INTEGRATED FISHERIES ASSESSMENT
PHASE TWO

Swan Valley Sport Fishing Enhancement Inc.

Submitted by: Holly Urban & Melissa Badger

May 2013

fisheriesenhancement fund

Manitoba Water Stewardship

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 an overview of work completed on the M-File Lakes for 2012.

Lake Inventory of Potential Recreational Fishing Lakes (M-Files) within the Porcupine Mountains

The Porcupine Provincial Forest possesses numerous lakes which are pristine to the area. Information was collected on a selected number of M-File lakes back in the 70's and 80's, but was limited to mostly a collection of only dissolved oxygen, alkalinity and maximum depths. In 2012, SVSFE conducted lake inventory assessments on four selected lakes. For each lake, parameters on water quality, bathymetric data, dissolved oxygen/temperature profiles, benthic and fish communities were collected. Methods of sampling fish communities included; overnight trap netting, short set gill netting, seining and minnow trapping. Furthermore, lakes were re-visited in the winter months to evaluate angling quality, dissolved oxygen levels and species present/condition. Assessments assisted in determining whether these lakes would support recreational fish species and help promote fisheries which do. Developing fishing opportunities and experiences is valuable to SVSFE and the community. Not only is this meeting SVSFE's mandate, but also the FEF mandate to "enhance Manitoba's recreational fisheries resources in accordance with a scientific resource-based decision making process".

7.1 M-Files - Objective

Lake Inventory assessments on four lakes under the M-Files (or "Mystery Lakes"), were conducted in the summer of 2012 and the winter of 2013. All four lakes are located in the Porcupine Provincial Forest. The main objective for these Mystery Lakes was to assess the current status and encourage more fishing opportunities for anglers by promoting lakes which are unknown or under utilized.

No Name Lake

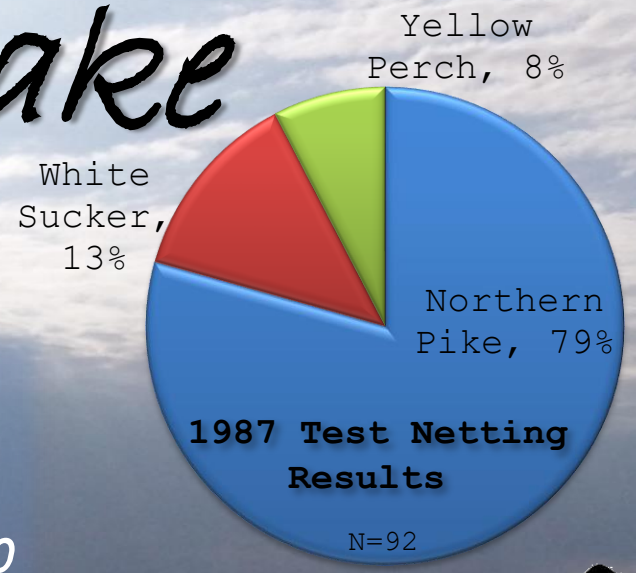
Red Shack Lake

Hoodoo Lake

Schade Lake

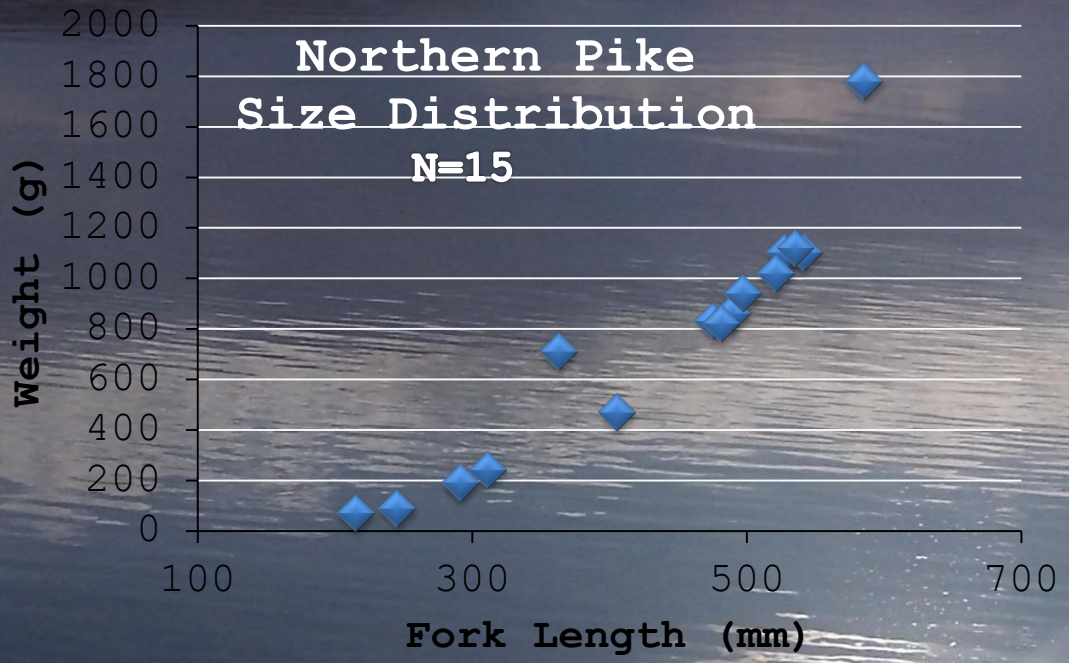
7.2 No Name Lake

Historical Info



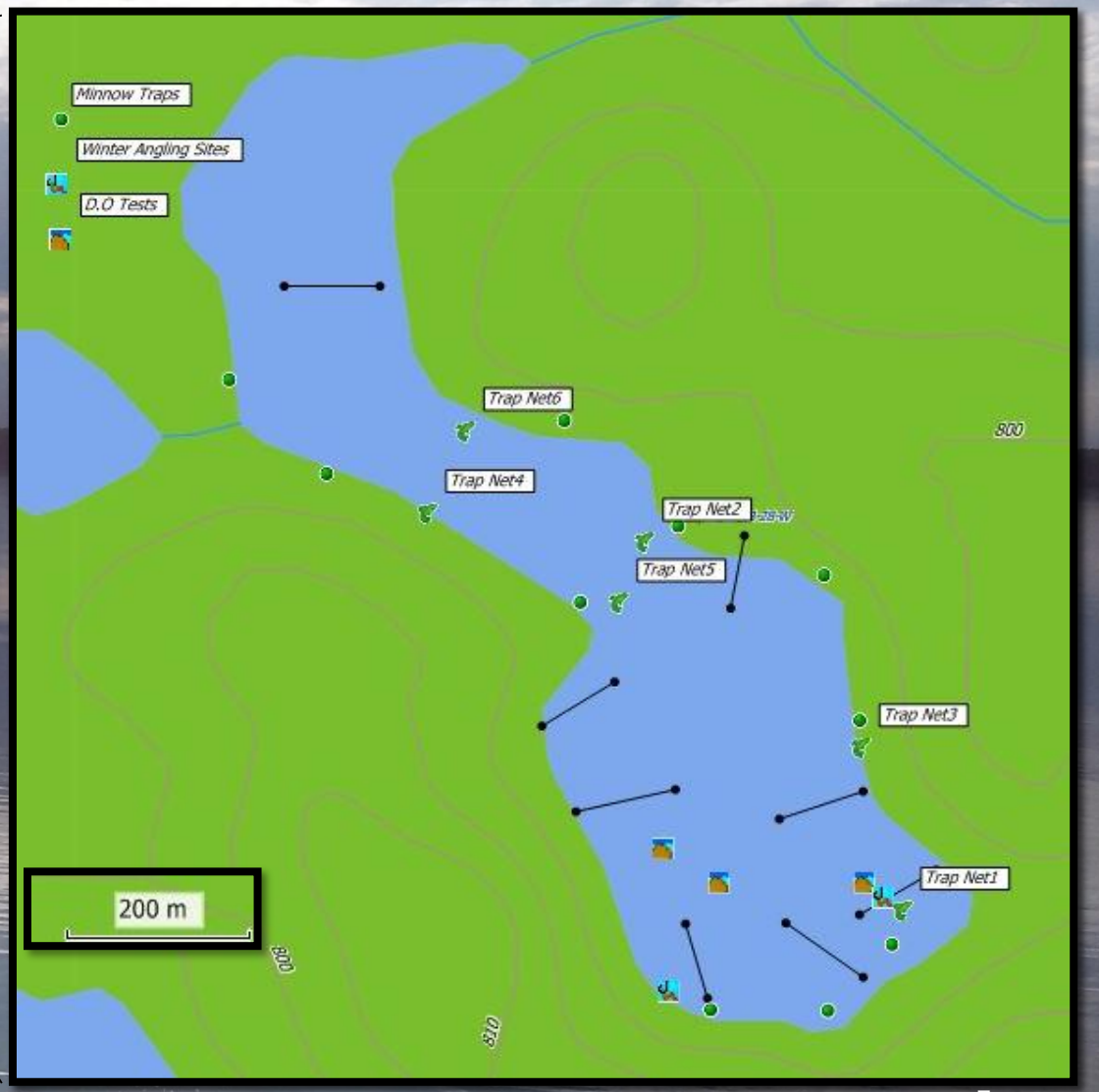
M-File Report:

On July 27th 1987, No Name Lake was test netted by fisheries branch. Nets used were 50 yards of 1 ½", 2" and 100 yards of 3" and 4" mesh gill net.



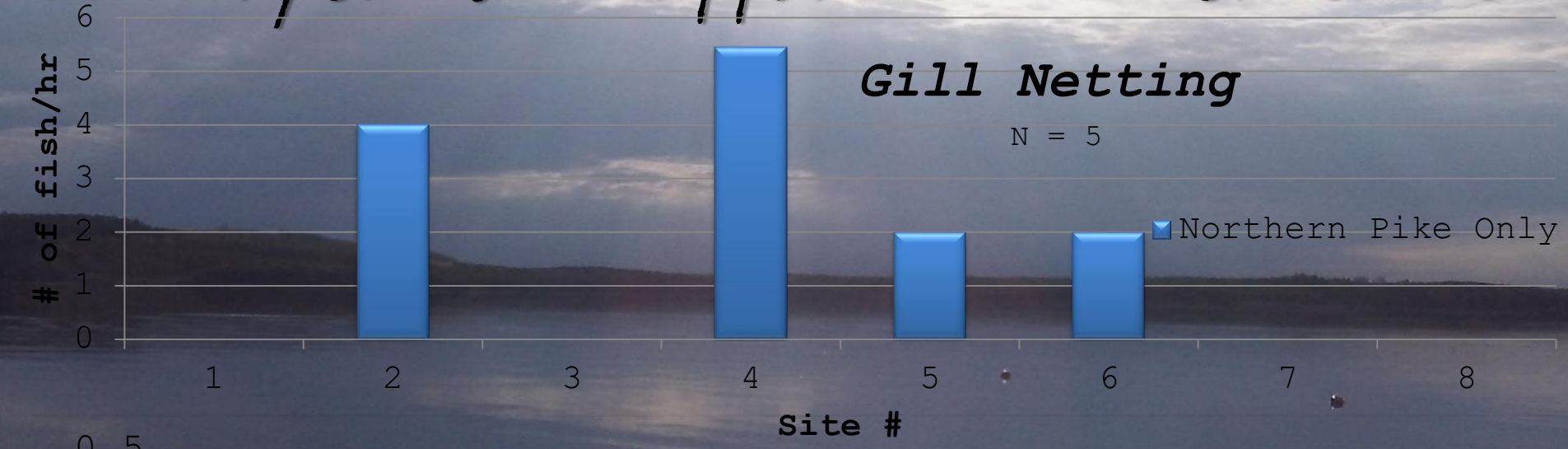
Access to this lake was noted to be "very difficult due to logging activity" and that "a 4-wheel drive was a necessity". "the last 50 yards to the lake had no road or trail and so the equipment had to be carried through the bush."

