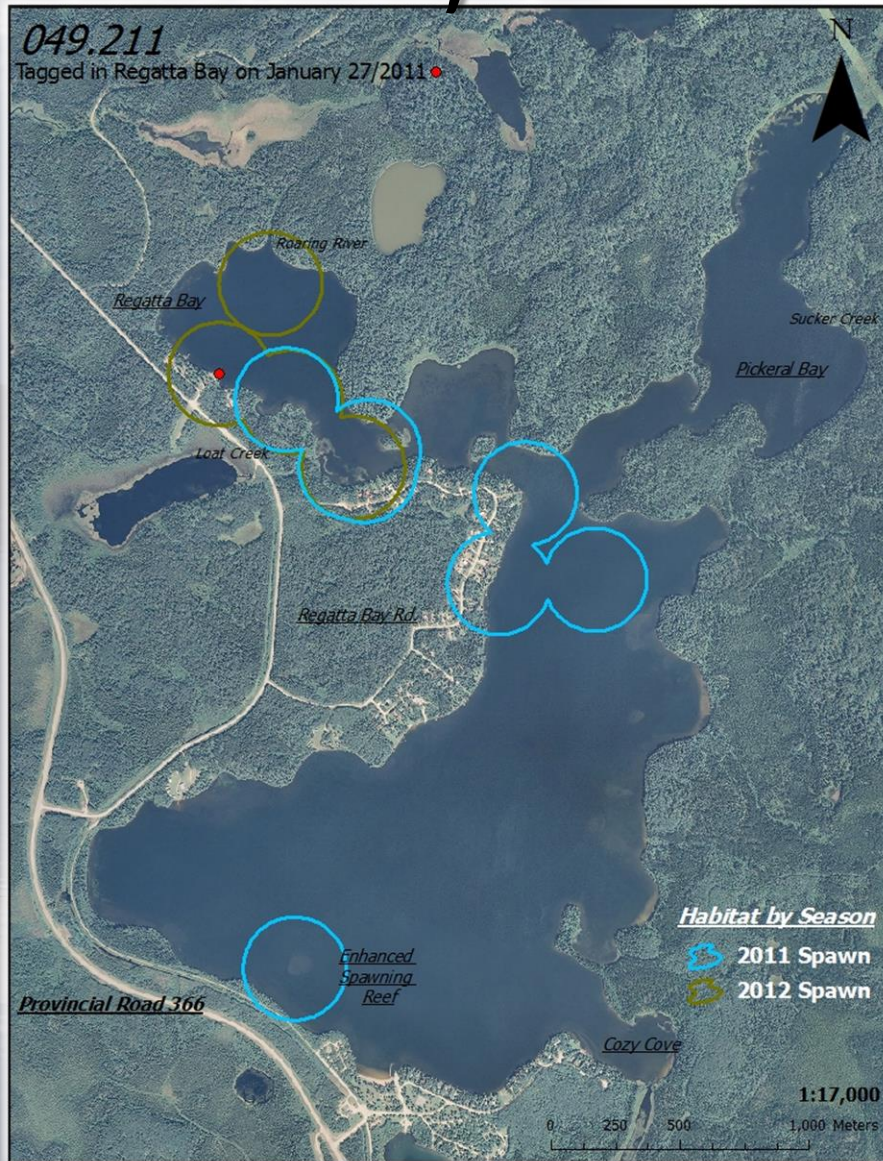
It is evident winter habitat for walleye are within concentrated areas & specific to each individual fish.



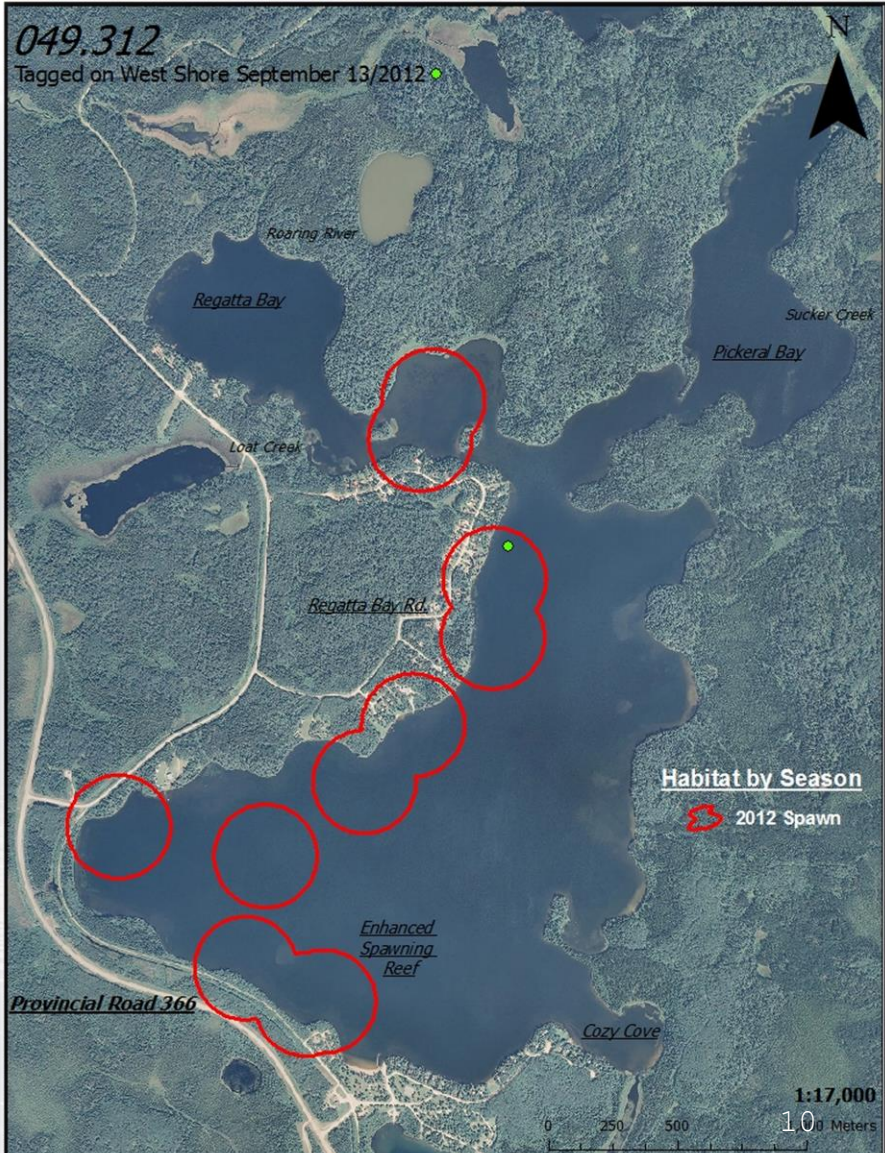
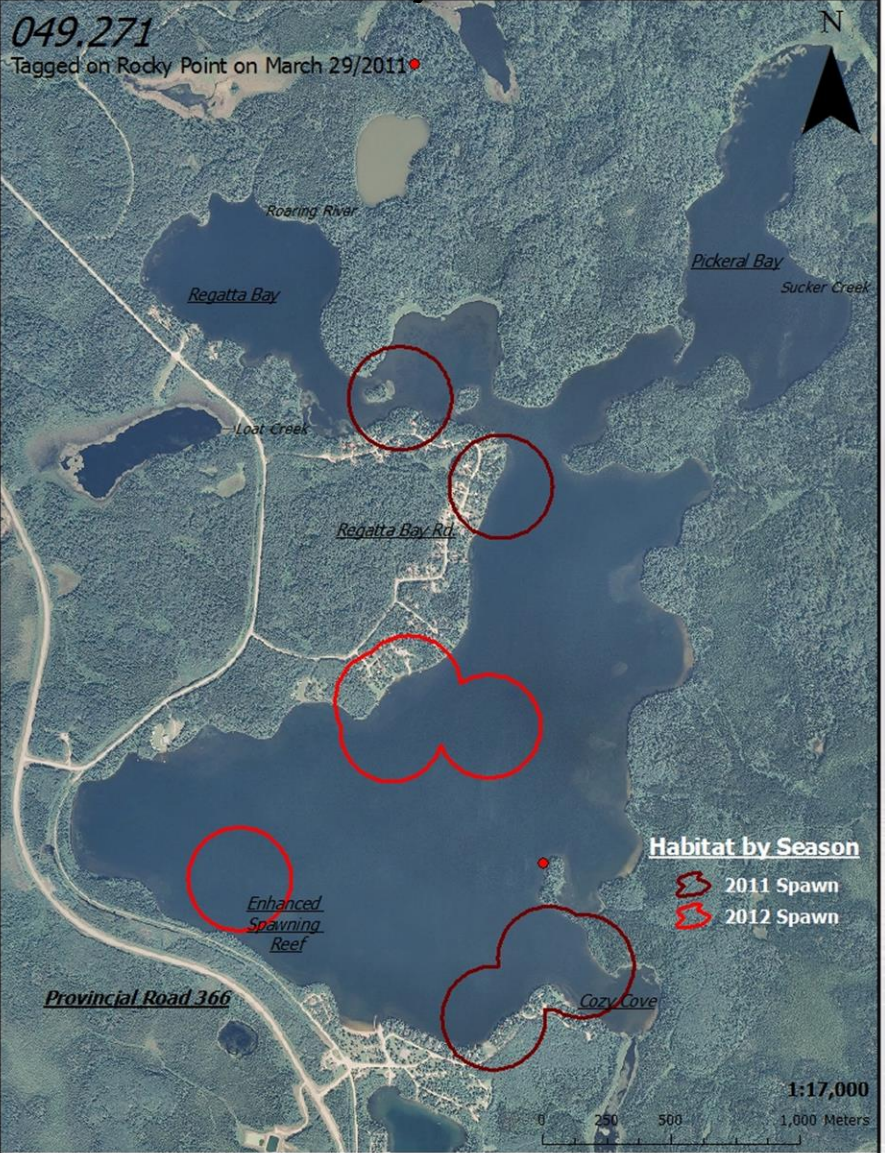
Note: Fish 211, 231 & 271 tags expired during the winter of 2012/2013 therefore only one year of winter habitat is displayed but one could consider their tagging locations from 2011 as winter habitat



