A

APPENDIX A

Public Participation Materials

1

Presentation Outline

- Onterra, LLC
- Why Create a Management Plan?
- Elements of a Lake Management Planning Project
  - Data & Information
  - Planning Process

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Onterra, LLC

- Founded in 2005
- Staff
  - Three full-time ecologists
  - One part-time ecologist
  - Four field technicians
  - Four summer interns
- Services
  - Science and planning
- Philosophy
  - Promote realistic planning
  - Assist, not direct

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Why create a lake management plan?

- To create a better understanding of the lake's positive and negative attributes.
- To discover ways to minimize the negative attributes and maximize the positive attributes.
- To foster realistic expectations and dispel myths.
- To create a snapshot of the lake for future reference and planning.

A goal without a plan is just a wish!

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Elements of an Effective Lake Management Planning Project

Data and Information Gathering

Environmental & Sociological

Planning Process

Brings it all together

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Data and information gathering

- Study Components
  - Water Quality Analysis
  - Watershed Assessment
  - Paleocore Collection & Analysis
  - Aquatic Plant Surveys
  - Fisheries Data Integration
  - Shoreland Assessment
  - Stakeholder Survey

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Water Quality Analysis

- General water chemistry (current & historical)
  - CLMN Data & UWSP Studies
- Nutrient analysis
  - Lake trophic state (Eutrophication)
  - Limiting plant nutrient
- Supporting data for watershed modeling

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Watershed Assessment

- Delineation of drainage basin
- Modeling
  - Land cover
  - Phosphorus loading
  - Scenario development

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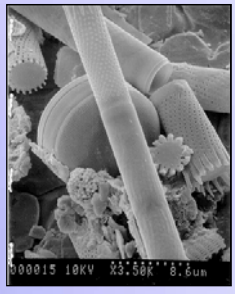
Paleocore Collection & Analysis

Sediment core



Diatoms

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Aquatic Plant Surveys

- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Point-intercept survey
  - Aquatic plant community mapping

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Non-native Aquatic Plants

Curly-leaf Pondweed

None Found – May 30, 2017

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Non-native Aquatic Plants

Eurasian Water Milfoil

First Found 2001

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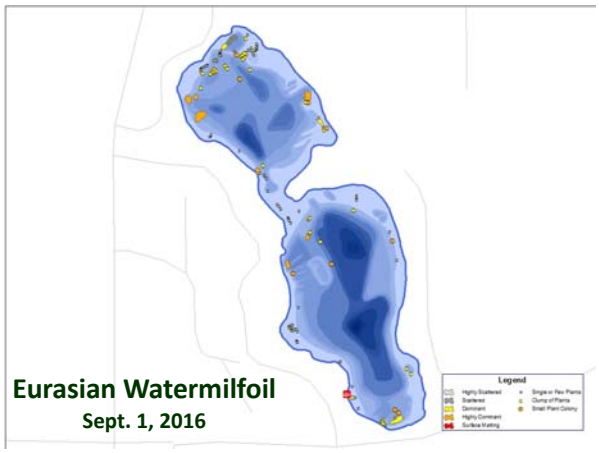

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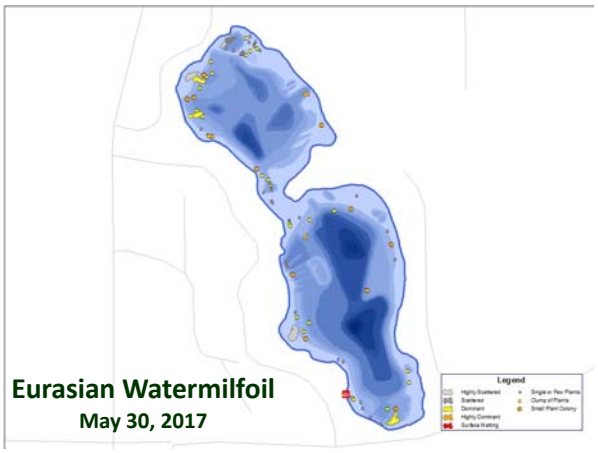

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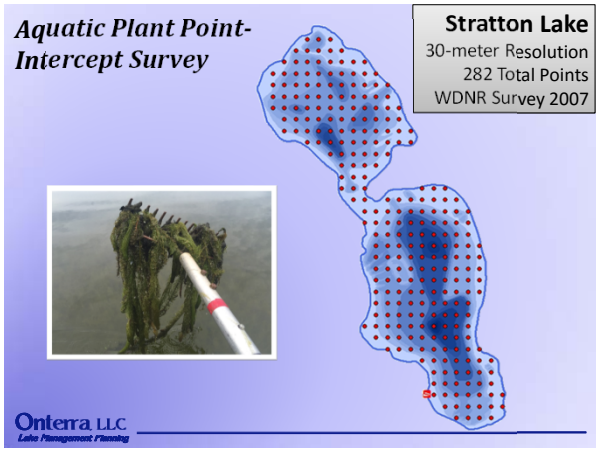

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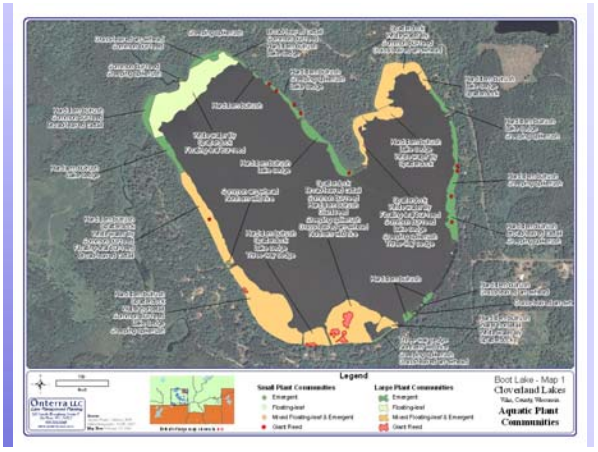

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Fisheries Data Integration

- No fish sampling completed
- Assemble data from WDNR, USGS, & USFWS,
- Fish survey results summaries (if available)
- Use information in planning as applicable

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Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- Assessment ranks shoreland area from shoreline back 35 feet
- Assess shoreland development and habitat
  - Coarse woody habitat

Urbanized **Natural**

Range

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Planning Process

Planning Committee Meetings

Study Results (including a stakeholder survey)
Conclusions & Initial Recommendations
Management Goals
Management Actions
Timeframe
Facilitator(s)

Implementation Plan

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Thank You

Many of the graphics used in this presentation were supplied by:

Wisconsin Lakes Partnership

UW Extension

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The Planning Process

…it's not as easy as you may think.

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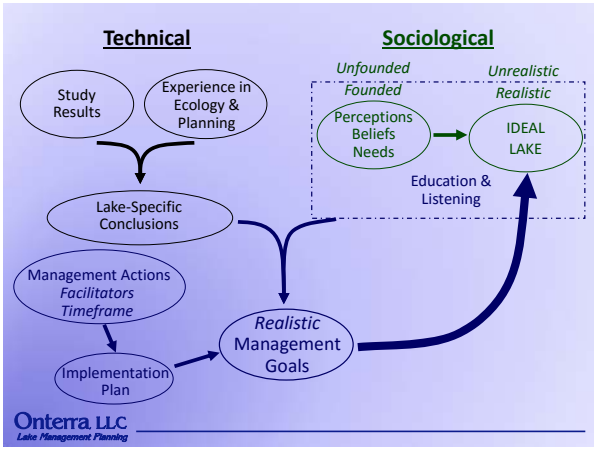

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Stratton Lake, Waupaca County
Project Update
August 2017

Submitted by: Tim Hoyman, Onterra, LLC

In March 2017, the Stratton Lake District was awarded $22,530 Aquatic Invasive Species – Education, Prevention, and Planning Grant to partially fund a comprehensive lake management planning project. The 18-24 month project includes surveys of the lake during the 2017 growing season into winter 2018. The process to develop the management plan will begin in spring 2018 and include meetings with the district's planning committee, integration of the district stakeholder survey, an opportunity for the district membership to review the proposed plan, and a project wrap-up meeting.

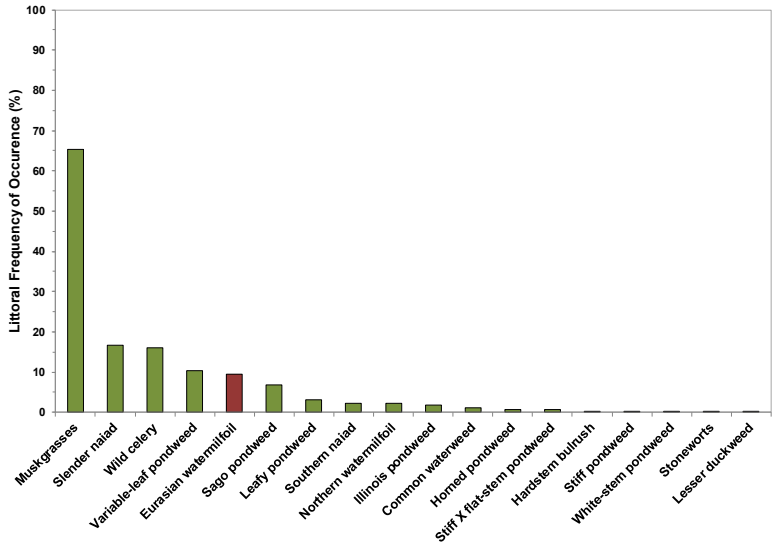

Figure 1. Littoral frequency of occurrence of most abundant plants found in Stratton Lake in 2017. Created using data from Onterra 2017 point-intercept survey.

As discussed during the project kick-off meeting held on June 10, 2017, there are two primary elements in an effective lake management planning project; 1) the gathering of data and information regarding the lake and the people that care for it, in this case, the Stratton Lake District, and 2) the completion of a planning process that will bring all that information together. Since early spring, staff members from Onterra, LLC, the district's lake management consultant, have been completing numerous surveys on Stratton Lake, including multiple assessments aimed at documenting the native and non-native aquatic plants within the lake. These assessments included, an early-season AIS survey completed at the end of May, a point-intercept aquatic plant survey completed on July 13th, and the mapping of emergent and floating-leaf plant communities on July 17th. An acoustic survey, using specialized sonar equipment that can detect aquatic plant bio-volumes, was completed on August 3rd. In September, a crew will return to the lake to map Eurasian watermilfoil while it is at its peak biomass in the lake. The point-intercept survey is completed by sampling plants from predetermined locations throughout the lake with a rake. The WDNR developed the methodology to allow comparisons between plant communities on different lakes and within the same lake over time, such as the data collected in Stratton Lake during 2007. For Stratton Lake, the points were 30 meters apart resulting in 282 points within the lake's boundaries. Figure 1 shows how frequent some of the plants located during the point-intercept survey occur in Stratton Lake's littoral zone. Muskgrasses, which are actually a macroalgae, do very well in hardwater lakes like Stratton and dominate the community. Seventeen species were located on the rake during the point-intercept survey. Including incidentals (species not found on the rake during the survey), the crews found a total of 30 species. The results of the aquatic plant surveys will guide the district on a management strategy for Eurasian water milfoil and other exotic species, such as pale-yellow iris and purple loosestrife, which were both located during the surveys.

Along with the water quality samples being collected by volunteers from Stratton Lake, Onterra has collected samples during the early spring and July. Staff will also collect samples during the fall turnover and through the winter ice in February 2018. The analysis results of these samples will be used to better understand the current water quality of Stratton Lake. They will also be compared to historical data from the lake as a part of the long-term trends analysis and used to calibrate the watershed model. In September, Onterra staff will collect a sediment core from near the deep hole in the lake. The core will be analyzed at Onterra's Madison office and lab with the results shedding light on Stratton Lake's water quality before European settlement in the area. In other words, the core analysis, also called *paleolimnology*, will bring about an understanding of the lake's water quality before humans impacted the lake.

In early August during a routine survey, staff from Golden Sands Resource Conservation & Development Council, Inc. discovered Asiatic clams near the boat landing on Stratton Lake. These exotic mussels also occur in Taylor Lake of the Waupaca Chain O' Lakes. Further investigation by WDNR staff located additional occurrences in Stratton Lake on August 28th. At this time, it is unknown how the exotic species will impact Stratton Lake, if it impacts it at all. More information will be gathered from these agencies and used within the management plan. Additional information regarding the Asiatic clam can be found at:
http://www.seagrant.wisc.edu/Home/Topics/InvasiveSpecies/Details.aspx?PostID=659.

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Presentation Outline

- Lake Management Planning Project Overview
- Study Results
  - Water Quality
  - Watershed
  - Shoreland Condition
  - Aquatic Plants
  - Fishery (not much data)

  Stakeholder Survey
- "Big Picture"
- Implementation Plan Development

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Management Planning Project Overview

- Foster holistic understanding of Stratton Lake ecosystem
- Collect & analyze data
  - Technical & sociological
- Construct long-term & useable plan

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Summary of Project Results

Water Quality
- Excellent for respective lake type, but…
- Increasing trend in phosphorus & chlorophyll-a concentrations
- Nitrogen (nitrate) and triazine discussion needs to be expanded
- Paleoecological study supports slight increase in phosphorus and an increase in macrophyte growth

Watershed & Immediate Shoreline
- Watershed is very small, with lake surface, forests, and wetlands dominating acreage
- A bit less than 50% of the lake's shoreline would be appropriate for restoration (habitat value more than buffering)
- Groundwater influence in Stratton Lake is high

Aquatic Plant Community
- Community is of good quality, but low diversity (expected)
- One non-native species: several invasive plant species occur

Fisheries
- Not much data available, but people like to fish the lake

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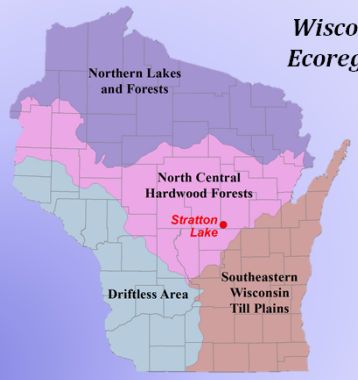
Wisconsin Ecoregions



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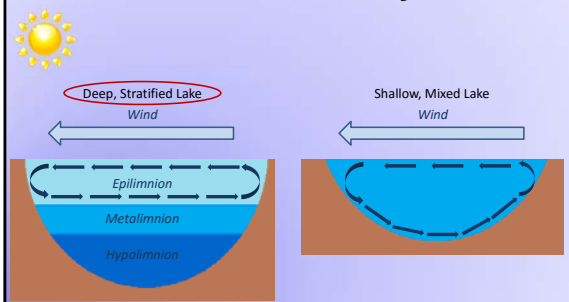
Wisconsin Lakes Classification



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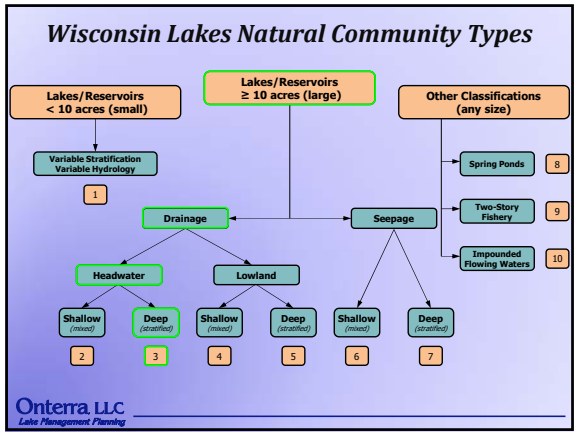
Wisconsin Lakes Natural Community Types
Lakes/Reservoirs < 10 acres (small)
Lakes/Reservoirs ≥ 10 acres (large)
Other Classifications (any size)
Variable Stratification Variable Hydrology
1
Spring Ponds
8
Two-Story Fishery
9
Impounded Flowing Waters
10
Drainage
Seepage
Headwater
Lowland
Shallow (mixed)
Deep (stratified)
2
3
4
5
6
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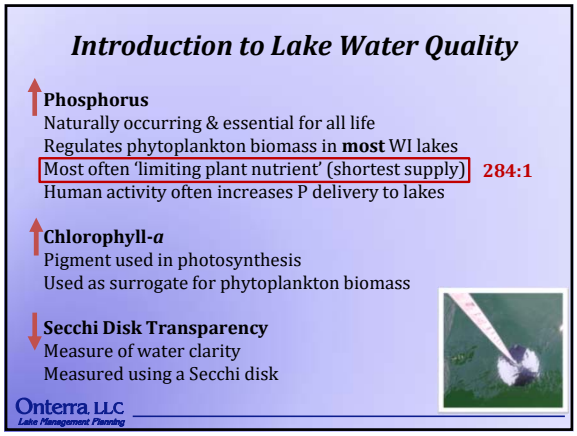
Introduction to Lake Water Quality
Phosphorus
Naturally occurring & essential for all life
Regulates phytoplankton biomass in most WI lakes
Most often 'limiting plant nutrient' (shortest supply) 284:1
Human activity often increases P delivery to lakes
Chlorophyll-a
Pigment used in photosynthesis
Used as surrogate for phytoplankton biomass
Secchi Disk Transparency
Measure of water clarity
Measured using a Secchi disk
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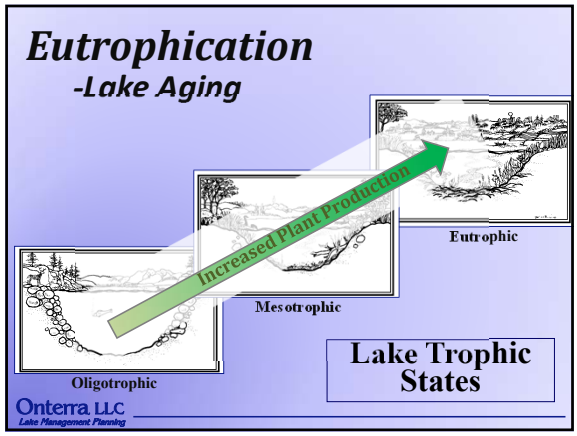
Eutrophication
-Lake Aging
Increased Plant Production
Eutrophic
Mesotrophic
Oligotrophic
Lake Trophic States
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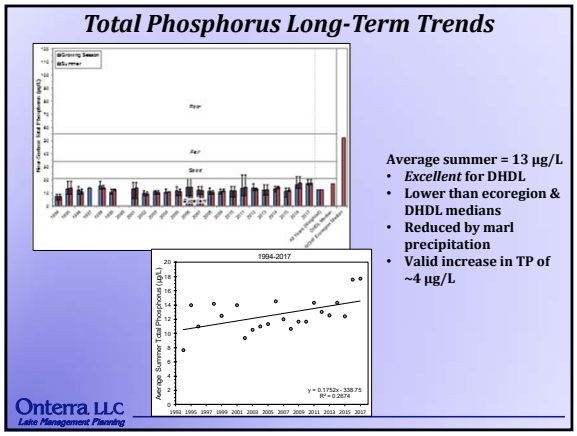
Total Phosphorus Long-Term Trends
1994-2017
Average summer = 13 µg/L
Excellent for DHDL
Lower than ecoregion & DHDL medians
Reduced by marl precipitation
Valid increase in TP of ~4 µg/L
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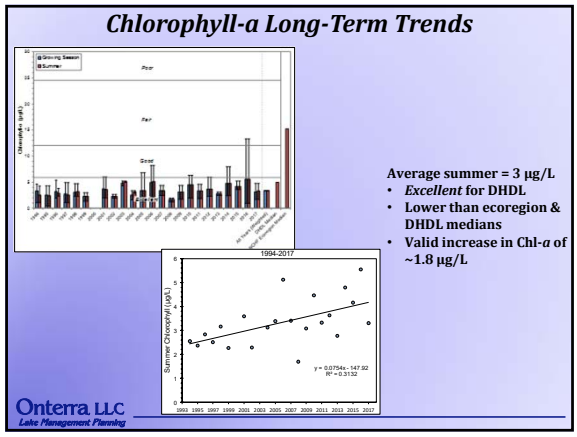
Chlorophyll-a Long-Term Trends
1994-2017
Average summer = 3 µg/L
Excellent for DHDL
Lower than ecoregion & DHDL medians
Valid increase in Chl-a of ~1.8 µg/L
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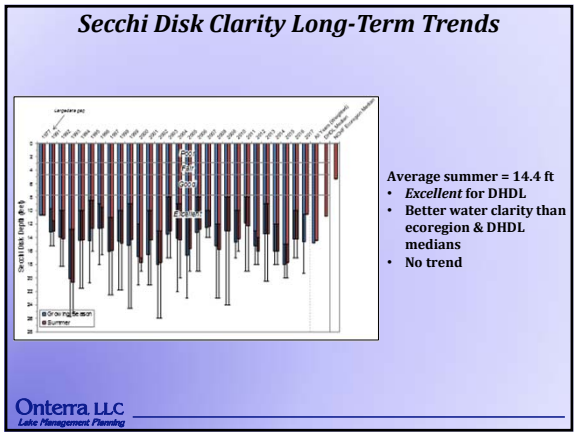
Secchi Disk Clarity Long-Term Trends
Average summer = 14.4 ft
Excellent for DHDL
Better water clarity than ecoregion & DHDL medians
No trend
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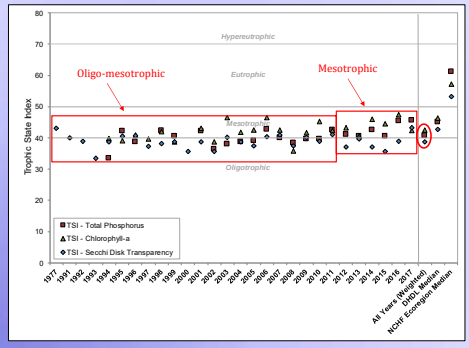
Trophic State



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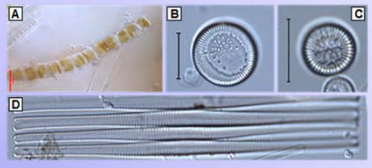
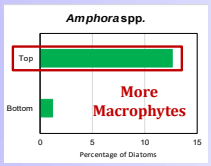
Paleoecology



Sample	Phosphorus (µg/L)
Stratton Top	13
Stratton Bottom	12



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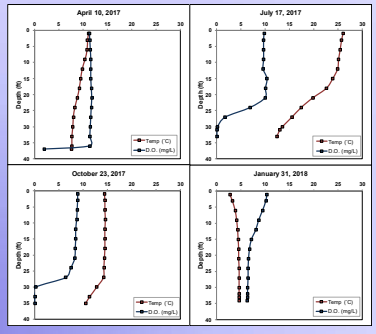
Dissolved Oxygen Levels



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Nitrate, Nitrogen, and Triazine

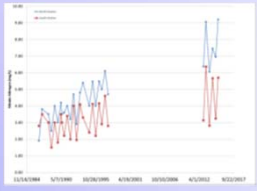
2015 Summary

Nitrate values remain high at both lake sites - maybe stabilizing?