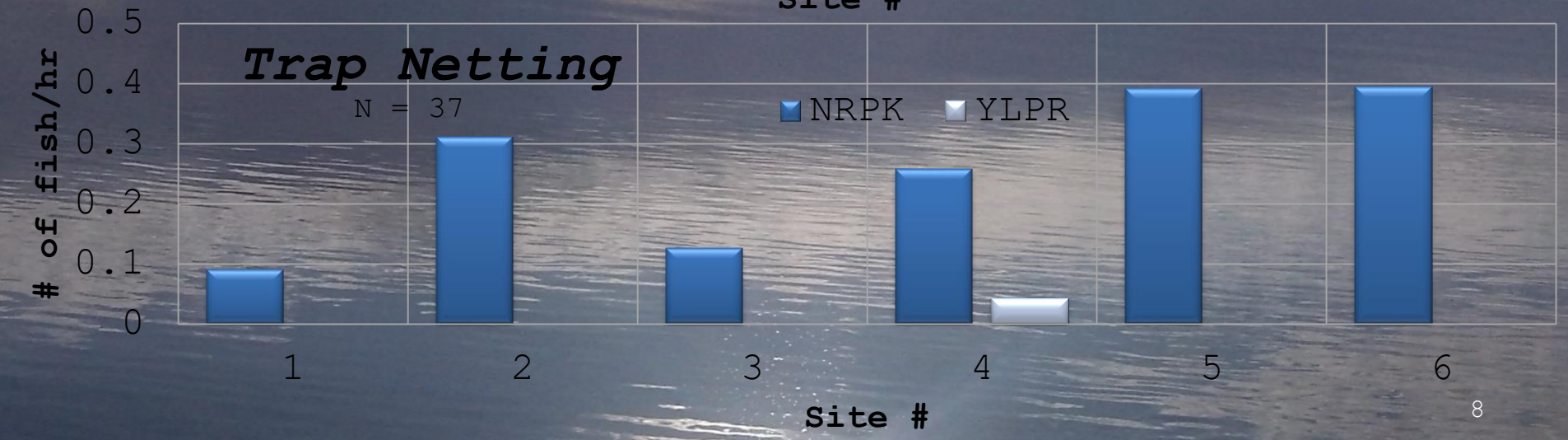
7.3 No Name Lake Study Area



7.4 No Name Lake

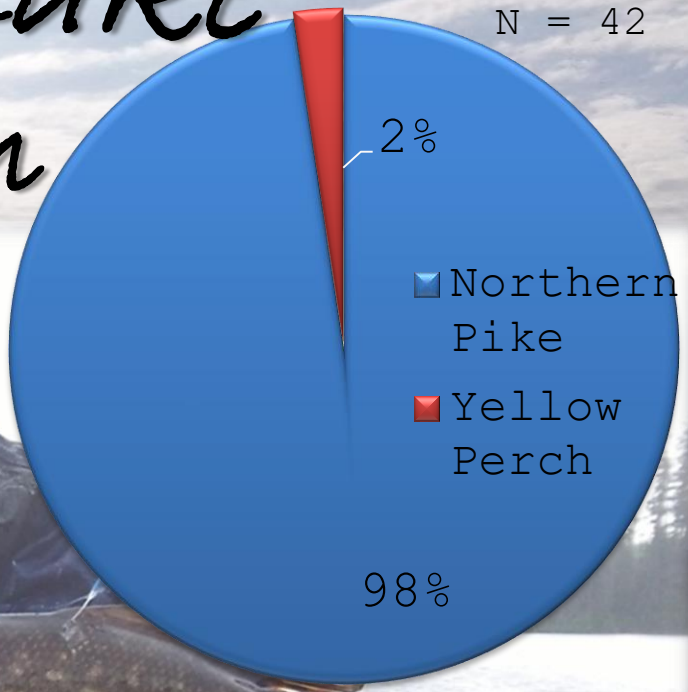
Catch per Unit Effort Summer 2012





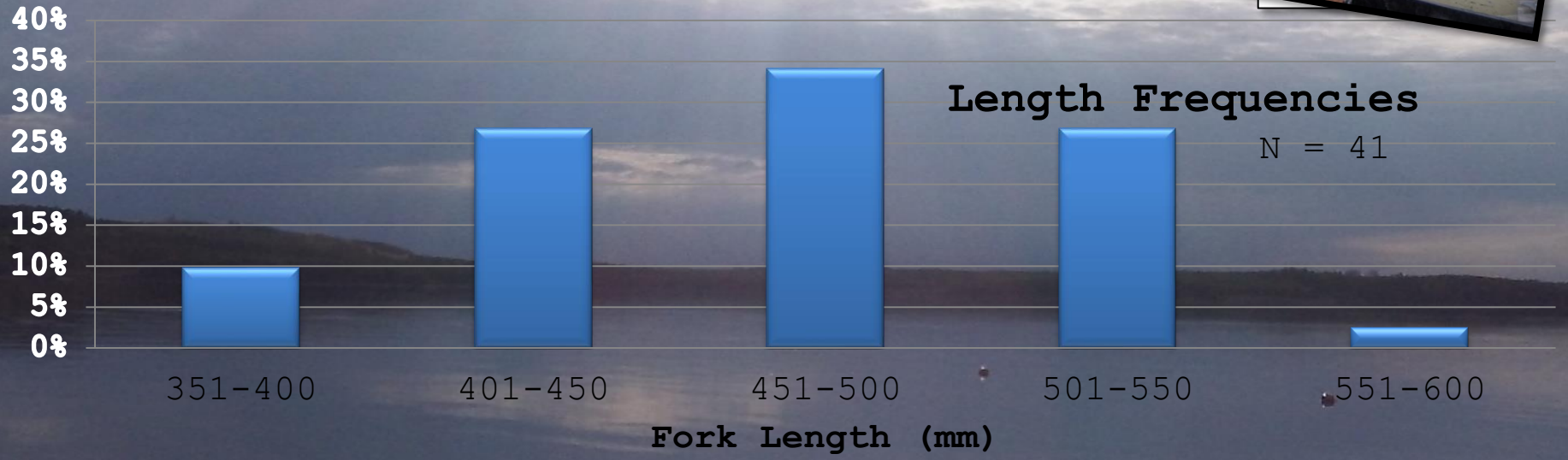
7.5 No Name Lake

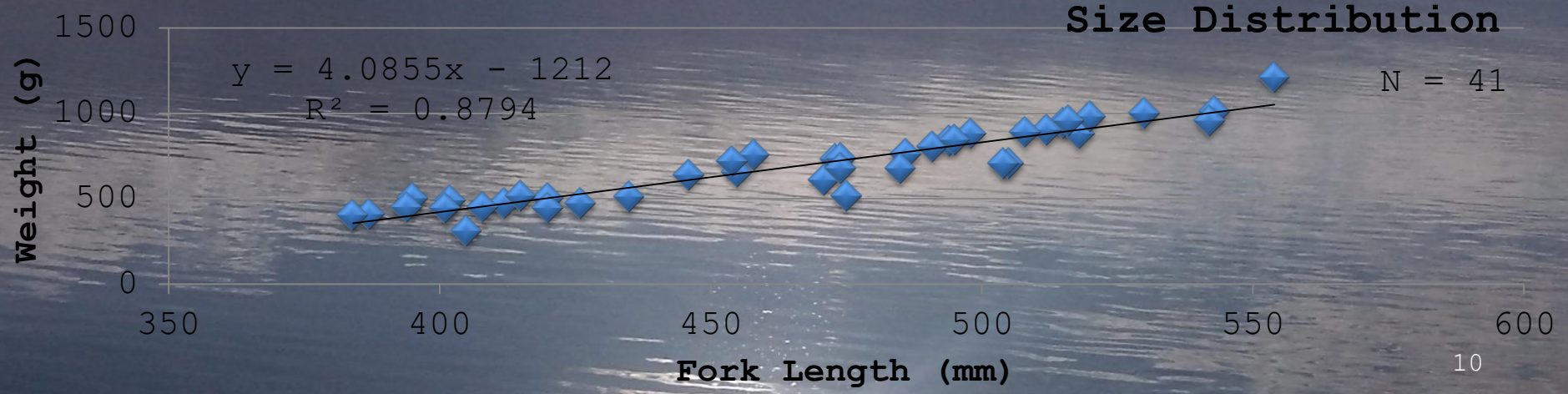
Species Composition



7.6 No Name Lake

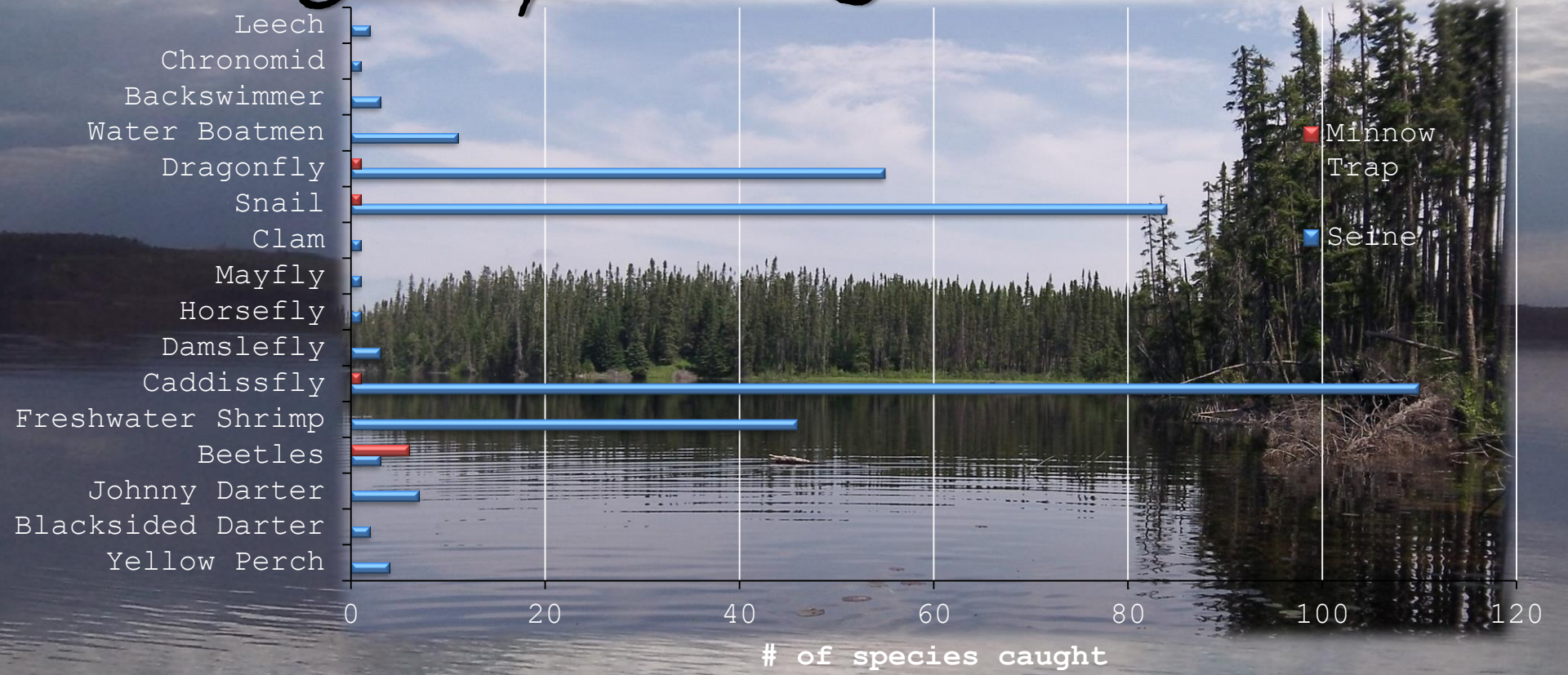
Northern Pike





7.7 No Name Lake

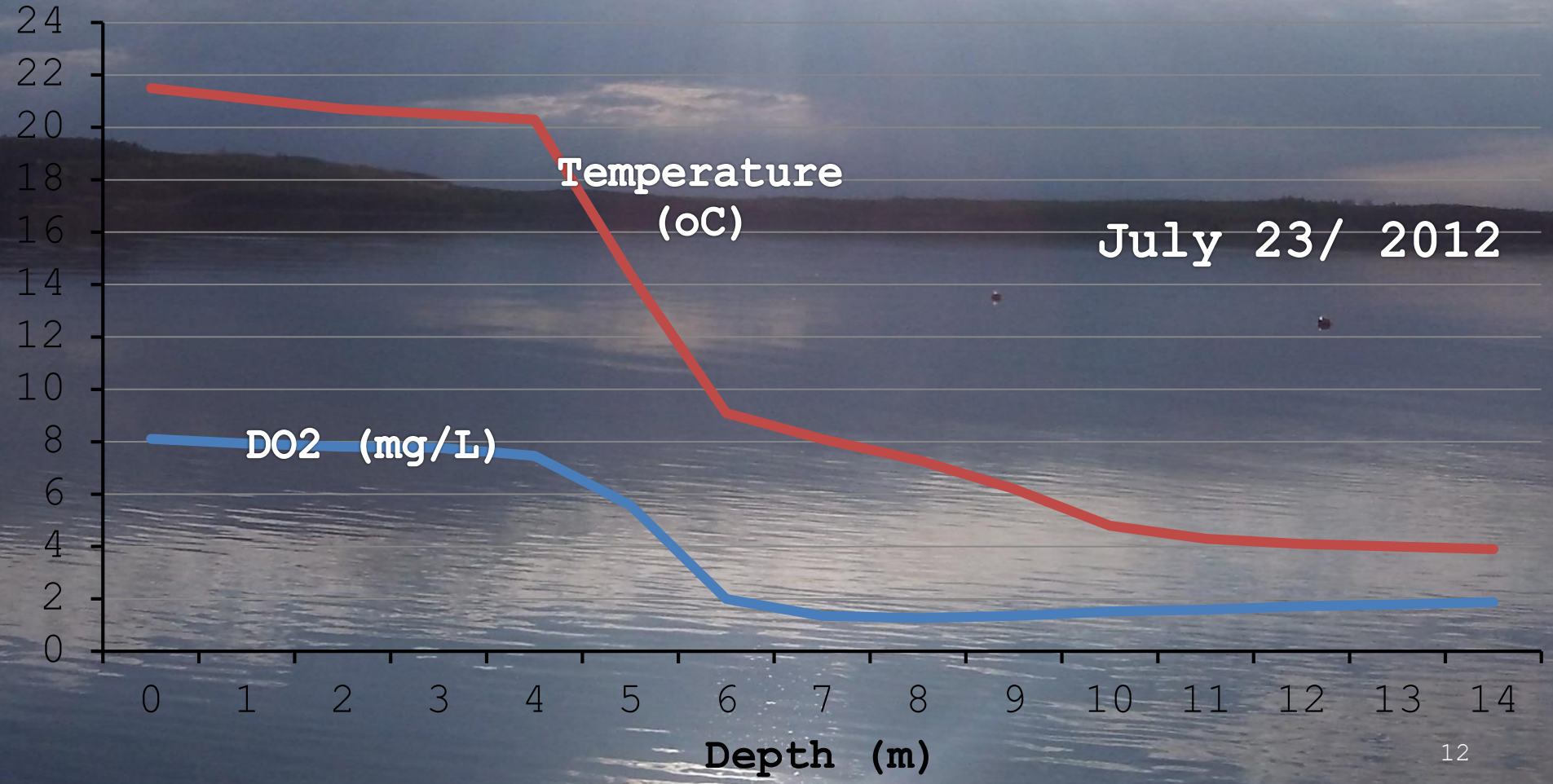
Forage Species & Invertebrates



A substantial population of caddisflies were found in No Name Lake. This invertebrate has been used as an indicator of good water quality. *Caddisfly larvae occur in most freshwater habitats and need moderately high levels of oxygen. Snails, also require moderately high levels of oxygen, both indicating good oxygen levels and available forage for this smaller lake*

7.8 No Name Lake

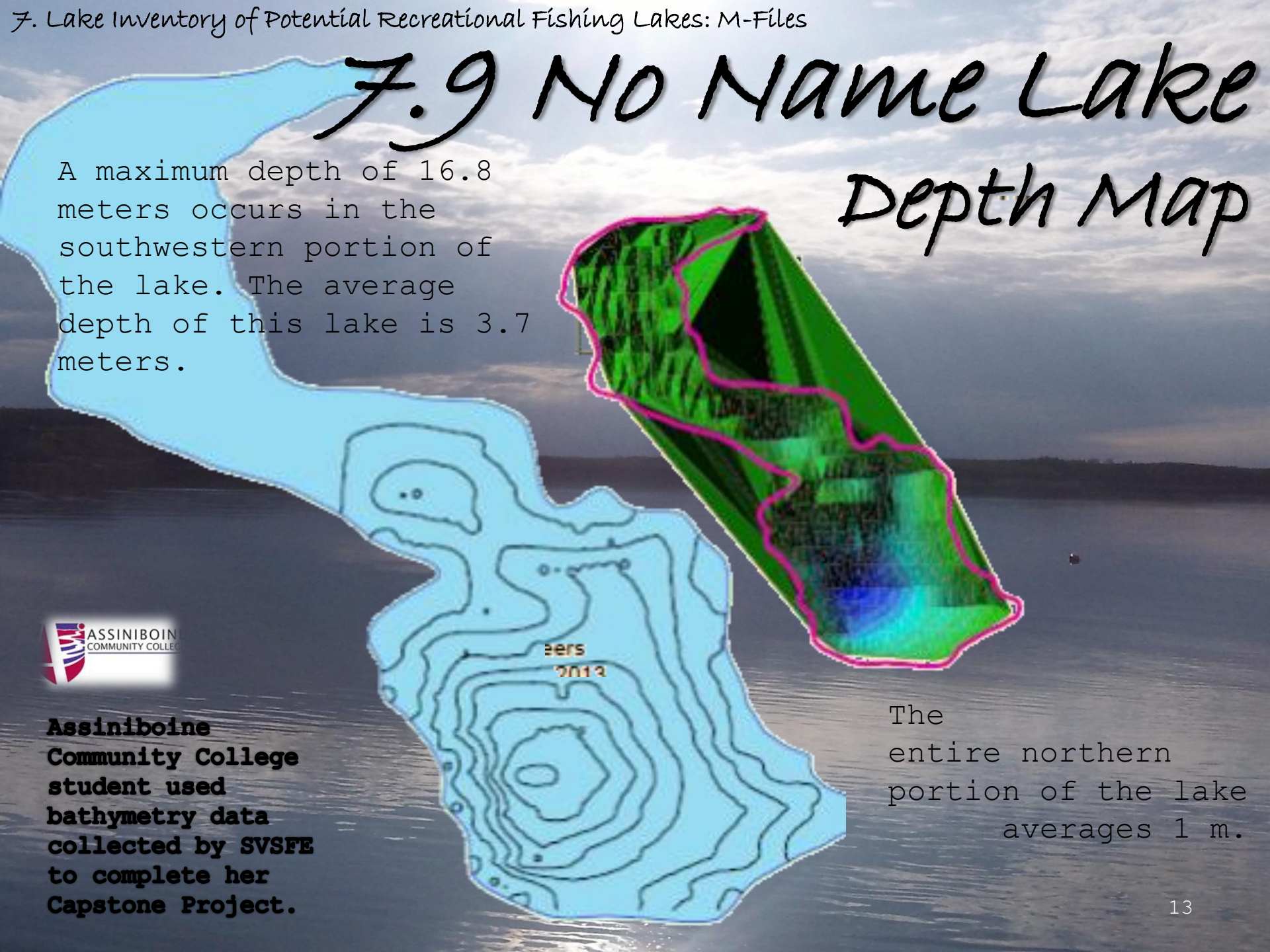
Summer Dissolved Oxygen Profile



7.9 No Name Lake

Depth Map

A maximum depth of 16.8 meters occurs in the southwestern portion of the lake. The average depth of this lake is 3.7 meters.



Assiniboine Community College student used bathymetry data collected by SVSFE to complete her Capstone Project.

The entire northern portion of the lake averages 1 m.