3.5 Spawning Habitat



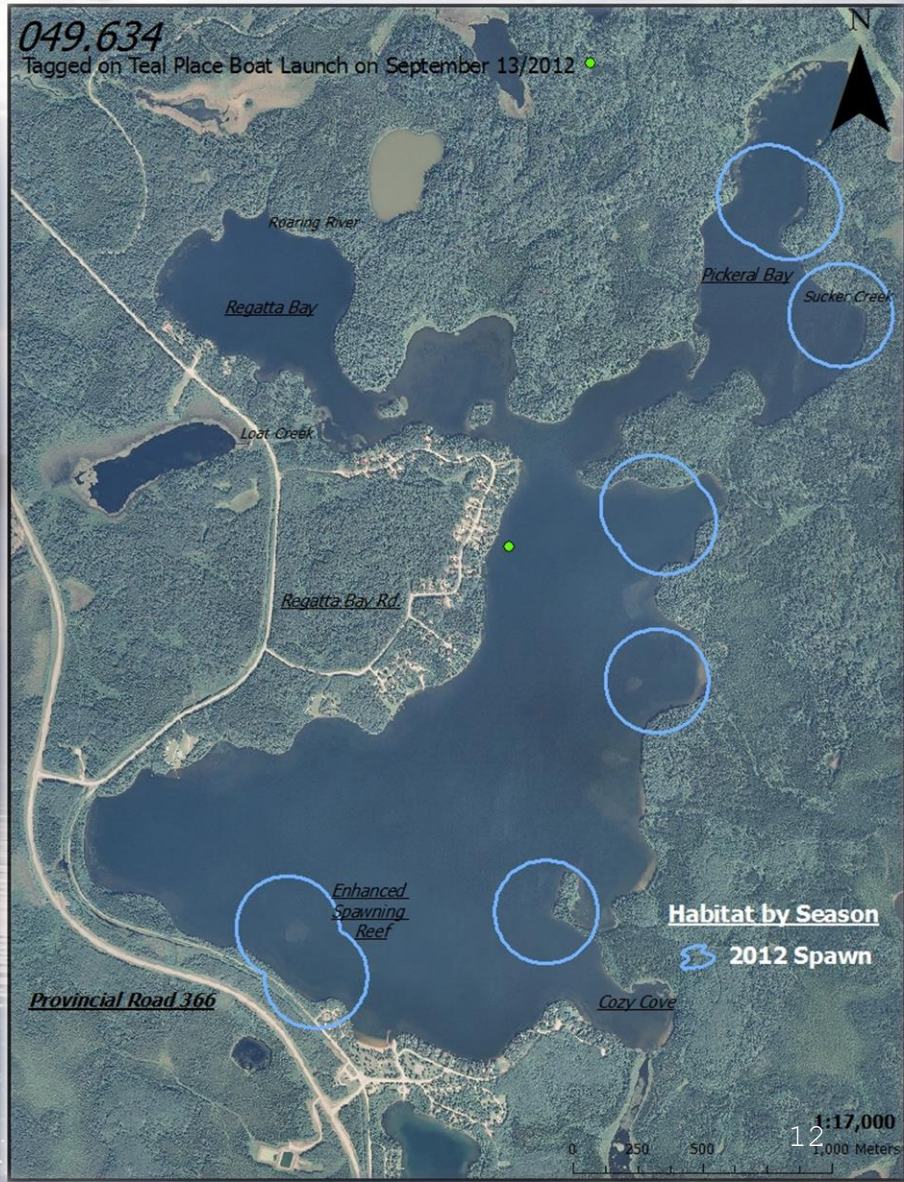
3.5 Spawning Habitat



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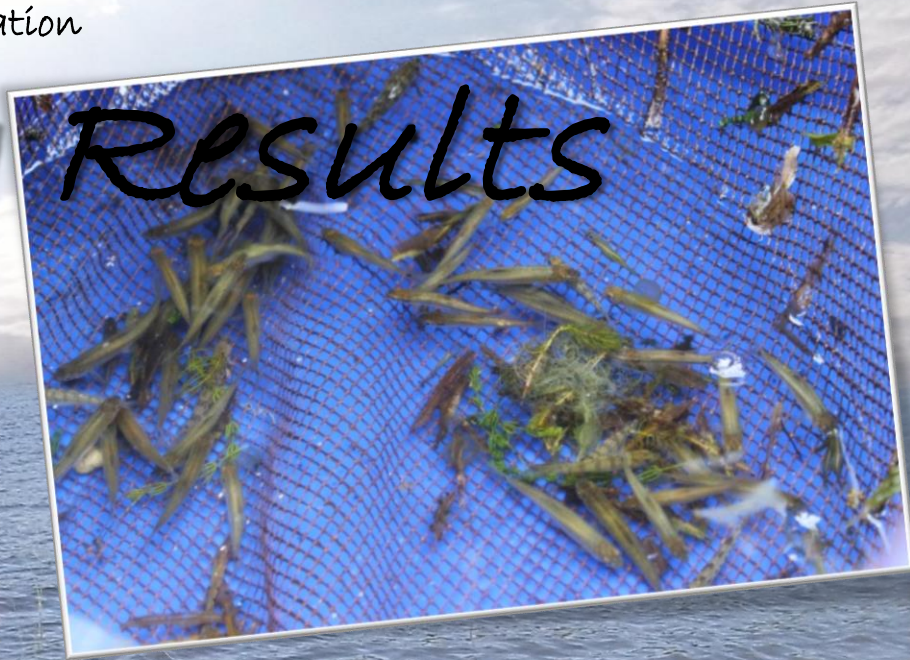
3.5 Spawning Habitat



