A

APPENDIX A

Public Participation Materials

Lake George
Management Planning Project
Kick-Off Meeting
June 30, 2012 – 1:00 PM
Pelican Town Hall
4093 County Road P, Rhinelander, WI

Aquatic ecologist, Dan Cibulka, speaks to a lake group in Oneida County about their lake management plan. Public participation will be an integral part of the Lake George Management Planning Project.

The Lake George Lake Association has received a grant totaling over $23,000 from the Wisconsin Department of Natural Resources to partially fund the completion of a comprehensive management plan for Lake George. The design for the planning project has been finalized and approved by the WDNR and includes two primary objectives: 1) the completion of in-depth studies including multiple plant surveys, water quality sampling, and watershed investigations; and 2) the completion of a realistic management plan for the lake and its watershed. Most of the studies will be completed during the spring, summer and fall of 2012. The tasks associated with the analysis of the data will be completed during the following fall and winter.

The project will also incorporate opportunities for stakeholder education and input, which are both very important components of all lake management planning efforts. The first opportunity for your participation in the process will be at the Project Kick-off Meeting to be held on Saturday, June 30th at 1:00 PM at the Pelican Town Hall (4093 County Road P – the same building as the volunteer fire department station house). In addition to this meeting as well as others, an opportunity for your input will be through a written stakeholder survey. This survey will be developed by Onterra, the WDNR, and a lake planning committee consisting of Lake George Lake Association members. Once it is finalized, the written survey will be distributed to association members and waterfront property owners to collect their ideas and opinions on the management of Lake George.

Onterra, LLC, a lake management planning firm out of De Pere, has been hired to lead the project. During the meeting, Dan Cibulka, an aquatic ecologist with Onterra, LLC, will describe the project and its importance. The presentation will include a description of the project's components, a quick course on general lake ecology, and a breakdown of how the Association's Planning Committee will be involved in the plan's completion. So, please plan on attending the meeting and do not hesitate to ask questions or make comments.

Lake George Management Planning Project

November 2012 Update
Submitted by: Dan Cibulka, Onterra, LLC

With the help of a Lake Management Planning Grant totaling over $23,000 through the Wisconsin Department of Natural Resources (WDNR), a project is underway to create a lake management plan for Lake George. The lake management plan will contain historic and current data from the lake as well as provide guidance for its management by integrating stakeholder perceptions and goals with what is ecologically beneficial for the lake.

As described further below, numerous field studies were carried out upon Lake George during 2012. Because of the wealth of data that was collected just within the past few months, much of the data analysis has yet to be completed. This update intends to bring the Lake George Lake Association (LGLA) up-to-speed on the scientific studies that have occurred, provide some initial observations on the ecology of Lake George, and project a rough timeline for the remaining actions that will be taken as a part of this planning project.

In April of 2012, Onterra staff had their first glimpse of Lake George with a water quality sampling visit. The lake is sampled during the spring and fall to analyze water chemistry during the lake's mixing, or *turnover* events. When a lake turns over, many physical and chemical constituents (temperature, dissolved oxygen, nutrients, etc.) are evenly mixed within the water column. This gives ecologists an idea of what the nutrient balance is within the lake, and supports modeling of the lake's watershed. During the summer months, water quality samples were collected by LGLA volunteers through the Citizen Lake Monitoring Network (CLMN). These results help ecologists understand how the physical and chemical constituents behave when the lake *stratifies*. Stratification is when a lake develops two separate layers of water – a warmer, upper layer and a cold lower layer of water. Water samples targeting the larval stage of the invasive zebra mussel were also taken by Onterra staff and sent to the WDNR for analysis as part of efforts to monitor the lake for this invasive species.

All aquatic plant surveys were conducted as scheduled, first by visiting the lake on May 31, 2012 to complete the curly-leaf pondweed (CLP) survey. This survey's purpose is to search the lake for CLP, and is scheduled early in the summer to coincide with this species peak growth. On June 28th, two crews, (four staff members) visited Lake George to complete the point-intercept survey. This is a grid-based survey designed to sample plants within the lake. Additionally, it provides an opportunity to search the lake for another Wisconsin invasive plant – Eurasian water milfoil. A third aquatic plant survey, the community mapping survey, was completed on August 9th. The purpose of this survey is to map the floating-leaf and emergent species that are found within the lake and are typically underestimated in the point intercept survey.

During all surveys, no aquatic invasive species were observed. Many interesting native species were observed however, including one species that is listed as being of 'special concern' in Wisconsin due to its rarity and vulnerability to environmental degradation – Vasey's pondweed (*Potamogeton vaseyi*). The majority of aquatic plants were found growing in up to eight feet of water, while one species of macroalgae (*Nitella sp.*, or a member of the Stonewort family) was found at a depth of 11 feet. Wild celery, a submerged aquatic plant with ribbon-shaped floating leaves, was the most common plant encountered during the point-intercept survey (Figure 1).