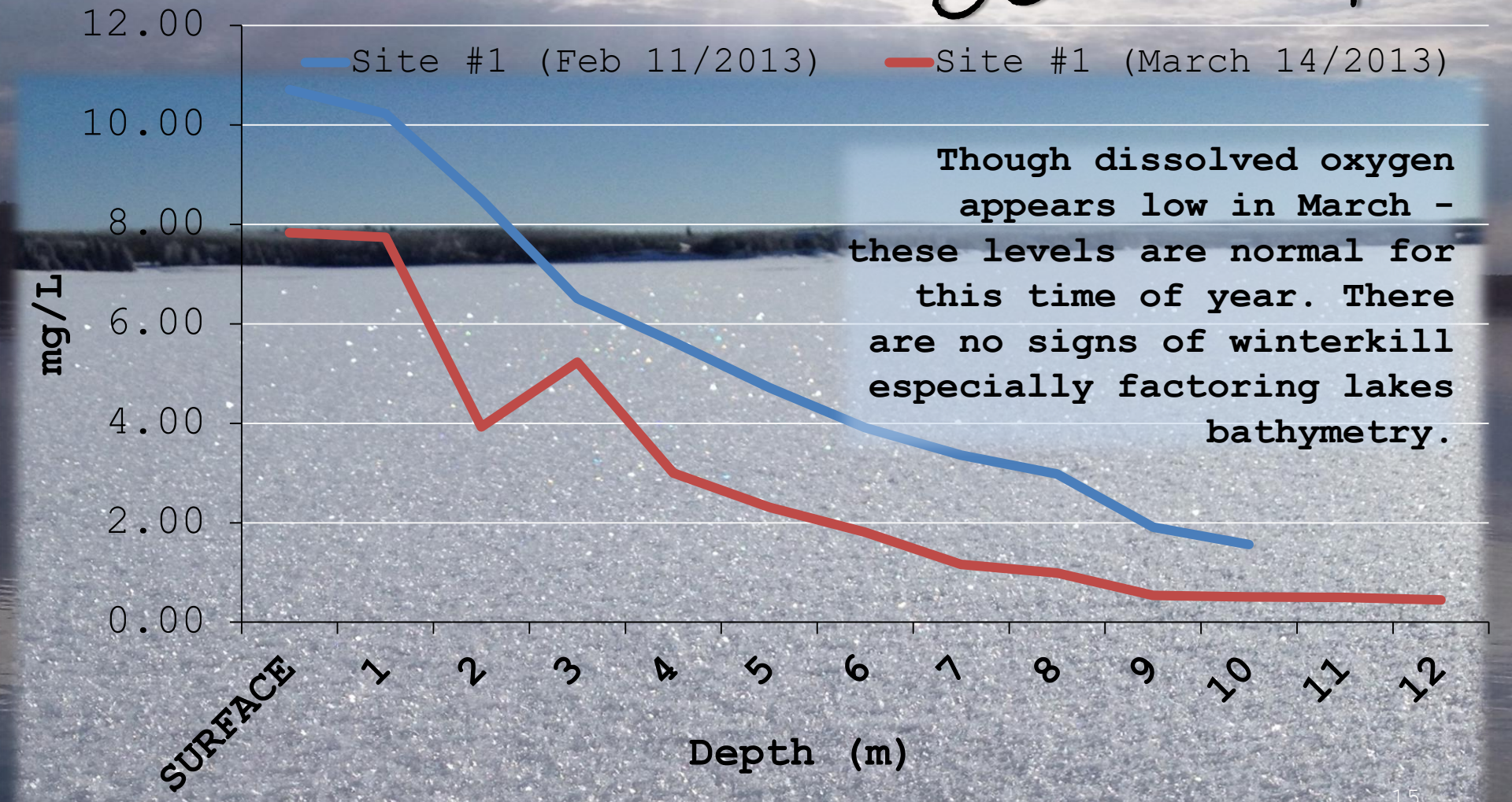
7.10 No Name Lake

CPUE Winter 2013

Technicians faced a few challenges in accessing No Name Lake during the winter months. Due to increased snowfall during the 2012/13 winter season sampling was delayed until trails were groomed by the local snowmobile group. Also ice and snow conditions on the lake prevented technicians from assessing the north half of the lake. In summary - no fish were caught during winter sampling.

7.11 No Name Lake

Winter Dissolved Oxygen Profile



Though dissolved oxygen appears low in March - these levels are normal for this time of year. There are no signs of winterkill especially factoring lakes bathymetry.

7.12 No Name Lake

Final Note

No Name Lake is slightly known to some anglers, but because it's off the beaten path, many aren't aware it exists. The pike population appears to be fairly established with smaller sized pike (<600 mm). Lake morphology, oxygen levels and indictor species suggest the lake would support fish populations. Providing access information to anglers would be beneficial as the trails are unmarked.

7.12 No Name Lake

Final Note

To access the lake anglers have to be up for a little more of a adventure - the scenery and wildlife along the 16 km trail from North Steeprock Lake is worth the drive.

Access and angling success was much better in the summer. It was recommended that SVSFE review improvements such as installing a dock or enhancing access from the main trail to the lake.

7.13 Red Shack Lake

Historical Info

Manitoba Water Stewardship

M-File Report: *Red Shack historical documents were quite detailed on the area surrounding the lake including the lake morphology.*

1975 Report:

It was noted Red Shack Lake's outflow is connected to North Steeprock Lake and the lake could be accessible by truck approached from the east, west and south shores and this area was being logged at the time. Test nets were set and the lift resulted in only one burbot. It was also noted the lake would be ideal for stocking trout.

One important note found in the file was "This is a small lake and even if it survives winterkill it could only withstand limited angling"

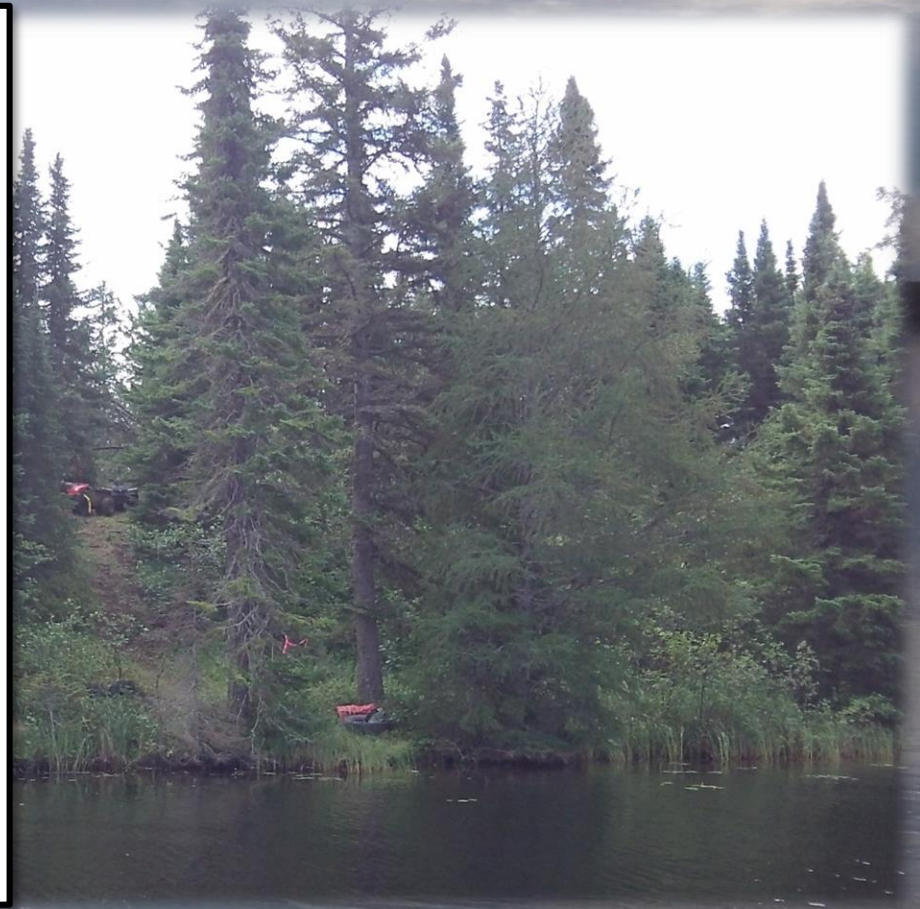
1989 Report:

"This lake could support a substantial amount of angling pressure but use is limited by the rough fish populations present."

7.13 Red Shack Lake

Historical Info

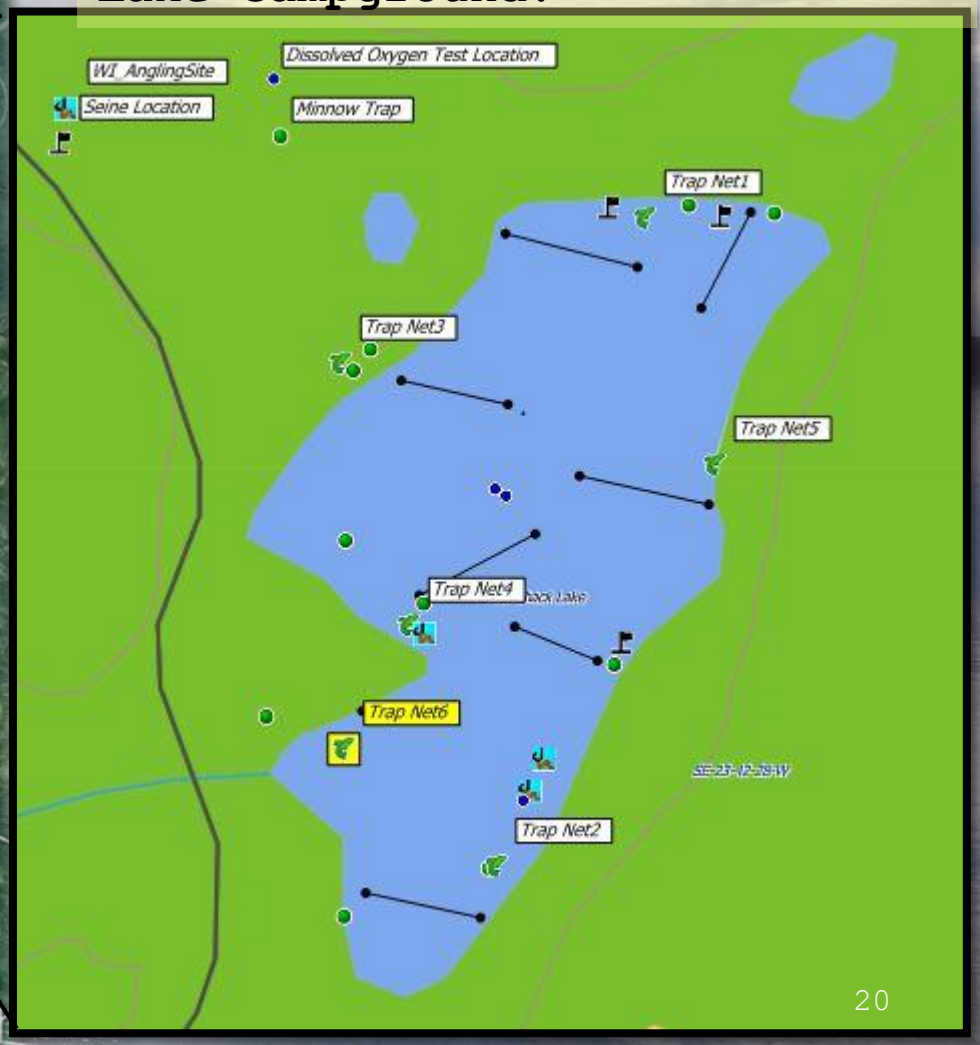
A proposal was made in 1989 for SVSFE to reclaim Red Shack Lake and stock with high-yielding game fish species (trout). The project would consist of live trapping and transferring of game fish species, elimination of remaining fish by use of rotenone, construction of an outflow control to prevent re-colonization by rough fish and stocking of trout. This project was estimated to cost $8,000. This proposal did not take place.



7.14 Red Shack Lake

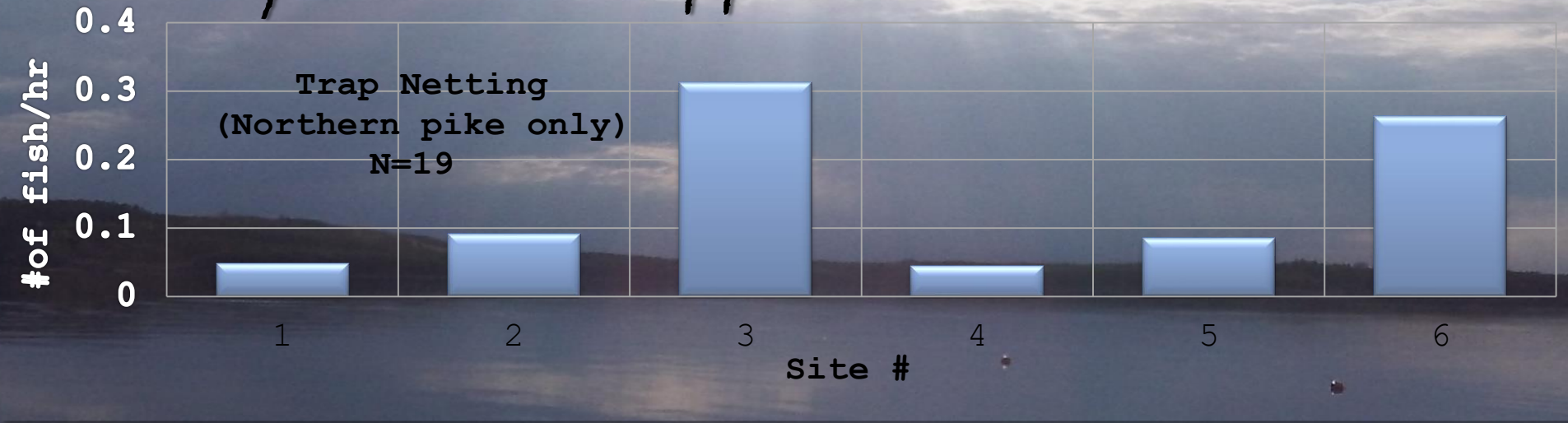
Study Area

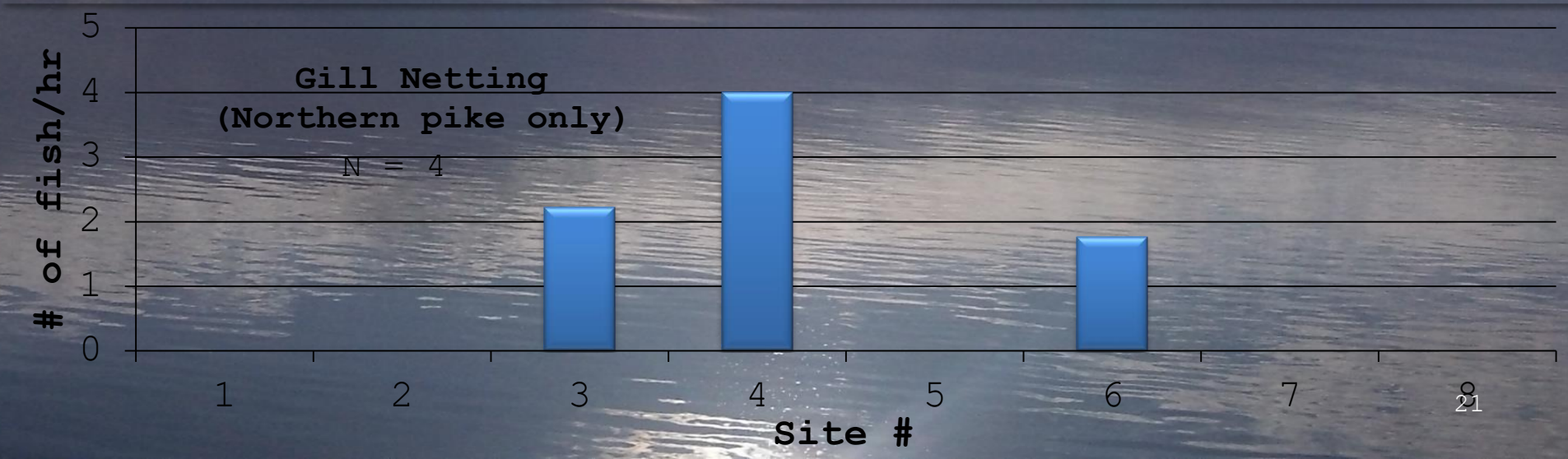
Located approximately 1 mile north of the North Steeprock Lake Campground.