Well testing indicates that nitrate values are lower – change in ag practices.

Atrazine concentrations are lower, but metolachlor may have replaced it in last 10 years.

Recommended continued data collection



Integration of this information into the management plan?

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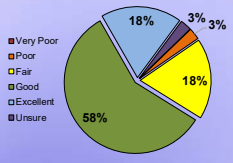
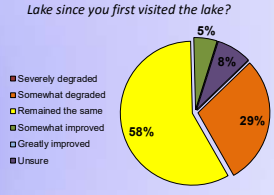
Stratton Lake Stakeholder Perceptions of Water Quality

How would you describe the current water quality of Stratton Lake?



How has water quality changed in Stratton Lake since you first visited the lake?



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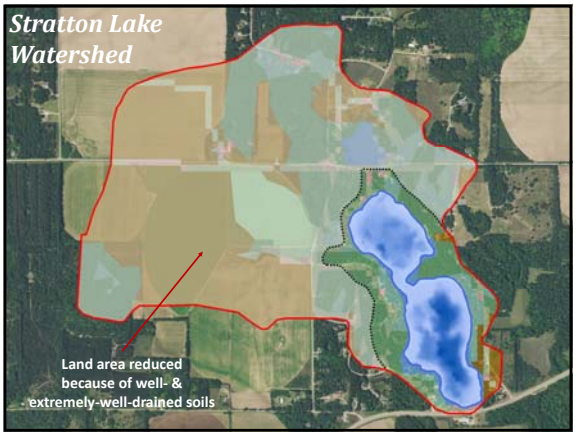
Stratton Lake Watershed



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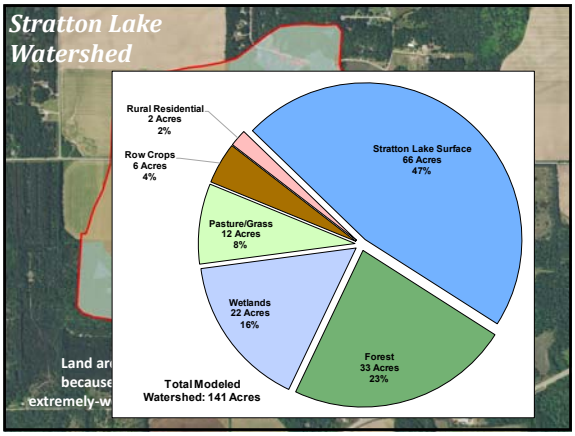

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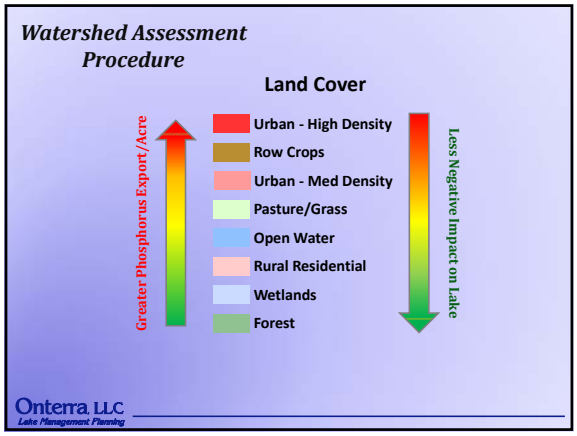

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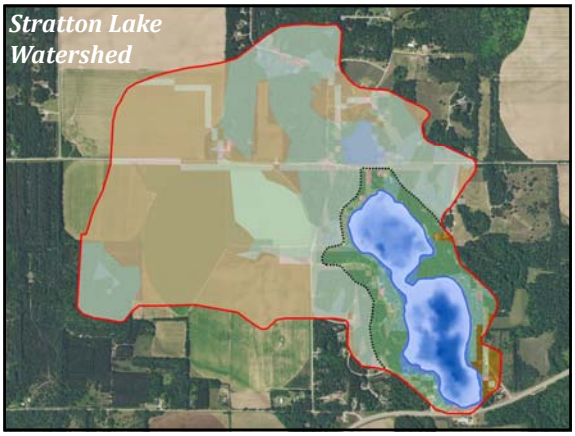

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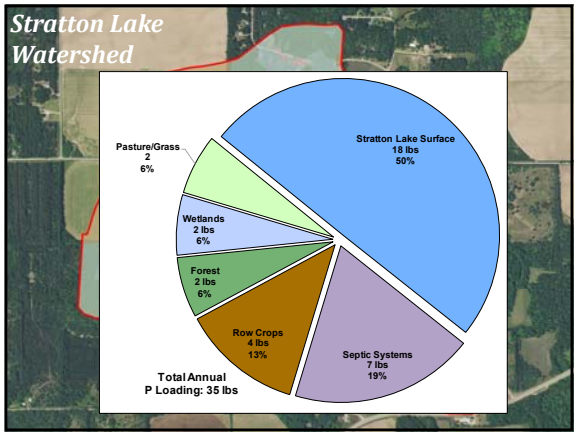

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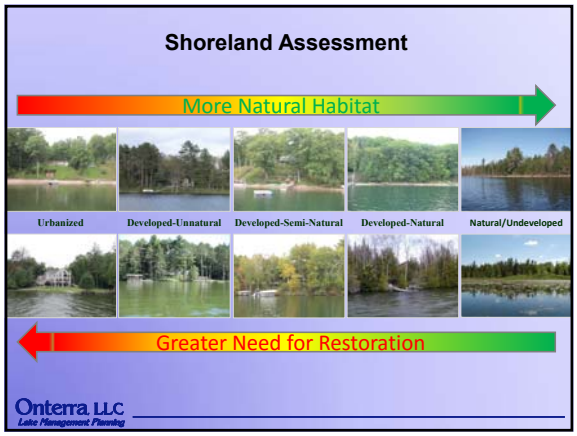

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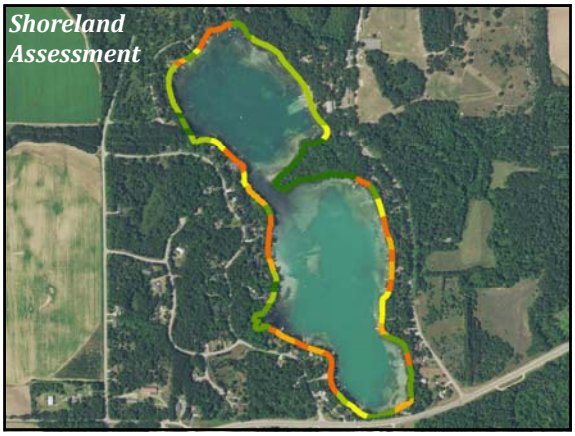

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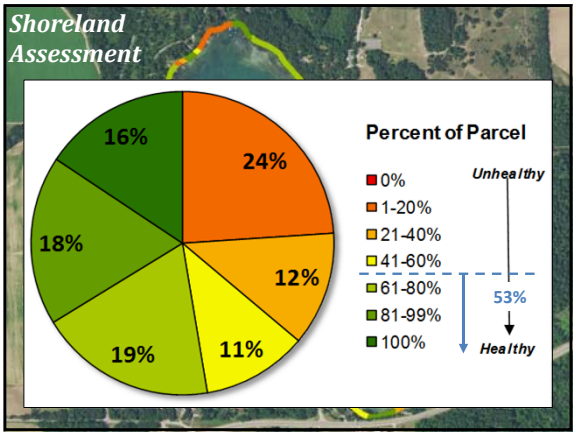

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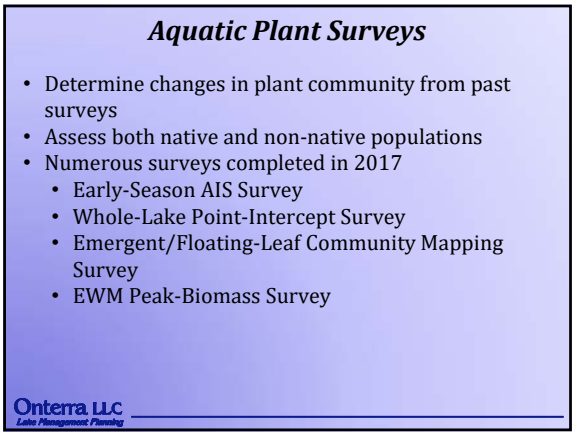

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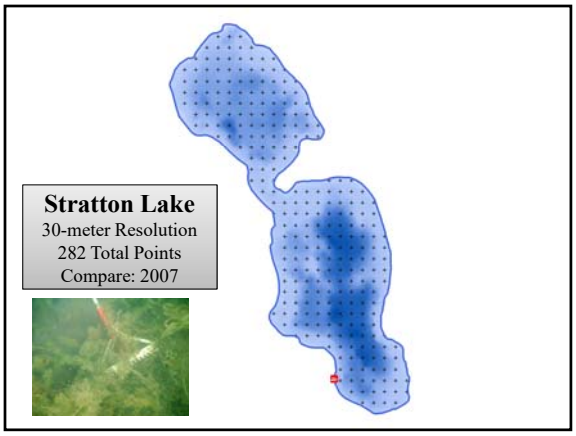

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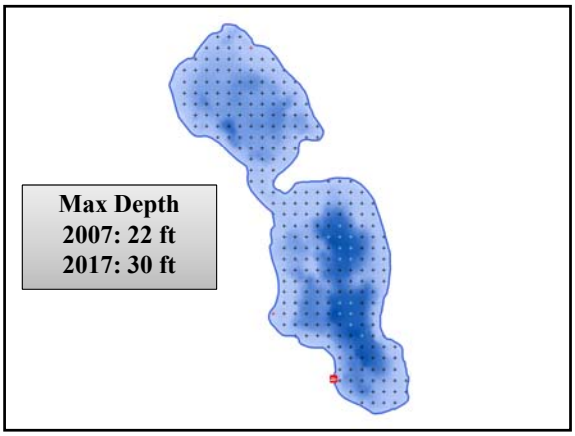

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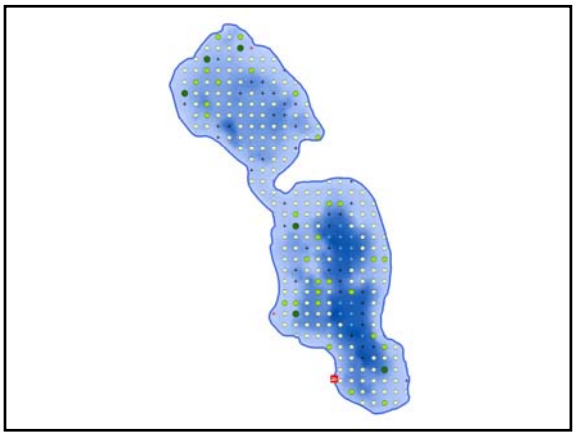

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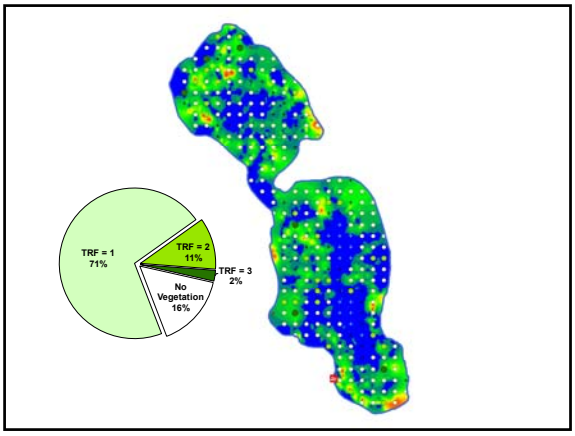

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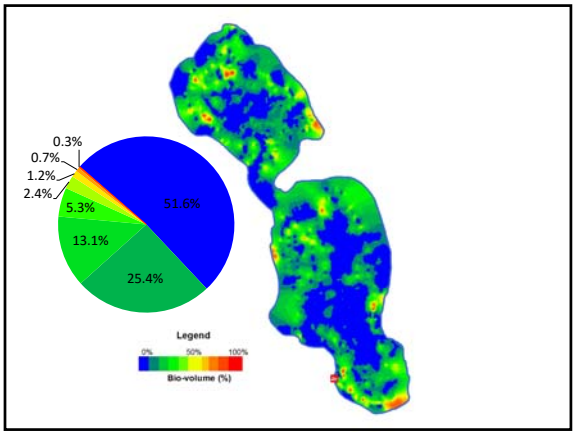

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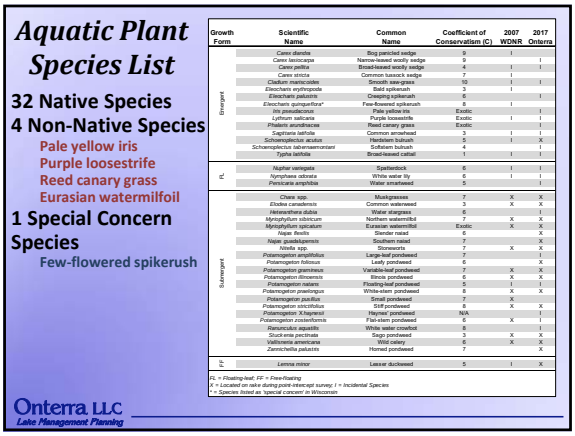

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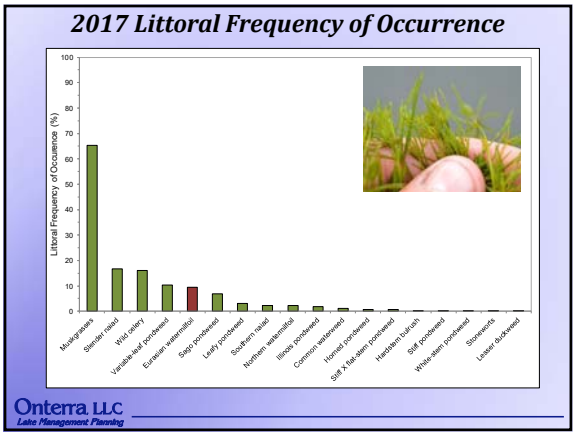

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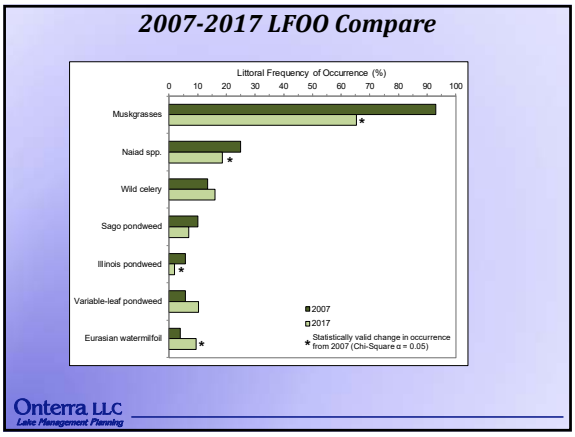

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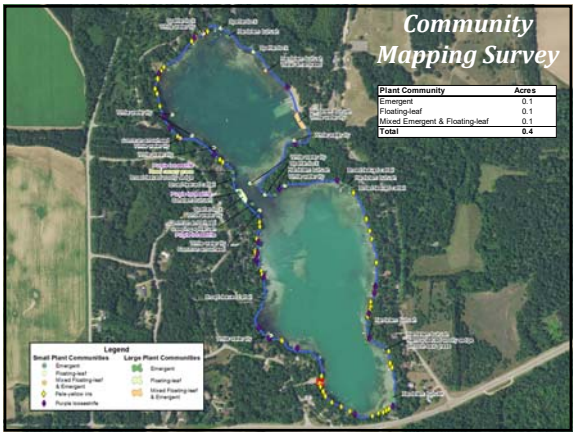

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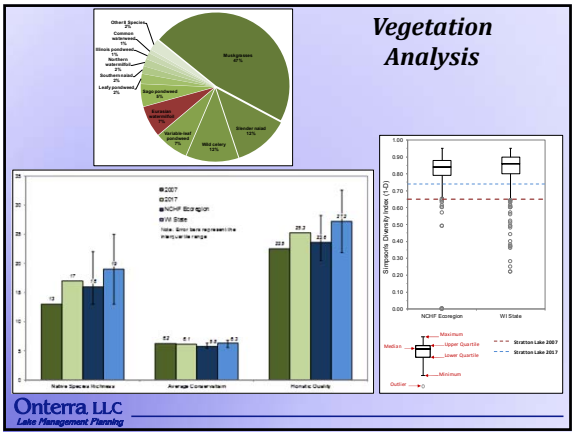

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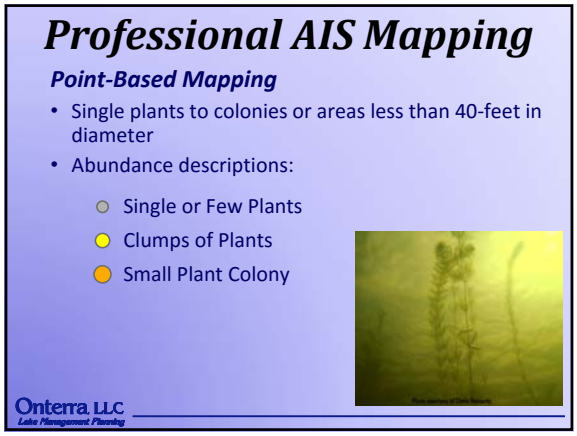

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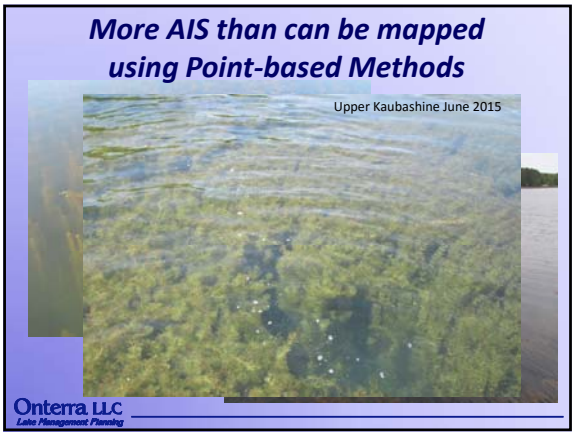

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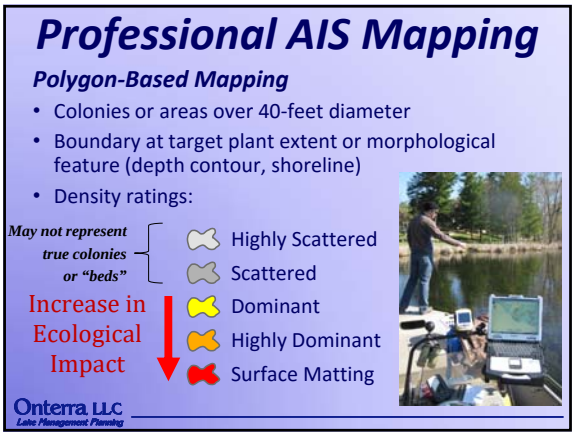

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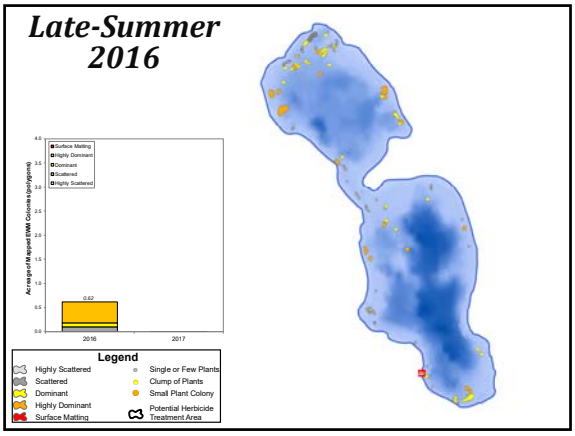

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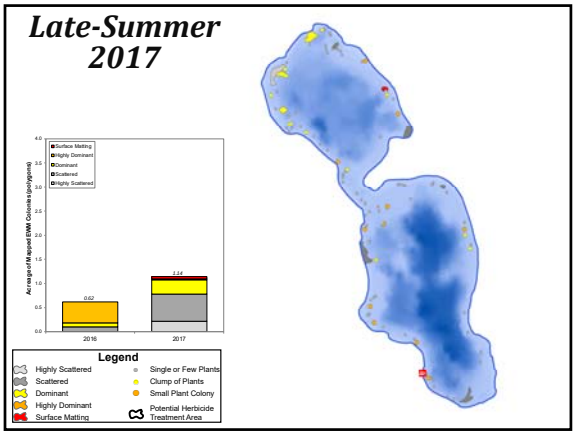

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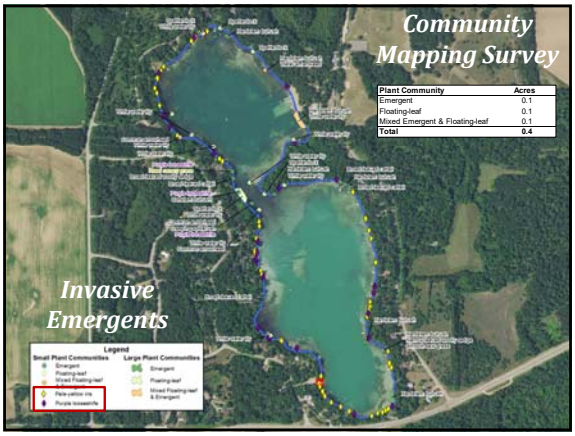

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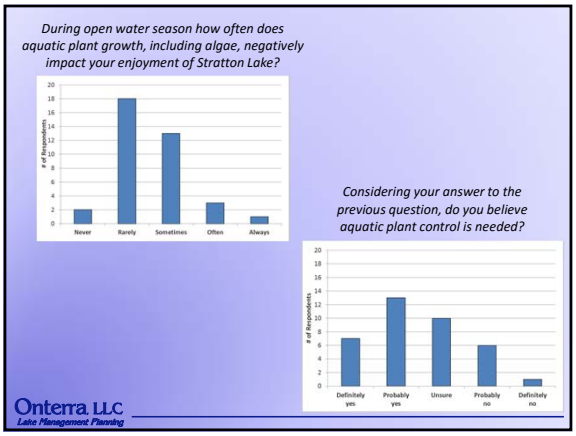

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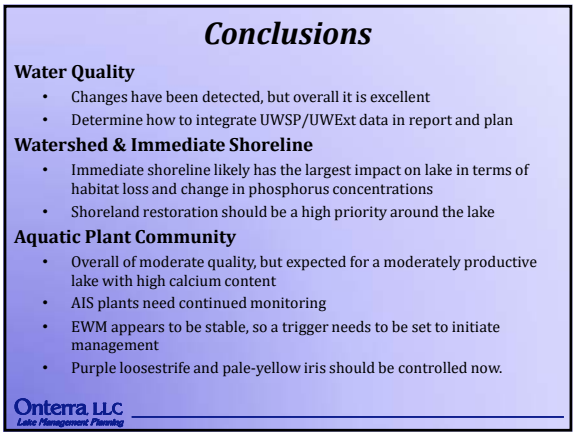

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1

Meeting Outline

Meeting Objective: *Frame the management goals and actions that will create the full Stratton Lake Implementation Plan*

- Study Conclusions Review
- 2018 Eurasian water milfoil results
- Zebra mussel discovery
- Filamentous algae
- Implementation Plan Framework Development
  - Lake Management and District Challenges Brainstorm
  - Management Goal Creation
  - Management Action Creation
    - Timeframe
    - Facilitator(s)

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Conclusions

Water Quality
- Changes have been detected, but overall it is excellent
- Determine how to integrate UWSP/UWExt data in report and plan

Watershed & Immediate Shoreline
- Immediate shoreline likely has the largest impact on lake in terms of habitat loss and change in phosphorus concentrations
- Shoreland restoration should be a high priority around the lake

Aquatic Plant Community
- Overall of moderate quality, but expected for a moderately productive lake with high calcium content
- AIS plants need continued monitoring
- EWM appears to be stable, so a trigger needs to be set to initiate management
- Purple loosestrife and pale-yellow iris should be controlled now.