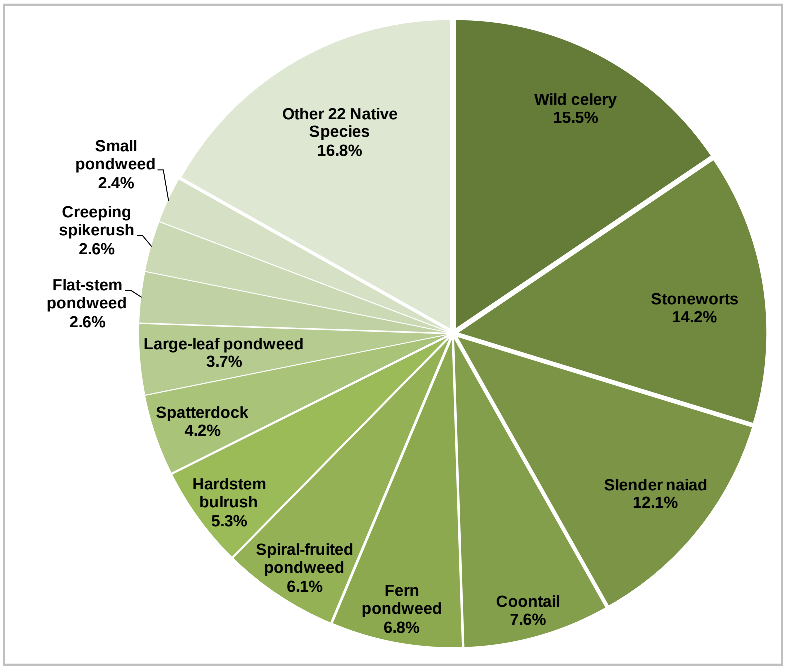

Figure 1. Lake George aquatic plant relative frequency of occurrence. Created using data from a June 2012 aquatic plant point-intercept survey.

On October 4th, a crew visited Lake George to conduct a shoreline assessment survey. During this survey, the lake's shoreline is examined and classified into one of five development categories, based upon its level of human disturbance. The results of this survey may be used to prioritize areas for restoration, if the LGLA wishes to pursue this.

In addition to collected ecological data from Lake George, sociological data was collected from the people who use and care for Lake George. This was approached in the form of a stakeholder survey, which was developed by Onterra staff and a planning committee comprised of LGLA volunteers. This survey was distributed in August of 2012 to all riparian property owners, both association members and non-members. Within 2-3 weeks after dispersal, 60% of these surveys were completed and returned, which is a great return rate for a survey of this type. Joan May kindly tabulated data from over 100 surveys and provided this to Onterra for analysis.

In the coming months, Onterra will be sorting through the immense amount of water quality, aquatic plant, shoreline assessment and stakeholder survey data that has been collected. Additionally, we will be looking at the watershed surrounding the lake and using a modeling program to estimate the amount of nutrients the lake receives on an annual basis. We will also be working with the WDNR to collect data and report upon the management of the fishery.

In summary, all project components are on schedule. The Lake George Planning Committee and Dan Cibulka, an aquatic ecologist with Onterra, have scheduled several planning meetings in February and March of 2013. At these meetings, the project results will be presented and discussed, and ideas brainstormed for the creation of management goals and actions the LGLA will pursue to manage their lake in both a recreationally enjoyable and ecologically sound manner.

Presentation Outline

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

Onterra LLC
Lake Management Planning

Onterra, LLC

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

Onterra LLC
Lake Management Planning

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.

Onterra LLC
Lake Management Planning

Elements of an Effective Lake Management Planning Project

Data and Information Gathering

Environmental & Sociological

Planning Process

Brings it all together

Onterra, LLC
Lake Management Planning

Data and information gathering

- Study Components
  - Water Quality Analysis
  - Watershed Assessment
  - Aquatic Plant Surveys
  - Fisheries Data Integration
  - Shoreline Assessment
  - Stakeholder Survey

Onterra, LLC
Lake Management Planning

Water Quality Analysis

- General water chemistry (current & historic)
  - Citizens Lake Monitoring Network
- Nutrient analysis
  - Lake trophic state (Eutrophication)
  - Limiting plant nutrient
- Supporting data for watershed modeling