7.15 Red Shack Lake

Catch per Unit Effort Summer 2012





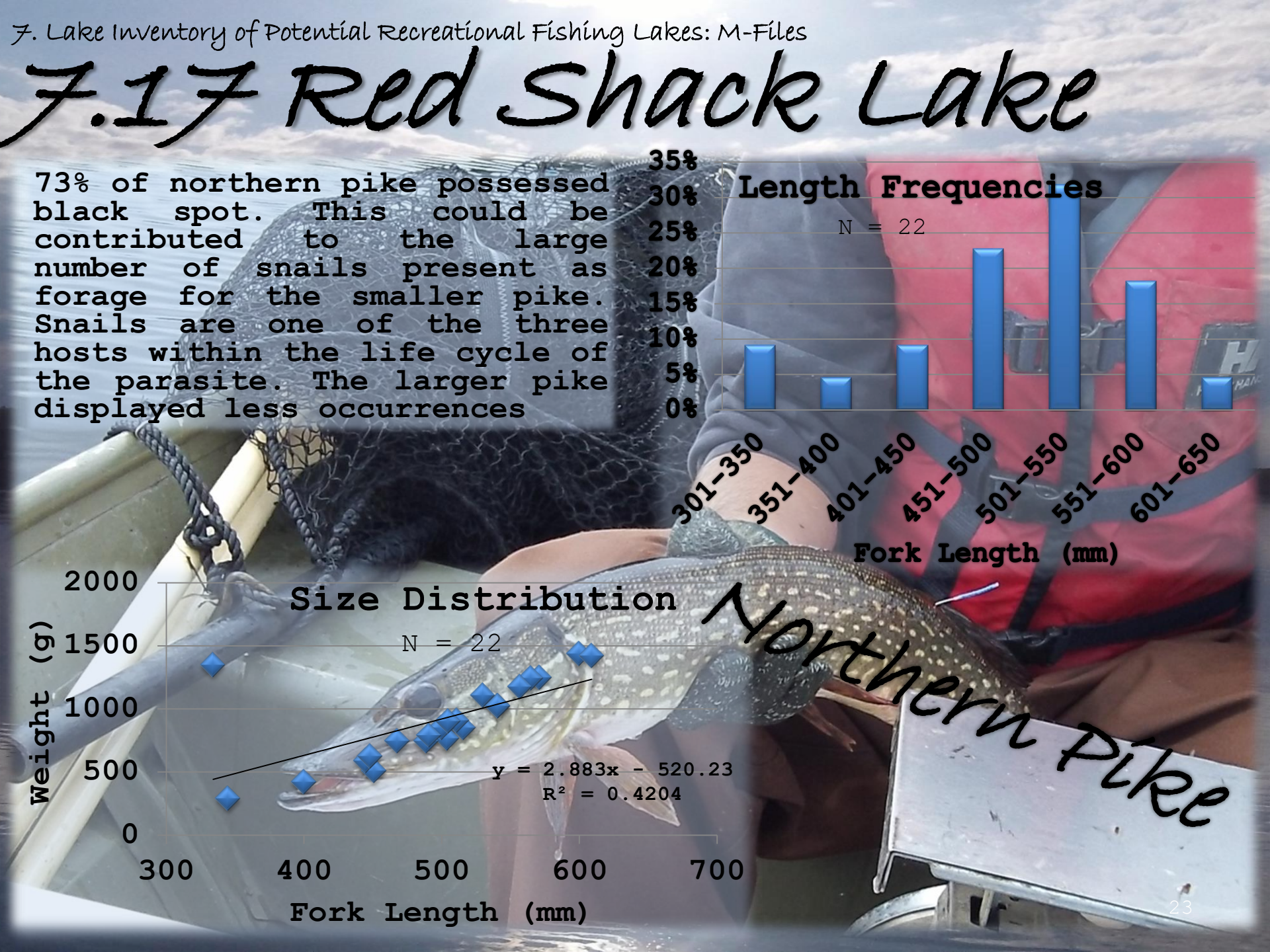
7.16 Red Shack Lake

Species Composition

Northern Pike were the only species caught in the 2012 assessment. Seining indicated Yellow Perch as the dominate forage species

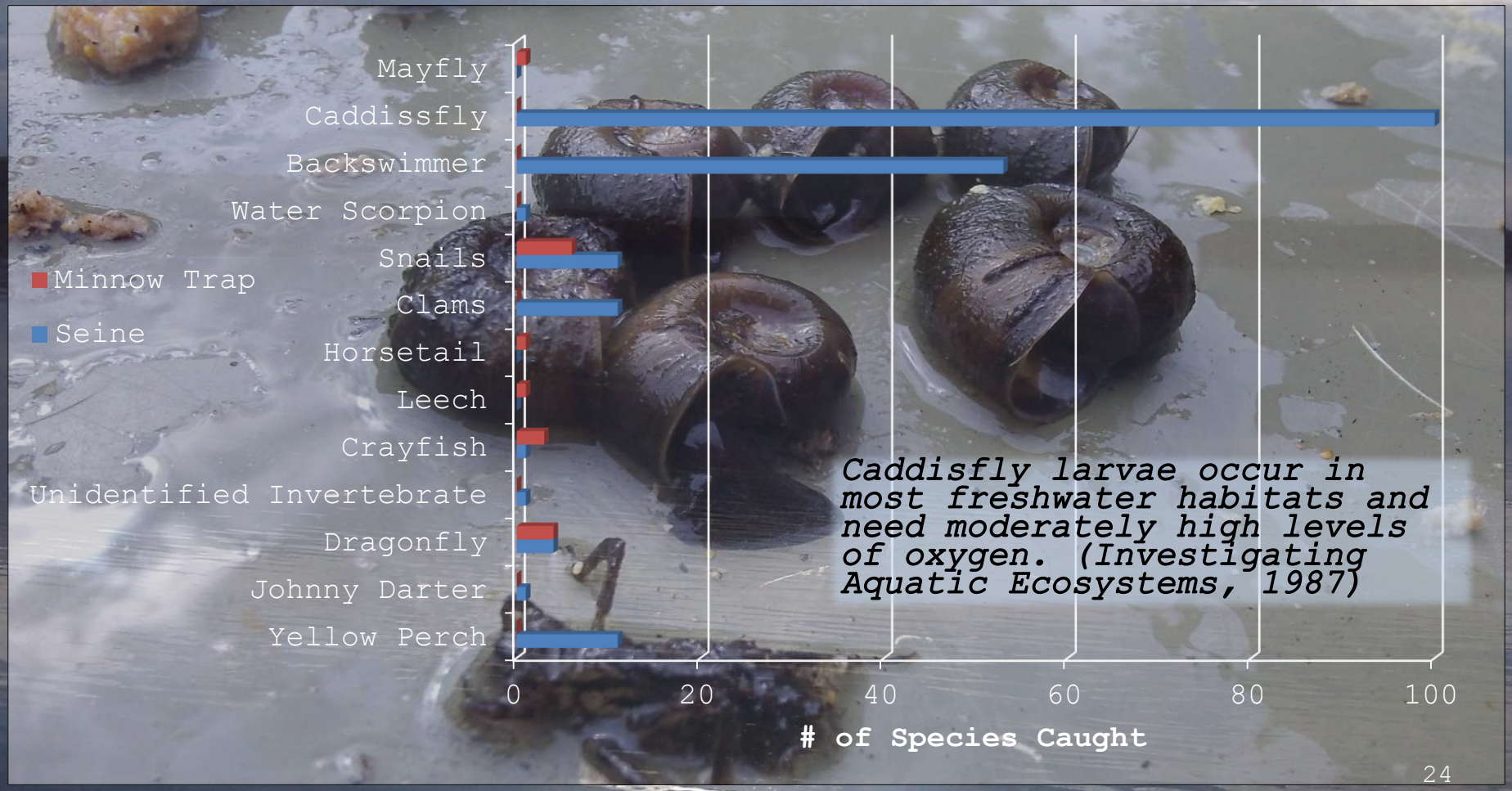
7.17 Red Shack Lake

73% of northern pike possessed black spot. This could be contributed to the large number of snails present as forage for the smaller pike. Snails are one of the three hosts within the life cycle of the parasite. The larger pike displayed less occurrences



7.18 Red Shack Lake

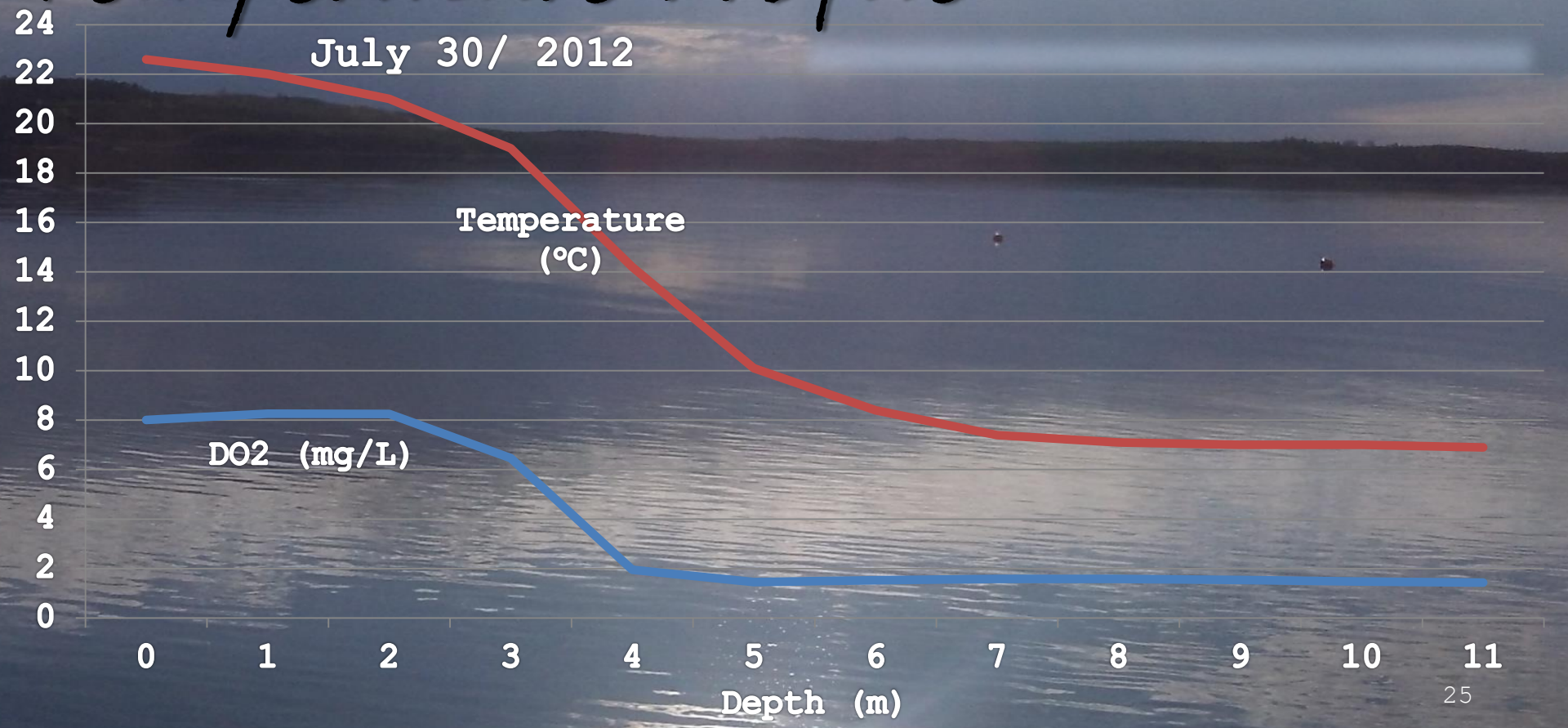
Forage Species & Invertebrates



Caddisfly larvae occur in most freshwater habitats and need moderately high levels of oxygen. (Investigating Aquatic Ecosystems, 1987)

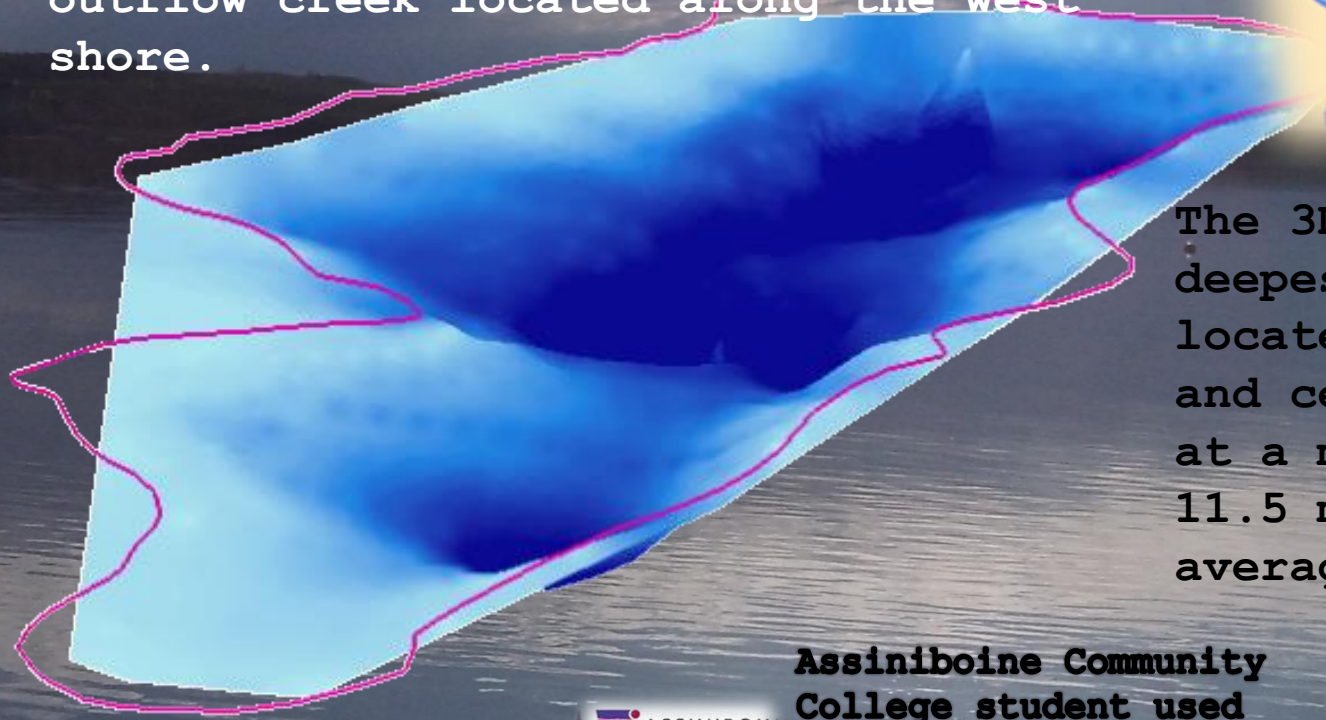
7.19 Red Shack Lake

Summer Dissolved Oxygen / Temperature Profile



7.20 Red Shack Lake Depth Map

Red Shack lake is connected to North Steeprock Lake's inflow by a small outflow creek located along the west shore.



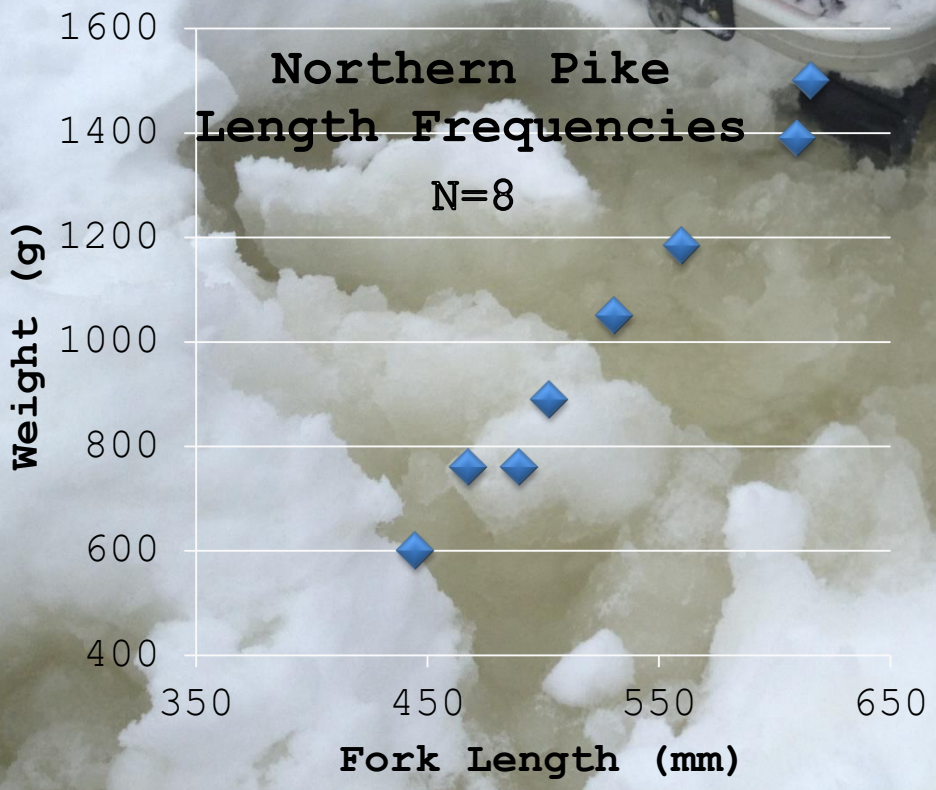
The 3D map displays the deepest holes are located northeast end and center of the lake at a maximum depth of 11.5 meters with an average of 4.3 meters.