3.6 Walleye Behaviour & Patterns

Seven of the eight active walleye utilized the enhanced reef during the 2012 spawning period. It is evident the reef plays a big part in walleye spawning at Wellman Lake. Patterns of pre and post spawn are inclusive as fish movement between the walleye varies. Most walleye were very active during the spring, moving back and forth between different areas of the lake. Locations frequented other than the reef included; Regatta Bay, the Narrows and Pickerel Bay and the west shore. Some of these areas could be considered post spawning habitat as they contain shallow vegetated habitat with high forage species available. When comparing dates and water temperatures to these locates, along with the potential spawning tributaries both Regatta and Pickerel Bay possess, the walleye may be utilizing these areas for spawning purposes. With the continued support through FEF, SVSFE will be tracking walleye and assessing the reef during the spawn of 2013

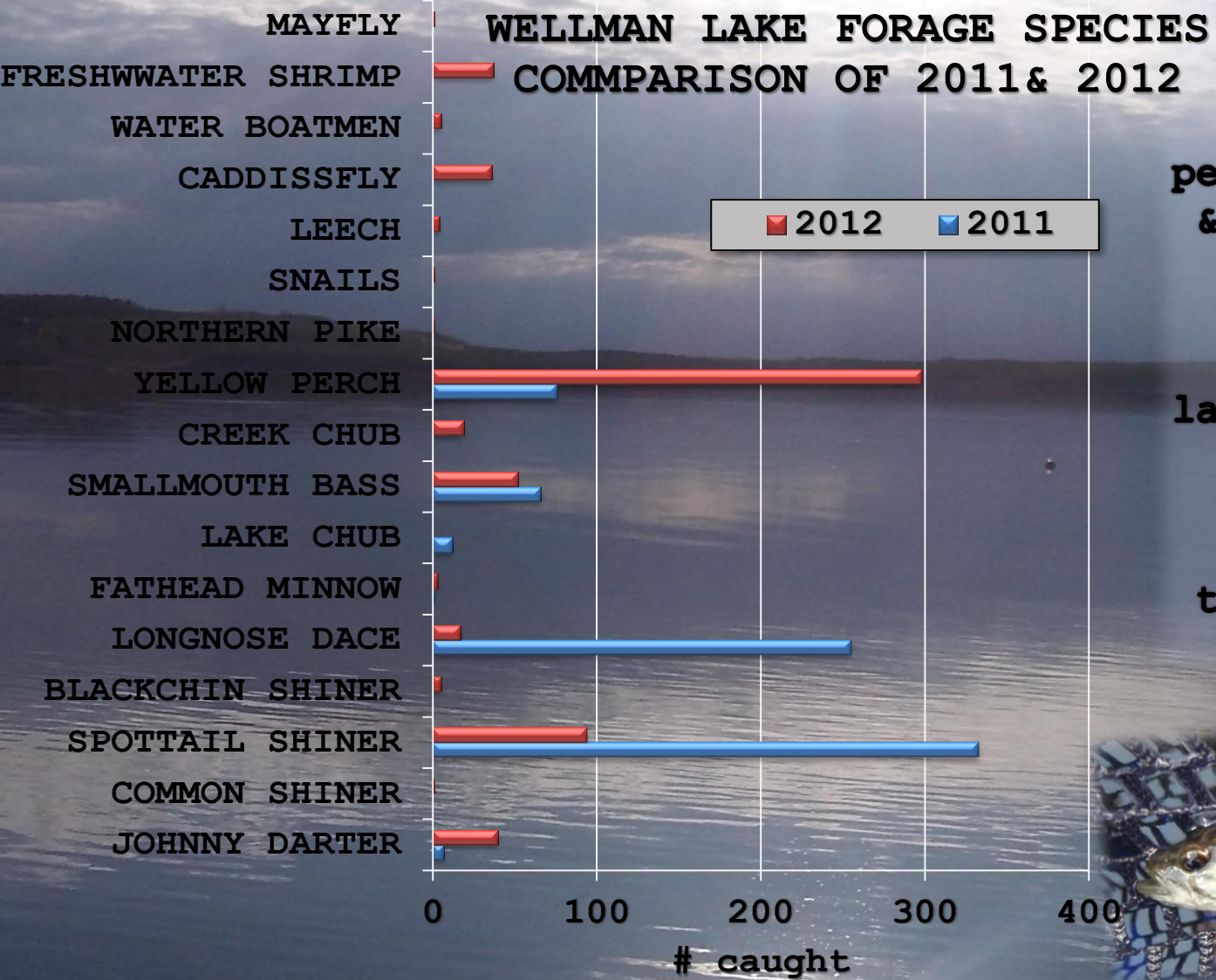
3.7 Seining Results



The quantity and quality of walleye spawning habitat has been shown to directly be related to walleye productivity (Schupp, 1978). Seining for young of the year walleye is an efficient way to monitor this.

During both the 2011 & 2012 seasons, no young of the year walleye were found during seining activities. Results did display a diverse composition of forage species available in Wellman Lake

3.7 Seining Results



Results display three dominate forage species available; yellow perch, longnose dace & spottail shiners.

One concern is the lack of young of the year walleye found compared to the amount of young of the year smallmouth bass



3.7 Seining Results

Young-of-the-year (YOY) walleye are known to be segregated from juvenile and adult walleye (Stevens 1990) and have schooling tendencies often associated with YOY yellow perch (Kerr et al. 1997).

With this fact in mind and the high catch of yellow perch from seining results, SVSFE technicians recommend more investigations been completed on walleye reproduction in Wellman Lake.

It would be beneficial to conduct an additional year of seining assessments (daytime and night sampling) and continue trap netting program to closely monitor walleye populations before concluding any theories. SVSFE has been approved for Project #12-042 Evaluating the Success of Walleye Recruitment in which the 2013 spawn can be further evaluated.