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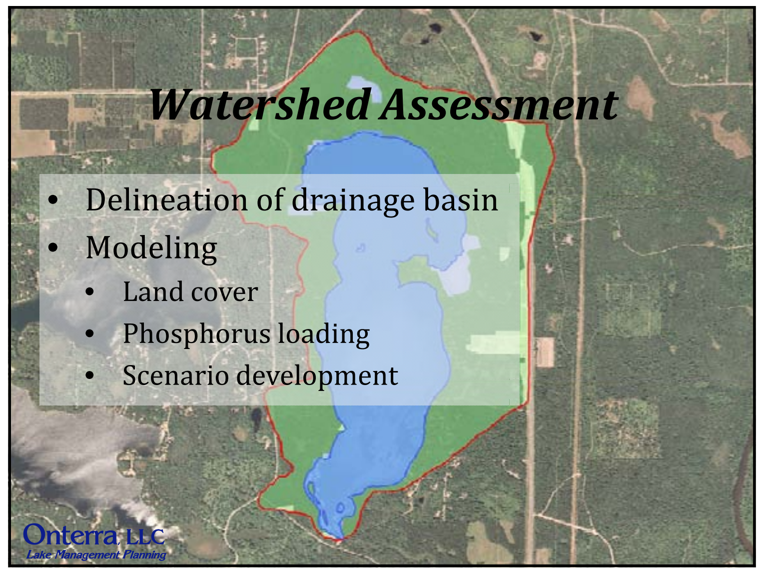
Lake Management Planning



Aquatic Plant Surveys

- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Early-season AIS Survey
  - Point-intercept survey
  - Aquatic plant community mapping
  - Volunteer survey findings

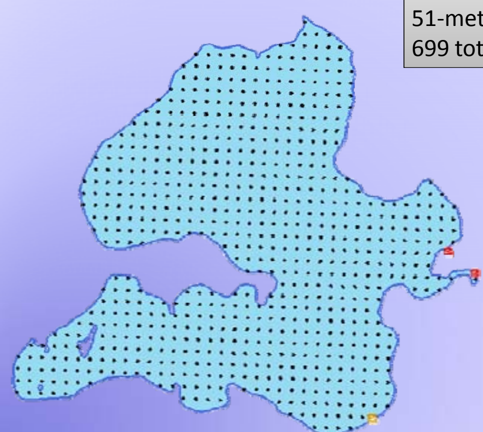
Onterra LLC
Lake Management Planning

Non-native Aquatic Plants

Curly-leaf Pondweed

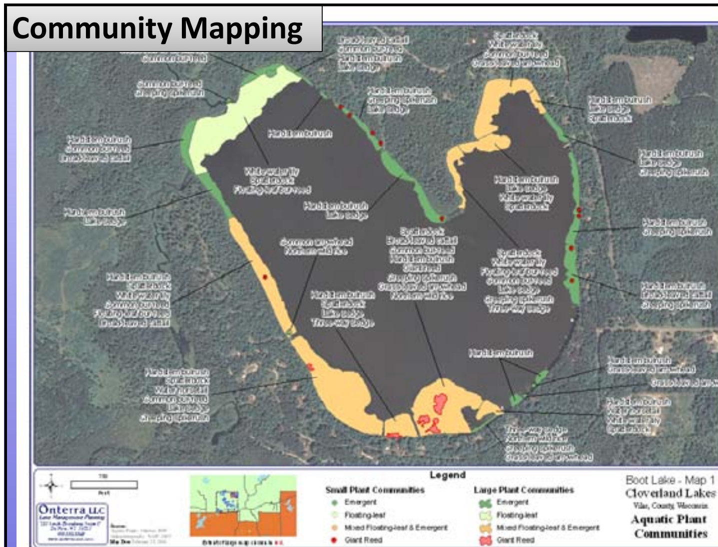
Onterra LLC
Lake Management Planning

Lake George
Point-intercept survey
51-meter resolution
699 total points



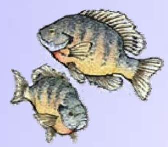
Onterra LLC
Lake Management Planning

Community Mapping



Fisheries Data Integration

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



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Lake Management Planning

Stakeholder Survey

- Standard survey used as base
  - Planning committee potentially develops additional questions and options
  - Must not lead respondent to specific answer through a "loaded" question
- Survey must be approved by WDNR

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Lake Management Planning

Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- It does not look at lake shoreline on a property-by-property basis.
- Assessment ranks shoreland area from shoreline back 35 feet

Urbanized

Range →

Natural

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Lake Management Planning

Planning Process

Planning Committee Meetings

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

↓

Implementation Plan

Onterra, LLC
Lake Management Planning

WDNR Grant and In-kind Hours

- $23,000 in grant assistance from the Department of Natural Resources
- In-kind (volunteer) hours needed:
  - Kick-off Meeting attendance
  - Wrap-up Meeting attendance
  - Clean Boats / Clean Waters Inspections (2 seasons)
  - AIS Monitoring (2 seasons)
  - Planning Committee responsibilities (project administration, survey development, meetings, etc.)