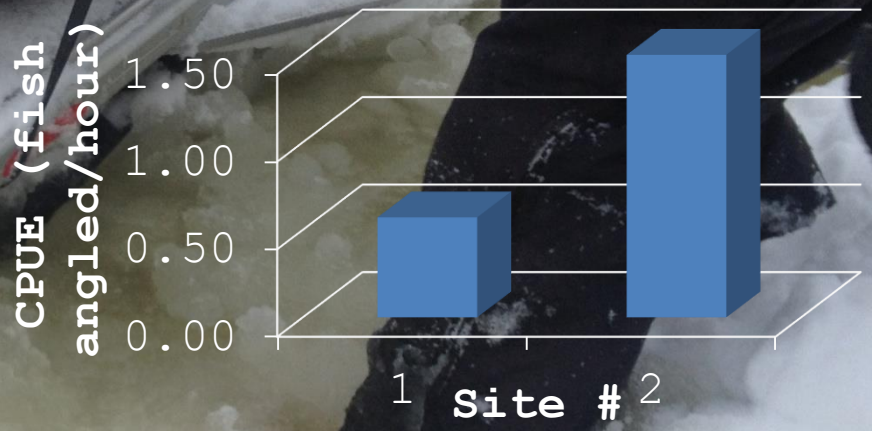
Assiniboine Community College student used bathymetry data collected by SVSFE to complete her Capstone Project.

7.21 Red Shack Lake

Catch per Unit Effort - Winter 2013

88% of pike caught in the winter possessed black spot





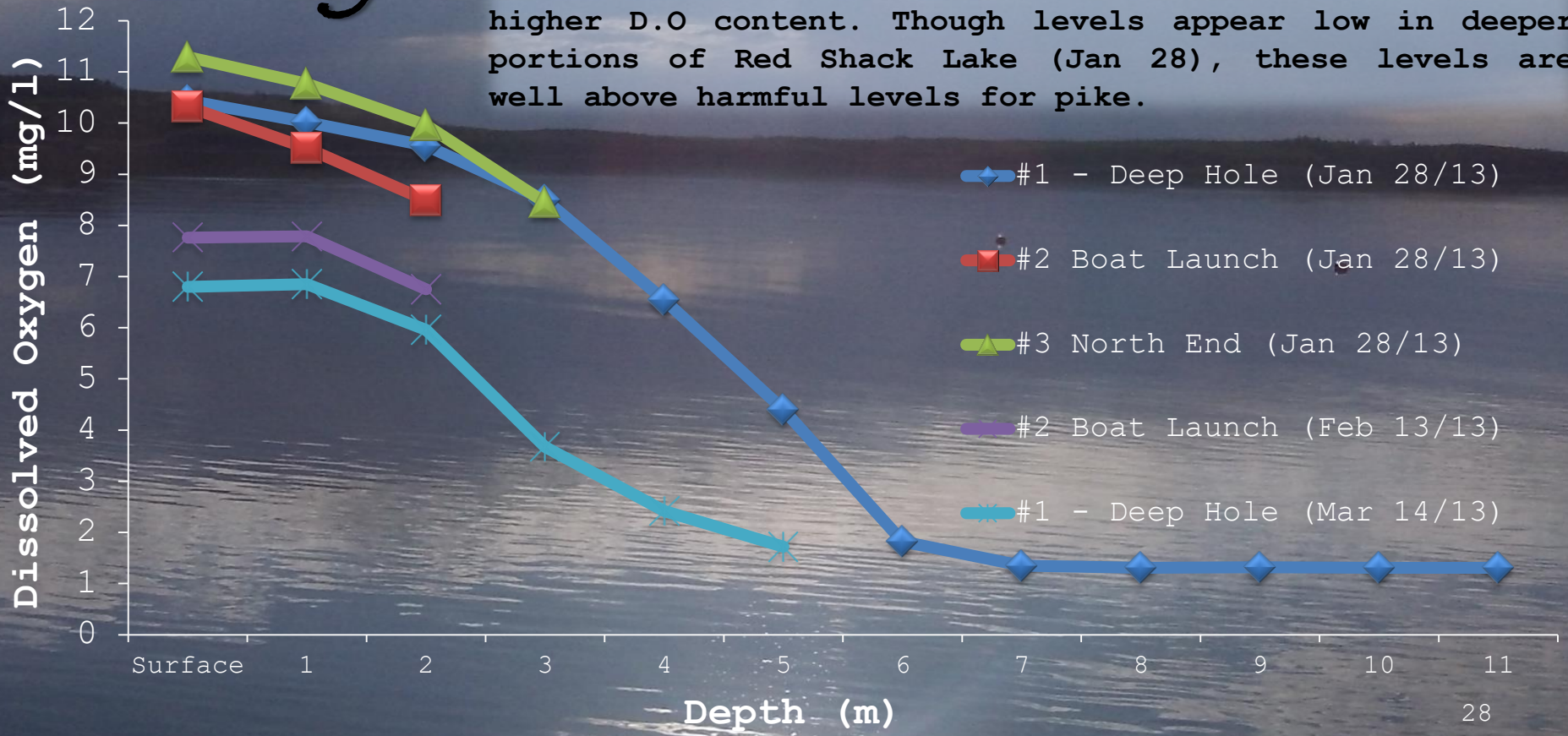
This lake was very easy to access in the winter but anglers should be aware that the trail to the lake is along a trap line.

Besides the higher levels of black spot in the pike, the general health condition between summer and winter was comparable and the fishing quality was of the highest at 1.07 fish/hour

7.22 Red Shack Lake

Winter Dissolved Oxygen Testing

Dissolved Oxygen usually drops in the deeper portions first where light cannot reach for photosynthesis. Fish can sense oxygen lowering and retreat to areas with higher D.O content. Though levels appear low in deeper portions of Red Shack Lake (Jan 28), these levels are well above harmful levels for pike.



7.23 Red Shack Lake

Final Note

DID YOU KNOW?!

Black spot is a parasite and is caused by eggs being released into the water by fish eating birds. Eggs develop to intermediate stages of the parasite in snails. The free swimming parasite than penetrates fish muscles. Infected fish are consumed by birds and the cycle begins again.

Red Shack Lake was one of the smallest lakes assessed. It is easily accessed by quad or snowmobile but the boat launch is steep and only small boats which can be carried are recommended to use. It does offer an exciting angling experience for northern pike cause you can't keep them off your hook!

Note:
Higher levels of black spot are present but this shouldn't deter anglers from enjoying this quite little lake.

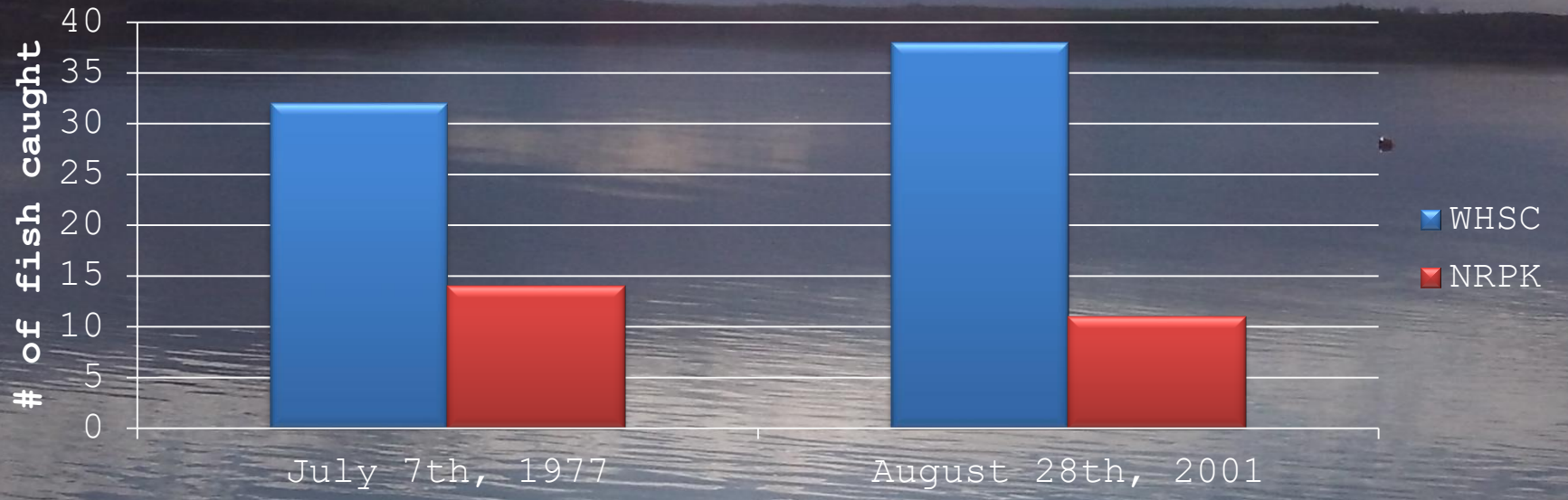
7.24 Hoodoo Lake

Historical Info

Manitoba Water Stewardship

M-File Report:

In 1977 soundings were made in various areas finding a maximum depth of 12 feet. Also noted the lake had good angling potential for pike



Hoodoo was stocked with 20,000 walleye fry once in 1994 although there are no records of any being caught

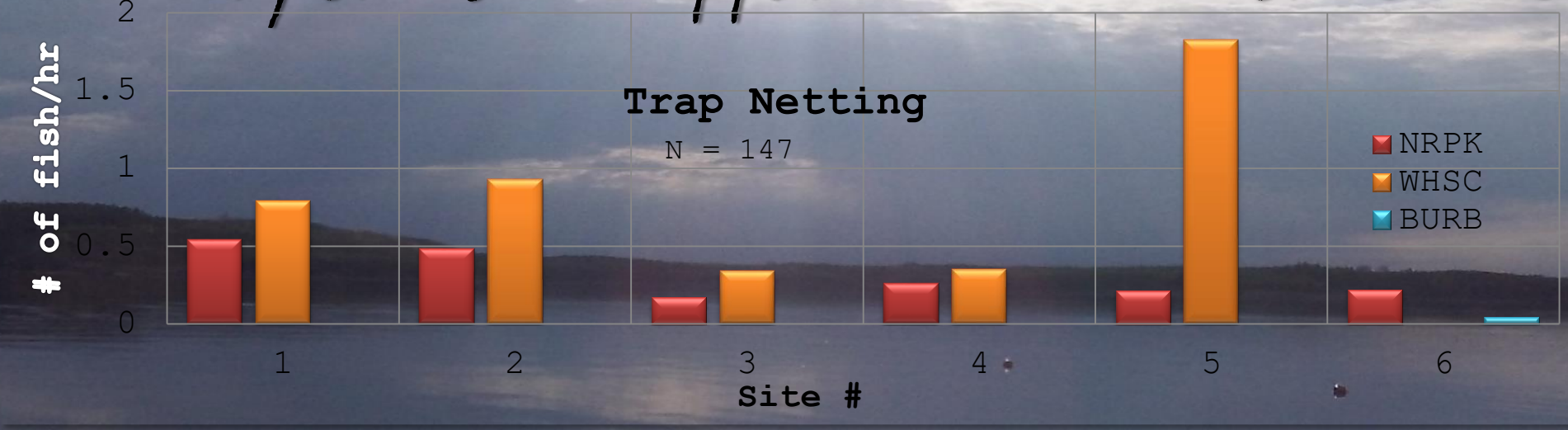
7.25 Hoodoo Lake

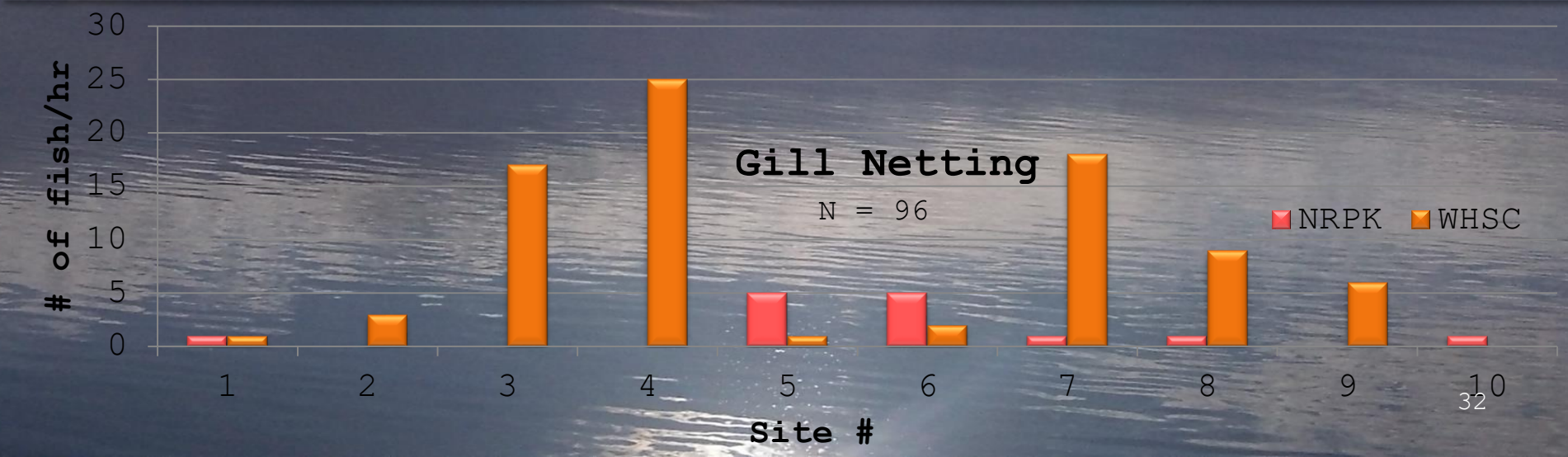
Study Area

Hoodoo Lake is located 11 km north of North Steeprock Lake along the Virgin Lake road