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EWM population in Stratton Lake

4

AIS Mapping Methodology

Point Mapping
- Single plants to colonies or areas <40 feet diameter
  - Single/few plants – Clump – Small Plant Colony

Polygon Mapping
- Larger, continuous colonies of plants >40-feet diameter
  - Highly Scattered – Scattered
  - Dominant – Highly Dominant – Surface Matted

Single or Few Plants
Clumps of Plants
Small Plant Colony

Highly Scattered
Scattered
Dominant
Highly Dominant
Surface Matting

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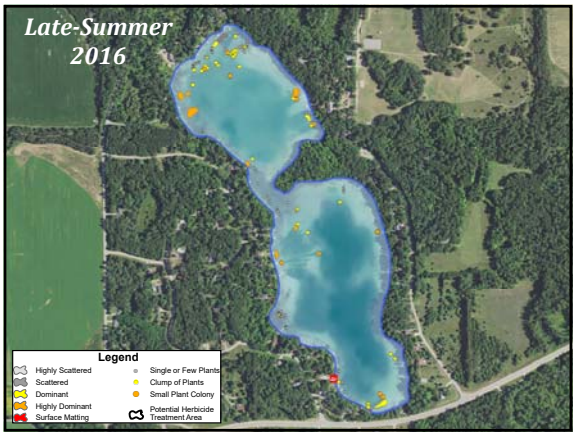

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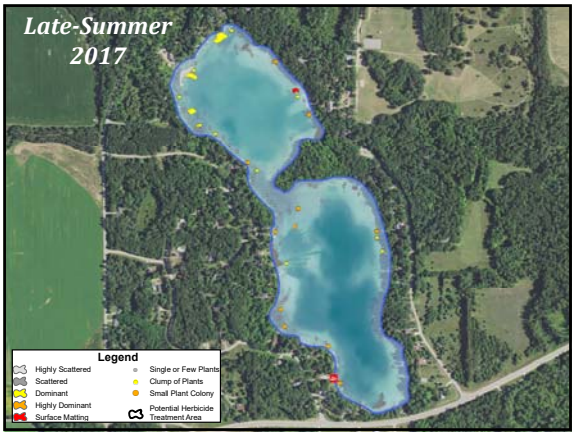

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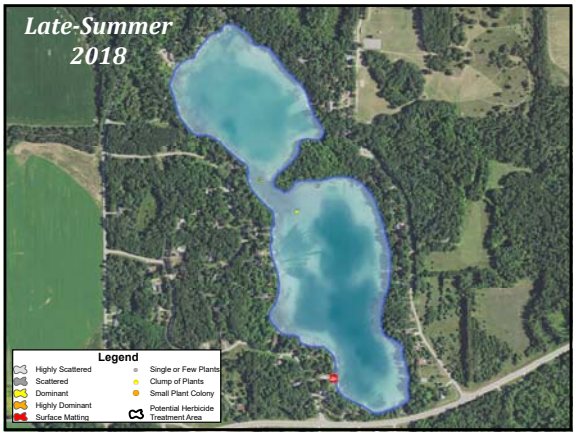

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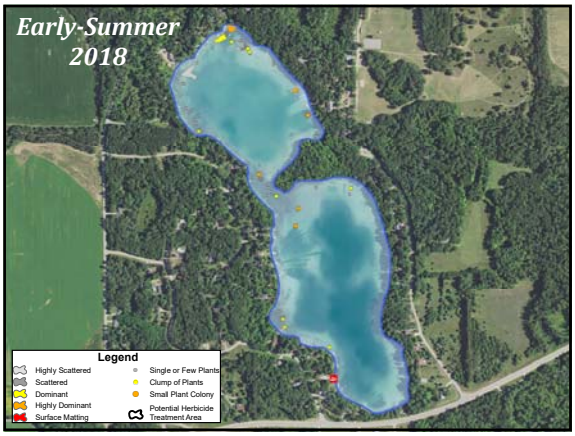

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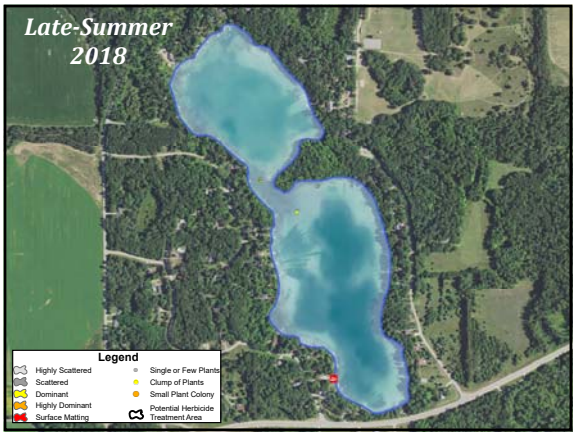


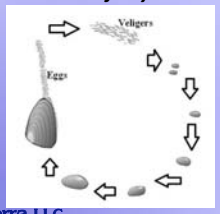
10

Zebra Mussel

Discovery in Stratton Lake

- First discovered by Matt Eid on May 26, 2018
- No veligers were detected in 2017 sampling
- Seen over much of the lake during Aug 20th survey.

Zebra Mussel Life Cycle



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Zebra Mussel

What to Expect

- Unknow how zebra mussel will impact Stratton Lake
- Typical AIS invasion includes high rate of spread, followed by decline, followed by dynamic equilibrium
  - Where the dynamic equilibrium occurs is the unknown
    - Stratton's high calcium allows for strong establishment
    - Stratton's low productivity likely limits population

Control Options

- Some options exist, but none are in common use in US
  - Zequanox (dead soil bacteria)
  - EarthTec QZ (copper sulfate pentahydrate)
  - Potash (potassium chloride)

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Zebra Mussel

Control Options (con't)

- Zebra mussel control is largely considered experimental
  - No treatments have been completed in WI
  - One experimental treatment was completed in MN

Recommended Next Steps for Stratton Lake

- Monitor lake to determine level of infestation & impact
  - Follow CLMN Protocol for three or more years
    - Substrate sampler
- After 3-year study, determine if treatment is appropriate
  - State funding would likely be available

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Filamentous Algae

Filamentous algae in Stratton Lake

- Starts growing on bottom sediments
  - Clear, warm water is the best habitat
- After initial growth, gasses build below colony and it can float to the surface
- Onterra & WDNR observed high levels of filamentous algae around entire state
- Raking it up and disposing of it out of the lake is the best option

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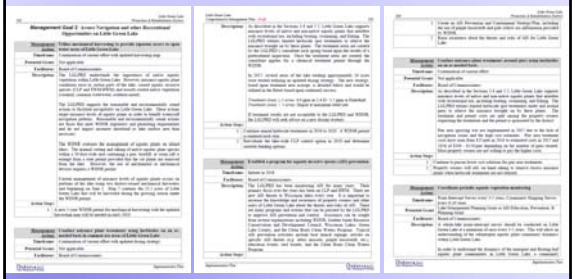
Implementation Plan



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1

Meeting Objective

- Present highlights of study results from Stratton Lake
  - Focusing on primarily on water quality and Eurasian watermilfoil
  - Will also discuss zebra mussels and filamentous algae
- Answer questions (throughout)
- Outline management plan goals and actions

Presentation Outline

- Summary of Project Conclusions
- Specific Results Discussion
- Proposed Management Plan (Mixed In)

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Conclusions

Water Quality

- Changes have been detected, but overall it is still very good to excellent
- Determine how to integrate UWSP/UWExt data in report and plan

Watershed & Immediate Shoreline

- Immediate shoreline likely has the largest impact on lake in terms of habitat loss and change in phosphorus concentrations
- Shoreland restoration should be a high priority around the lake

Aquatic Plant Community

- Overall of moderate quality, but expected for a moderately productive lake with high calcium content
- AIS plants need continued monitoring
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- Purple loosestrife and pale-yellow iris should be controlled now

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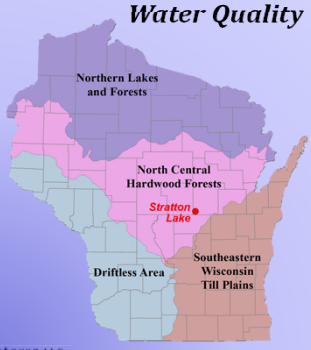
Water Quality - Comparables



Wisconsin Ecoregions

An area containing similar geology, physiography, hydrology, climate, and soils. As well as common terrestrial and aquatic fauna.

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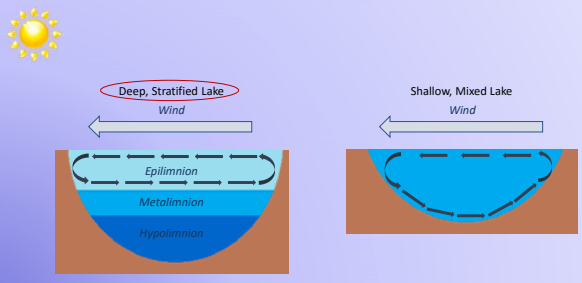
Wisconsin Lakes Classification



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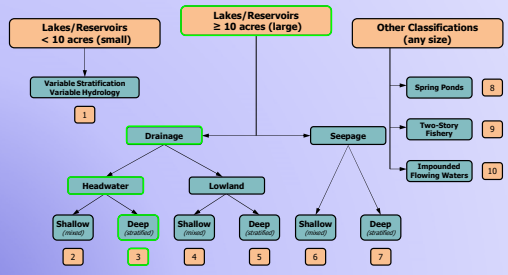
Wisconsin Lakes Natural Community Types



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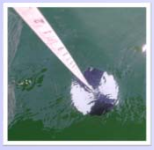
Lake Water Quality – Trophic Parameters

Phosphorus
Naturally occurring & essential for all life
Regulates phytoplankton biomass in **most** WI lakes
Most often 'limiting plant nutrient' (shortest supply) **284:1**
Human activity often increases P delivery to lakes

Chlorophyll-*a*
Pigment used in photosynthesis
Used as surrogate for phytoplankton biomass

Secchi Disk Transparency
Measure of water clarity
Measured using a Secchi disk



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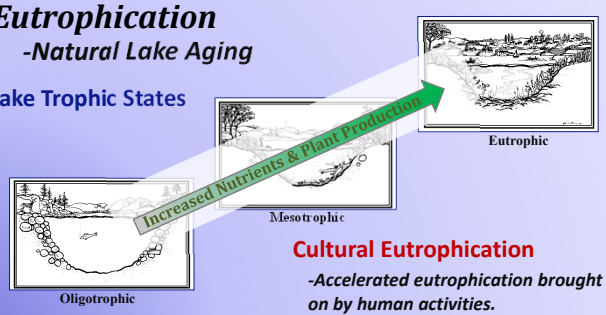
Eutrophication
-Natural Lake Aging

Lake Trophic States



Cultural Eutrophication
-Accelerated eutrophication brought on by human activities.

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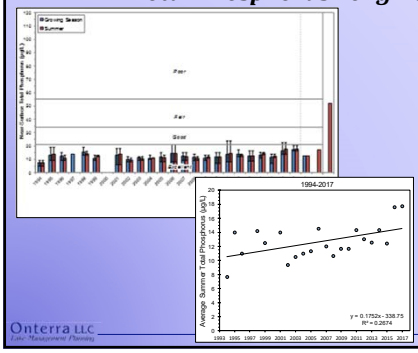
Total Phosphorus Long-Term Trends



Average summer = 13 µg/L
- ***Excellent*** for DHDL
- Lower than ecoregion & DHDL medians
- Reduced by marl precipitation
- Valid increase in TP of ~4 µg/L

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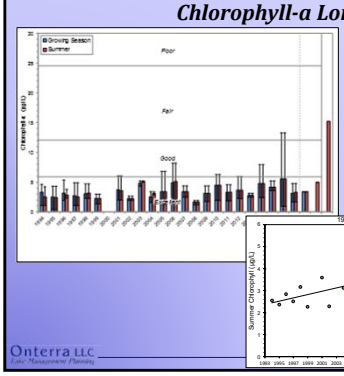
Chlorophyll-a Long-Term Trends



Average summer = 3 µg/L
- ***Excellent*** for DHDL
- Lower than ecoregion & DHDL medians
- Valid increase in Chl-*a* of 1.8 µg/L

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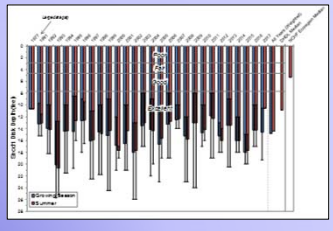
Secchi Disk Clarity Long-Term Trends



Average summer = 14.4 ft
- ***Excellent*** for DHDL
- Better water clarity than ecoregion & DHDL medians
- No trend

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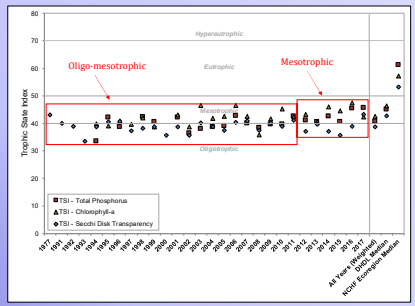
Trophic State



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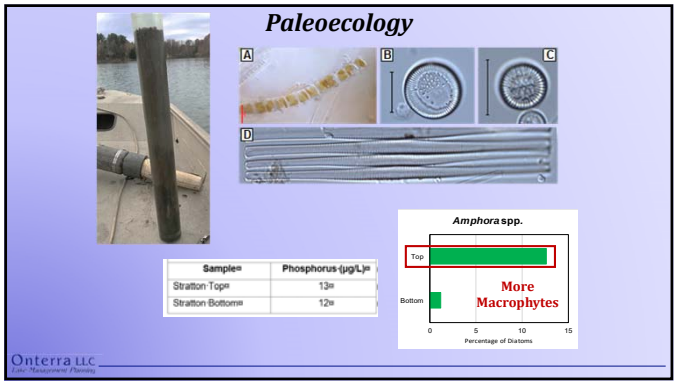

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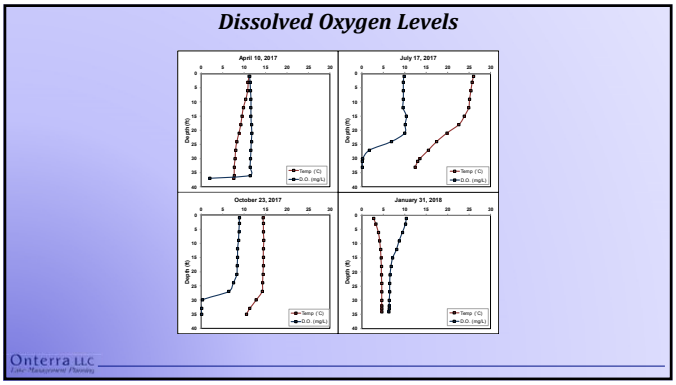

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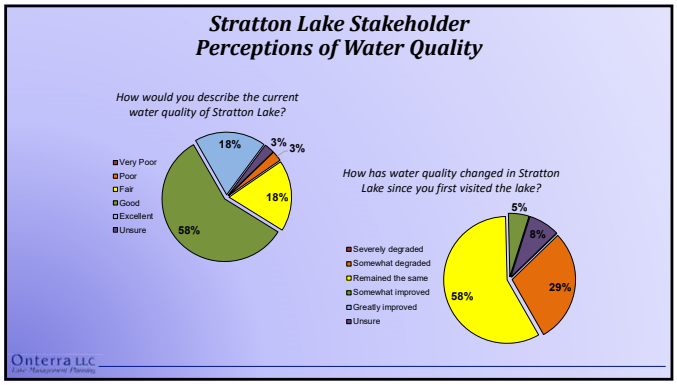

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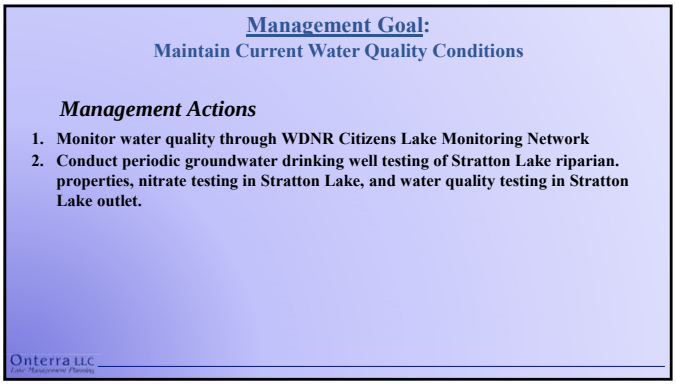

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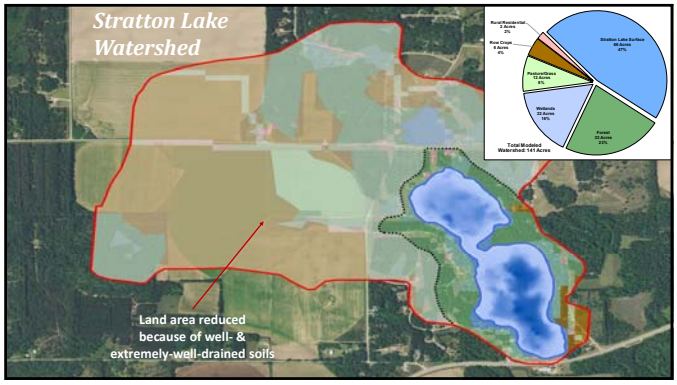

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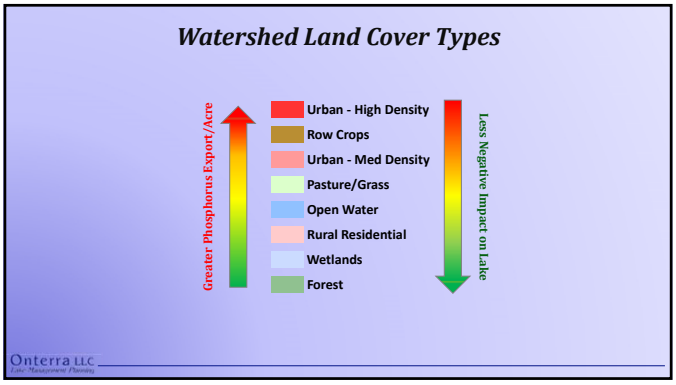

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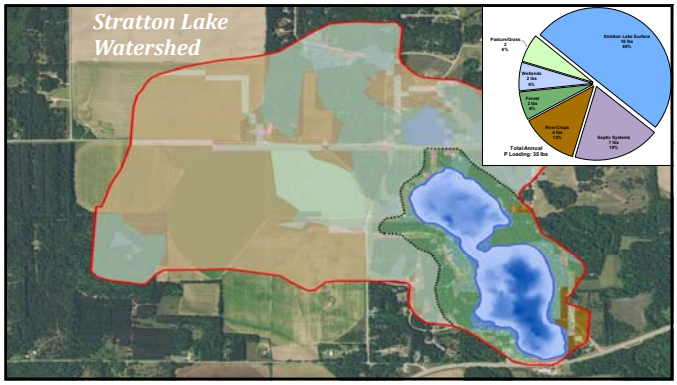

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Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- EPA National Lakes Assessment results indicate shoreland development has greatest negative impact to health of our nations lakes.
- Waupaca County assessment considered shoreland area from shoreline back 50 feet

Urbanized Natural

Range

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Shoreland Assessment

More Natural Habitat

Greater Need for Restoration

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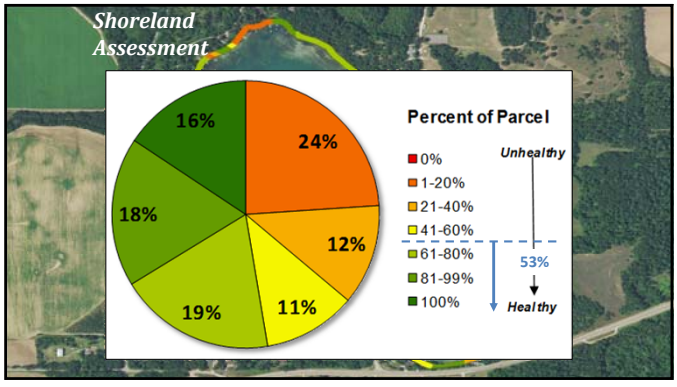

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Management Goal:

Maintain Current Water Quality Conditions

Management Actions

1. **Monitor water quality through WDNR Citizens Lake Monitoring Network.**
2. **Conduct periodic groundwater drinking well testing of Stratton Lake riparian properties, nitrate testing in Stratton Lake, and water quality testing in Stratton Lake outlet.**
3. **Inform Stratton Lake riparian property owners regarding the importance of natural shorelines and septic systems.**
4. **Work with Waupaca County Highway department to keep culverts under Highway 22 free of debris and reduce shoreline erosion brought on by high water levels.**

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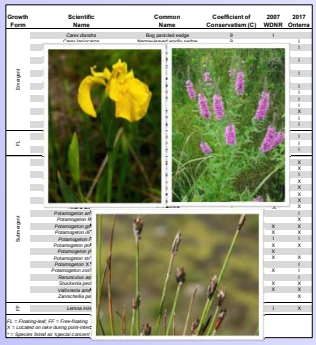
Aquatic Plant Species List

32 Native Species
4 Non-Native Species
- Pale yellow iris
- Purple loosestrife
- Reed canary grass
- Eurasian watermilfoil

1 Special Concern Species
- Few-flowered spikerush



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Management Goal:

Manage Current Aquatic Invasive Species Populations and Prevent Further Introductions to Stratton Lake

Management Actions

1. **Control existing purple loosestrife and pale-yellow iris populations in Stratton Lake.**

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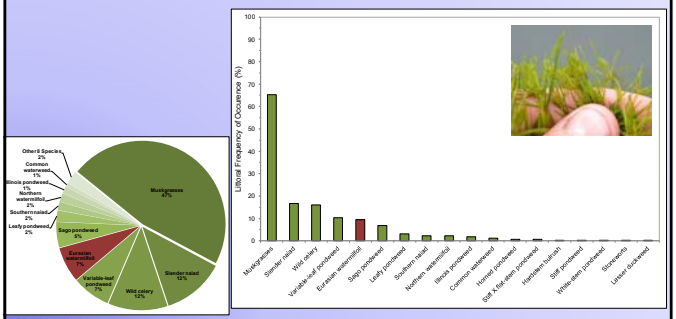
2017 Littoral Frequency of Occurrence



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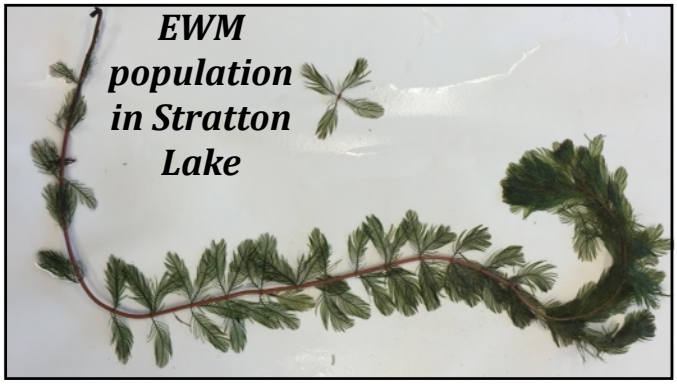

29

Professional AIS Mapping

Point-Based Mapping
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

Polygon-Based Mapping

May not represent true colonies or "beds"
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting

Increase in Ecological Impact

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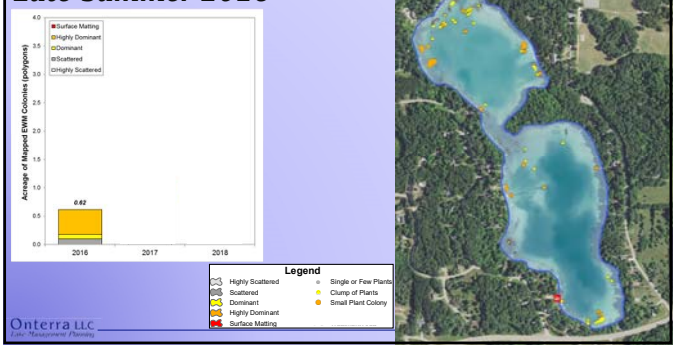
Late-Summer 2016



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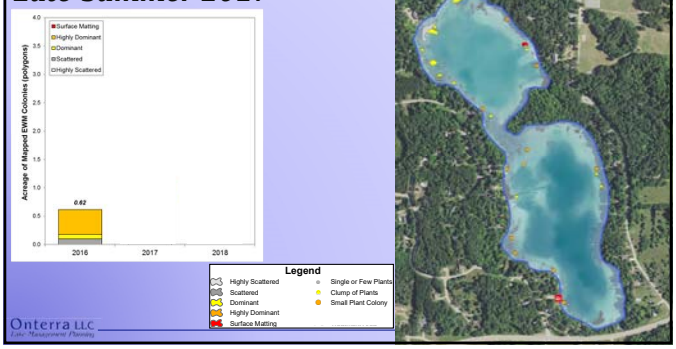
Late-Summer 2017



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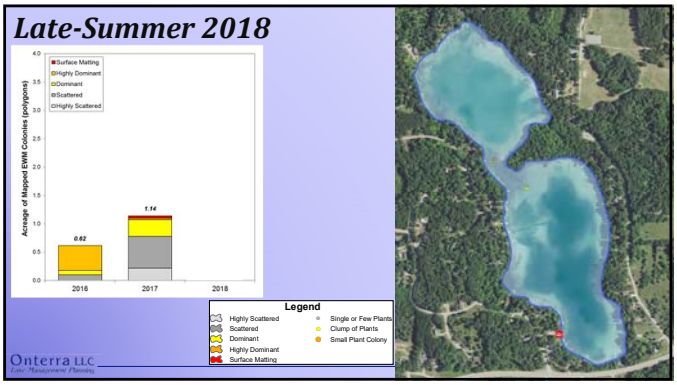
Late-Summer 2018



33

Management Goal:

Manage Current Aquatic Invasive Species Populations and Prevent Further Introductions to Stratton Lake

Management Actions

1. **Control existing purple loosestrife and pale-yellow iris populations in Stratton Lake.**
2. **Conduct periodic quantitative vegetation monitoring on Stratton Lake.**
3. **Continue Clean Boats Clean Waters watercraft inspections at public access location.**

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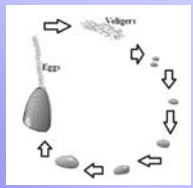
Zebra Mussels

Discovery in Stratton Lake

- First discovered by Matt Eid on May 26, 2018
- No veligers were detected in 2017 sampling
- Seen over much of the lake during Aug 20th survey.

Zebra Mussel Life Cycle



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Zebra Mussels

What to Expect

- Unknow how zebra mussel will impact Stratton Lake
- Typical AIS invasion includes high rate of spread, followed by decline, followed by dynamic equilibrium
  - Where the dynamic equilibrium occurs is the unknown
    - Stratton's high calcium allows for strong establishment
    - Stratton's low productivity likely limits population

Control Options

- Some options exist, but none are in common use in US
  - Zequanox (dead soil bacteria)
  - EarthTec QZ (copper sulfate pentahydrate)
  - Potash (potassium chloride)

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Zebra Mussels

Control Options (con't)

- Zebra mussel control is largely considered experimental
  - No treatments have been completed in WI
  - One experimental treatment was completed in MN

Recommended Next Steps for Stratton Lake

- Monitor lake to determine level of infestation & impact
  - Follow CLMN Protocol for three or more years
    - Substrate sampler
- After 3-year study, determine if treatment is appropriate
  - State funding would likely be available

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Management Goal:

Manage Current Aquatic Invasive Species Populations and Prevent Further Introductions to Stratton Lake

Management Actions

1. **Control existing purple loosestrife and pale-yellow iris populations in Stratton Lake.**
2. **Conduct periodic quantitative vegetation monitoring on Stratton Lake.**
3. **Continue Clean Boats Clean Waters watercraft inspections at public access location.**
4. **Monitor zebra mussel populations in Stratton Lake and gauge perceived impact of zebra mussels on riparian property owners.**

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Filamentous Algae

Filamentous algae in Stratton Lake

- Starts growing on bottom sediments
  - Clear, warm water is the best habitat
- After initial growth, gasses build below colony and it can float to the surface
- Onterra & WDNR observing high levels of filamentous algae around entire state
- Raking it up and disposing of it out of the lake is the best option
- Studies have shown that increased zebra mussel activity may lead to increased filamentous algae



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Management Goal:

Enhance Fishing Opportunities on Stratton Lake

Management Actions

1. **Work with WDNR fisheries staff to increase proper fish habitat and determine appropriate stocking routine.**

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Management Goal:

Increase the Stratton Lake District's Capacity to Communicate with Lake Stakeholders and Facilitate Partnerships with Other Management Entities

Management Actions

1. **Use education and communication to promote lake protection and enjoyment.**
2. **Participate in annual Wisconsin Lakes Partnership Convention**
3. **Continue SLD's involvement with other entities that have a responsibility in managing Stratton Lake.**

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Thank You

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Lake Management Planning


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B

APPENDIX B

Stakeholder Survey Response Charts and Comments

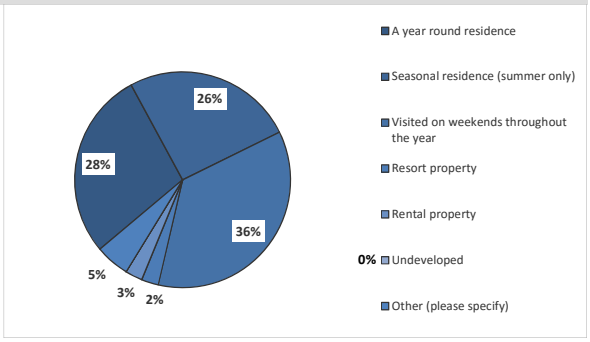
Stratton Lake - Anonymous Stakeholder Survey

Surveys Distributed: 66
Surveys Returned: 39
Response Rate: 59%

Stratton Lake Property

1. How is your property on Stratton Lake utilized?

Answer Options	Response Percent	Response Count
A year round residence	28.2%	11
Seasonal residence (summer only)	25.6%	10
Visited on weekends throughout the year	35.9%	14
Resort property	2.6%	1
Rental property	2.6%	1
Undeveloped	0.0%	0
Other (please specify)	5.1%	2
answered question		39
skipped question		0

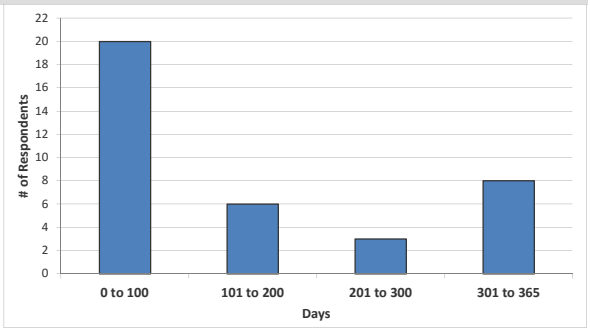


Number	Other (please specify)
1	As I want it to be.
2	It is a year round residence primarily used about 4 days a week

2. How many days each year is your property used by you or others?

Answer Options	Response Count
	37
answered question	37
skipped question	2

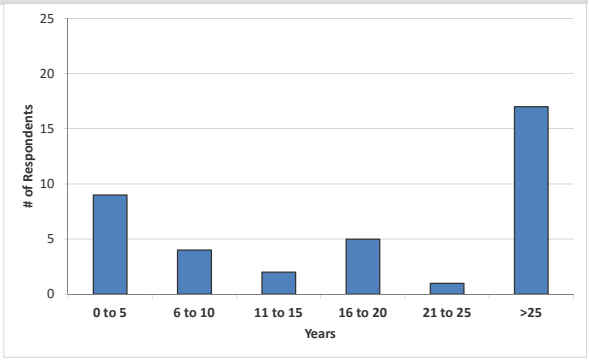
Category (# of days)	Responses	
0 to 100	20	54.1%
101 to 200	6	16.2%
201 to 300	3	8.1%
301 to 365	8	21.6%



3. How long have you owned your property on Stratton Lake?

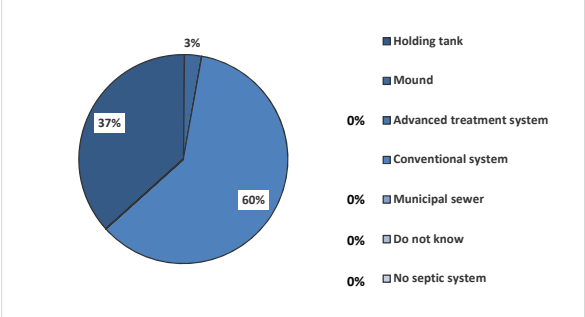
Answer Options	Response Count
	38
answered question	38
skipped question	1

Category (# of years)	Responses	% Response
0 to 5	9	23.7%
6 to 10	4	10.5%
11 to 15	2	5.3%
16 to 20	5	13.2%
21 to 25	1	2.6%
>25	17	44.7%



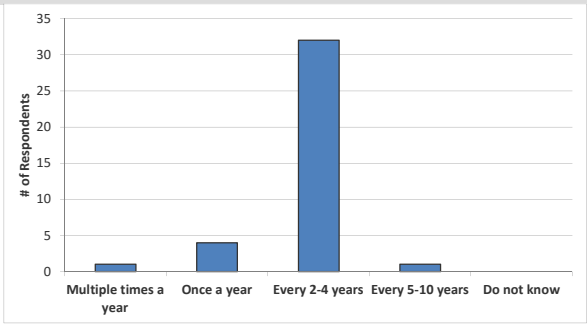
4. What type of septic system does your property utilize?

Answer Options	Response Percent	Response Count
Holding tank	36.8%	14
Mound	2.6%	1
Advanced treatment system	0.0%	0
Conventional system	60.5%	23
Municipal sewer	0.0%	0
Do not know	0.0%	0
No septic system	0.0%	0
answered question		38
skipped question		1



5. How often is the septic system on your property pumped?

Answer Options	Response Percent	Response Count
Multiple times a year	2.6%	1
Once a year	10.5%	4
Every 2-4 years	84.2%	32
Every 5-10 years	2.6%	1
Do not know	0.0%	0
answered question		38
skipped question		1

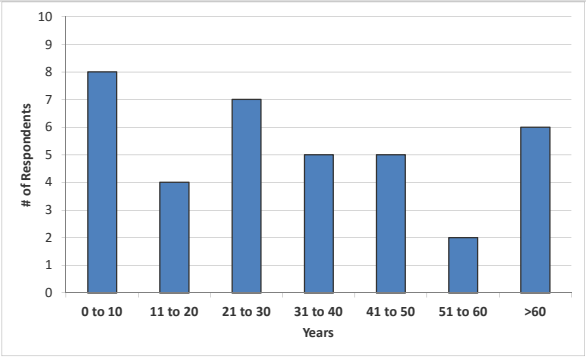


Recreational Activity on Stratton Lake

6. How many years ago did you first visit Stratton Lake?

Answer Options	Response Count
	37
answered question	37
skipped question	2

Category (# of days)	Responses	% Response
0 to 10	8	21.6%
11 to 20	4	10.8%
21 to 30	7	18.9%
31 to 40	5	13.5%
41 to 50	5	13.5%
51 to 60	2	5.4%
>60	6	16.2%



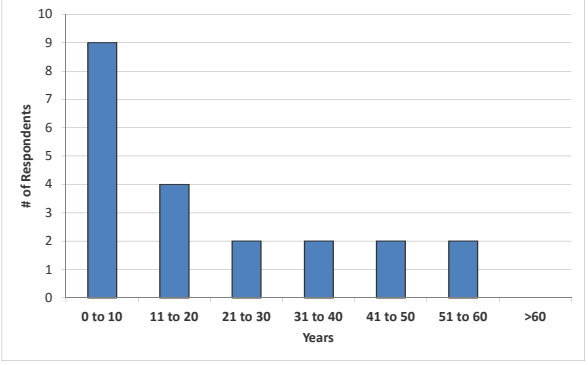
7. Have you personally fished on Stratton Lake in the past three years?

Answer Options	Response Percent	Response Count
Yes	57.9%	22
No	42.1%	16
answered question		38
skipped question		1

8. For how many years have you fished Stratton Lake?

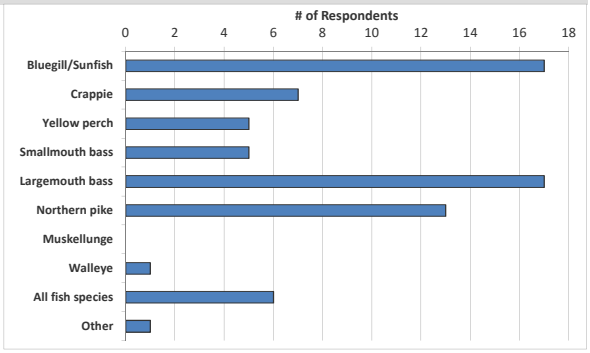
Answer Options	Response Count
	21
answered question	21
skipped question	18

Category (# of years)	Responses	% Response
0 to 10	9	42.9%
11 to 20	4	19.0%
21 to 30	2	9.5%
31 to 40	2	9.5%
41 to 50	2	9.5%
51 to 60	2	9.5%
>60	0	0.0%



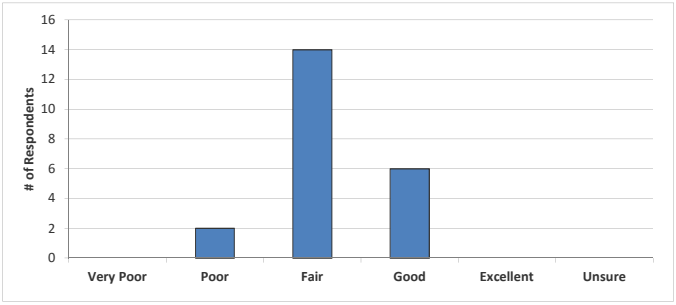
9. What species of fish do you like to catch on Stratton Lake?

Answer Options	Response Percent	Response Count
Bluegill/Sunfish	77.3%	17
Crappie	31.8%	7
Yellow perch	22.7%	5
Smallmouth bass	22.7%	5
Largemouth bass	77.3%	17
Northern pike	59.1%	13
Muskellunge	0.0%	0
Walleye	4.6%	1
All fish species	27.3%	6
Other (please specify)	4.6%	1
answered question		22
skipped question		17



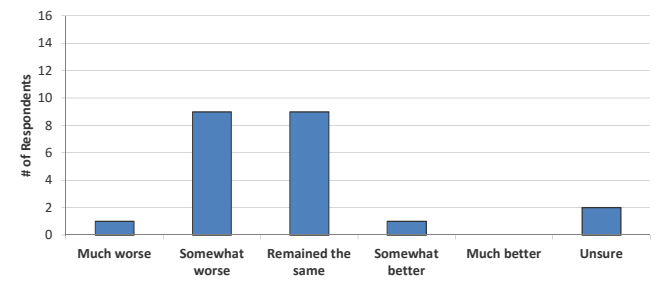
10. How would you describe the current quality of fishing on Stratton Lake?

Answer Options	Very Poor	Poor	Fair	Good	Excellent	Unsure	Response Count
	0	2	14	6	0	0	22
answered question							22
skipped question							17



11. How has the quality of fishing changed on Stratton Lake since you have started fishing the lake?

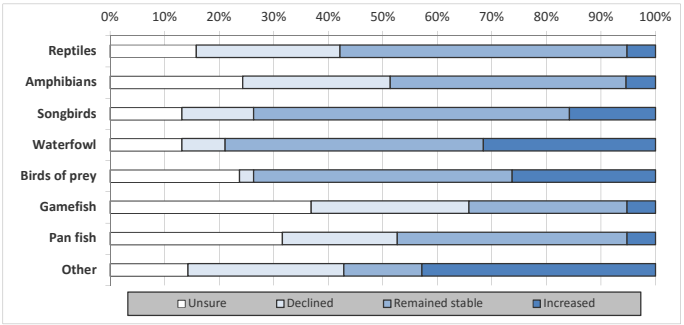
Answer Options	Much worse	Somewhat worse	Remained the same	Somewhat better	Much better	Unsure	Response Count
	1	9	9	1	0	2	22
						answered question	**22**
						skipped question	**17**



12. Have you observed either an increase or a decline in any lake or shoreland species in Stratton Lake?

Answer Options	Declined	Remained stable	Increased	Unsure	Rating Average	Response Count
Reptiles (ex. - turtles, snakes)	10	20	2	6	1.47	38
Amphibians (ex. - frogs, salamanders)	10	16	2	9	1.30	37
Songbirds	5	22	6	5	1.76	38
Waterfowl	3	18	12	5	1.97	38
Birds of prey (ex. - hawks, owls)	1	18	10	9	1.76	38
Gamefish	11	11	2	14	1.03	38
Pan fish	8	16	2	12	1.21	38
Other (please specify below)	2	1	3	1	1.86	7
Please specify "Other" response here						6
					answered question	**38**
					skipped question	**1**

Number	Other (please specify)
1	Multiple crane & duck families have appeared the past two years.
2	Sandhill cranes
3	Crawfish n aquatics etc
4	Herons&Eagles
5	smallmouth bass
6	we have seen a loon (or loons) on the lake after many years absence



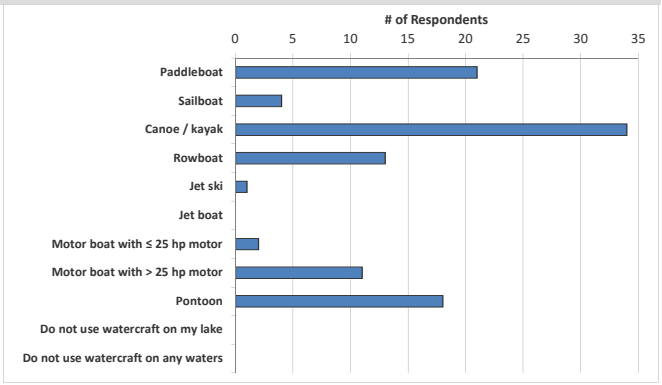
13. If you answered "declined" or "increased" to question 12, please list the species and any observations you'd like to offer about its population change.

Answer Options	Response Count
	21
answered question	21
skipped question	18

Number	Other (please specify)
1	Not as many northern pike
2	We have a family of Sand Hill cranes (believe) that has populated the lake. We have noticed a single loon that has taken residence in the North end of the lake and a family of Canadian geese.
3	buffleheads, mergansers, wood ducks
4	N/A
5	Walleye are gone. Northern Pike greatly reduced. Hawks are getting the songbird eggs.
6	Boats too large. Wakes too large from tubing destroying shorelines
7	There appear to be increased numbers of Canada Geese and, to some extent, herring gulls
8	Fewer pan fish such as blue gill
9	Ducks
10	eagles, northern
11	seagulls, geese, loonhawk
12	Frequent sightings of bald eagles just this year.
13	No snakes observed on property in the last 17 yrs. More waterfowl such as gulls appearing on the lake
14	Many turtles now on shore and dock area, up to 20
15	Pan fish and gamefish have slightly declined from numbers seen several years ago due mostly to non-resident fishing increase.
16	numbers have been stable, but size and quality have declined
17	have not seen any turtles or snakes in the last 5 years
18	I see more bald eagles (or maybe I notice them more?)
19	Bulegills are mostly stunted few large fish and northern pike are small under 20" few large fish. The smallmouth population is very small, would be great to grow their population. Please note I practice catch and release.
20	I believe we see fewer turtles and frogs but more Geese and Moles
21	We have taken many steps to deter geese from entering our property due to the mess that they leave

14. What types of watercraft do you currently use on Stratton Lake?

Answer Options	Response Percent	Response Count
Paddleboat	55.3%	21
Sailboat	10.5%	4
Canoe / kayak	89.5%	34
Rowboat	34.2%	13
Jet ski (personal water craft)	2.6%	1
Jet boat	0.0%	0
Motor boat with 25 hp or less motor	5.3%	2
Motor boat with greater than 25 hp motor	29.0%	11
Pontoon	47.4%	18
Do not use watercraft on Stratton Lake	0.0%	0
Do not use watercraft on any waters	0.0%	0
answered question		38
skipped question		1



15. Do you use your watercraft on waters other than Stratton Lake?

Answer Options	Response Percent	Response Count
Yes	13.2%	5
No	86.8%	33
answered question		38
skipped question		1

16. What is your typical cleaning routine after using your watercraft on waters other than Stratton Lake?

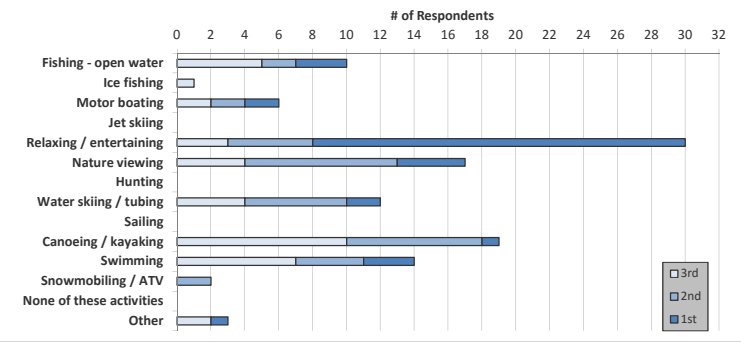
Answer Options	Response Percent	Response Count
Remove aquatic hitch-hikers (ex. - plant material, clams, mussels)	100.0%	4
Drain bilge	75.0%	3
Rinse boat	25.0%	1
Power wash boat	50.0%	2
Apply bleach	0.0%	0
Do not clean boat	0.0%	0
Other (please specify)		1
answered question		4
skipped question		35

Number	Other (please specify)
1	N/a

17. For the list below, rank your top three activities that are important reasons for owning your property on Stratton Lake, with 1 being the most important activity.