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Lake Management Planning

WDNR Grant and In-kind Hours

- Clean Boats / Clean Waters
  - Volunteer program initiated to take an aggressive approach to combating the spread of AIS
  - Signs of success:
    - 67% of lakes with public access are free of Eurasian water-milfoil and zebra mussels
    - 95% are aware of laws pertaining to AIS (2011)
    - Collaborations and partnerships developing for lake protection

Onterra LLC
Lake Management Planning

Thank You

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

Wisconsin Lakes Partnership
UW Extension
Wisconsin Dept. of Natural Resources

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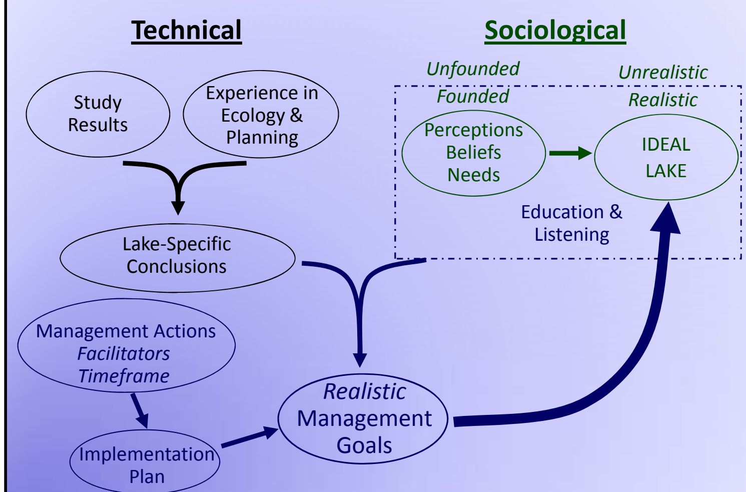

Onterra LLC
Lake Management Planning

Presentation Outline

- **Lake Management Planning Project Overview**
- **Study Results**
  - Water Quality
  - Watershed
  - Shoreland
  - Aquatic Plants
  - Fishery

  Stakeholder Survey
- **"Big Picture"**

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Lake Management Planning

Study and Plan Goals

- Collect & Analyze Data
- Construct Long-Term & Useable Plan

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Lake Management Planning

Wisconsin Ecoregions

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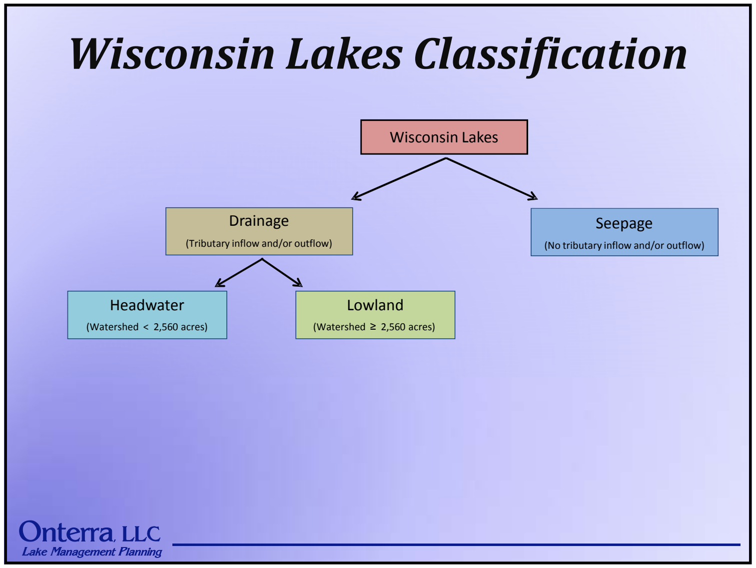
Lake Management Planning


Wisconsin Lakes Classification
Wisconsin Lakes
Drainage
(Tributary inflow and/or outflow)
Seepage
(No tributary inflow and/or outflow)
Headwater
(Watershed < 2,560 acres)
Lowland
(Watershed ≥ 2,560 acres)
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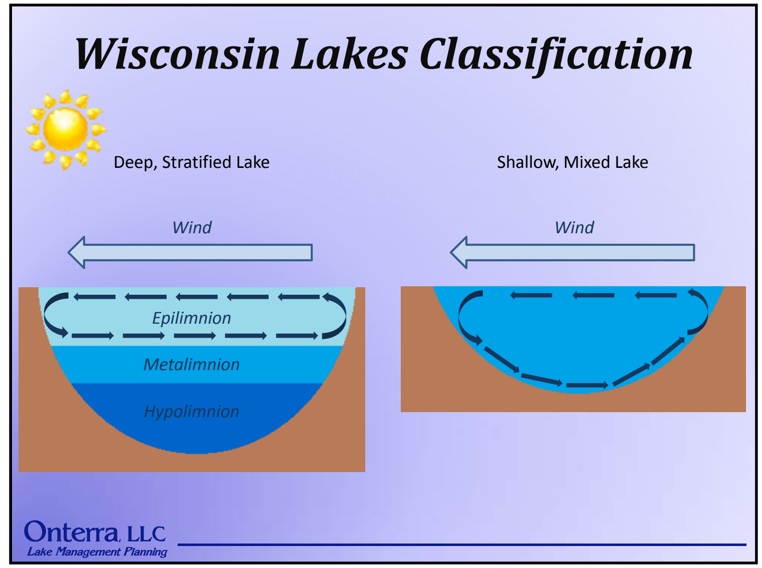
Lake Management Planning