7.26 Hoodoo Lake

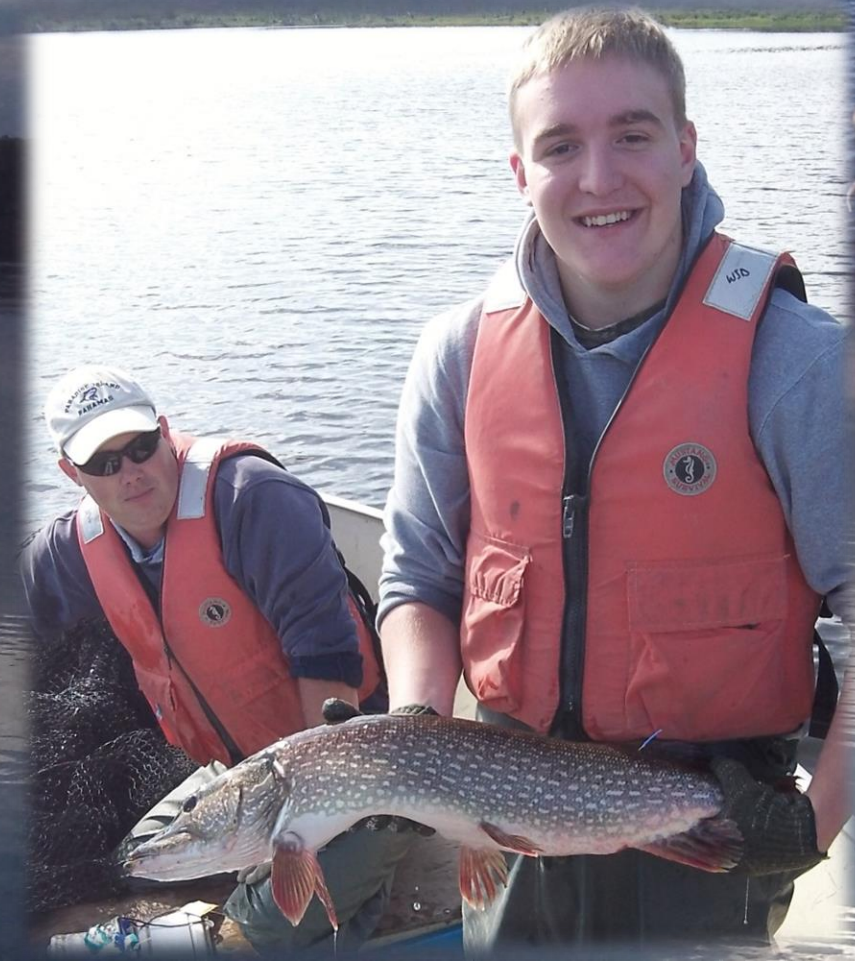
Catch per Unit Effort - Summer 2012

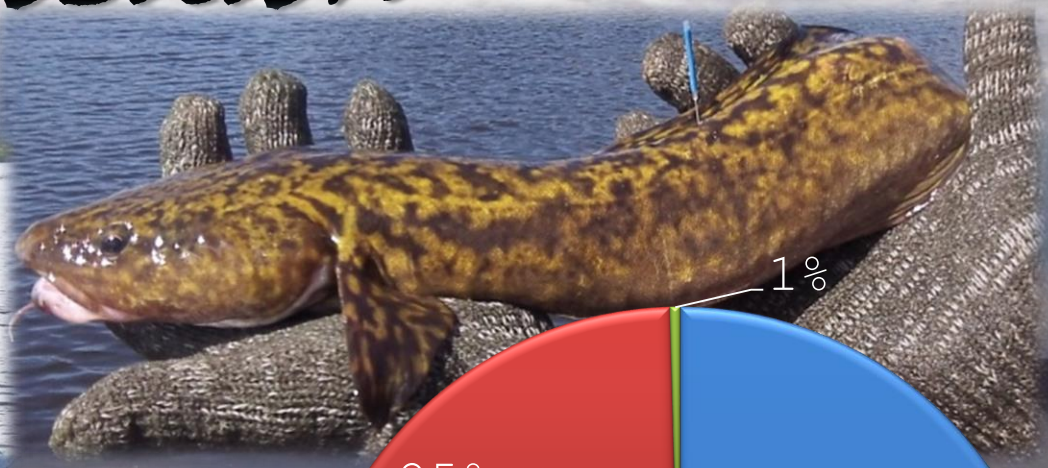


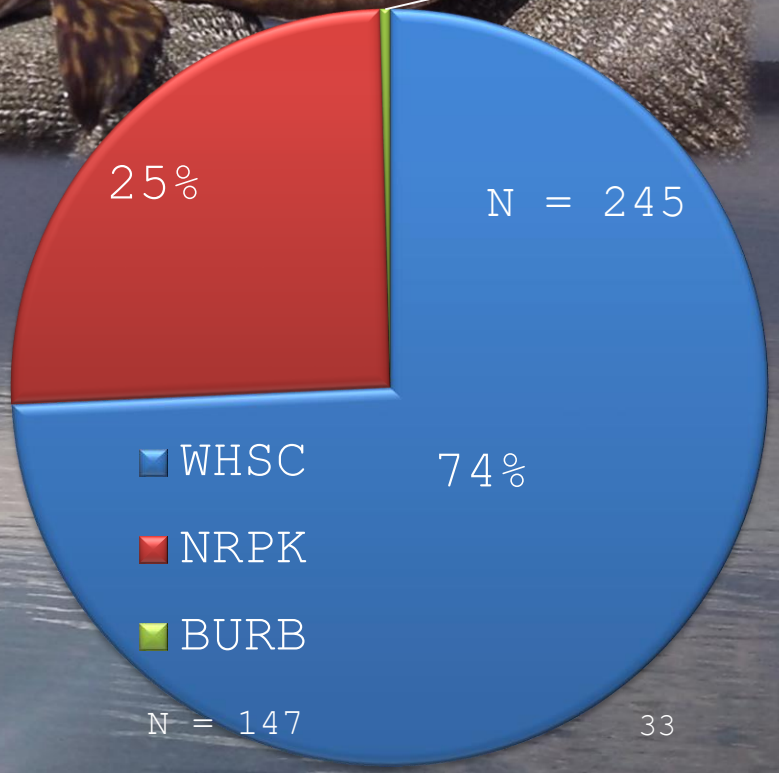


7.27 Hoodoo Lake

Species Composition

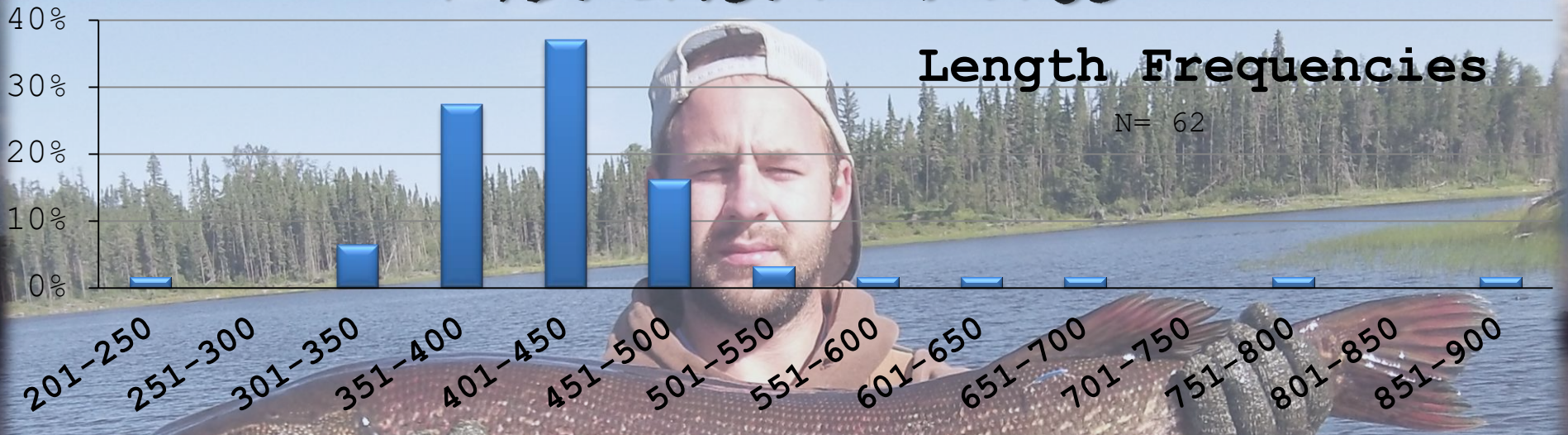


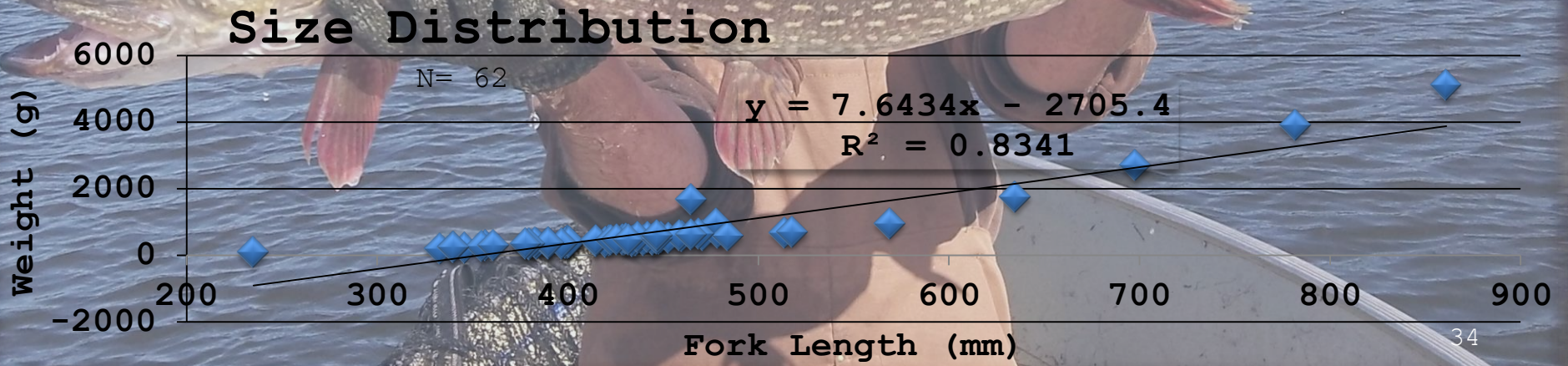




7.28 Hoodoo Lake

Northern Pike





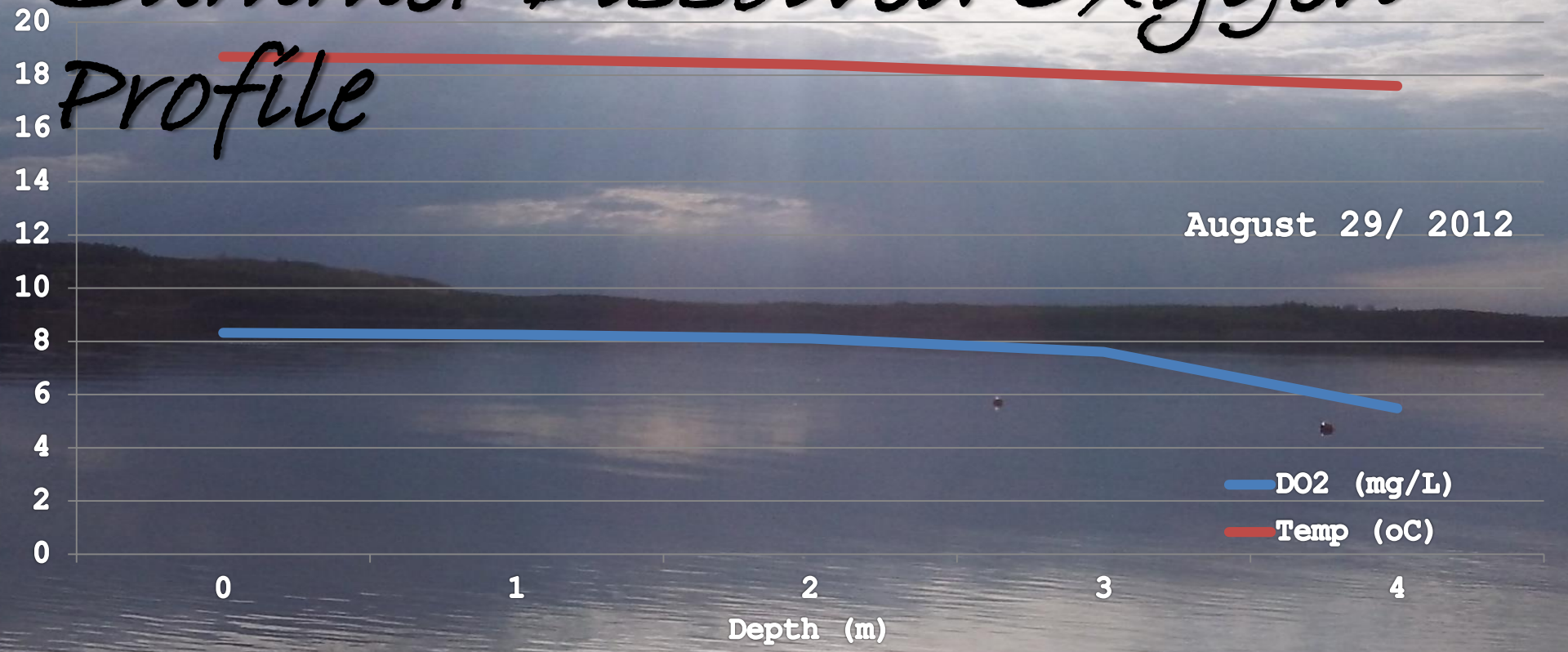
7.29 Hoodoo Lake

Forage Species & Invertebrates

Hoodoo Lake shows a diverse population of invertebrates indicating good food supply and a healthy waterbody. The most abundant species was freshwater shrimp which is an excellent food source. There were low catches of minnow species but a fair diversity.

7.30 Hoodoo Lake

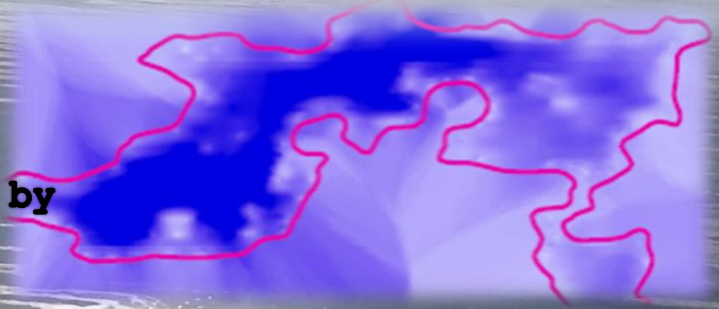
Summer Dissolved Oxygen Profile



It is apparent fall turnover was occurring during DO_2 sampling. Presence of large northern pike indicate dissolved oxygen levels have been able to sustain populations for many years.

7.31 Hoodoo Lake - Depth Map

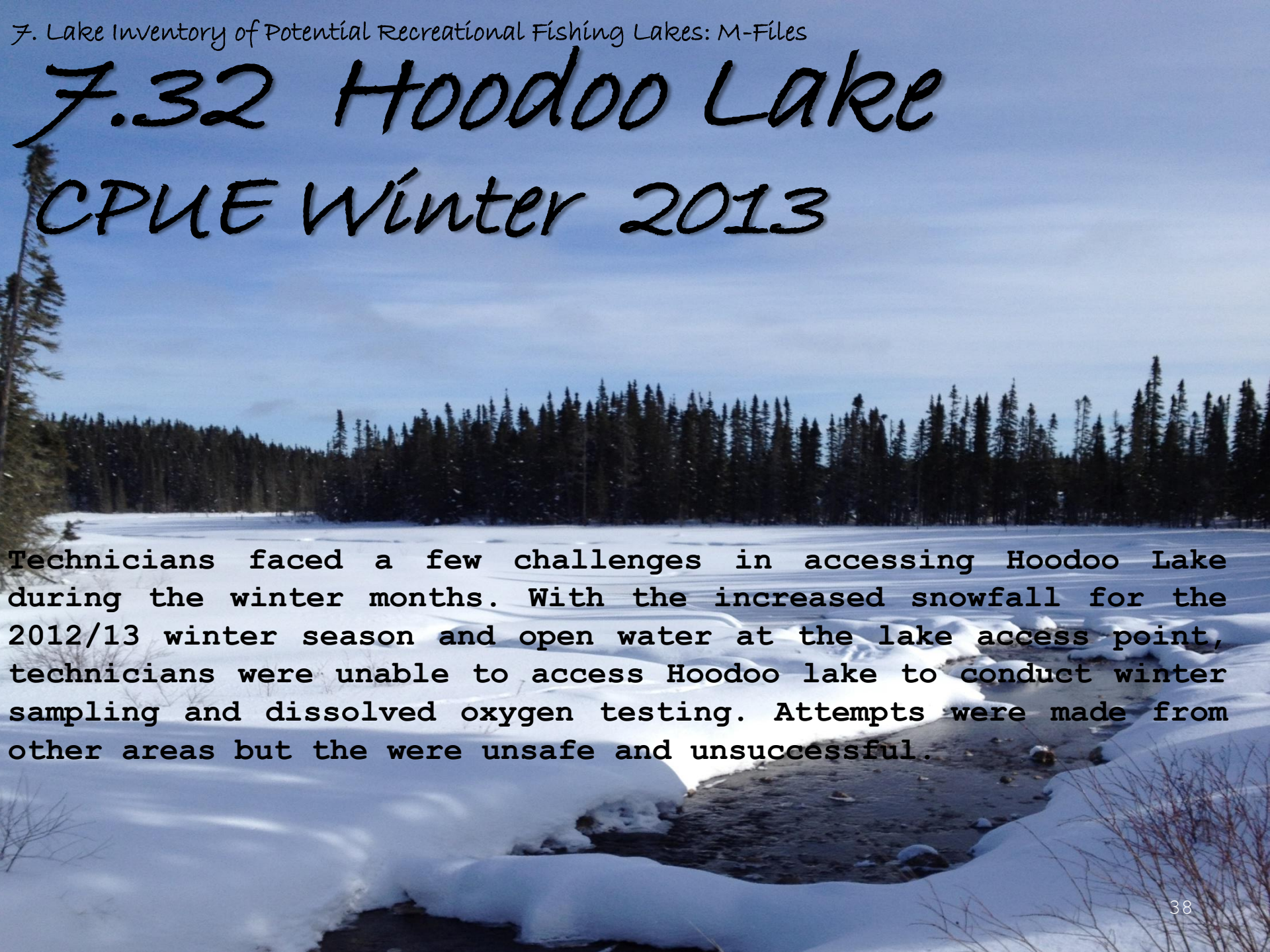
Hoodoo Lake is one of the shallower lakes with an average depth of 2.2 meters. This was a concern at first on whether this lake could sustain fish populations for a period of time. But with the various holes up to 4 meters in depth and inflows along the north shore the lake appears to maintain suitable oxygen levels and fish habitat.



Assiniboine Community College student used bathymetry data collected by SVSFE to complete her Capstone Project.