3.8 History of the Reef

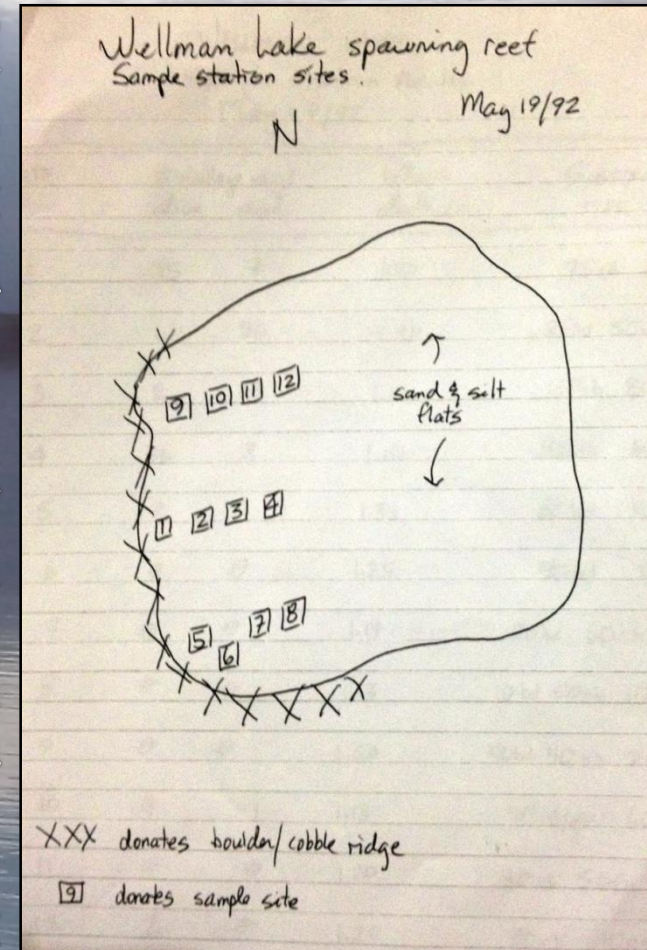
1991



Enhancement of the reef was recommended in 1991 as there was limited substrate for successful incubation and hatching. Previous to enhancement the natural reef was approximately 5,414 m² with boulders as the predominate substrate on the southern and southwestern portions of the reef, while >70% of the reef was sand interspersed with some cobble and boulders (Gaboury M., 1991) (Figure).

1992

On May 19th, 1992 Ken Kansas and Mark Gaboury (Fisheries Branch - Fisheries Biologists) guzzled the reef prior to enhancement. The reef yielded viable walleye eggs in areas where there was more cobble substrate, near the western rim of the reef. Habitat sampled consisted of 20% boulder, 38% cobble, 6% gravel and 35% fine (sand/silt). Average depth was 1.23 meters. A total of 206 were collected with 61% being live eggs. Results found a rate of 2.08 eggs/min/lm².

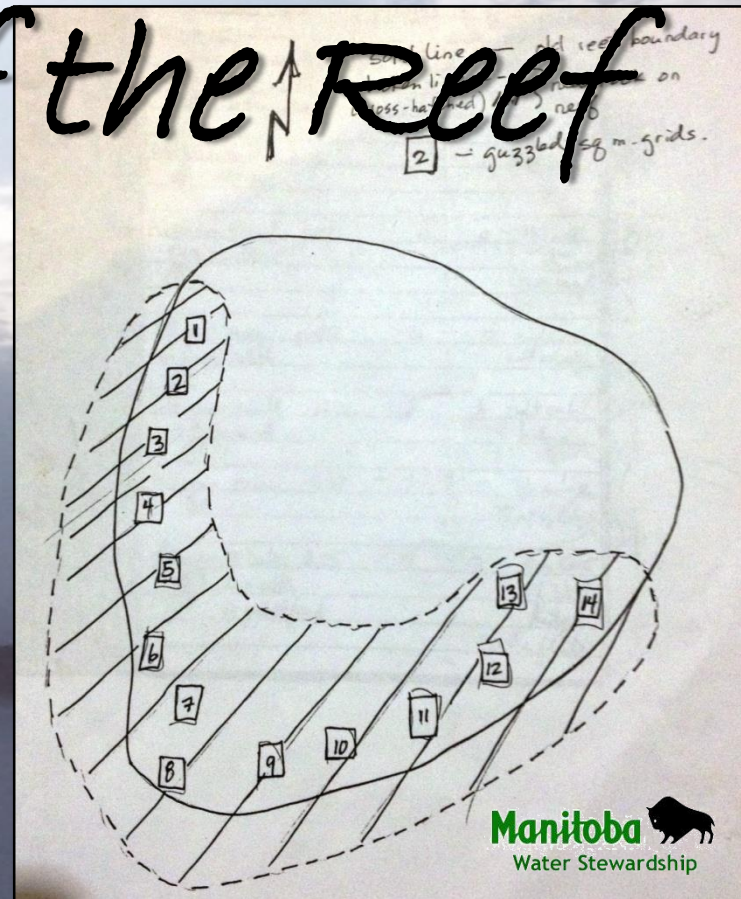


3.8 History of the Reef

1993

SVSFE secured funding of \$5,000 through Manitoba Lotteries Special Conservation Fund and Fisheries Branch acquired appropriate rock, contractors, etc and rock placement was completed by March 15th, 1993.

Guzzling results from 1993 displayed a large decrease after rock placement. 92% of sites sampled possessed new rock with egg counts dropping to 0.39 eggs/min/1m² in an average water depth of 1.06 m. Biologists noted the numbers were lower but walleye were using the reef to spawn.



1994

Results displayed high use of the west side of the reef - a total of 92 eggs were found (88% being live eggs) at a CPUE of 7.36 live eggs/min/1 m² in water temperatures of 10.6°C and water depths of 1 m (note guzzling dates vary depending on the year).

1995

Results displayed a remarkable increase - a total of 212 eggs were found (84% live eggs) at a CPUE of 17.9 eggs/min/1 m² in water temperatures of 14.4°C and water depths of 1.3 m.