Wisconsin Lakes Classification
Deep, Stratified Lake
Shallow, Mixed Lake
Wind
Wind
Epilimnion
Metalimnion
Hypolimnion
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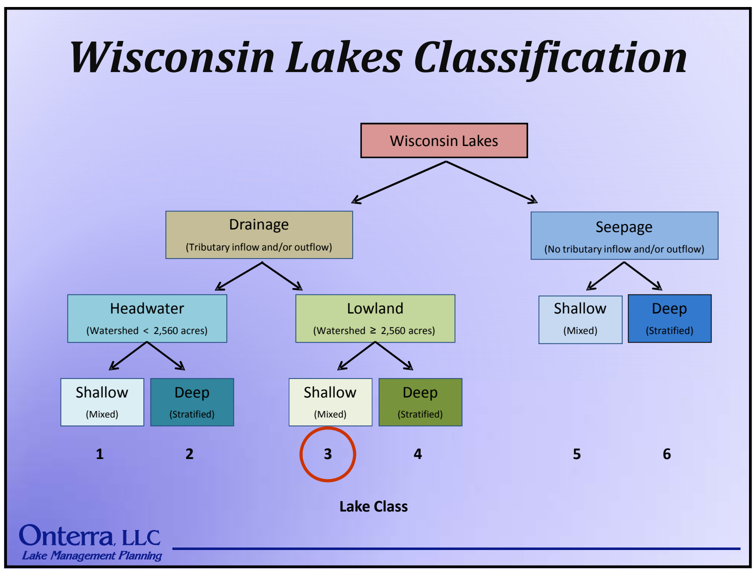
Wisconsin Lakes Classification
Wisconsin Lakes
Drainage
(Tributary inflow and/or outflow)
Seepage
(No tributary inflow and/or outflow)
Headwater
(Watershed < 2,560 acres)
Lowland
(Watershed ≥ 2,560 acres)
Shallow
(Mixed)
Deep
(Stratified)
Shallow
(Mixed)
Deep
(Stratified)
Shallow
(Mixed)
Deep
(Stratified)
1
2
3
4
5
6
Lake Class
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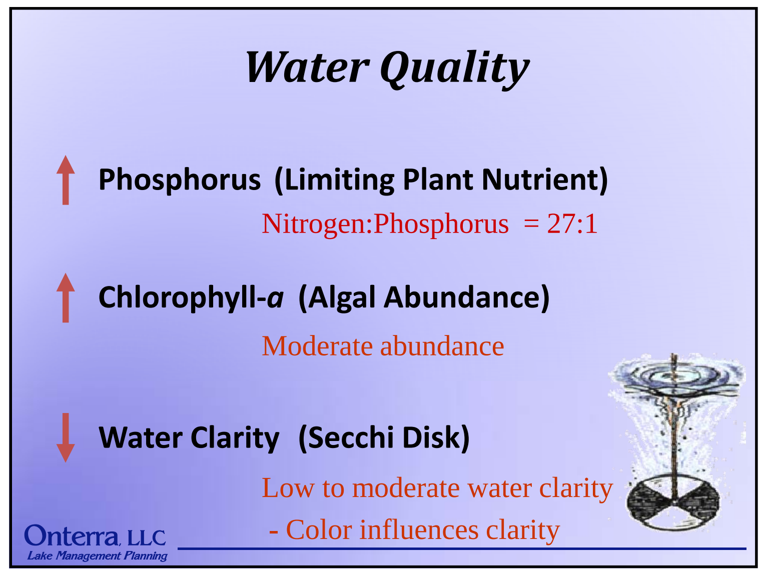
Lake Management Planning