Answer Options	1st	2nd	3rd	Rating Average	Response Count
Fishing - open water	3	2	5	2.20	10
Ice fishing	0	0	1	3.00	1
Motor boating	2	2	2	2.00	6
Jet skiing	0	0	0	0.00	0
Relaxing / entertaining	22	5	3	1.37	30
Nature viewing	4	9	4	2.00	17
Hunting	0	0	0	0.00	0
Water skiing / tubing	2	6	4	2.17	12
Sailing	0	0	0	0.00	0
Canoeing / kayaking	1	8	10	2.47	19
Swimming	3	4	7	2.29	14
Snowmobiling / ATV	0	2	0	2.00	2
None of these activities are important to me	0	0	0	0.00	0
Other (please specify below)	1	0	2	2.33	3
answered question					38
skipped question					1

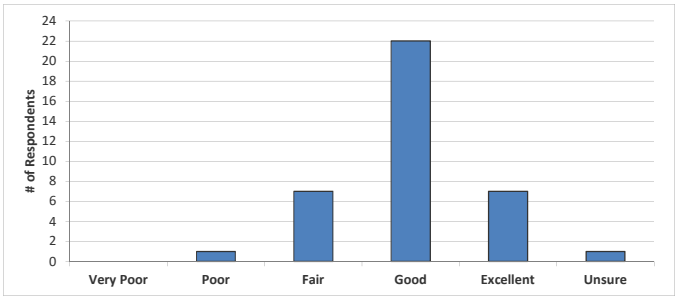
Number	"Other" responses
1	Pleasure cruises either by boat or kayak/canoe
2	Family Home
3	row boating



Stratton Lake Current and Historic Condition, Health and Management

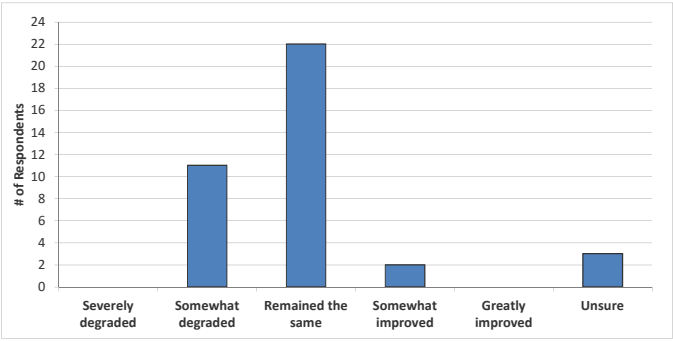
18. How would you describe the current water quality of Stratton Lake?

Answer Options	Very Poor	Poor	Fair	Good	Excellent	Unsure	Response Count
	0	1	7	22	7	1	38
						answered question	**38**
						skipped question	**1**



19. How has the water quality changed in Stratton Lake since you first visited the lake?

Answer Options	Severely degraded	Somewhat degraded	Remained the same	Somewhat improved	Greatly improved	Unsure	Response Count
	0	11	22	2	0	3	38
						answered question	**38**
						skipped question	**1**



20. Before reading the statement above, had you ever heard of aquatic invasive species?

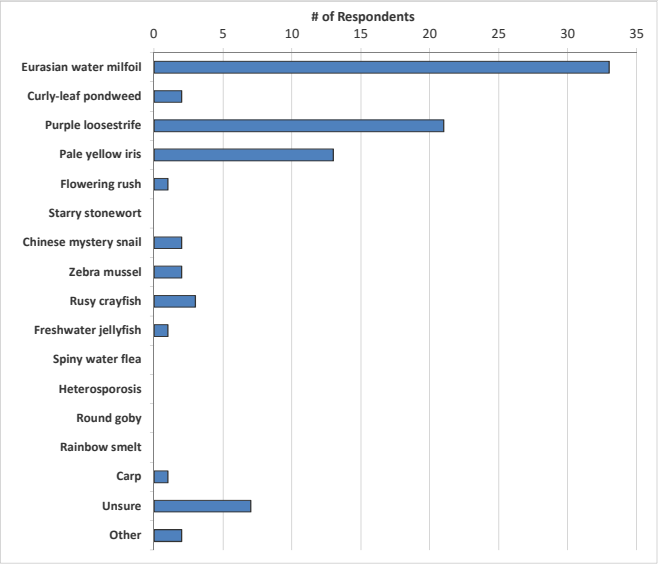
Answer Options	Response Percent	Response Count
Yes	100.0%	37
No	0.0%	0
	answered question	**37**
	skipped question	**2**

21. Do you believe aquatic invasive species are present within Stratton Lake?

Answer Options	Response Percent	Response Count
Yes	73.0%	27
I think so but am not certain	24.3%	9
No	2.7%	1
	answered question	**37**
	skipped question	**2**

22. Which aquatic invasive species do you believe are in Stratton Lake?

Answer Options	Response Percent	Response Count
Eurasian water milfoil	89.2%	33
Curly-leaf pondweed	5.4%	2
Purple loosestrife	56.8%	21
Pale yellow iris	35.1%	13
Flowering rush	2.7%	1
Starry stonewort	0.0%	0
Chinese mystery snail	5.4%	2
Zebra mussel	5.4%	2
Rusy crayfish	8.1%	3
Freshwater jellyfish	2.7%	1
Spiny water flea	0.0%	0
Heterosporosis (Yellow perch parasite)	0.0%	0
Round goby	0.0%	0
Rainbow smelt	0.0%	0
Carp	2.7%	1
Unsure but presume AIS to be present	18.9%	7
Other (please specify)	5.4%	2
answered question		37
skipped question		2

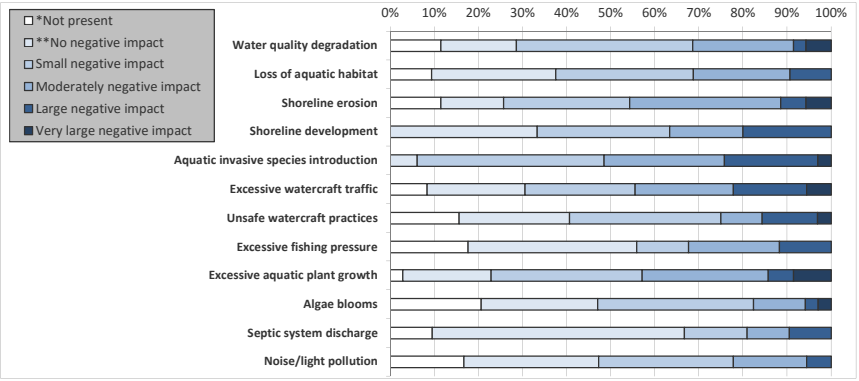


Number	Other (please specify)
1	Asian Clam
2	Asian Clam

23. To what level do you believe each of the following factors may currently be negatively impacting Stratton Lake?
*** Not present means that you believe the issue does not exist on Stratton Lake.**
**** No impact means that the issue may exist on Stratton Lake but it is not negatively impacting the lake.**

Answer Options	*Not present	**No negative impact	Small negative impact	Moderately negative impact	Large negative impact	Very large negative impact	Unsure: Need more information	Rating Average	Response Count
Water quality degradation	4	6	14	8	1	2	3	1.08	38
Loss of aquatic habitat	3	9	10	7	3	0	5	0.89	37
Shoreline erosion	4	5	10	12	2	2	3	1.26	38
Shoreline development	0	10	9	5	6	0	4	1.09	34
Aquatic invasive species introduction	0	2	14	9	7	1	5	1.50	38
Excessive watercraft traffic	3	8	9	8	6	2	2	1.34	38
Unsafe watercraft practices	5	8	11	3	4	1	2	0.97	34
Excessive fishing pressure	6	13	4	7	4	0	4	0.79	38
Excessive aquatic plant growth	1	7	12	10	2	3	3	1.32	38
Algae blooms	7	9	12	4	1	1	3	0.73	37
Septic system discharge	2	12	3	2	2	0	16	0.35	37
Noise/light pollution	6	11	11	6	2	0	2	0.76	38
Other (please specify)									4
								answered question	38
								skipped question	1

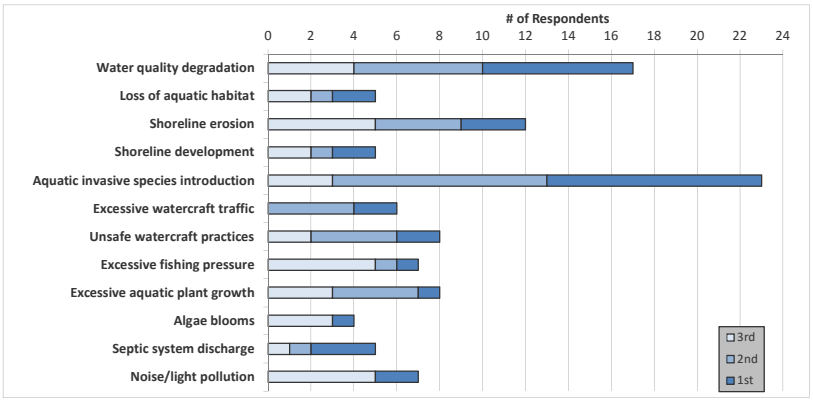
Number	Other (please specify)
1	Boat traffic, especially fishing craft have dramatically increased over the past year since the boat ramp was repaired.
2	boat landing used as swim area
3	some ski boats are way to large for this lake
4	boaters going in shallows in channel and stirring up the muck



24. From the list below, please rank your top three concerns regarding Stratton Lake, with 1 being your greatest concern.

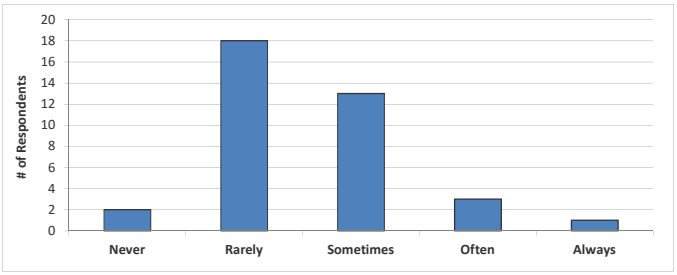
Answer Options	1st	2nd	3rd	Response Count
Water quality degradation	7	6	4	17
Loss of aquatic habitat	2	1	2	5
Shoreline erosion	3	4	5	12
Shoreline development	2	1	2	5
Aquatic invasive species introduction	10	10	3	23
Excessive watercraft traffic	2	4	0	6
Unsafe watercraft practices	2	4	2	8
Excessive fishing pressure	1	1	5	7
Excessive aquatic plant growth	1	4	3	8
Algae blooms	1	0	3	4
Septic system discharge	3	1	1	5
Noise/light pollution	2	0	5	7
Other (please specify)	1	0	1	2
			answered question	**37**
			skipped question	**2**

Number	"Other" responses
1	Farm run off or mismanagement of farm chemicals on land



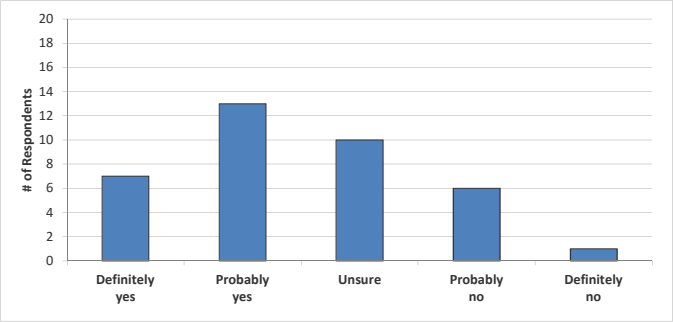
25. During open water season how often does aquatic plant growth, including algae, negatively impact your enjoyment of Stratton Lake?

Answer Options	Never	Rarely	Sometimes	Often	Always	Response Count
	2	18	13	3	1	37
					answered question	**37**
					skipped question	**2**



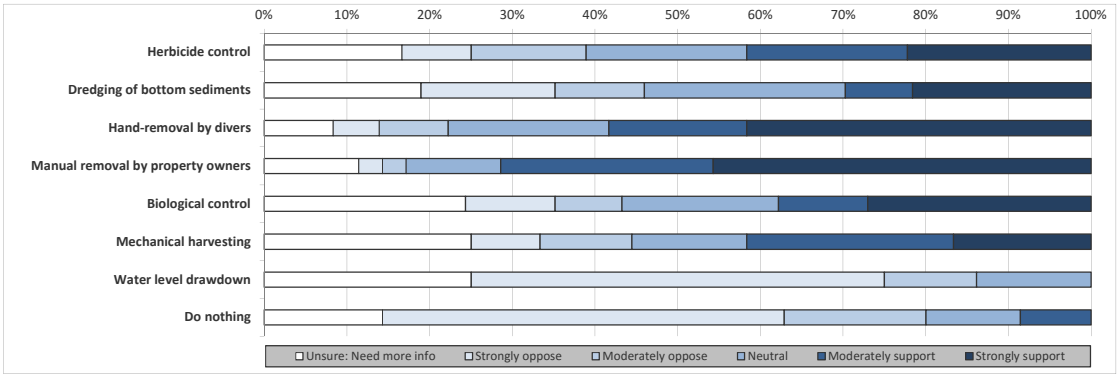
26. Considering your answer to the question above, do you believe aquatic plant control is needed on Stratton Lake?

Answer Options	Definitely yes	Probably yes	Unsure	Probably no	Definitely no	Response Count
	7	13	10	6	1	37
				answered question		**37**
				skipped question		**2**



27. Aquatic plants can be managed using many techniques. Please tell us if you oppose or support the responsible use of the following techniques on Stratton Lake.

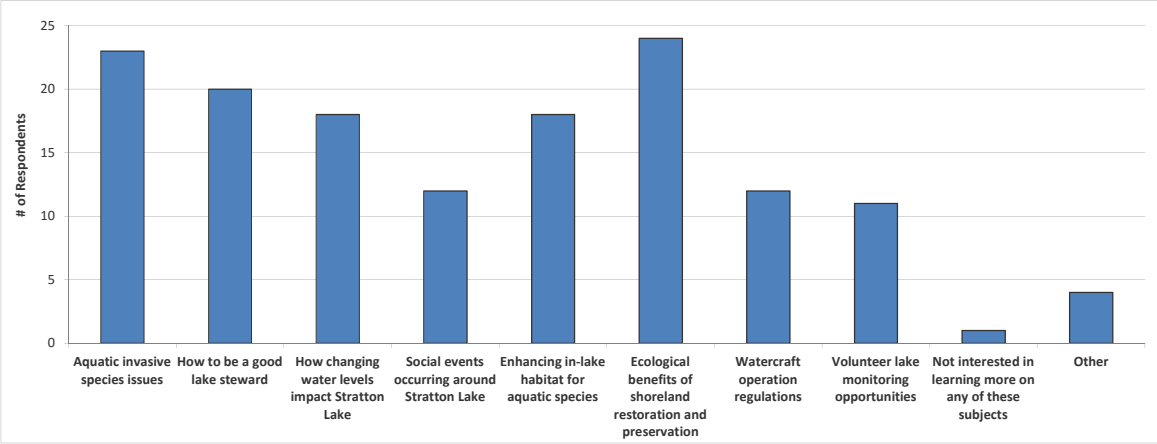
Answer Options	Strongly oppose	Moderately oppose	Neutral	Moderately support	Strongly support	Unsure: Need more info	Rating Average	Response Count
Herbicide (chemical) control	3	5	7	7	8	6	2.83	36
Dredging of bottom sediments	6	4	9	3	8	7	2.51	37
Hand-removal by divers	2	3	7	6	15	3	3.56	36
Manual removal by property owners	1	1	4	9	16	4	3.74	35
Biological control	4	3	7	4	10	9	2.62	37
Mechanical harvesting	3	4	5	9	6	9	2.56	36
Water level drawdown	18	4	5	0	0	9	1.14	36
Do nothing (do not manage plants)	17	6	4	3	0	5	1.51	35
						answered question		**37**
						skipped question		**2**



28. Stakeholder education is an important component of every lake management planning effort. Which of these subjects would you like to learn more about?

Answer Options	Response Percent	Response Count
Aquatic invasive species issues	62.2%	23
How to be a good lake steward	54.1%	20
How changing water levels impact Stratton Lake	48.7%	18
Social events occurring around Stratton Lake	32.4%	12
Enhancing in-lake habitat for aquatic species	48.7%	18
Ecological benefits of shoreland restoration and preservation	64.9%	24
Watercraft operation regulations	32.4%	12
Volunteer lake monitoring opportunities	29.7%	11
Not interested in learning more on any of these subjects	2.7%	1
Other (please specify)	10.8%	4
answered question		37
skipped question		2

Number	Other (please specify)
1	Shoreland enhancements to increase attract waterfowl
2	the invasive species mgt. options mentioned in previous question.
3	fish stocking and managment
4	How to encourage wider interest in working for common interests such as quality of life on the lake and dealing with those who violate rules



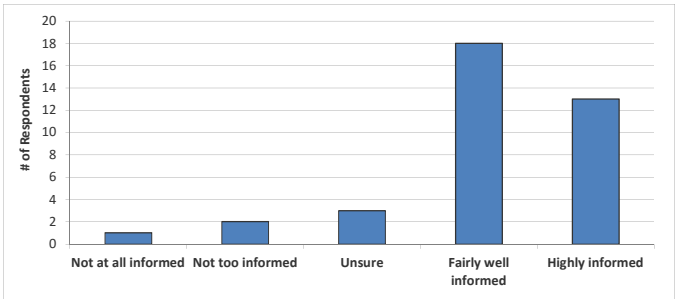
Stratton Lake District (SLD)

29. Before receiving this mailing, had you ever heard of the SLD?

Answer Options	Response Percent	Response Count
Yes	100.0%	37
No	0.0%	0
answered question		37
skipped question		2

30. How informed has the SLD kept you regarding issues with Stratton Lake and its management?

Answer Options	Not at all informed	Not too informed	Unsure	Fairly well informed	Highly informed	Response Count
	1	2	3	18	13	37
					answered question	**37**
					skipped question	**2**



31. Before receiving this mailing, had you ever heard of the Stratton Lake Property Owners Association (SLPOA)?

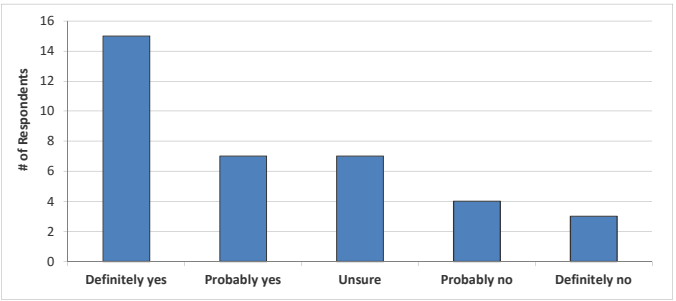
Answer Options	Response Percent	Response Count
Yes	97.3%	36
No	2.7%	1
	answered question	**37**
	skipped question	**2**

32. What is your membership status with the Stratton Lake Property Owners Association?

Answer Options	Response Percent	Response Count
Current member	88.9%	32
Former member	11.1%	4
Never been a member	0.0%	0
	answered question	**36**
	skipped question	**3**

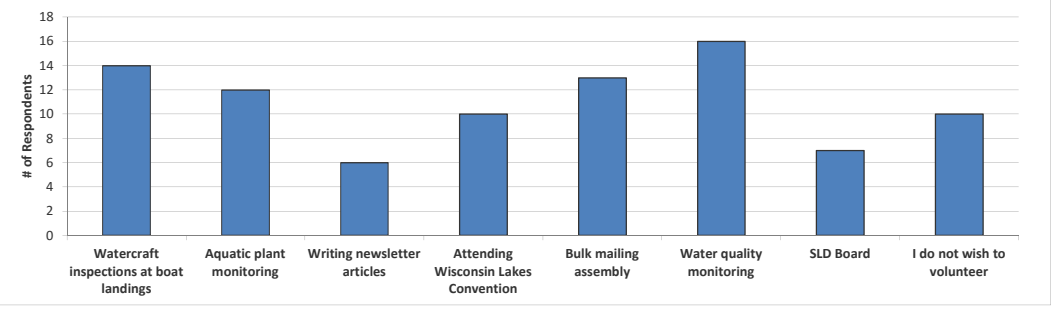
33. Would you like to see the Stratton Lake Property Owners Association continued?

Answer Options	Definitely yes	Probably yes	Unsure	Probably no	Definitely no	Response Count
	15	7	7	4	3	36
					answered question	**36**
					skipped question	**3**



34. The effective management of your lake will require the cooperative efforts of numerous volunteers. Please circle the activities you would be willing to participate in if the SLD requires additional assistance.

Answer Options	Response Percent	Response Count
Watercraft inspections at boat landings	37.8%	14
Aquatic plant monitoring	32.4%	12
Writing newsletter articles	16.2%	6
Attending Wisconsin Lakes Convention	27.0%	10
Bulk mailing assembly	35.1%	13
Water quality monitoring	43.2%	16
SLD Board	18.9%	7
I do not wish to volunteer	27.0%	10
answered question		**37**
skipped question		**2**



35. Please feel free to provide written comments concerning the Stratton Lake, its current and/or historic condition and its management.