3.9 Guzzling Results

2010

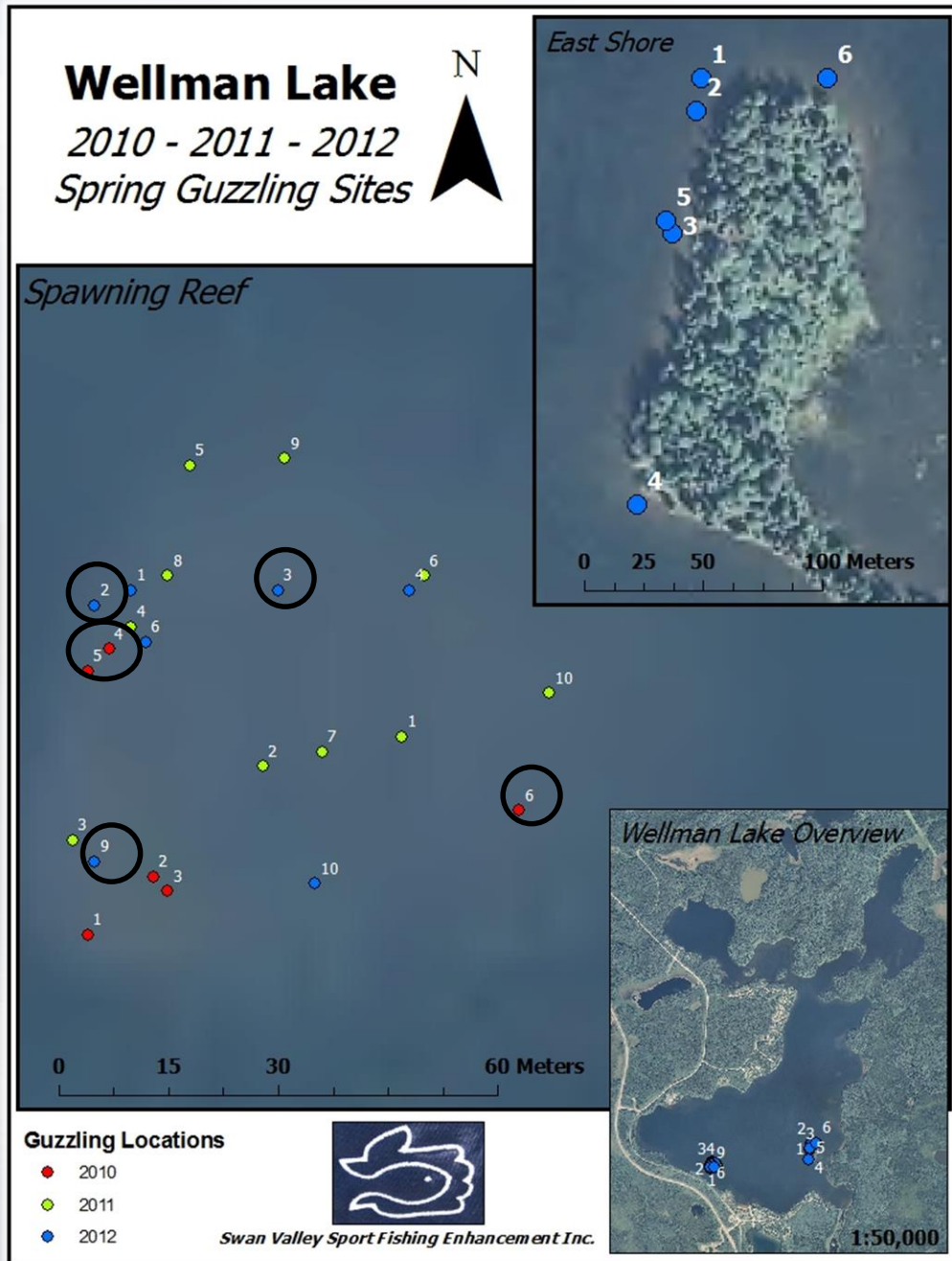
Habitat sampled was fairly distributed on reef with substrates of 24% boulder, 33% cobble, 16% gravel, 27% sand at an average depth of 1.3 m and water temperatures of 6°C. Results indicated a CPUE of 0.39 eggs/min/1m². Eggs were found at sites 4, 5 & 6. Depths at these sites ranged from 1.3 to 1.6 m.

2011

Sampling took place on May 30th and June 6th with water temperatures at 10.7 °C and 12.2 °C, respectively. Habitat included 5% boulder, 22% cobble, 50% gravel, 23% sand with an average depth of 1.8m. No eggs were found and it is believed the spawn was missed this year. One should be cautious of drawing any conclusions from the 2011 results.

2012

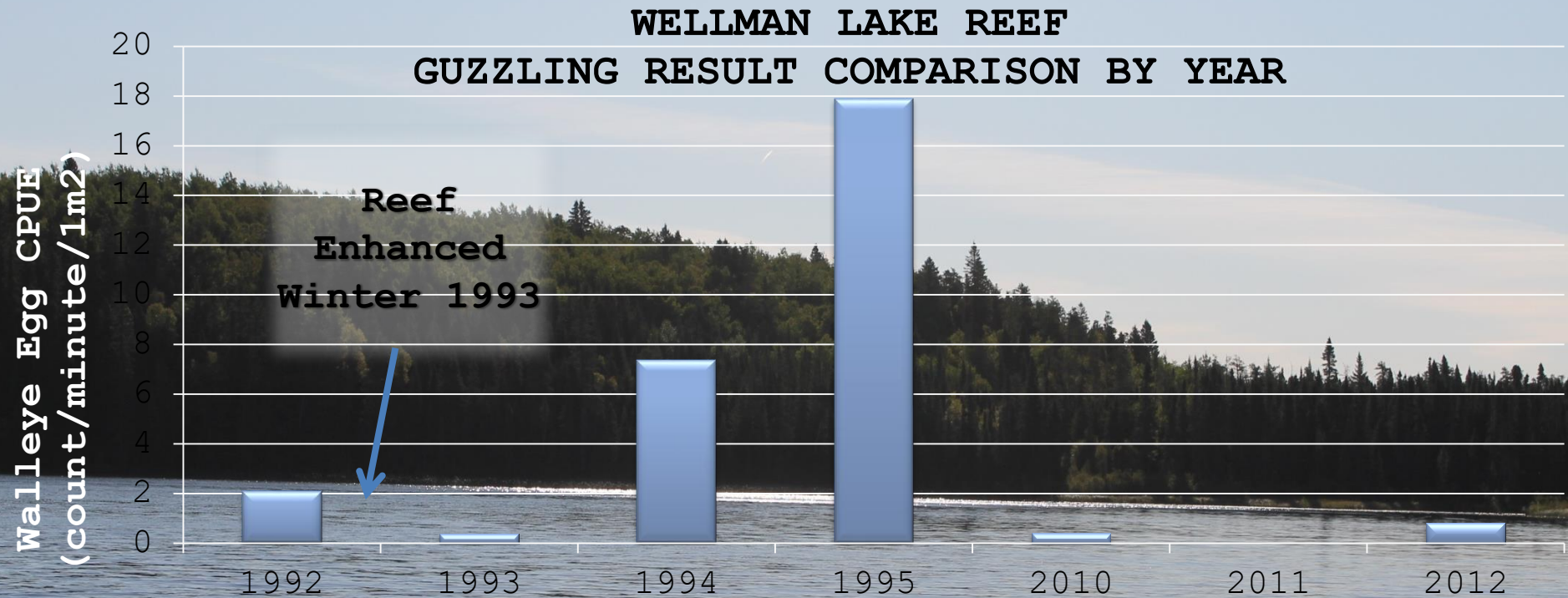
Both the reef and the east shoreline (Rocky Point) were sampled during May at water temperatures of 10.5°C. CPUE slightly increased from 2010 sampling at 0.82 eggs/min/1m² on the reef. No eggs were found on the east shore. Eggs were found at sites 2, 3, 9



3.9 Guzzling Results

○ Sites where eggs were found

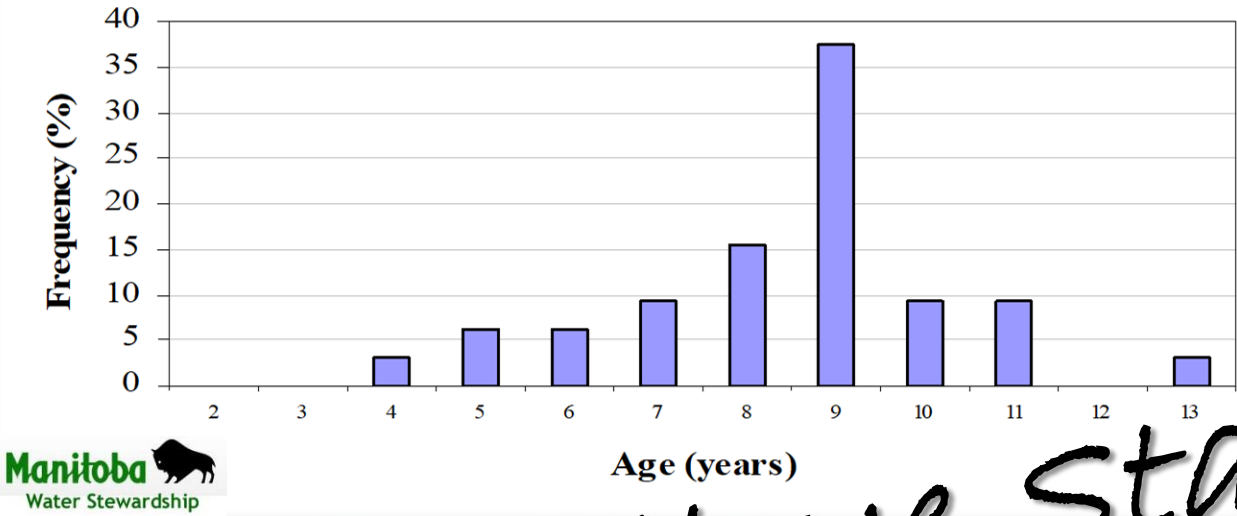
3. Wellman Lake Walleye Telemetry & Spawn Evaluation