Water Quality
Phosphorus (Limiting Plant Nutrient)
Nitrogen:Phosphorus = 27:1
Chlorophyll-a (Algal Abundance)
Moderate abundance
Water Clarity (Secchi Disk)
Low to moderate water clarity
- Color influences clarity
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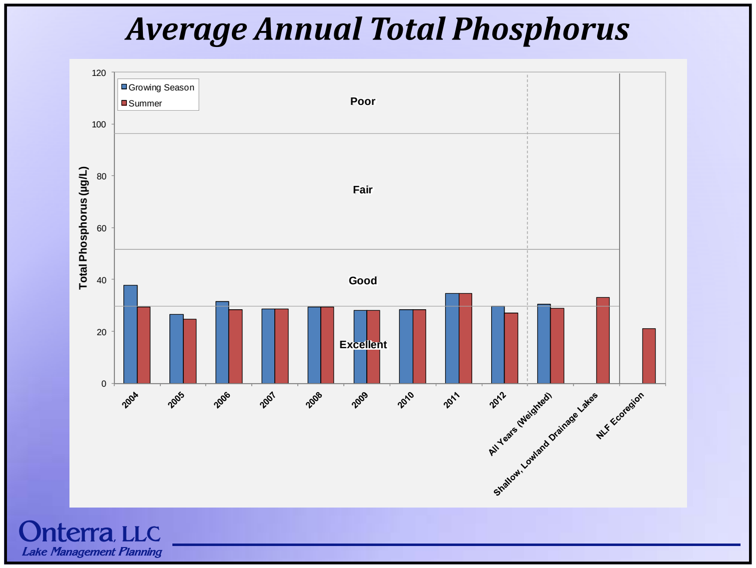
Lake Management Planning


Average Annual Total Phosphorus
Total Phosphorus (µg/L)
Growing Season
Summer
Poor
Fair
Good
Excellent
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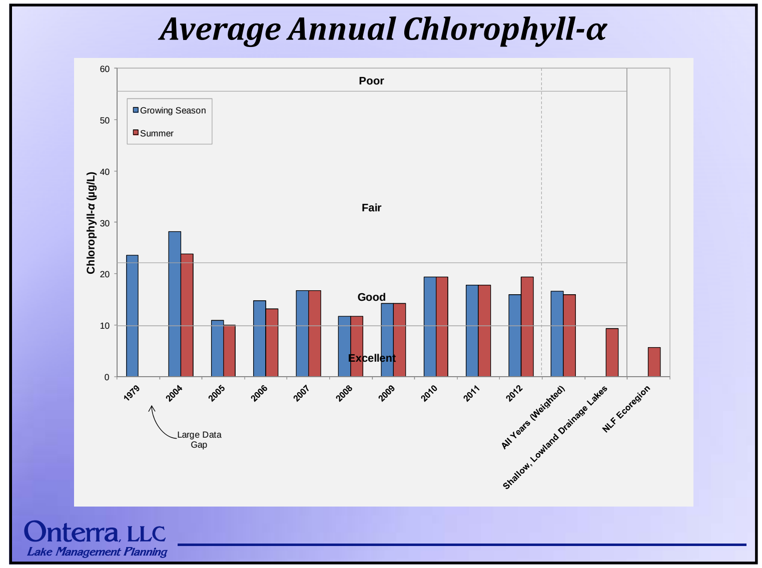
Lake Management Planning


Average Annual Chlorophyll-α
Chlorophyll-α (µg/L)
Growing Season
Summer
Poor
Fair
Good
Excellent
Large Data Gap
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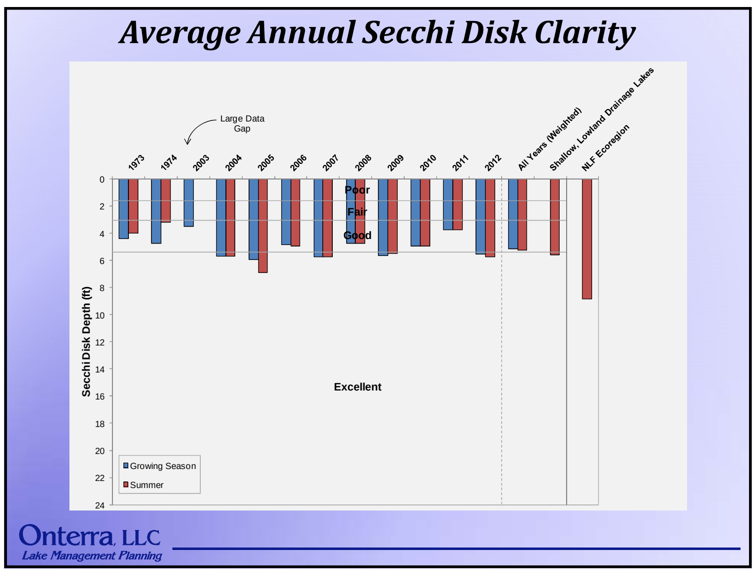
Lake Management Planning