Answer Options	Response Count
	17
answered question	**17**
skipped question	**22**

Number	Response Text
1	This is not a scientific survey! It it a political survey. Brad, I expect to see null responses in your tabulation. I strongly prefer the lake be unmanaged. This is a solution looking for a problem. Of course, the easiest way to solve a problem is to not have one in the first place.
2	We really appreciate the involvement of numerous individuals that have taken great interest in the preservation of the current and future lake conditions. We are happy to support all efforts in any way necessary to preserve this beautiful lake and its long heritage so that our lakes future residents can enjoy the same environment that is present today.
3	I strongly support Stratton Lake conservation efforts, including managing invasive species, addressing noise and light pollution, improving natural habitats, and similar activities.
4	currently out of state owners and when that status changes possible volunteer status would also change....Thank you for your commitment to Stratton Lake.
5	It hasn't changed much in 70 years but I'm glad for the monitoring of fish, aquatic plants and water quality.
6	Ban jet skis for safety. State boating laws for PWC can't be adhered to because of the size of the lake. Encourage large boat owners to stop tubing which leads to shoreline degradation
7	There was no mention of adverse affects of poor farming practices on Stratton Lake.
8	The Lake is very valuable and requires Property Owners involvement to insure its future!
9	We have had an outstanding group of officers and volunteers seriously representing Stratton Lake over the years.
10	I am satisfied with all aspects of Stratton Lake management and preservation.
11	Witnessed excessive boat activity on northern portion of lake this season with plant debris floating to northern end of lake. Much more than past.
12	Need better control of the verylarge boats allowed on lake hard time keeping my shoreline from eroding our association seems to have a good handle on controlling quality of lake.
13	Keep up the great work
14	This lake has been studied to death over the last 40+ years.
15	I would be interested to see if putting size limits on certain species of fish would help to ensure the lake could possibly hold more abundant large fish, or how getting the lake stocked with certain fish could increase the population, or if it would make no difference.
16	It seems that social contact among residents has decreased e.g. picnic and other neighbor to neighbor activities. It seems newer property owners care only about their individual interests and don't care about any personal "community" involvement for betterment of all.Those who volunteer are mostly if not exclusively those who have continuously over the years. Perhaps we are dealing with a new reality and should examine strategies for dealing with the new reality.what ever that is.
17	Stratton Lake is a small, beautiful, peaceful lake, which affords my family the opportunity to enjoy the lake environment in many ways. Thank you for taking the time and interest to developing a management plan for the lake.

C

APPENDIX C

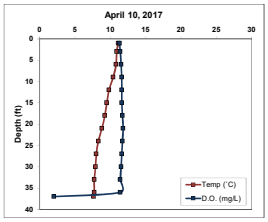
Water Quality Data

Stratton Lake

Date: 4/10/2017
Time: 10:50
Weather: 53F, ~5 mph wind, 100% clouds
Entry: EEH

Max Depth: 36.7
STNS Depth (ft): 3.0
STNB Depth (ft): 33.0
Secchi Depth (ft): 16.1

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	11.1	11.3		
3	10.9	11.4	8.0	
6	10.8	11.5		
9	10.4	11.6		
12	9.8	11.6		
15	9.5	11.6		
18	9.2	11.7	8.0	
21	8.8	11.8		
24	8.3	11.7		
27	8.0	11.6		
30	7.9	11.5		
33	7.7	11.4	8.0	
36	7.7	11.4		
37	7.6	2.0		



Parameter	STNS	STNB
Total P (µg/L)	16.50	17.80
Dissolved P (µg/L)	1.80	2.10
Chl-a (µg/L)	1.71	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	7200.00	6380.00
Lab Cond. (µS/cm)	370.00	370.00
Lab pH	8.30	8.28
Alkalinity (mg/L $CaCO_3$)	123.00	125.00
Total Susp. Solids (mg/L)	ND	ND
Calcium (mg/L)	41.30	NA
Magnesium (mg/L)	20.10	NA
Hardness (mg/L)	186.00	NA
Color (SU)	5.00	NA
Turbidity (NTU)	NA	NA

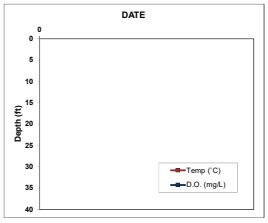
Data collected by JMB and EEH (Onterra).

Stratton Lake

Date: 6/11/2017
Time:
Weather:
Entry: EEH

Max Depth:
STNS Depth (ft):
STNB Depth (ft):
Secchi Depth (ft):

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)



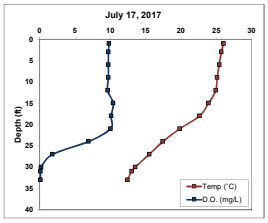
Parameter	STNS	STNB
Total P (µg/L)	16.40	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	1.68	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

Stratton Lake

Date: 7/17/2017
Time: 12:15
Weather: 10% clouds, 72F, light wind
Entry: EEH

Max Depth: 33.4
STNS Depth (ft): 3.0
STNB Depth (ft): 31.0
Secchi Depth (ft): 10.5

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	26.0	9.8		
3	25.7	9.7		
6	25.4	9.7		
9	25.1	9.7		
12	24.9	9.6		
15	23.9	10.4		
18	22.6	10.1		
21	19.8	10.0		
24	17.4	6.9		
27	15.5	1.8		
30	13.5	0.2		
31	13.0	0.1		
33	12.4	0.1		



Parameter	STNS	STNB
Total P (µg/L)	16.50	50.00
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	3.47	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_4-N (µg/L)	NA	NA
Total N (µg/L)	4690.00	NA
Lab Cond. (µS/cm)	348.00	350.00
Lab pH	8.41	7.68
Alkalinity (mg/L $CaCO_3$)	117.00	160.00
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	5.00	NA
Turbidity (NTU)	NA	NA

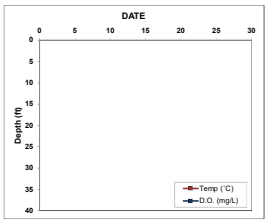
Data collected by TWH and CJF (Onterra).

Stratton Lake

Date: 8/12/2017
Time:
Weather:
Entry: EEH

Max Depth:
STNS Depth (ft):
STNB Depth (ft):
Secchi Depth (ft):

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)



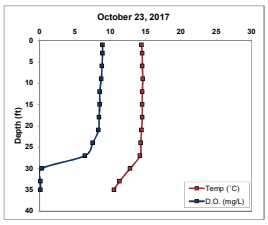
Parameter	STNS	STNB
Total P (µg/L)	20.20	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	4.79	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_4-N (µg/L)	NA	NA
Total N (µg/L)	4080.00	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

Stratton Lake

Date: 10/23/2017
Time: 10:11
Weather: 100% clouds, 45F, no wind
Entry: EEH

Max Depth: 38.3
STNS Depth (ft): 3.0
STNB Depth (ft): 35.0
Secchi Depth (ft): 12.4

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	14.4	8.9		
3	14.5	8.9		
6	14.5	8.8		
9	14.6	8.7		
12	14.5	8.5		
15	14.5	8.5		
18	14.5	8.4		
21	14.4	8.3		
24	14.3	7.5		
27	14.2	6.4		
30	12.8	0.3		
33	11.3	0.1		
35	10.5	0.1		



Parameter	STNS	STNB
Total P (µg/L)	17.20	106.00
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	4.08	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	ND	4.80
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

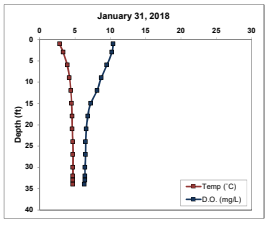
Data collected by TAH & PJG (Onterra).

Stratton Lake

Date: 1/31/2018
Time: 12:00
Weather: 40% clouds, 35F
Entry: EEH

Max Depth: 34.7
STNS Depth (ft): 3.0
STNB Depth (ft): 32.0
Secchi Depth (ft): 11.4

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	2.8	10.4		
3	3.3	10.2		
6	3.9	9.5		
9	4.2	8.7		
12	4.4	8.1		
15	4.5	7.2		
18	4.6	6.8		
21	4.6	6.6		
24	4.7	6.5		
27	4.7	6.5		
30	4.7	6.4		
32	4.7	6.4		
33	4.7	6.4		
34	4.7	6.3		



Parameter	STNS	STNB
Total P (µg/L)	11.60	12.80
Dissolved P (µg/L)	ND	ND
Chl-a (µg/L)	NA	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

Data collected by TWH & JMB (Onterra). Ice thickness = 1.3 feet

Water Quality Data

2017-2018	Surface		Bottom	
Parameter	Count	Mean	Count	Mean
Secchi Depth (feet)	4	12.6	NA	NA
Total P (µg/L)	6	16.4	4	46.7
Dissolved P (µg/L)	2	1.8	2	2.1
Chl a (µg/L)	5	3.1	0	NA
TKN (µg/L	0	NA	0	NA
NO_3+NO_2-N (µg/L)	0	NA	0	NA
NH_3-N (µg/L)	0	NA	0	NA
Total N (µg/L)	3	5323.3	1	6380.0
Lab Cond. (µS/cm)	2	359.0	2	360.0
Alkal (mg/l $CaCO_3$)	2	120.0	2	142.5
Total Susp. Solids (mg/l)	2	ND	2	4.8
Calcium (mg/L)	1	41.3	0	NA
Magnesium (mg/L)	1	20.1	0	NA
Hardness (mg/L)	1	186.0	0	NA
Color (SU)	2	5.0	0	NA
Turbidity (NTU)	0	NA	0	NA

Trophic State Index (TSI)

Year	TP	Chl-a	Secchi
1977			43.0
1991			40.1
1992			38.9
1993			33.5
1994	33.5	39.8	38.8
1995	42.2	39.0	40.6
1996	38.7	40.9	40.6
1997		39.6	37.3
1998	42.4	41.9	38.2
1999	40.6	38.6	38.8
2000			35.7
2001	42.2	43.2	38.8
2002	36.4	38.7	35.7
2003	38.1	46.6	40.2
2004	38.7	41.8	38.8
2005	39.2	42.6	37.5
2006	42.7	46.6	40.4
2007	40.0	42.6	40.9
2008	38.3	35.8	37.4
2009	39.6	41.7	40.2
2010	39.6	45.3	38.9
2011	42.5	42.4	41.0
2012	41.1	43.2	37.2
2013	40.6	40.6	39.7
2014	42.5	46.0	37.2
2015	40.5	44.6	35.7
2016	45.5	47.4	38.8
2017	45.6	42.4	43.2
All Years (Weighted)	40.7	42.6	38.7
DHDL Median	45.0	46.4	42.8
NCHF Ecoregion Median	61.1	57.3	53.2

	Secchi (feet)				Chlorophyll-a (µg/L)				Total Phosphorus (µg/L)			
	Growing Season		Summer		Growing Season		Summer		Growing Season		Summer	
Year	Count	Mean	Count	Mean	Count	Mean	Count	Mean	Count	Mean	Count	Mean
1977	1	10.7	1	10.7					0		0.0	
1991	10	13.2	6	13.1								
1992	10	14.0	7	14.2								
1993	10	20.1	6	20.7								
1994	12	14.4	6	14.3	5	3.3	3	2.6	4	7.5	3.0	7.7
1995	13	14.5	7	12.6	4	2.5	2	2.4	4	13.0	2.0	14.0
1996	11	12.6	7	12.6	5	3.2	3	2.8	3	12.3	2.0	11.0
1997	12	16.1	6	15.9	4	2.7	3	2.5	1	14.0	0.0	
1998	11	14.6	7	14.9	4	3.1	3	3.2	4	15.4	3.0	14.2
1999	12	15.2	7	14.3	4	2.3	3	2.3	4	10.8	2.0	12.5
2000	6	16.8	3	17.7	0		0		0		0.0	
2001	6	16.5	3	14.3	4	3.7	3	3.6	5	13.0	3.0	14.0
2002	4	18.0	3	17.7	2	2.3	2	2.3	4	10.0	3.0	9.3
2003	6	13.5	5	13.0	3	4.8	2	5.1	4	11.3	2.0	10.5
2004	8	14.1	3	14.3	5	2.5	2	3.1	6	10.8	2.0	11.0
2005	6	16.7	3	15.7	3	3.4	3	3.4	5	11.8	3.0	11.3
2006	11	13.3	8	12.8	3	4.9	2	5.1	2	14.5	2.0	14.5
2007	4	12.5	3	12.3	2	3.4	2	3.4	4	12.3	3.0	12.0
2008	5	15.2	4	15.8	3	1.7	3	1.7	4	11.5	3.0	10.7
2009	5	13.0	5	13.0	3	3.1	3	3.1	4	11.0	3.0	11.7
2010	6	14.7	5	14.2	3	4.5	3	4.5	3	11.7	3.0	11.7
2011	6	11.8	4	12.3	3	3.3	3	3.3	4	13.5	3.0	14.3
2012	4	15.3	3	16.0	3	3.6	3	3.6	4	14.0	3.0	13.0
2013	9	13.4	9	13.4	3	2.8	3	2.8	4	12.4	3.0	12.5
2014	3	16.0	3	16.0	3	4.8	3	4.8	3	13.2	2.0	14.3
2015	4	18.0	3	17.7	3	4.2	3	4.2	5	11.4	3.0	12.4
2016	4	14.3	4	14.3	3	5.6	3	5.6	5	16.3	3.0	17.6
2017	4	14.6	1	10.5	5	3.1	3	3.3	6	17.2	3.0	17.7
All Years (Weighted)		14.8		14.4		3.4		3.4		12.6		12.6
DHDL Median				10.8				5.0				17.0
NCHF Ecoregion Median				5.3				15.2				52.0

D

APPENDIX D

Watershed Analysis WiLMS Results

Date: 1/26/2018 Scenario: Stratton Lake Watershed Current

Lake Id: Stratton Lake
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 75.0 acre
Total Unit Runoff: 10.50 in.
Annual Runoff Volume: 65.6 acre-ft
Lake Surface Area <As>: 66.0 acre
Lake Volume <V>: 686.0 acre-ft
Lake Mean Depth <z>: 10.4 ft
Precipitation - Evaporation: 3.8 in.
Hydraulic Loading: 86.5 acre-ft/year
Areal Water Load <qs>: 1.3 ft/year
Lake Flushing Rate <p>: 0.13 1/year
Water Residence Time: 7.93 year
Observed spring overturn total phosphorus (SPO): 11.9 mg/m^3
Observed growing season mean phosphorus (GSM): 12.6 mg/m^3
% NPS Change: 0%
% PS Change: 0%

NON-POINT SOURCE DATA

Land Use	Acre (ac)	Low	Most Likely	High	Loading %	Low	Most Likely	High
		Loading (kg/ha-year)				Loading (kg/year)		
Row Crop AG	6.0	0.50	1.00	3.00	14.2	1	2	7
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	12.0	0.10	0.30	0.50	8.5	0	1	2
HD Urban (1/8 Ac)	0.0	1.00	1.50	2.00	0.0	0	0	0
MD Urban (1/4 Ac)	0.0	0.30	0.50	0.80	0.0	0	0	0
Rural Res (>1 Ac)	2.0	0.05	0.10	0.25	0.5	0	0	0
Wetlands	22.0	0.10	0.10	0.10	5.2	1	1	1
Forest	33.0	0.05	0.09	0.18	7.0	1	1	2
Lake Surface	66.0	0.10	0.30	1.00	46.8	3	8	27

POINT SOURCE DATA

Point Sources	Water Load (m^3/year)	Low (kg/year)	Most Likely (kg/year)	High (kg/year)	Loading %

SEPTIC TANK DATA

Description		Low	Most Likely	High	Loading %
Septic Tank Output (kg/capita-year)		0.30	0.50	0.80	
# capita-years	61.0				
% Phosphorus Retained by Soil		98.0	90.0	80.0	
Septic Tank Loading (kg/year)		0.37	3.05	9.76	17.8

TOTALS DATA

Description	Low	Most Likely	High	Loading %
Total Loading (lb)	14.0	37.7	109.5	100.0
Total Loading (kg)	6.3	17.1	49.7	100.0
Areal Loading (lb/ac-year)	0.21	0.57	1.66	
Areal Loading (mg/m^2-year)	23.72	64.10	186.00	
Total PS Loading (lb)	0.0	0.0	0.0	0.0
Total PS Loading (kg)	0.0	0.0	0.0	0.0
Total NPS Loading (lb)	7.3	13.4	29.1	82.2
Total NPS Loading (kg)	3.3	6.1	13.2	82.2

Phosphorus Prediction and Uncertainty Analysis Module

Date: 1/26/2018 Scenario: 286
Observed spring overturn total phosphorus (SPO): 11.9 mg/m^3
Observed growing season mean phosphorus (GSM): 12.6 mg/m^3
Back calculation for SPO total phosphorus: 0.0 mg/m^3
Back calculation GSM phosphorus: 0.0 mg/m^3
% Confidence Range: 70%
Nurenberg Model Input - Est. Gross Int. Loading: 0 kg

Lake Phosphorus Model	Low Total P (mg/m^3)	Most Likely Total P (mg/m^3)	High Total P (mg/m^3)	Predicted -Observed (mg/m^3)	% Dif.
Walker, 1987 Reservoir	19	52	152	39	310
Canfield-Bachmann, 1981 Natural Lake	14	26	50	13	103
Canfield-Bachmann, 1981 Artificial Lake	15	25	43	12	95
Rechow, 1979 General	2	5	15	-8	-63
Rechow, 1977 Anoxic	24	65	188	52	413
Rechow, 1977 water load<50m/year	5	13	39	0	0
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	19	52	150	40	336
Vollenweider, 1982 Combined OECD	15	33	80	21	171
Dillon-Rigler-Kirchner	14	37	107	25	210
Vollenweider, 1982 Shallow Lake/Res.	11	27	70	15	122
Larsen-Mercier, 1976	16	42	122	30	252
Nurnberg, 1984 Oxic	11	30	86	17	135

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	27	116	Tw	0	GSM
Canfield-Bachmann, 1981 Natural Lake	8	75	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	8	72	FIT	1	GSM
Rechow, 1979 General	3	11	L qs	0	GSM
Rechow, 1977 Anoxic	35	143	FIT	0	GSM
Rechow, 1977 water load<50m/year	7	30	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	23	119	FIT	0	SPO
Vollenweider, 1982 Combined OECD	15	69	FIT	0	ANN
Dillon-Rigler-Kirchner	20	81	P L qs p	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	12	58	FIT	0	ANN
Larsen-Mercier, 1976	23	92	P Pin	0	SPO
Nurnberg, 1984 Oxic	14	67	qs	0	ANN

Water and Nutrient Outflow Module

Date: 1/26/2018 Scenario: 249
Average Annual Surface Total Phosphorus: 12.6mg/m^3
Annual Discharge: 8.65E+001 AF => 1.07E+005 m^3
Annual Outflow Loading: 2.9 LB => 1.3 kg

Date: 1/26/2018 Scenario: Stratton Lake Watershed Scenario 1

Lake Id: Stratton Lake
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 74.0 acre
Total Unit Runoff: 10.50 in.
Annual Runoff Volume: 64.8 acre-ft
Lake Surface Area <As>: 66.0 acre
Lake Volume <V>: 686.0 acre-ft
Lake Mean Depth <z>: 10.4 ft
Precipitation - Evaporation: 3.8 in.
Hydraulic Loading: 85.7 acre-ft/year
Areal Water Load <qs>: 1.3 ft/year
Lake Flushing Rate <p>: 0.12 1/year
Water Residence Time: 8.01 year
Observed spring overturn total phosphorus (SPO): 11.9 mg/m^3
Observed growing season mean phosphorus (GSM): 12.6 mg/m^3
% NPS Change: 0%
% PS Change: 0%

NON-POINT SOURCE DATA

Land Use	Acre (ac)	Low	Most Likely	High	Loading %	Low	Most Likely	High
		Loading (kg/ha-year)				Loading (kg/year)		
Row Crop AG	14	0.50	1.00	3.00	28.3	3	6	17
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	12	0.10	0.30	0.50	7.3	0	1	2
HD Urban (1/8 Ac)	0.0	1.00	1.50	2.00	0.0	0	0	0
MD Urban (1/4 Ac)	0	0.30	0.50	0.80	0.0	0	0	0
Rural Res (>1 Ac)	2	0.05	0.10	0.25	0.4	0	0	0
Wetlands	22	0.10	0.10	0.10	4.4	1	1	1
Forest	24	0.05	0.09	0.18	4.4	0	1	2
Lake Surface	66.0	0.10	0.30	1.00	40.0	3	8	27

POINT SOURCE DATA

Point Sources	Water Load (m^3/year)	Low (kg/year)	Most Likely (kg/year)	High (kg/year)	Loading %

SEPTIC TANK DATA

Description		Low	Most Likely	High	Loading %
Septic Tank Output (kg/capita-year)		0.30	0.50	0.80	
# capita-years	61.0				
% Phosphorus Retained by Soil		98.0	90.0	80.0	
Septic Tank Loading (kg/year)		0.37	3.05	9.76	15.2

TOTALS DATA

Description	Low	Most Likely	High	Loading %
Total Loading (lb)	17.1	44.2	129.5	100.0
Total Loading (kg)	7.8	20.0	58.7	100.0
Areal Loading (lb/ac-year)	0.26	0.67	1.96	
Areal Loading (mg/m^2-year)	29.10	75.00	219.91	
Total PS Loading (lb)	0.0	0.0	0.0	0.0
Total PS Loading (kg)	0.0	0.0	0.0	0.0
Total NPS Loading (lb)	10.4	19.8	49.1	84.8
Total NPS Loading (kg)	4.7	9.0	22.3	84.8

Phosphorus Prediction and Uncertainty Analysis Module

Date: 1/26/2018 Scenario: 287
Observed spring overturn total phosphorus (SPO): 11.9 mg/m^3
Observed growing season mean phosphorus (GSM): 12.6 mg/m^3
Back calculation for SPO total phosphorus: 0.0 mg/m^3
Back calculation GSM phosphorus: 0.0 mg/m^3
% Confidence Range: 70%
Nurenberg Model Input - Est. Gross Int. Loading: 0 kg