Differences in sampling could contribute to lower counts in 2010-2012 compared to past results as a motorized pump was used for guzzling during the 90's versus a hand pump in the 2000's. In order to answer the question whether the enhanced reef is still being utilized and providing successful spawning habitat additional sampling during 2013 is required. This sampling will include guzzling, placement of spawning mats and snorkeling on various locations of the reef during the 2013 spawn. Results from both telemetry and the reef assessment will determine if SVSFE is required to take action in improving spawning habitat on the reef as it has proven to be one of the desired spawning areas by walleye in Wellman Lake.

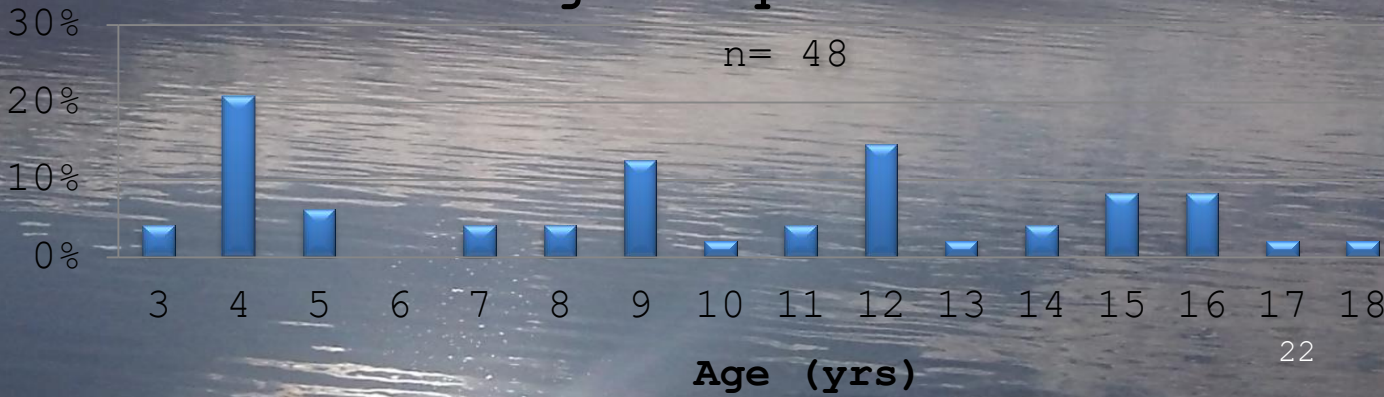
3. Wellman Lake Walleye Telemetry & Spawn Evaluation

Figure 2. Age Frequencies - Wellman Lake, 2006
Walleye (n=32)



3.10 Walleye stats

WELLMAN LAKE 2010 WALLEYE
Trap Netting Results
Age Frequencies



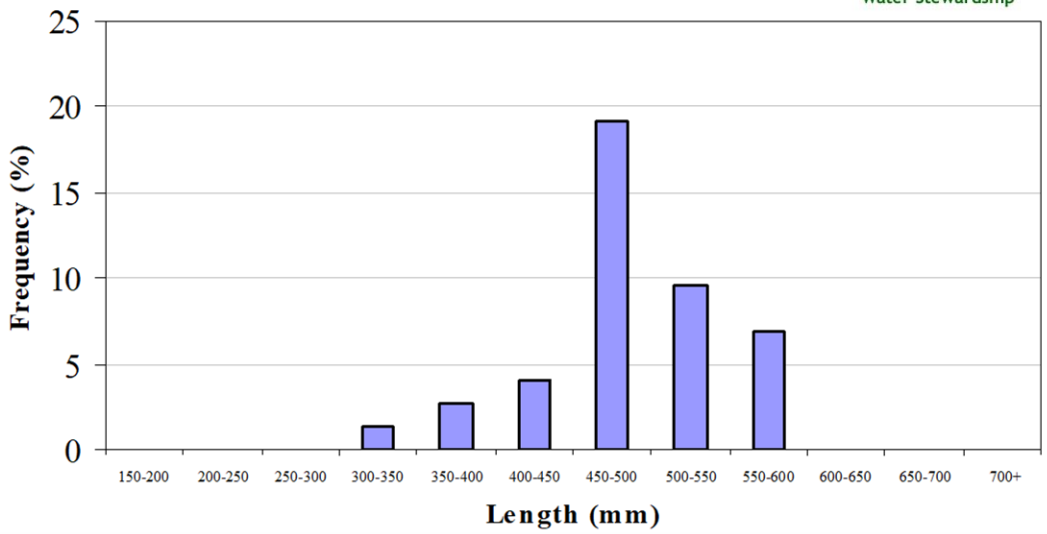
3.10 Walleye

Stats

Wellman Lake 2011
Creel Surveys -
Total Fish Caught

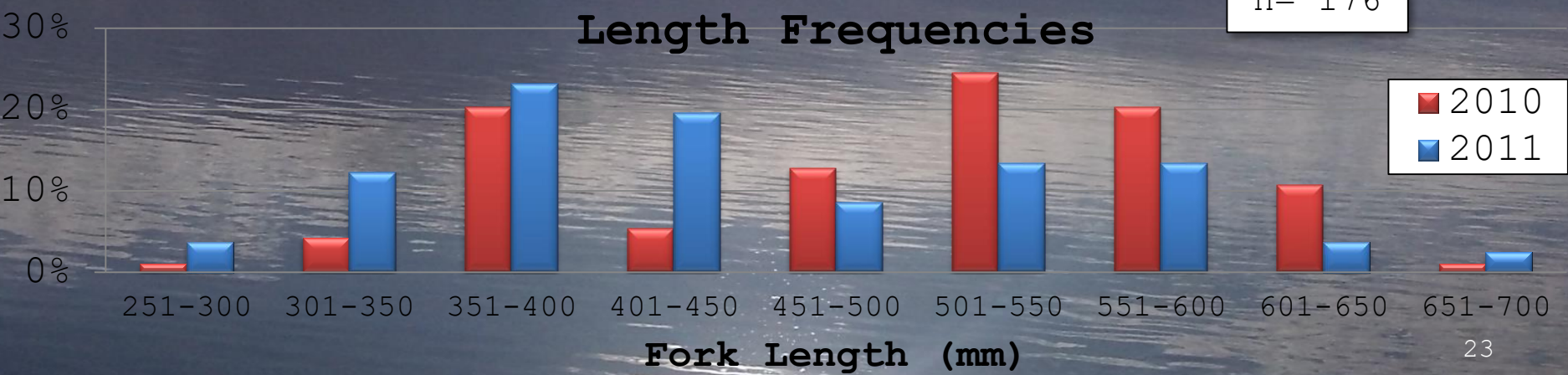


Figure 5. Walleye Length Frequencies
Wellman Lake, 2006 n=32
Note: Slot size = 45-70cm