Average Annual Secchi Disk Clarity
Secchi Disk Depth (ft)
Large Data Gap
Poor
Fair
Good
Excellent
Growing Season
Summer
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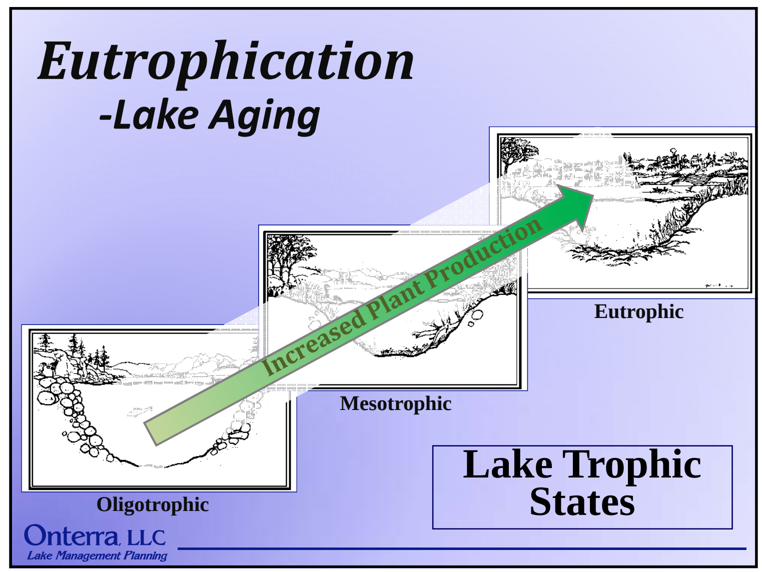
Eutrophication
-Lake Aging
Increased Plant Production
Oligotrophic
Mesotrophic
Eutrophic
Lake Trophic States
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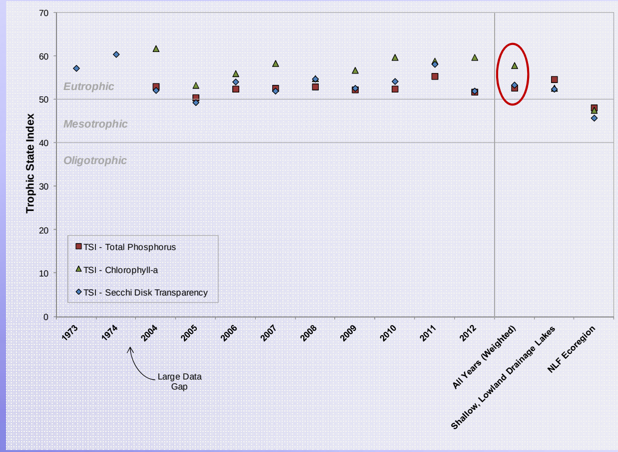
Trophic State Index



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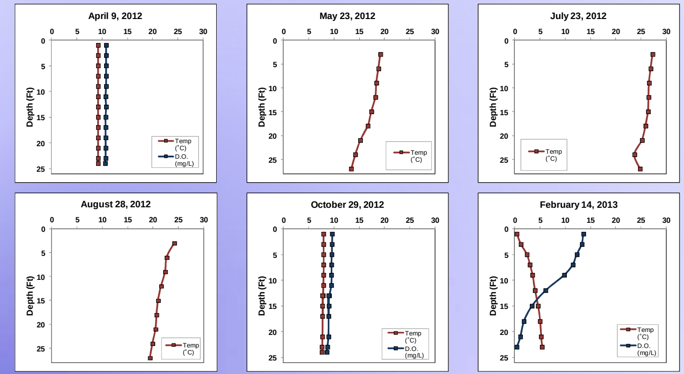
Dissolved Oxygen / Temperature



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Other Water Quality Results

- pH: 7.7
- Alkalinity = 32.4 mg/L as $CaCO_3$
  - Indicates very little sensitivity to acid rain
- Low calcium concentrations (10.2 mg/L)
  - Not suitable to zebra mussel establishment

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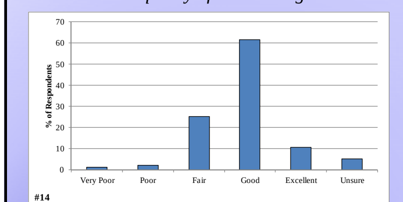
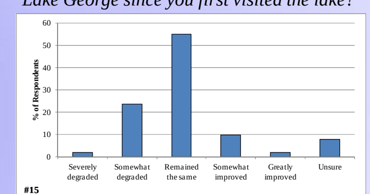
Stakeholder Survey – Water Quality