Lake Phosphorus Model	Low Total P (mg/m^3)	Most Likely Total P (mg/m^3)	High Total P (mg/m^3)	Predicted -Observed (mg/m^3)	% Dif.
Walker, 1987 Reservoir	22	58	170	45	357
Canfield-Bachmann, 1981 Natural Lake	16	29	55	16	127
Canfield-Bachmann, 1981 Artificial Lake	17	28	46	15	119
Rechow, 1979 General	2	6	18	-7	-56
Rechow, 1977 Anoxic	30	76	223	63	500
Rechow, 1977 water load<50m/year	6	16	46	3	24
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	24	61	178	49	412
Vollenweider, 1982 Combined OECD	17	38	92	26	212
Dillon-Rigler-Kirchner	17	44	128	32	269
Vollenweider, 1982 Shallow Lake/Res.	14	32	81	20	163
Larsen-Mercier, 1976	19	50	145	38	319
Nurnberg, 1984 Oxic	14	35	103	22	175

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	31	129	Tw	0	GSM
Canfield-Bachmann, 1981 Natural Lake	9	84	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	9	81	FIT	1	GSM
Rechow, 1979 General	3	14	qs	0	GSM
Rechow, 1977 Anoxic	42	169	FIT	0	GSM
Rechow, 1977 water load<50m/year	8	35	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	28	141	FIT	0	SPO
Vollenweider, 1982 Combined OECD	17	80	FIT	0	ANN
Dillon-Rigler-Kirchner	24	97	P L qs p	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	15	68	FIT	0	ANN
Larsen-Mercier, 1976	28	110	P Pin	0	SPO
Nurnberg, 1984 Oxic	17	80	qs	0	ANN

Date: 1/26/2018 Scenario: Stratton Lake Watershed Scenario 2

Lake Id: Stratton Lake
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 74.0 acre
Total Unit Runoff: 10.50 in.
Annual Runoff Volume: 64.8 acre-ft
Lake Surface Area <As>: 66.0 acre
Lake Volume <V>: 686.0 acre-ft
Lake Mean Depth <z>: 10.4 ft
Precipitation - Evaporation: 3.8 in.
Hydraulic Loading: 85.7 acre-ft/year
Areal Water Load <qs>: 1.3 ft/year
Lake Flushing Rate <p>: 0.12 1/year
Water Residence Time: 8.01 year
Observed spring overturn total phosphorus (SPO): 11.9 mg/m^3
Observed growing season mean phosphorus (GSM): 12.6 mg/m^3
% NPS Change: 0%
% PS Change: 0%

NON-POINT SOURCE DATA

Land Use	Acre	Low	Most Likely	High	Loading %	Low	Most Likely	High
	(ac)	Loading (kg/ha-year)				Loading (kg/year)		
Row Crop AG	22	0.50	1.00	3.00	38.7	4	9	27
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	12.0	0.10	0.30	0.50	6.3	0	1	2
HD Urban (1/8 Ac)	0.0	1.00	1.50	2.00	0.0	0	0	0
MD Urban (1/4 Ac)	0	0.30	0.50	0.80	0.0	0	0	0
Rural Res (>1 Ac)	2.0	0.05	0.10	0.25	0.4	0	0	0
Wetlands	22.0	0.10	0.10	0.10	3.9	1	1	1
Forest	16	0.05	0.09	0.18	2.5	0	1	1
Lake Surface	66.0	0.10	0.30	1.00	34.9	3	8	27

POINT SOURCE DATA

Point Sources	Water Load	Low	Most Likely	High	Loading %
	(m^3/year)	(kg/year)	(kg/year)	(kg/year)	

SEPTIC TANK DATA

Description		Low	Most Likely	High	Loading %
Septic Tank Output (kg/capita-year)		0.30	0.50	0.80	
# capita-years	61.0				
% Phosphorus Retained by Soil		98.0	90.0	80.0	
Septic Tank Loading (kg/year)		0.37	3.05	9.76	13.3

TOTALS DATA

Description	Low	Most Likely	High	Loading %
Total Loading (lb)	20.3	50.7	149.6	100.0
Total Loading (kg)	9.2	23.0	67.9	100.0
Areal Loading (lb/ac-year)	0.31	0.77	2.27	
Areal Loading (mg/m^2-year)	34.55	86.03	254.09	
Total PS Loading (lb)	0.0	0.0	0.0	0.0
Total PS Loading (kg)	0.0	0.0	0.0	0.0
Total NPS Loading (lb)	13.7	26.3	69.2	86.7
Total NPS Loading (kg)	6.2	11.9	31.4	86.7

Phosphorus Prediction and Uncertainty Analysis Module

Date: 1/26/2018 Scenario: 288
Observed spring overturn total phosphorus (SPO): 11.9 mg/m^3
Observed growing season mean phosphorus (GSM): 12.6 mg/m^3
Back calculation for SPO total phosphorus: 0.0 mg/m^3
Back calculation GSM phosphorus: 0.0 mg/m^3
% Confidence Range: 70%
Nurenberg Model Input - Est. Gross Int. Loading: 0 kg

Lake Phosphorus Model	Low Total P (mg/m^3)	Most Likely Total P (mg/m^3)	High Total P (mg/m^3)	Predicted -Observed (mg/m^3)	% Dif.
Walker, 1987 Reservoir	25	63	185	50	397
Canfield-Bachmann, 1981 Natural Lake	18	32	60	19	151
Canfield-Bachmann, 1981 Artificial Lake	18	29	49	16	127
Rechow, 1979 General	3	7	21	-6	-48
Rechow, 1977 Anoxic	35	87	258	74	587
Rechow, 1977 water load<50m/year	7	18	54	5	40
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	28	70	206	58	487
Vollenweider, 1982 Combined OECD	20	43	103	31	253
Dillon-Rigler-Kirchner	20	50	148	38	319
Vollenweider, 1982 Shallow Lake/Res.	16	36	93	24	196
Larsen-Mercier, 1976	23	57	168	45	378
Nurnberg, 1984 Oxic	16	40	119	27	214

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	34	141	Tw	0	GSM
Canfield-Bachmann, 1981 Natural Lake	10	92	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	9	84	FIT	1	GSM
Rechow, 1979 General	4	16	qs	0	GSM
Rechow, 1977 Anoxic	48	195	FIT	0	GSM
Rechow, 1977 water load<50m/year	9	41	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	32	162	FIT	0	SPO
Vollenweider, 1982 Combined OECD	20	90	FIT	0	ANN
Dillon-Rigler-Kirchner	27	112	P L qs p	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	17	78	FIT	0	ANN
Larsen-Mercier, 1976	32	127	P Pin	0	SPO
Nurnberg, 1984 Oxic	19	92	qs	0	ANN

E

APPENDIX E

Aquatic Plant Survey Data

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum spicatum	Chara spp.	Elodea canadensis	Lemna minor	Myriophyllum sibiricum	Najas flexilis	Najas guadalupensis	Nitella spp.	Potamogeton foliosus	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton praelongus	Potamogeton strictifolius	Schoenoplectus acutus	Stuckenia pectinata	Vallisneria americana	Potamogeton strictifolius X P. zosteriformis	Zannichellia palustris
1	44.295251	-89.185743	257	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	1	4	Sand	Pole	SAMPLED			1		1																	0
2	44.294981	-89.185747	258	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	2	4	Sand	Pole	SAMPLED			1		1																	0
3	44.294711	-89.185750	235	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	3	5	Sand	Pole	SAMPLED			3	3									1						1			0
4	44.294441	-89.185754	234	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	4	4	Muck	Pole	SAMPLED			0																			0
5	44.295519	-89.185363	274	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	5	3	Sand	Pole	SAMPLED			1		1																	0
6	44.295249	-89.185367	256	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	6	4	Sand	Pole	SAMPLED			1		1																	0
7	44.294979	-89.185371	255	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	7	9	Sand	Pole	SAMPLED			2	1		1			1										2	1		0
8	44.294709	-89.185374	236	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	8	11	Sand	Pole	SAMPLED			1					1														0
9	44.294438	-89.185378	233	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	9	10	Sand	Pole	SAMPLED			1	1								1										0
10	44.294168	-89.185382	212	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	10	10	Sand	Pole	SAMPLED			1		1																	0
11	44.293898	-89.185386	211	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	11	3	Sand	Pole	SAMPLED			1		1																	0
12	44.295786	-89.184983	275	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	12	4	Sand	Pole	SAMPLED			1	1	1																	0
13	44.295516	-89.184987	273	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	13	6	Sand	Pole	SAMPLED			3	1	1														3			0
14	44.295246	-89.184991	259	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	14	10	Sand	Pole	SAMPLED			2	2																		0
15	44.294976	-89.184995	254	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	15	11	Sand	Pole	SAMPLED			1		1																	0
16	44.294706	-89.184998	237	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	16	11	Sand	Pole	SAMPLED			1		1																	0
17	44.294436	-89.185002	232	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	17	16	Sand	Pole	SAMPLED			2		2																	0
18	44.294166	-89.185006	213	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	18	9	Sand	Pole	SAMPLED			2					1					1						1			0
19	44.293896	-89.185010	210	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	19	5	Sand	Pole	SAMPLED			1		1																	0
20	44.296053	-89.184604	282	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	20	2	Sand	Pole	SAMPLED			2	2					1				1									0
21	44.295783	-89.184607	276	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	21	5	Sand	Pole	SAMPLED			1		1	1			1													0
22	44.295513	-89.184611	272	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	22	8	Sand	Pole	SAMPLED			0																			0
23	44.295243	-89.184615	260	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	23	9	Sand	Pole	SAMPLED			1		1																	0
24	44.294973	-89.184619	253	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	24	11	Sand	Pole	SAMPLED			2												1				2			0
25	44.294703	-89.184622	238	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	25	11	Sand	Pole	SAMPLED			1		1																	0
26	44.294433	-89.184626	231	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	26	11	Sand	Pole	SAMPLED			1		1																	0
27	44.294163	-89.184630	214	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	27	15	Sand	Pole	SAMPLED			1		1																	0
28	44.293893	-89.184634	209	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	28	10	Sand	Pole	SAMPLED			0																			0
29	44.293623	-89.184637	190	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	29	3	Sand	Pole	SAMPLED			0																			0
30	44.296051	-89.184228	281	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	30	5	Sand	Pole	SAMPLED			1		1																	0
31	44.295781	-89.184231	277	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	31	5	Sand	Pole	SAMPLED			1		1																	0
32	44.295511	-89.184235	271	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	32	9	Sand	Pole	SAMPLED			1		1																	0
33	44.295241	-89.184239	261	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	33	9	Sand	Pole	SAMPLED			1										1						1			0
34	44.294971	-89.184243	252	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	34	12	Sand	Pole	SAMPLED			1		1																	0
35	44.294700	-89.184246	239	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	35	14	Sand	Pole	SAMPLED			1		1																	0
36	44.294430	-89.184250	230	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	36	15	Sand	Pole	SAMPLED			1		1																	0
37	44.294160	-89.184254	215	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	37	13	Sand	Pole	SAMPLED			1		1																	0
38	44.293890	-89.184258	208	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	38	28		Rope	SAMPLED			0																			0
39	44.293620	-89.184261	191	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	39	15	Sand	Pole	SAMPLED			1		1																	0
40	44.296048	-89.183852	280	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	40	3	Sand	Pole	SAMPLED			2		1				2													0
41	44.295778	-89.183855	278	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	41	2	Sand	Pole	SAMPLED			3	1					2			1										0
42	44.295508	-89.183859	270	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	42	4	Sand	Pole	SAMPLED			1		1																	0
43	44.295238	-89.183863	262	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	43	9	Sand	Pole	SAMPLED			1		1																	0
44	44.294968	-89.183867	251	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	44	16		Rope	SAMPLED			1		1																	0
45	44.294698	-89.183870	240	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	45	13	Sand	Pole	SAMPLED			0																			0
46	44.294428	-89.183874	229	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	46	14	Sand	Pole	SAMPLED			1		1																	0
47	44.294158	-89.183878	216	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	47	13	Sand	Pole	SAMPLED			1		1																	0
48	44.293888	-89.183882	207	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	48	14	Sand	Pole	SAMPLED			1		1																	0
49	44.293618	-89.183885	192	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	49	13	Sand	Pole	SAMPLED			1		1																	0
50	44.293347	-89.183889	189	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	50	6	Sand	Pole	SAMPLED			1	1	2																	0
51	44.295775	-89.183479	279	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	51	0			SHALLOW																						0
52	44.295505	-89.183483	269	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	52	3	Sand	Pole	SAMPLED			1		1																	0
53	44.295235	-89.183487	263	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	53	7	Sand	Pole	SAMPLED			2		1														1	2		0
54	44.294965	-89.183491	250	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	54	17		Rope	SAMPLED			0																			0
55	44.294695	-89.183494	241	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	55	13	Sand	Pole	SAMPLED			1		1																	0
56	44.294425	-89.183498	228	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	56	12	Muck	Pole	SAMPLED			1		1																	0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum spicatum	Chara spp.	Elodea canadensis	Lemna minor	Myriophyllum sibiricum	Najas flexilis	Najas guadalupensis	Nitella spp.	Potamogeton foliosus	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton praelongus	Potamogeton strictifolius	Schoenoplectus acutus	Stuckenia pectinata	Vallisneria americana	Potamogeton strictifolius X P. zosteriformis	Zannichellia palustris
57	44.294155	-89.183502	217	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	57	14	Sand	Pole	SAMPLED			1		1																	0
58	44.293885	-89.183506	206	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	58	14	Sand	Pole	SAMPLED			1		1																	0
59	44.293615	-89.183509	193	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	59	12	Sand	Pole	SAMPLED			1		1																	0
60	44.293345	-89.183513	188	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	60	9	Sand	Pole	SAMPLED			1		1																	0
61	44.293075	-89.183517	180	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	61	5	Sand	Pole	SAMPLED			1		1				1													0
62	44.292805	-89.183521	179	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	62	5	Sand	Pole	SAMPLED			0																			0
63	44.292535	-89.183524	174	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	63	3	Muck	Pole	SAMPLED			1		1																	0
64	44.295503	-89.183107	268	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	64	2	Sand	Pole	SAMPLED			1		1																	0
65	44.295233	-89.183111	264	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	65	4	Sand	Pole	SAMPLED			1						1													0
66	44.294962	-89.183115	249	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	66	16	Sand	Pole	SAMPLED			0																			0
67	44.294692	-89.183118	242	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	67	11	Sand	Pole	SAMPLED			0																			0
68	44.294422	-89.183122	227	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	68	16		Rope	SAMPLED			1		1																	0
69	44.294152	-89.183126	218	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	69	15	Sand	Pole	SAMPLED			1		1																	0
70	44.293882	-89.183130	205	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	70	16	Sand	Pole	SAMPLED			1		1																	0
71	44.293612	-89.183133	194	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	71	13	Sand	Pole	SAMPLED			1		1																	0
72	44.293342	-89.183137	187	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	72	12	Sand	Pole	SAMPLED			1		1																	0
73	44.293072	-89.183141	181	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	73	12	Sand	Pole	SAMPLED			0																			0
74	44.292802	-89.183145	178	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	74	2	Sand	Pole	SAMPLED			1		1								1									0
75	44.292532	-89.183148	175	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	75	2	Sand	Pole	SAMPLED			1		1																	0
76	44.292262	-89.183152	173	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	76	5	Muck	Pole	SAMPLED			1																			1
77	44.295500	-89.182731	267	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	77	2	Sand	Pole	SAMPLED			1		1				1									1				0
78	44.295230	-89.182735	265	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	78	3	Sand	Pole	SAMPLED			1		1																	0
79	44.294960	-89.182739	248	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	79	9	Sand	Pole	SAMPLED			1		1																	0
80	44.294690	-89.182742	243	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	80	12	Sand	Pole	SAMPLED			0																			0
81	44.294420	-89.182746	226	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	81	17		Rope	SAMPLED			1		1																	0
82	44.294150	-89.182750	219	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	82	17		Rope	SAMPLED			0																			0
83	44.293880	-89.182754	204	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	83	17		Rope	SAMPLED			1		1																	0
84	44.293609	-89.182757	195	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	84	14	Sand	Pole	SAMPLED			1		1																	0
85	44.293339	-89.182761	186	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	85	10	Sand	Pole	SAMPLED			1		1																	0
86	44.293069	-89.182765	182	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	86	5	Sand	Pole	SAMPLED			1		1																	0
87	44.292799	-89.182769	177	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	87	2	Sand	Pole	SAMPLED			1		1																	0
88	44.292529	-89.182772	176	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	88	0			SHALLOW																							0
89	44.292259	-89.182776	172	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	89	2	Sand	Pole	SAMPLED			1		1																	0
90	44.291989	-89.182780	152	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	90	2	Sand	Pole	SAMPLED			1						1													0
91	44.291719	-89.182784	151	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	91	2	Sand	Pole	SAMPLED			1						1										1			0
92	44.289288	-89.182817	56	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	92	0			SHALLOW																							0
93	44.295227	-89.182359	266	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	93	1	Sand	Pole	SAMPLED			0																			0
94	44.294957	-89.182363	247	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	94	3	Sand	Pole	SAMPLED			1		1																	0
95	44.294687	-89.182366	244	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	95	5	Sand	Pole	SAMPLED			1																1			0
96	44.294417	-89.182370	225	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	96	17		Rope	SAMPLED			0																			0
97	44.294147	-89.182374	220	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	97	13	Sand	Pole	SAMPLED			0																			0
98	44.293877	-89.182378	203	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	98	13	Sand	Pole	SAMPLED			1		1																	0
99	44.293607	-89.182381	196	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	99	7	Sand	Pole	SAMPLED			1		1																	0
100	44.293337	-89.182385	185	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	100	5	Sand	Pole	SAMPLED			1		1								1						1			0
101	44.293067	-89.182389	183	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	101	3	Sand	Pole	SAMPLED			1		1																	0
102	44.291986	-89.182404	153	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	102	2	Sand	Pole	SAMPLED			0																			0
103	44.291716	-89.182408	150	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	103	4	Sand	Pole	SAMPLED			1						1										1			0
104	44.291446	-89.182411	133	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	104	4	Sand	Pole	SAMPLED			0																			0
105	44.291176	-89.182415	132	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	105	4	Sand	Pole	SAMPLED			1		1																	0
106	44.290906	-89.182419	113	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	106	9	Sand	Pole	SAMPLED			1						1	1									1			0
107	44.290636	-89.182423	112	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	107	5	Sand	Pole	SAMPLED			1		1														1			0
108	44.290366	-89.182426	93	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	108	4	Sand	Pole	SAMPLED			1		1																	0
109	44.290096	-89.182430	92	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	109	2	Sand	Pole	SAMPLED			1		1																	0
110	44.289826	-89.182434	74	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	110	2	Sand	Pole	SAMPLED			1		1								1									0
111	44.289556	-89.182437	73	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	111	2	Sand	Pole	SAMPLED			2	2					1			1						1				0
112	44.289286	-89.182441	55	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	112	3	Sand	Pole	SAMPLED			1		1					1									1	1			0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum spicatum	Chara spp.	Elodea canadensis	Lemna minor	Myriophyllum sibiricum	Najas flexilis	Najas guadalupensis	Nitella spp.	Potamogeton foliosus	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton praelongus	Potamogeton strictifolius	Schoenoplectus acutus	Stuckenia pectinata	Vallisneria americana	Potamogeton strictifolius X P. zosteriformis	Zannichellia palustris
113	44.289016	-89.182445	54	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	113	3	Sand	Pole	SAMPLED			1		1														1		0
114	44.294954	-89.181987	246	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	114	1	Sand	Pole	SAMPLED			1															1			0
115	44.294684	-89.181990	245	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	115	5	Sand	Pole	SAMPLED			2	1									2								0
116	44.294414	-89.181994	224	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	116	5	Sand	Pole	SAMPLED			0																		0
117	44.294144	-89.181998	221	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	117	14	Sand	Pole	SAMPLED			1		1																0
118	44.293874	-89.182002	202	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	118	10	Sand	Pole	SAMPLED			0																		0
119	44.293604	-89.182005	197	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	119	3	Sand	Pole	SAMPLED			1		1																0
120	44.293334	-89.182009	184	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	120	2	Sand	Pole	SAMPLED			0																		0
121	44.292254	-89.182024	171	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	121	3	Sand	Pole	SAMPLED			1		1																0
122	44.291984	-89.182028	154	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	122	4	Sand	Pole	SAMPLED			1		1				1												0
123	44.291714	-89.182032	149	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	123	4	Sand	Pole	SAMPLED			2	1	2													2			0
124	44.291444	-89.182035	134	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	124	5	Sand	Pole	SAMPLED			3	3										1					1		0
125	44.291174	-89.182039	131	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	125	14	Sand	Pole	SAMPLED			1		1																0
126	44.290903	-89.182043	114	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	126	13	Sand	Pole	SAMPLED			1		1																0
127	44.290633	-89.182047	111	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	127	10	Sand	Pole	SAMPLED			1		1																0
128	44.290363	-89.182050	94	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	128	14	Sand	Pole	SAMPLED			0																		0
129	44.290093	-89.182054	91	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	128	4	Sand	Pole	SAMPLED			0																		0
130	44.289823	-89.182058	75	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	130	4	Sand	Pole	SAMPLED			1		1				1												0
131	44.289553	-89.182062	72	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	191	5	Sand	Pole	SAMPLED			2						2										1		0
132	44.289283	-89.182065	57	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	132	11	Sand	Pole	SAMPLED			3	3															1		0
133	44.289013	-89.182069	53	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	133	10	Sand	Pole	SAMPLED			1	2						1								1	1		0
134	44.288743	-89.182073	37	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	134	4	Sand	Pole	SAMPLED			1										1						1		0
135	44.294412	-89.181618	223	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	135	2	Sand	Pole	SAMPLED			1						1			1									0
136	44.294142	-89.181622	222	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	136	6	Sand	Pole	SAMPLED			1	1					1										1		0
137	44.293871	-89.181626	201	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	137	12	Sand	Pole	SAMPLED			1		1																0
138	44.293601	-89.181629	198	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	138	2	Sand	Pole	SAMPLED			1		1																0
139	44.292251	-89.181648	170	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	139	3	Sand	Pole	SAMPLED			1		1																0
140	44.291981	-89.181652	155	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	140	3	Sand	Pole	SAMPLED			1						1												0
141	44.291711	-89.181656	148	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	141	4	Sand	Pole	SAMPLED			1		1				1												0
142	44.291441	-89.181659	135	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	142	5	Sand	Pole	SAMPLED			1	1	1																0
143	44.291171	-89.181663	130	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	143	9	Sand	Pole	SAMPLED			1					1													0
144	44.290901	-89.181667	115	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	144	12	Sand	Pole	SAMPLED			0																		0
145	44.290631	-89.181671	110	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	145	8	Sand	Pole	SAMPLED			2		1													1	2		0
146	44.290361	-89.181674	95	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	146	5	Sand	Pole	SAMPLED			1						1				1								0
147	44.290091	-89.181678	90	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	147	13	Sand	Pole	SAMPLED			1		1							1									0
148	44.289821	-89.181682	76	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	148	17		Rope	SAMPLED			1		1																0
149	44.289550	-89.181686	71	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	149	20		Rope	SAMPLED			1		1			1													0
150	44.289280	-89.181689	58	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	150	19		Rope	SAMPLED			1		1																0
151	44.289010	-89.181693	52	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	151	17		Rope	SAMPLED			1		1																0
152	44.288740	-89.181697	38	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	152	4	Sand	Pole	SAMPLED			1		1								1	1				1			0
153	44.293869	-89.181250	200	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	153	2	Sand	Pole	SAMPLED			1		1				1												0
154	44.293599	-89.181253	199	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	154	1	Muck	Pole	SAMPLED			2	1			2	1					1					1			0
155	44.292248	-89.181272	169	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	155	3	Sand	Pole	SAMPLED			1		1				1												0
156	44.291978	-89.181276	156	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	156	4	Sand	Pole	SAMPLED			1		1																0
157	44.291708	-89.181280	147	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	157	5	Sand	Pole	SAMPLED			1		1																0
158	44.291438	-89.181283	136	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	158	27		Rope	SAMPLED			1		1																0
159	44.291168	-89.181287	129	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	159	15	Sand	Pole	SAMPLED			2	1						1									2		0
160	44.290898	-89.181291	116	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	160	10	Sand	Pole	SAMPLED			1											1					1		0
161	44.290628	-89.181295	109	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	161	5	Sand	Pole	SAMPLED			1		1																0
162	44.290358	-89.181298	96	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	162	5	Sand	Pole	SAMPLED			1		1																0
163	44.290088	-89.181302	89	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	163	14	Sand	Pole	SAMPLED			2		1							2									0
164	44.289818	-89.181306	77	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	164	18		Rope	SAMPLED			2		2																0
165	44.289548	-89.181310	70	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	165	18		Rope	SAMPLED			2		2																0
166	44.289278	-89.181313	59	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	166	18		Rope	SAMPLED			1		1																0
167	44.289008	-89.181317	51	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	167	17		Rope	SAMPLED			1		1																0
168	44.288738	-89.181321	39	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	168	5	Sand	Pole	SAMPLED			1		1																0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum spicatum	Chara spp.	Elodea canadensis	Lemna minor	Myriophyllum sibiricum	Najas flexilis	Najas guadalupensis	Nitella spp.	Potamogeton foliosus	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton praelongus	Potamogeton strictifolius	Schoenoplectus acutus	Stuckenia pectinata	Vallisneria americana	Potamogeton strictifolius X P. zosteriformis	Zannichellia palustris
169	44.292516	-89.180892	166	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	169	2	Sand	Pole	SAMPLED			1		1																	0
170	44.292246	-89.180896	168	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	170	5	Sand	Pole	SAMPLED			1		1																	0
171	44.291976	-89.180900	157	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	171	12	Sand	Pole	SAMPLED			2	2														1	1	1	0
172	44.291706	-89.180904	146	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	172	24		Rope	SAMPLED			0																		0
173	44.291436	-89.180907	137	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	173	28		Rope	SAMPLED			0																		0
174	44.291165	-89.180911	128	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	174	34			DEEP																					0
175	44.290895	-89.180915	117	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	175	27		Rope	SAMPLED			0																		0
176	44.290625	-89.180919	108	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	176	17		Rope	SAMPLED			1		1																0
177	44.290355	-89.180922	97	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	177	20		Rope	SAMPLED			0																		0
178	44.290085	-89.180926	88	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	178	13	Sand	Pole	SAMPLED			2	2																	0
179	44.289815	-89.180930	78	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	179	14	Sand	Pole	SAMPLED			1		1																0
180	44.289545	-89.180934	69	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	180	17		Rope	SAMPLED			1		1																0
181	44.289275	-89.180937	60	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	181	28		Rope	SAMPLED			1		1																0
182	44.289005	-89.180941	50	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	182	22		Rope	SAMPLED			1		1																0
183	44.288735	-89.180945	40	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	183	9	Sand	Pole	SAMPLED			1		1				1												0
184	44.288465	-89.180949	36	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	184	4	Sand	Pole	SAMPLED			2	1														1			1
185	44.292513	-89.180516	165	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	185	2	Sand	Pole	SAMPLED			1		1																0
186	44.292243	-89.180520	167	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	186	5	Sand	Pole	SAMPLED			1		1																0
187	44.291973	-89.180524	158	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	187	13	Sand	Pole	SAMPLED			2	2																	0
188	44.291703	-89.180528	145	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	188	23		Rope	SAMPLED			0																		0
189	44.291433	-89.180531	138	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	189	31			DEEP																					0
190	44.291163	-89.180535	127	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	190	34			DEEP																					0
191	44.290893	-89.180539	118	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	191	33			DEEP																					0
192	44.290623	-89.180543	107	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	192	32			DEEP																					0
193	44.290353	-89.180546	98	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	193	29		Rope	SAMPLED			0																		0
194	44.290082	-89.180550	87	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	184	28		Rope	SAMPLED			0																		0
195	44.289812	-89.180554	79	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	195	27		Rope	SAMPLED			0																		0
196	44.289542	-89.180558	68	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	196	31			DEEP																					0
197	44.289272	-89.180561	61	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	197	37			DEEP																					0
198	44.289002	-89.180565	49	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	198	28		Rope	SAMPLED			1		1						1										0
199	44.288732	-89.180569	41	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	199	21		Rope	SAMPLED			1		1																0
200	44.288462	-89.180573	35	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	200	13	Sand	Pole	SAMPLED			1		1																0
201	44.288192	-89.180576	24	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	201	5	Sand	Pole	SAMPLED			1		1				1										1		0
202	44.287922	-89.180580	23	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	202	5	Sand	Pole	SAMPLED			1		1				1				1								0
203	44.287652	-89.180584	11	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	203	5	Sand	Pole	SAMPLED			1			1							1								0
204	44.292510	-89.180140	164	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	204	1	Sand	Pole	SAMPLED			0																		0
205	44.292240	-89.180144	163	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	205	3	Sand	Pole	SAMPLED			1		1								1						1		0
206	44.291970	-89.180148	159	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	206	4	Sand	Pole	SAMPLED			0																		0
207	44.291700	-89.180152	144	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	207	12	Sand	Pole	SAMPLED			1					1					1						1		0
208	44.291430	-89.180155	139	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	208	15	Sand	Pole	SAMPLED			1		1					1											0
209	44.291160	-89.180159	126	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	209	32			DEEP																					0
210	44.290890	-89.180163	119	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	210	34			DEEP																					0
211	44.290620	-89.180167	106	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	211	32			DEEP																					0
212	44.290350	-89.180170	99	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	212	24		Rope	SAMPLED			1		1																0
213	44.29008	-89.1801741	86	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	213	14	Sand	Pole	SAMPLED			1		1																0
214	44.28981	-89.1801779	80	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	214	24		Rope	SAMPLED			2		2																0
215	44.28954	-89.1801816	67	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	215	31			DEEP																					0
216	44.28927	-89.1801854	62	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	216	32			DEEP																					0
217	44.289	-89.1801891	48	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	217	33			DEEP																					0
218	44.288729	-89.1801929	42	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	218	29		Rope	SAMPLED			0																		0
219	44.288459	-89.1801966	34	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	219	20		Rope	SAMPLED			1		1																0
220	44.288189	-89.1802004	25	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	220	19		Rope	SAMPLED			1		1																0
221	44.287919	-89.1802041	22	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	221	17		Rope	SAMPLED			1		1																0
222	44.287649	-89.1802079	12	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	222	18		Rope	SAMPLED			1		1																0
223	44.287379	-89.1802117	10	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	223	9	Sand	Pole	SAMPLED			2									1		1		1					0
224	44.292238	-89.179768	162	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	224	2	Sand	Pole	SAMPLED			1		1								1								0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum spicatum	Chara spp.	Elodea canadensis	Lemna minor	Myriophyllum sibiricum	Najas flexilis	Najas guadalupensis	Nitella spp.	Potamogeton foliosus	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton praelongus	Potamogeton strictifolius	Schoenoplectus acutus	Stuckenia pectinata	Vallisneria americana	Potamogeton strictifolius X P. zosteriformis	Zannichellia palustris
225	44.291968	-89.1797718	160	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	225	3	Sand	Pole	SAMPLED			1		1																	0
226	44.291697	-89.1797756	143	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	226	4	Sand	Pole	SAMPLED			1		1				1													0
227	44.291427	-89.1797793	140	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	227	5	Sand	Pole	SAMPLED			1		1								1						1			0
228	44.291157	-89.1797831	125	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	228	21		Rope	SAMPLED			1		1																	0
229	44.290887	-89.1797868	120	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	229	23		Rope	SAMPLED			1		1																	0
230	44.290617	-89.1797906	105	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	230	15	Sand	Pole	SAMPLED			1		1														1			0
231	44.290347	-89.1797944	100	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	231	9	Sand	Pole	SAMPLED			1		1																	0
232	44.290077	-89.1797981	85	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	232	12	Sand	Pole	SAMPLED			1		1																	0
233	44.289807	-89.1798019	81	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	233	28		Rope	SAMPLED			0																			0
234	44.289537	-89.1798056	66	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	234	29		Rope	SAMPLED			0																			0
235	44.289267	-89.1798094	63	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	235	28		Rope	SAMPLED			0																			0
236	44.288997	-89.1798131	47	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	236	28		Rope	SAMPLED			0																			0
237	44.288727	-89.1798169	43	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	237	32			DEEP																							0
238	44.288457	-89.1798207	33	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	238	32		Rope	SAMPLED			0																			0
239	44.288187	-89.1798244	26	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	239	34		Rope	SAMPLED			0																			0
240	44.287917	-89.1798282	21	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	240	17		Rope	SAMPLED			1		1																	0
241	44.287647	-89.1798319	13	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	241	16		Rope	SAMPLED			1							1												0
242	44.287376	-89.1798357	9	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	242	17		Rope	SAMPLED			1		1																	0
243	44.287106	-89.1798395	1	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	243	4	Sand	Pole	SAMPLED			1		1				1										1			0
244	44.291965	-89.1793958	161	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	244	2	Sand	Pole	SAMPLED			1		1				1													0
245	44.291695	-89.1793996	142	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	245	3	Sand	Pole	SAMPLED			1		1				1				1						1			0
246	44.291425	-89.1794033	141	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	247	4	Sand	Pole	SAMPLED			1		1				1									1	1			0
247	44.291155	-89.1794071	124	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	247	8	Sand	Pole	SAMPLED			1		1				1										1			0
248	44.290885	-89.1794108	121	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	248	7	Sand	Pole	SAMPLED			1		1																	0
249	44.290615	-89.1794146	104	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	249	12	Sand	Pole	SAMPLED			2	1									1						1			0
250	44.290344	-89.1794184	101	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	250	7	Sand	Pole	SAMPLED			1		1																	0
251	44.290074	-89.1794221	84	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	251	11	Sand	Pole	SAMPLED			1		1														1			0
252	44.289804	-89.1794259	82	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	252	13	Sand	Pole	SAMPLED			1		1																	0
253	44.289534	-89.1794296	65	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	253	15	Sand	Pole	SAMPLED			1		1														1	1		0
254	44.289264	-89.1794334	64	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	154	5	Sand	Pole	SAMPLED			1		1				1													0
255	44.288994	-89.1794372	45	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	255	10	Sand	Pole	SAMPLED			1		1				1													0
256	44.288724	-89.1794409	44	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	256	15	Sand	Pole	SAMPLED			2						2										1			0
257	44.288454	-89.1794447	32	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	257	27		Rope	SAMPLED			0																			0
258	44.288184	-89.1794484	27	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	258	30		Rope	SAMPLED			1		1																	0
259	44.287914	-89.1794522	20	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	259	17		Rope	SAMPLED			1		1																	0
260	44.287644	-89.179456	14	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	260	11	Sand	Pole	SAMPLED			1		1																	0
261	44.287374	-89.1794597	8	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	261	8	Sand	Pole	SAMPLED			1		1				1										1			0
262	44.287104	-89.1794635	2	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	262	11	Sand	Pole	SAMPLED			1		1																	0
263	44.291152	-89.1790311	123	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	263	2	Sand	Pole	SAMPLED			1		1																	0
264	44.290882	-89.1790349	122	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	264	3	Sand	Pole	SAMPLED			1		1				1				1									0
265	44.290612	-89.1790386	103	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	265	4	Sand	Pole	SAMPLED			2						1				2						1			0
266	44.290342	-89.1790424	102	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	266	3	Sand	Pole	SAMPLED			1		1								1									0
267	44.290072	-89.1790461	83	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	267	3	Sand	Pole	SAMPLED			1										1									0
268	44.288721	-89.179065	46	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	268	0			TERRESTRIAL																							0
269	44.288451	-89.1790687	31	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	269	6	Sand	Pole	SAMPLED			2		1				2													0
270	44.288181	-89.1790725	28	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	270	14	Sand	Pole	SAMPLED			1		1														1			0
271	44.287911	-89.1790762	19	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	271	16	Sand	Pole	SAMPLED			3	1								3										0
272	44.287641	-89.17908	15	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	272	9	Sand	Pole	SAMPLED			1		1														1			0
273	44.287371	-89.1790838	7	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	273	5	Sand	Pole	SAMPLED			1						1													0
274	44.287101	-89.1790875	3	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	274	5	Sand	Pole	SAMPLED			2											1					1	1			0
275	44.288449	-89.1786927	30	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	275	2	Sand	Pole	SAMPLED			1						1													0
276	44.288179	-89.1786965	29	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	276	3	Sand	Pole	SAMPLED			1		1				1				1									0
277	44.287908	-89.1787003	18	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	277	5	Sand	Pole	SAMPLED			1		1				1				1						1			0
278	44.287638	-89.178704	16	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	278	3	Sand	Pole	SAMPLED			1		1				1				1						1			0
279	44.287368	-89.1787078	6	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	279	3	Sand	Pole	SAMPLED			1		1																	0
280	44.287098	-89.1787116	4	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	380	2	Sand	Pole	SAMPLED			1		1																	0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum spicatum	Chara spp.	Elodea canadensis	Lemna minor	Myriophyllum sibiricum	Najas flexilis	Najas guadalupensis	Nitella spp.	Potamogeton foliosus	Potamogeton gramineus	Potamogeton illinoensis	Potamogeton praelongus	Potamogeton strictifolius	Schoenoplectus acutus	Stuckenia pectinata	Vallisneria americana	Potamogeton strictifolius X P. zosteriformis	Zannichellia palustris
281	44.287636	-89.1783281	17	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	281	1	Sand	Pole	SAMPLED			0																		0
282	44.287366	-89.1783318	5	Stratton Lake	Waupaca	7/13/2017	BTB, LJS & NLS	282	1	Sand	Pole	SAMPLED			1														1				0