WELLMAN LAKE WALLEYE Trap Netting Results Length Frequencies

n= 176



3.10 Walleye Stats

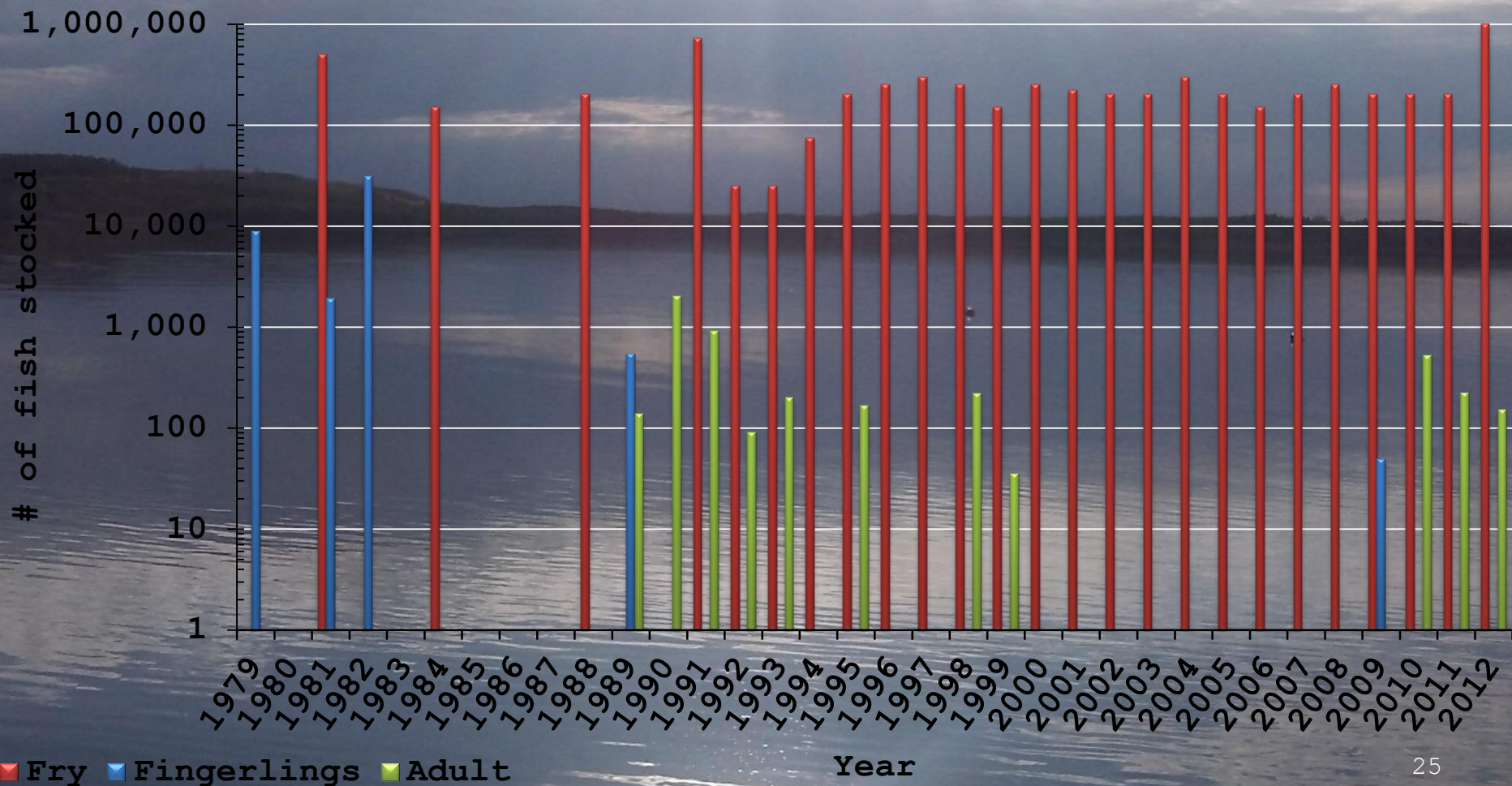
When looking at current length and age frequencies from walleye sampled during trap netting assessments, the population dynamics display erratic frequencies showing how the population is easily influenced by varying factors.

Desired length and age frequencies should represent a bell curve with a normal distribution around the mean category with a few outliers on either side. Factors which affect walleye reproduction & populations include; weather, water temperature, number of mature fish, predation, competition, angling pressure, stocking efforts and the availability of suitable habitat.

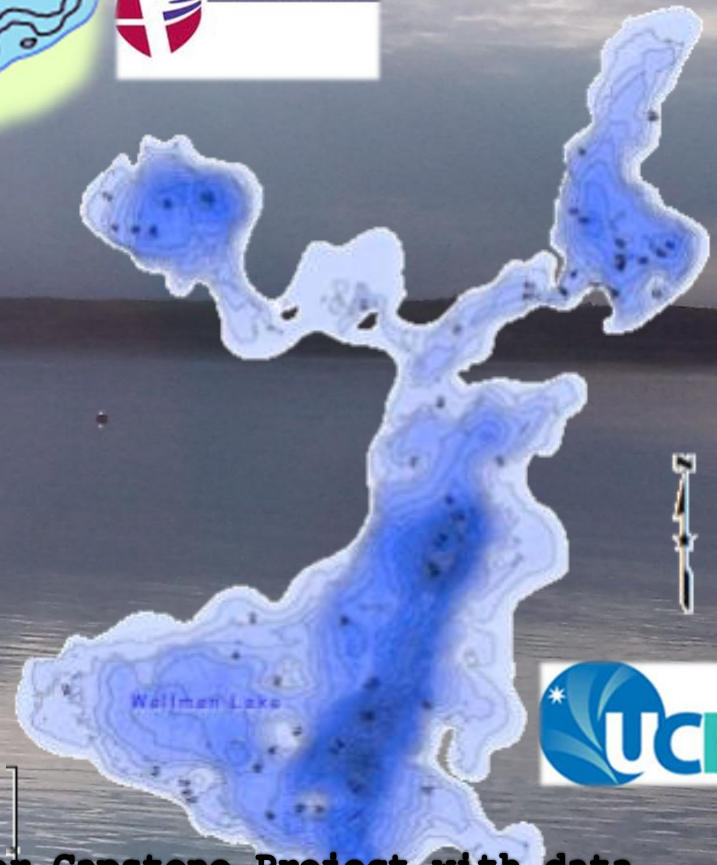
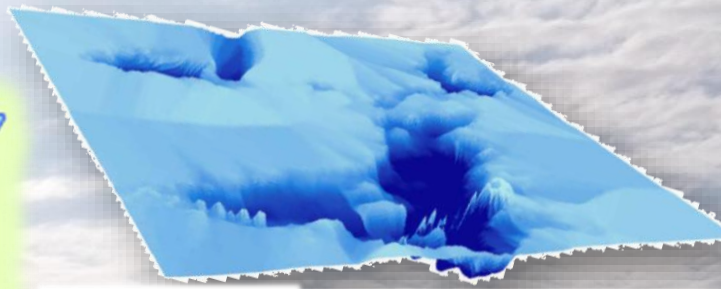
Walleye stocking at Wellman Lake includes annual fry stocking since the late 1980's. Through the 90's and the past three years adult walleye have also been transferred to help supplement the spawning population.