7.32 Hoodoo Lake

CPUE Winter 2013



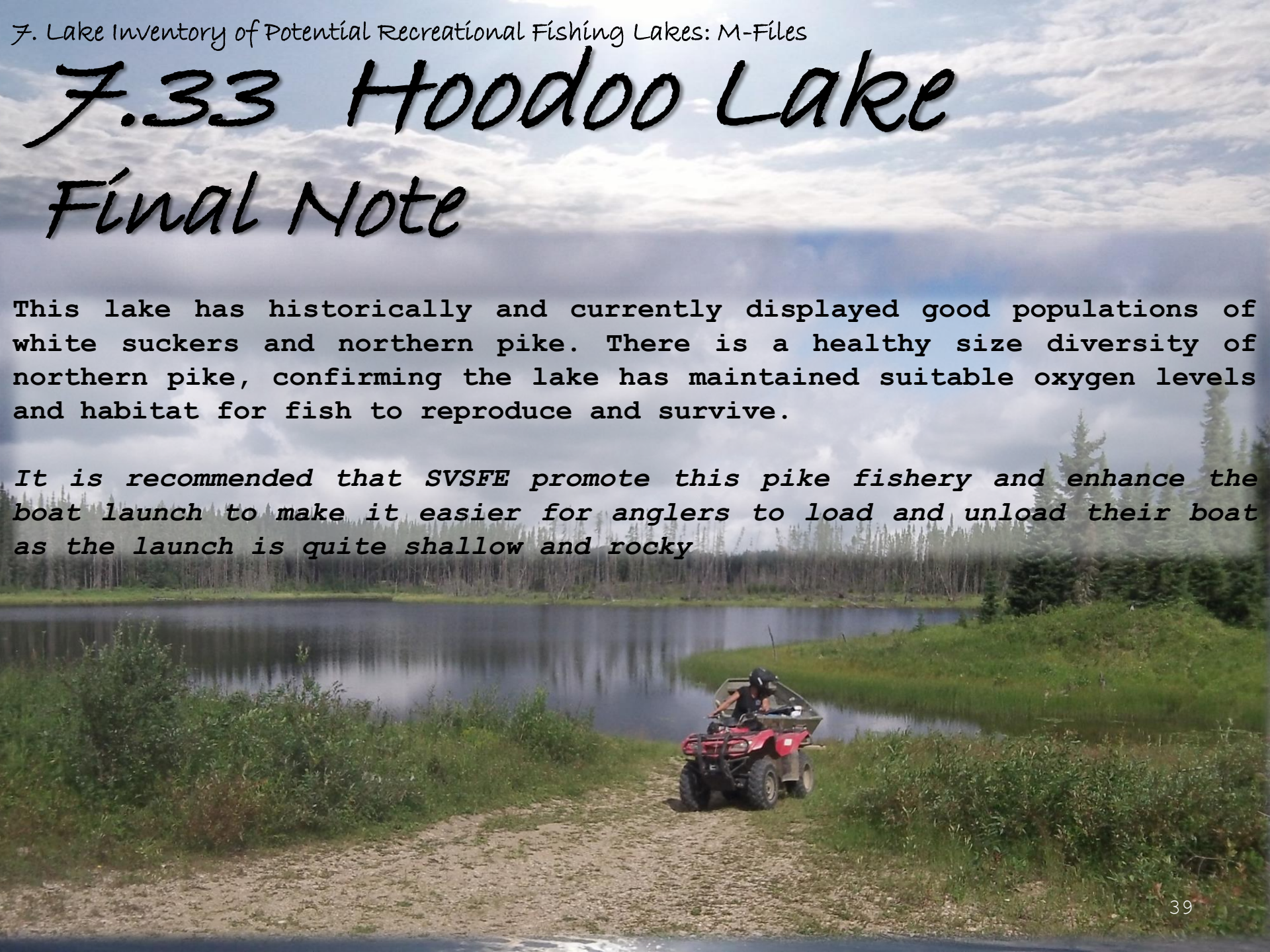
Technicians faced a few challenges in accessing Hoodoo Lake during the winter months. With the increased snowfall for the 2012/13 winter season and open water at the lake access point, technicians were unable to access Hoodoo lake to conduct winter sampling and dissolved oxygen testing. Attempts were made from other areas but the were unsafe and unsuccessful.

7.33 Hoodoo Lake

Final Note

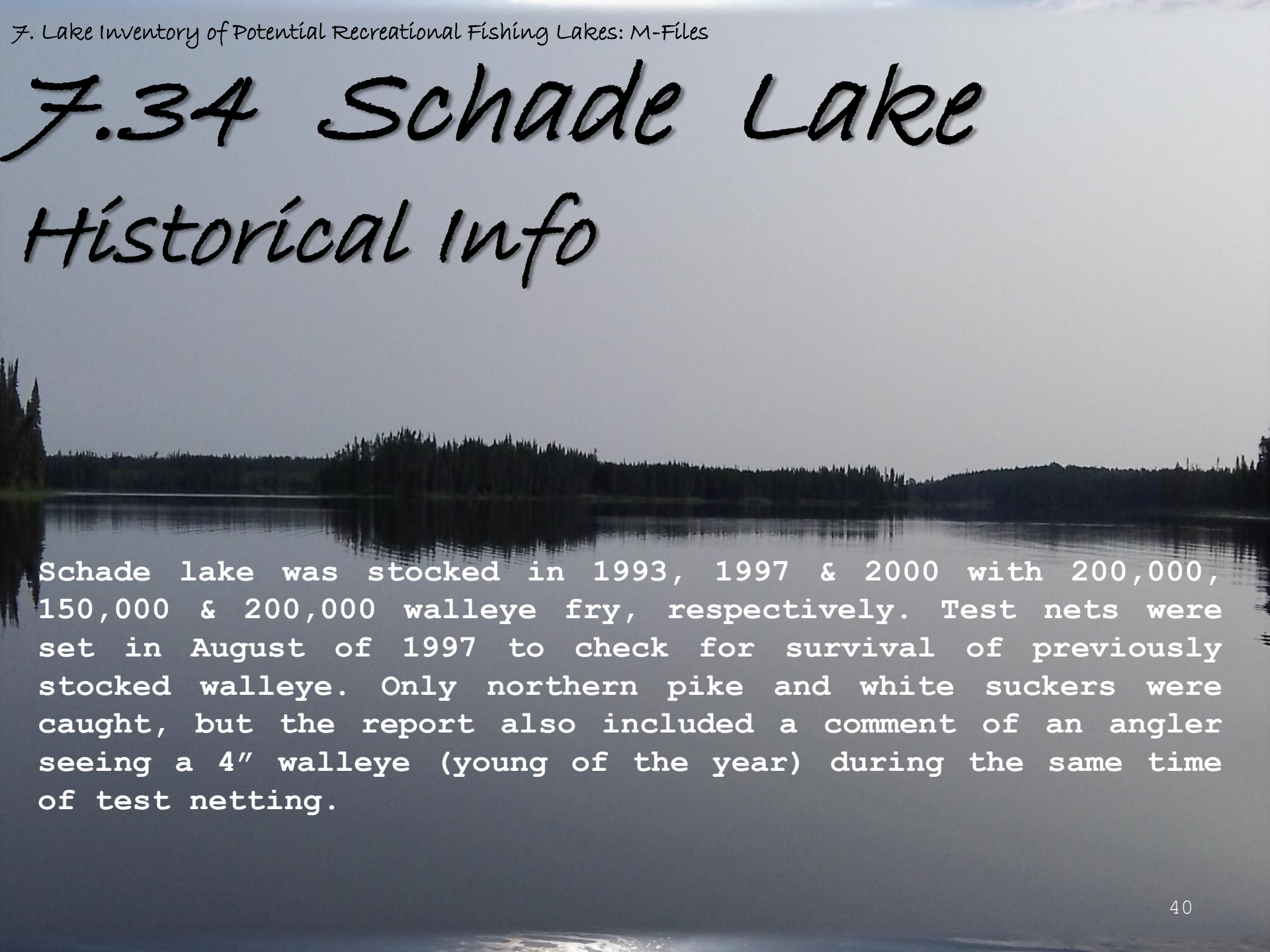
This lake has historically and currently displayed good populations of white suckers and northern pike. There is a healthy size diversity of northern pike, confirming the lake has maintained suitable oxygen levels and habitat for fish to reproduce and survive.

It is recommended that SVSFE promote this pike fishery and enhance the boat launch to make it easier for anglers to load and unload their boat as the launch is quite shallow and rocky



7.34 Schade Lake

Historical Info



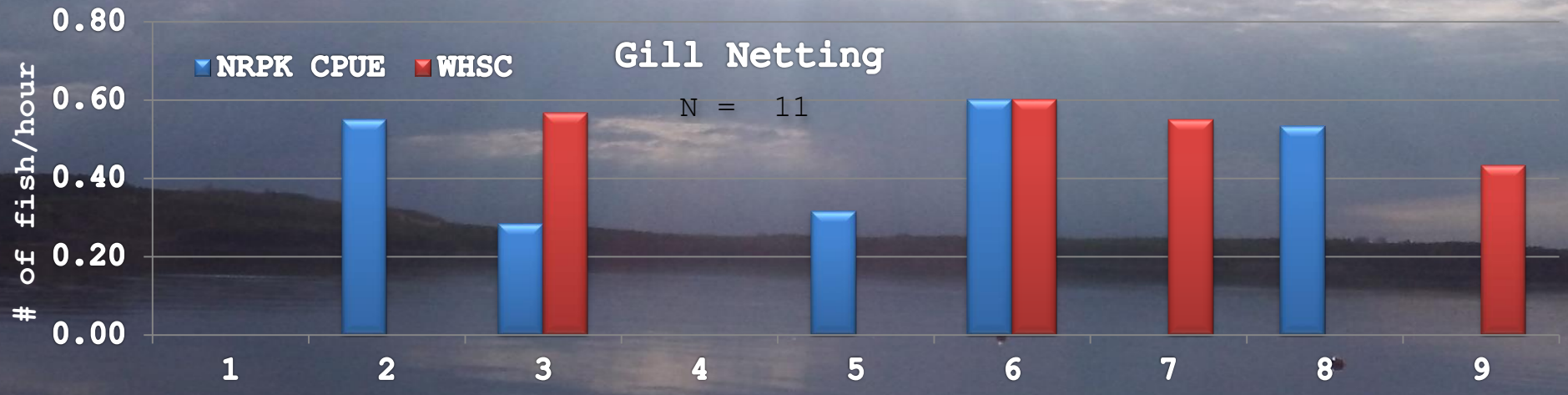
Schade lake was stocked in 1993, 1997 & 2000 with 200,000, 150,000 & 200,000 walleye fry, respectively. Test nets were set in August of 1997 to check for survival of previously stocked walleye. Only northern pike and white suckers were caught, but the report also included a comment of an angler seeing a 4" walleye (young of the year) during the same time of test netting.

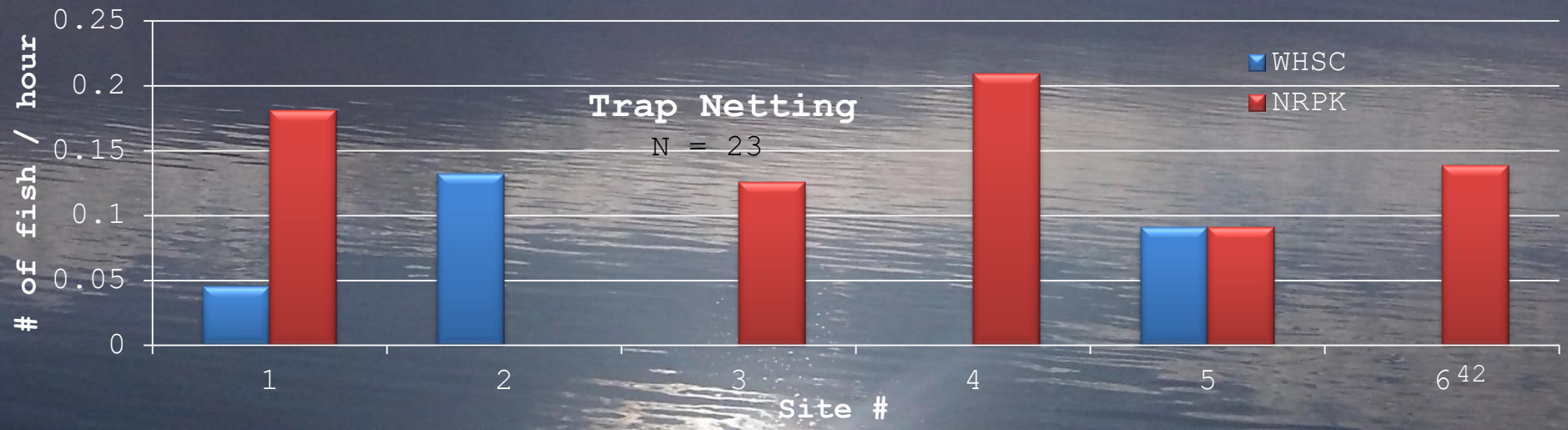
7.35 Schade Lake Study Area

The trail starts northwest of North Steeprock's outflow (the river launch). It is fairly good 5 km trail accessible by quad with a 14' boat. The trail runs along a well used trap line but is narrow in some places