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APPENDIX F

Stratton Lake 2016 Spring Netting Summary Report

2016 Spring Netting (SNII) Summary Report

Stratton Lake (WBIC 259600)

Waupaca County

Introduction and Survey Objectives

In 2016, the Department of Natural Resources conducted a three night fyke netting survey of Stratton Lake in order to provide insight and direction for the future fisheries management of this water body. Primary sampling objectives of this survey are to characterize species composition, relative abundance and size structure. The following report is a brief summary of the activities conducted, general status of fish populations and future management options.

Acres: 63 Shoreline Miles: 2.15 Maximum Depth (feet): 42
Lake Type: Spring Public Access: 1 public access
Regulations: 25 Panfish may be kept, but only 10 of any one species, all other species follow Statewide Default Regulations.

WISCONSIN DNR CONTACT INFO.

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Shawano, WI 54166

Elliot Hoffman Phone: 715-526-4231
E-mail: elliot.hoffman@wisconsin.gov

Survey Information						
Site location	**Survey Dates**	**Water Temp. (F)**	**Target Species**	**No. of Nets**	**Gear**	**Net nights**
Stratton Lake	4/20/2016 - 4/23/2016	56 - 57	Panfish	7	Fyke Net	10

Survey Method

- Stratton Lake was sampled according to spring netting (SNII) protocols as outlined in the statewide lake assessment plan. In this particular survey we were collecting panfish data for the special panfish regulations that have gone into effect for roughly 100 lakes throughout Wisconsin. Stratton Lake has a regulation of 25 panfish may be kept but only 10 of any one species.
- Fyke nets were deployed in areas of the lake that appeared suitable for panfish species. All fish captured were identified to species and measured for length. A subsample of fish were weighed and age structures collected for age and growth analysis.
- Fish metrics used to describe fish populations include proportional stock density, catch per effort, length frequency distribution and mean age at length.

Fish Metric Descriptions
PSD, CPUE, LFD and Growth

Proportional Stock Density (PSD) is an index used to describe size structure of fish. It is calculated by dividing he number of quality size fish by the number of stock size fish for a given species. PSD values in the 40 to 60 percent range generally describe a balanced fish population.

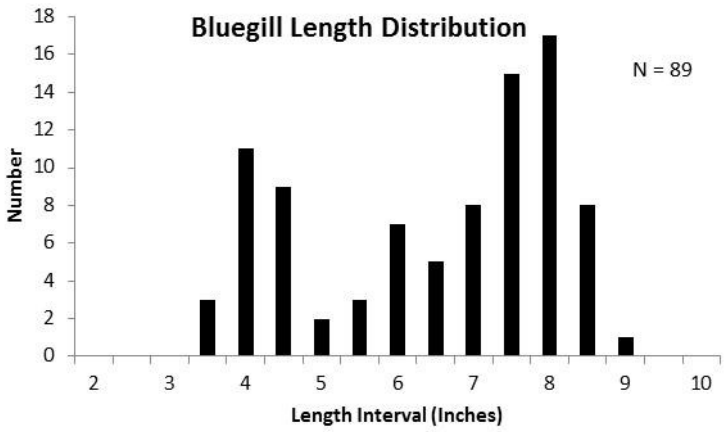
Catch per unit effort (CPUE) is an index used to measure fish population relative abundance which simply refers to the number of fish captured per unit of distance or time. For netting surveys we typically quantify CPUE by the number and size of fish per net night. CPUE indexes are compared to statewide data by percentiles and within lake trends. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

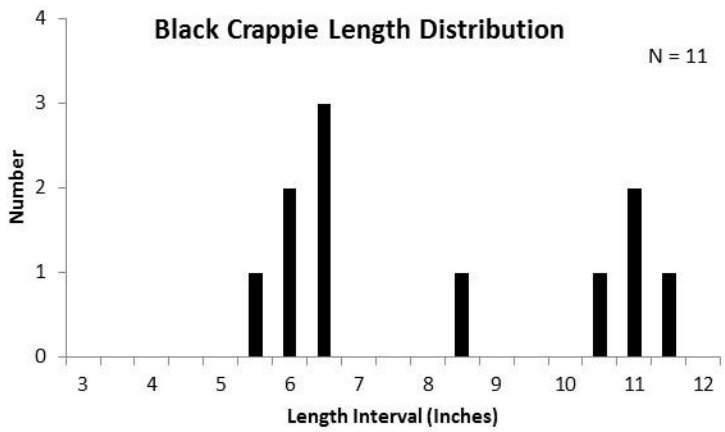
Length frequency distribution (LFD) is a graphical representation of the percentage of fish captured by one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean Age at Length is an index used to assess fish growth. Growth structures (otoliths, spines, or scales) are collected from a specified length bin of interest (e.g. 7.0-7.5 inches for bluegill). Mean age is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

Size Structure Metrics									
Species	**Total**	**Average Length (inches)**	**Length Range (inches)**	**Stock and Quality Size (inches)**	**Stock No**	**Quality No**	**PSD**	**Percentile Rank**	**Size Rating**
BLUEGILL	89	6.7	3.5 - 9.1	3.0 and 6.0	89	61	69%	65th	Moderate
BLACK CRAPPIE	11	8.3	5.8 - 11.7	5.0 and 8.0	11	5	45%	36th	Moderate - Low
LARGEMOUTH BASS	1	13.3	-	8.0 and 12.0	1	1	-	-	-
NORTHERN PIKE	2	20.7	13.2 - 28.2	14.0 and 21.0	1	1	-	-	-

Abundance Metrics			
Species	**CPUE Total (no. per net night)**	**Percentile Rank**	**Overall Abundance Rating**
BLUEGILL	8.9	47th	Moderate
BLACK CRAPPIE	1.1	31st	Moderate - Low
LARGEMOUTH BASS	0.1	25th	Low
NORTHERN PIKE	0.2	11th	Low





Growth Metrics						
Species	**Total (N)**	**Length Bin (inches)**	**Mean Age (years)**	**Age Range (years)**	**Percentile Rank**	**Growth Rating**
BLUEGILL	8	6.0	4.8	4 - 6	53rd	Moderate
BLUEGILL	4	7.0	5.5	4 - 6	52nd	Moderate
BLACK CRAPPIE	3	11.0	5	5	70th	Moderate - Fast

Summary

- A total of 166 fish in 9 species were collected during our survey. The most frequently encountered and common species were bluegill (89), green sunfish (19), black crappie (11), and rock bass (37).
- All fish captured were native species.
- Other fish species sampled in low abundance included green sunfish hybrid (1), largemouth bass (1), northern pike (2), pumpkinseed (2), and white sucker (4).
- Gamefish were sampled in low numbers, many largemouth bass were observed swimming in Stratton Lake. Electrofishing would be a more appropriate way to sample largemouth bass.
- Moderate numbers of panfish were sampled. A lack of suitable habitat made sampling difficult.
- Panfish populations were mainly comprised of bluegill, black crappie, rock bass, and green sunfish. Bluegill were found in moderate density and showed above average size structure with 69% of our catch greater than 6.0 inches and 55% greater than 7.0 inches. Black crappie were found in moderate levels of abundance and showed average size with 45% of our catch greater than 8.0 inches. Black crappie growth was average when compared to statewide data.
- Stratton Lake has been know to support a black crappie population. Clear water and lack of habitat made sampling difficult. Double-ended fyke nets were set in deeper water, which resulted in some success of capturing black crappie.

Management Options

This survey was primarily intended to assess panfish populations. Other species are captured but different survey techniques are typically used to better assess their population metrics. Therefore, management recommendations are focused on bluegill and black crappie.

Panfish

- Panfish size structure was found at moderate levels.
- Management Objective: Maintain bluegill size structure and relative abundance at moderate levels.
- Management Action: A special panfish regulation was put in place in spring 2016 to protect some of the larger individuals from harvest and maintain the size structure of the panfish populations.

Other Management Objectives:

- Currently, Stratton Lake is on an 8 year sampling rotation. The DNR sampled Stratton Lake for the experimental panfish regulations that were put into place in the spring of 2016. In 4 - 5 years we will conduct another survey to assess the efficacy of the panfish regulation put into place.
- Fish habitat in Stratton Lake is very minimal. Bottom sediments consist of marl, and the water is clear. The lake would likely benefit from habitat and shoreline restoration projects, such as fish sticks and tree drops.