3.10 Walleye Stats

Wellman Lake Walleye Stocking History 1979 - 2012

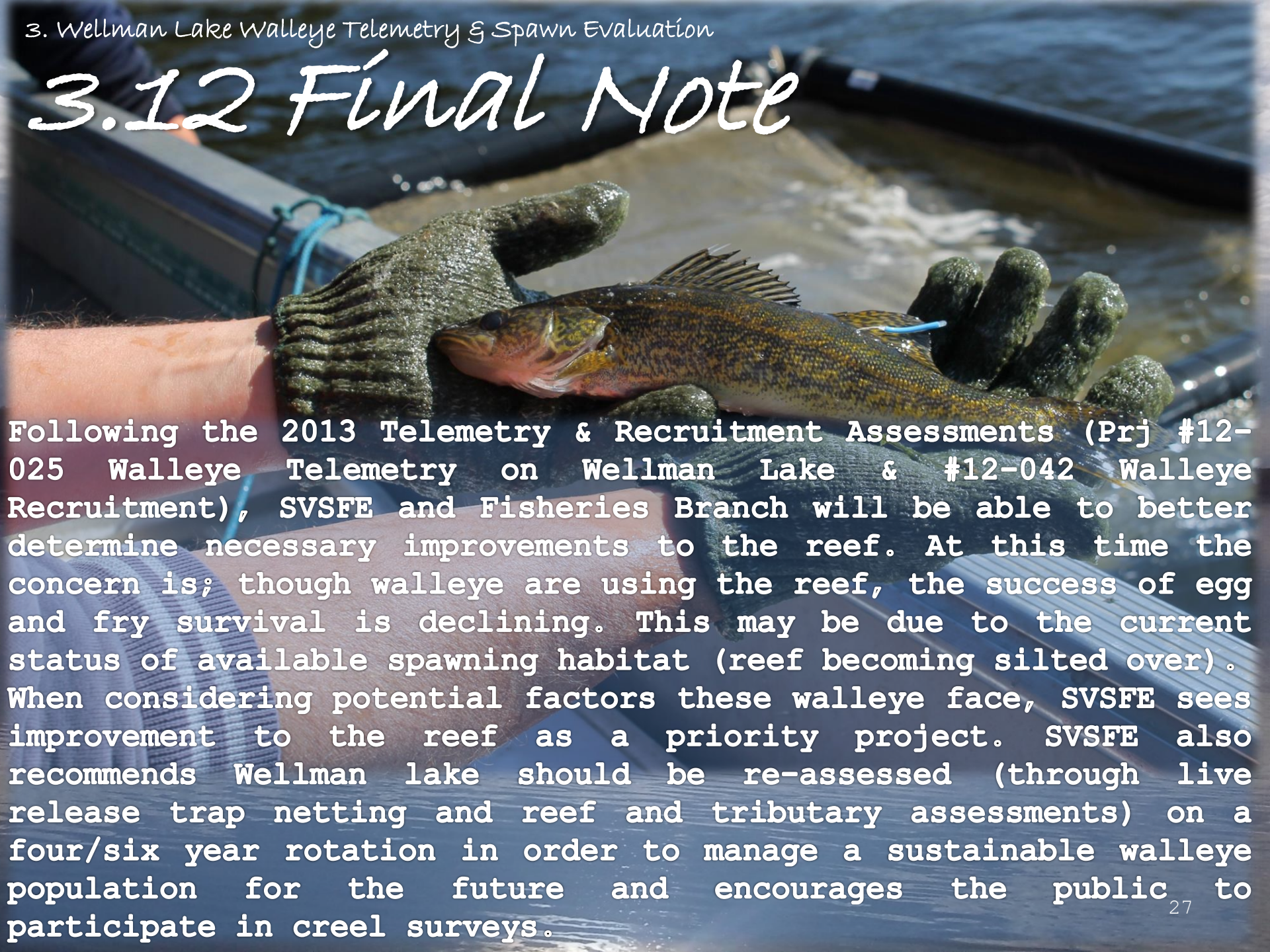


3.11 Depth Map



Assiniboine Community College student completed her Capstone Project with data collected through a past partner with University College of the North (UCN) and SVSFE. This data was collected by UCN students who also developed maps as part of their fall camp studies in 2008

3.12 Final Note



Following the 2013 Telemetry & Recruitment Assessments (Prj #12-025 Walleye Telemetry on Wellman Lake & #12-042 Walleye Recruitment), SVSFE and Fisheries Branch will be able to better determine necessary improvements to the reef. At this time the concern is; though walleye are using the reef, the success of egg and fry survival is declining. This may be due to the current status of available spawning habitat (reef becoming silted over). When considering potential factors these walleye face, SVSFE sees improvement to the reef as a priority project. SVSFE also recommends Wellman lake should be re-assessed (through live release trap netting and reef and tributary assessments) on a four/six year rotation in order to manage a sustainable walleye population for the future and encourages the public to participate in creel surveys.

Acknowledgements



Provides SVSFE with funding to contribute to fisheries management in the Duck Mountains, Porcupine Mountains and the Swan Valley area. We would like to acknowledge the importance and benefits the FEF brings to our recreational fishery. The stamp is always a reminder that a portion of the license fee helps fund projects to educate the public and to ensure that future generations will enjoy fishing as much as the present population does!



Swan Lake Watershed
Conservation District

Provides SVSFE with the opportunity to use their ESRI software to produce maps.

Partnering with the Honoway Fishway Monitoring which has been successful in allowing fish to continue their migration upstream in the Swan River.



Water Stewardship
Fisheries Branch

SVSFE is very thankful towards the Fisheries Branch staff as they are the support which makes these projects possible. Special thank-you to Ian Kitch, Lloyd Rowe, Bruno Bruderlin, Ken Kansas and all the fisheries experts for their endless direction on fisheries management.



MB Conservation

Including Parks, Enforcement, Forestry & Wildlife staff. Each department continually supports SVSFE projects and provides in kind support. Special thanks to Allan Moore & A.J Sutherland

INTERMOUNTAIN
SPORT
FISHING
ENHANCEMENT

ISFE -
for their support
& partnerships in our
projects

Acknowledgements



Glad/Wellman Cottage
Owners Association

These cottage owners have supported every project completed on Glad & Wellman Lake financially or morally.

AND thank you
to all the
individuals we
may have
missed.



Assiniboine
Community
College

University College
of the North



Partnering on projects and
assisting in data analysis

Thank you to North Mountain Rider's Snowmobile Club who was available to groom trails for us this winter - otherwise we would not have been able to access several lakes due to heavy snowfall!

SVSFE greatly appreciates support from Tru Hardware, Qwik Stop, Rough Country and Swan Valley Co-op. Support our Community!



Service Canada

Provides the opportunity to access funding to provide education to youth. Education is a top priority for SVSFE and we have utilized this fund several times.



Swan Valley
School Division -
SVRSS Environment
Management Students &
Ecole - Student
volunteers for
Walleye Transfer



LP Woodlands

Has provided SVSFE with in-kind material on Stream Protocols, Invertebrate sampling and most recently (along with Daryll Hill) who provided us with a radio for safe travels on logging roads.

IFA Phase TWO - Final

Note:

An integrated assessment of this type has strongly benefited the recreational fisheries in our area and promotes the importance of FEF to the highest degree. SVSFE hopes to continue and build on past FEF projects in the future. Results from other activities completed within this project can be found in additional "IFA#2" reports.