7.36 Schade Lake

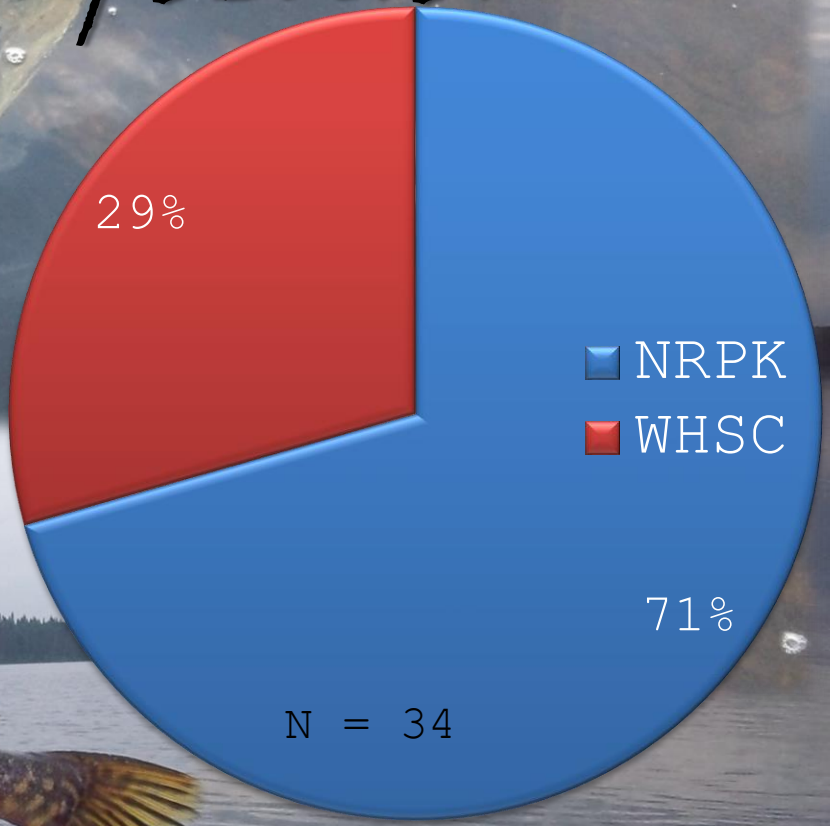
Catch per Unit Effort - Summer 2013





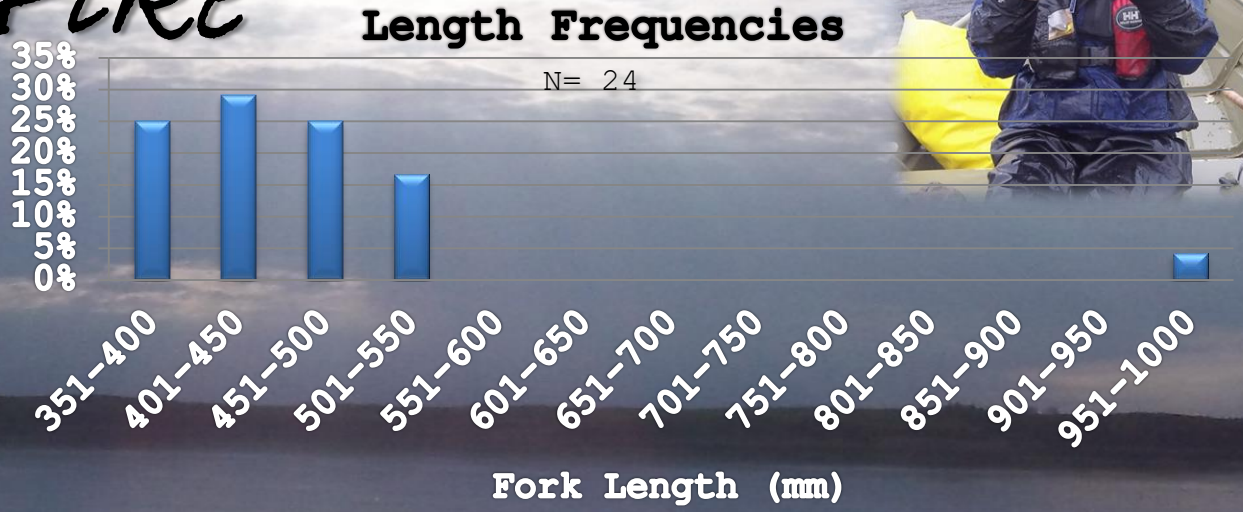
7.37 Schade Lake

Species Composition

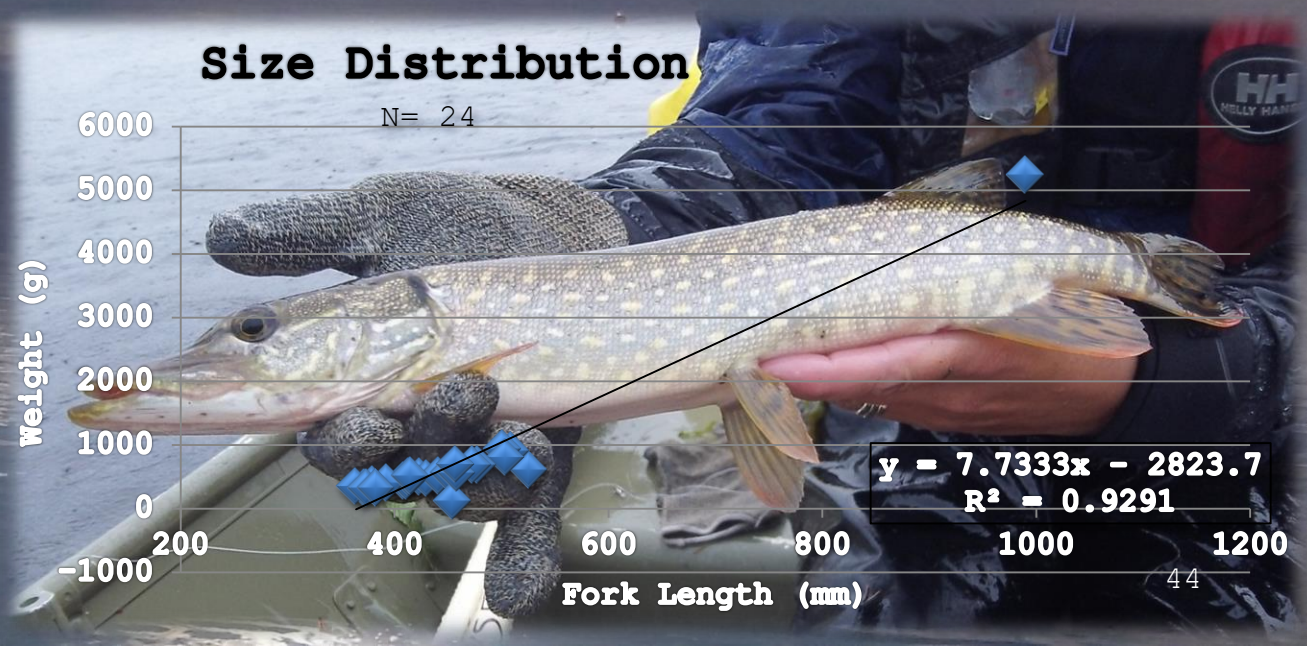


7.38 Schade Lake

Northern Pike



Illustrated in the length frequency graph, smaller pike dominant the pike population. One large pike just under a meter was caught indicating the lake's capability of supporting game fish for a long period of time.

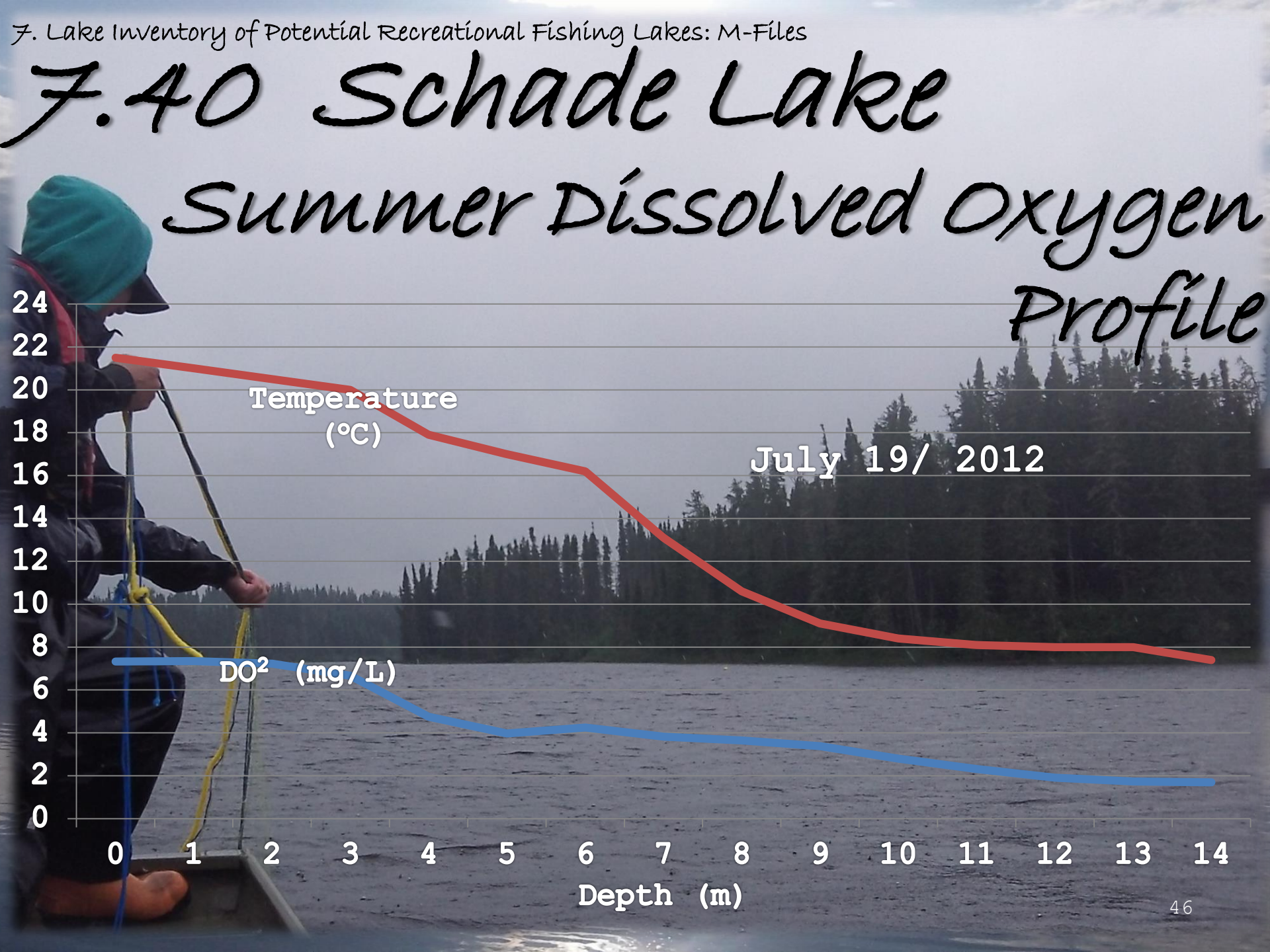


7.39 Schade Lake Forage Species & Invertebrates

Schade Lake has a wide diversity of minnow species and invertebrates which indicates a healthy waterbody. Yellow perch and shiners are a great forage for game fish species. Also young of the year northern pike were caught.

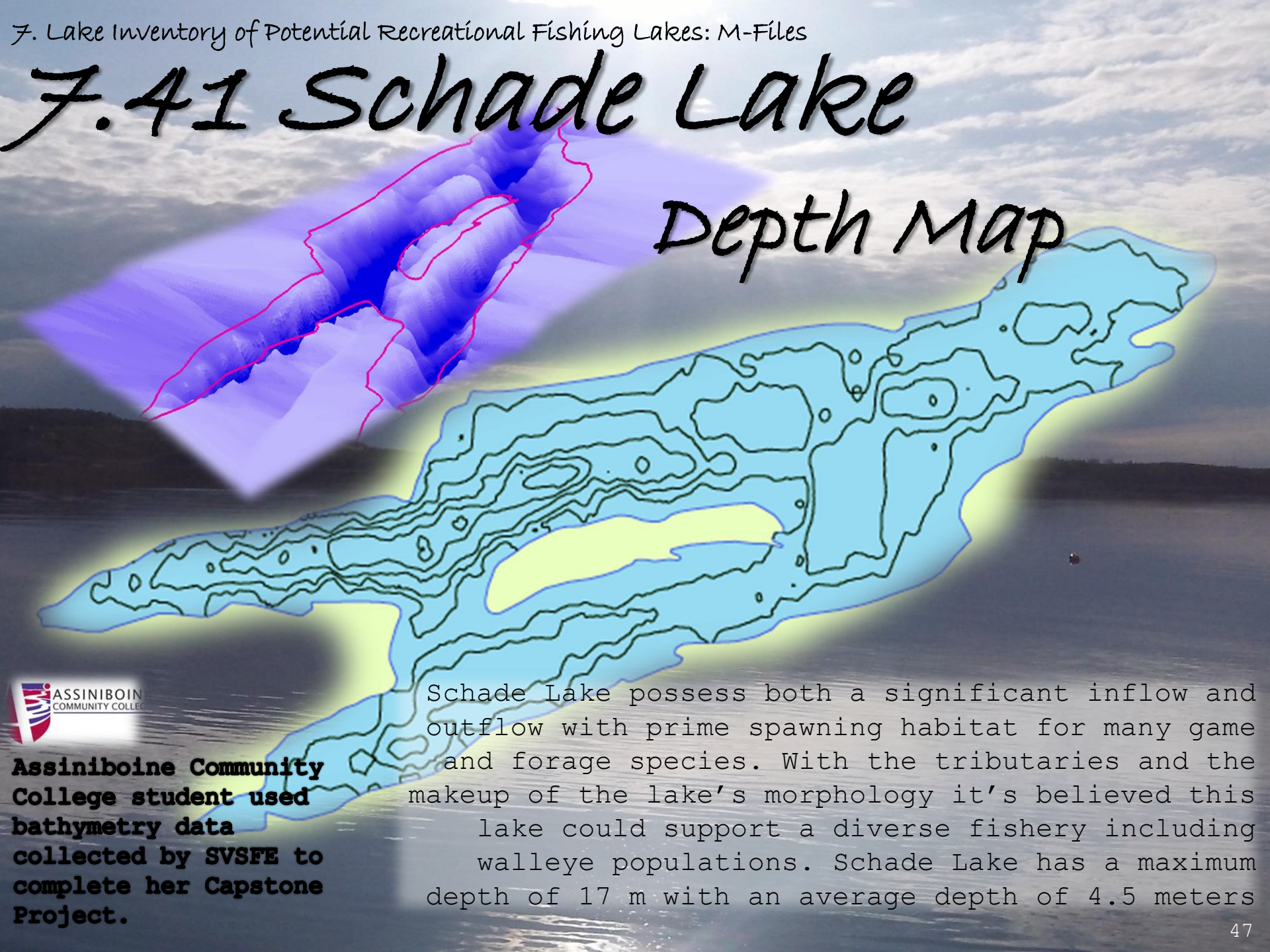
7.40 Schade Lake

Summer Dissolved Oxygen Profile



7.41 Schade Lake

Depth Map



Assiniboine Community College student used bathymetry data collected by SVSFE to complete her Capstone Project.

Schade Lake possess both a significant inflow and outflow with prime spawning habitat for many game and forage species. With the tributaries and the makeup of the lake's morphology it's believed this lake could support a diverse fishery including walleye populations. Schade Lake has a maximum depth of 17 m with an average depth of 4.5 meters

7.42 Schade Lake

CPUE Winter 2013

Schade lake was easy to access during the winter as the trail leading to the lake was along an active trap line. This lake displayed potential for quality winter angling.

7.42 Schade Lake

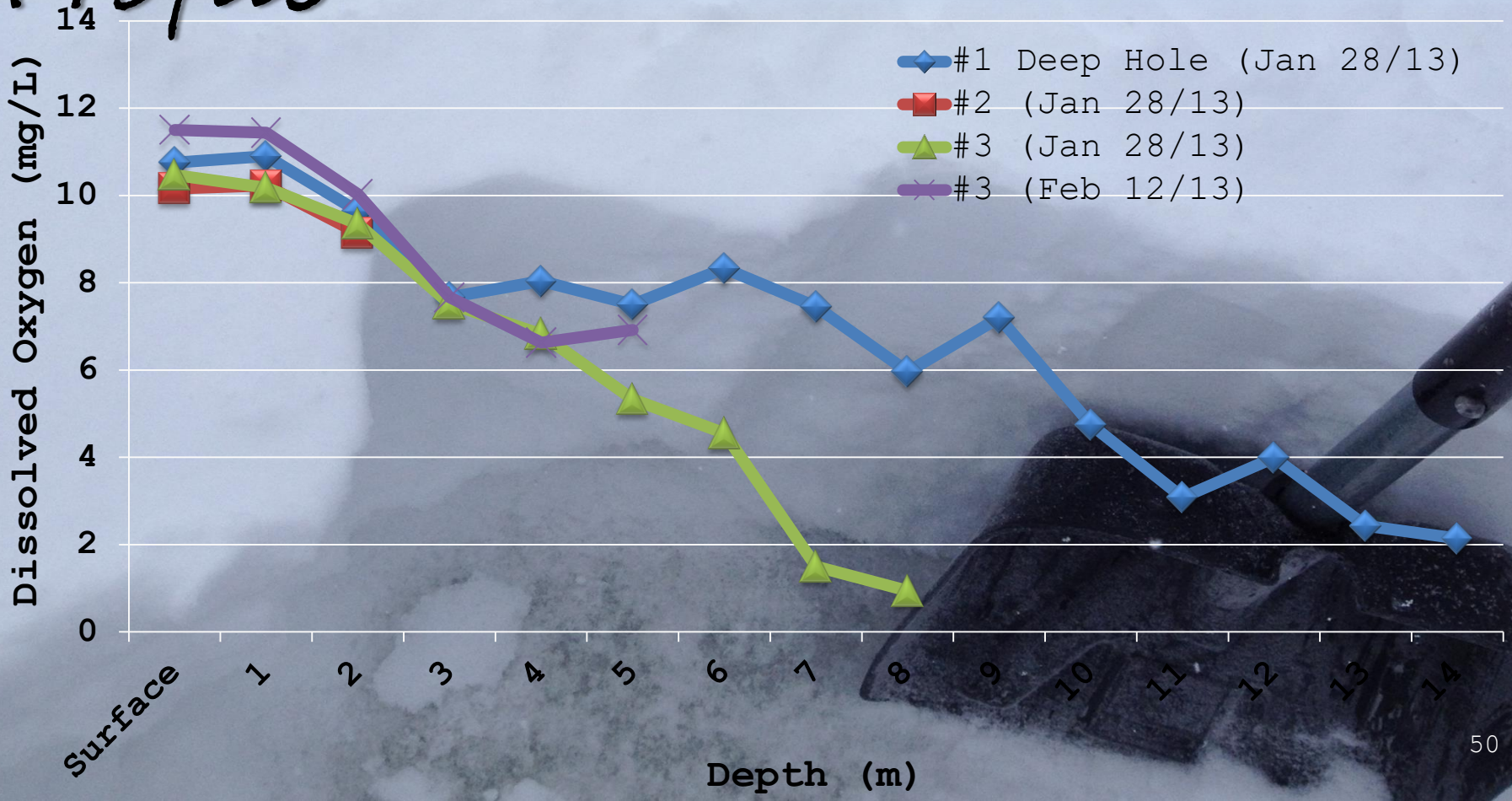
CPUE Winter 2013

Northern pike were the only species caught during the winter sampling at a rate of **0.86 fish per hour**

7.43 Schade Lake

Winter Dissolved Oxygen Profile

Levels remained fair throughout the winter even with considerable snow cover.



7.44 Schade Lake

Final Note

Schade lake is another unique fishery off the beaten path. This lake would support walleye very easily with the abundant forage fish, available spawning habitat, fish cover and good oxygen levels throughout summer and winter months. With the presence of northern pike, it would be more beneficial to stock larger sized fish (fingerling/adult) as past fry stocking has been unsuccessful.

At this time SVSFE is not considering walleye stocking, but anticipate anglers will enjoy Schade Lake's current pike fishery.

7.45 M-Files Final Note

To date, findings from each lake revealed potential and displayed the capabilities of sustaining fish populations. Interestingly, angling was generally more productive in catching fish then trap & gill netting. Winter assessments indicated quality fishing in both Red Shack and Schade Lake.

SVSFE can now start developing plans for these waterbodies on the recommendations from SVSFE technicians and Water Stewardship. Plans include, but are not limited to: boat launch improvements, trail maintenance, stocking and promoting these opportunities to anglers by posting signage and providing spatial route data by way of swanvalleysportfishing.com

Acknowledgements

fisheriesenhancement fund

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!

Manitoba Water Stewardship

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.

Manitoba

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

Swan Lake Watershed Conservation District

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.

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.