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



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



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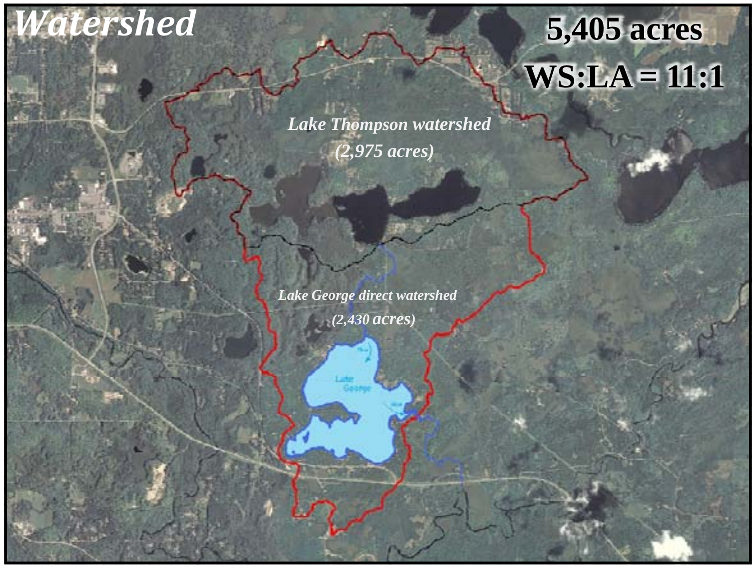
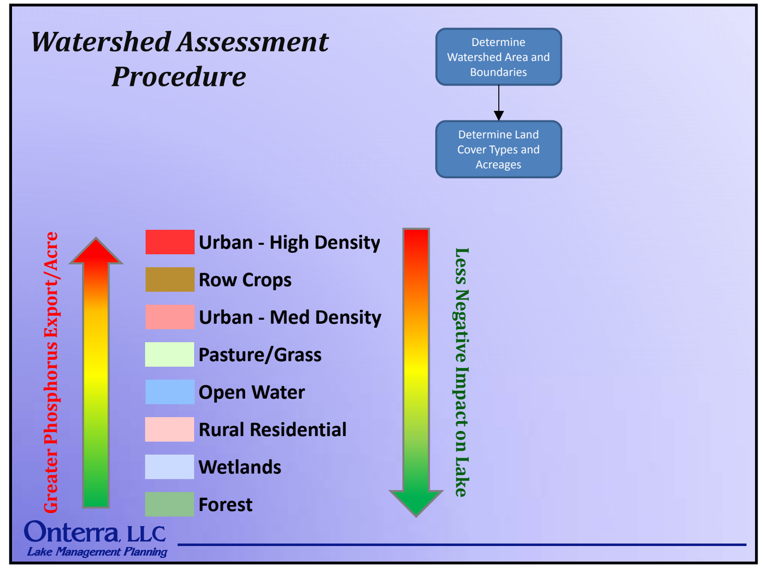

Watershed
5,405 acres
WS:LA = 11:1
Lake Thompson watershed
(2,975 acres)
Lake George direct watershed
(2,430 acres)


Watershed Assessment Procedure
Determine Watershed Area and Boundaries
Determine Land Cover Types and Acreages
Greater Phosphorus Export/Acre
Urban - High Density
Row Crops
Urban - Med Density
Pasture/Grass
Open Water
Rural Residential
Wetlands
Forest
Less Negative Impact on Lake
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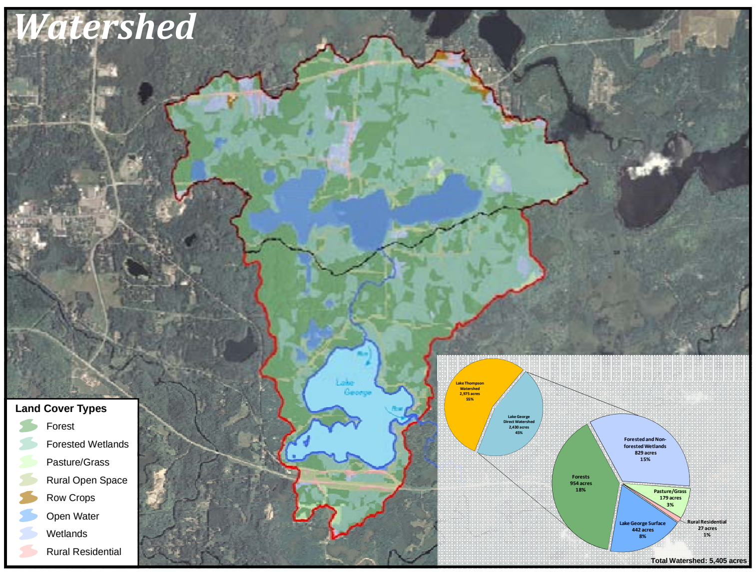
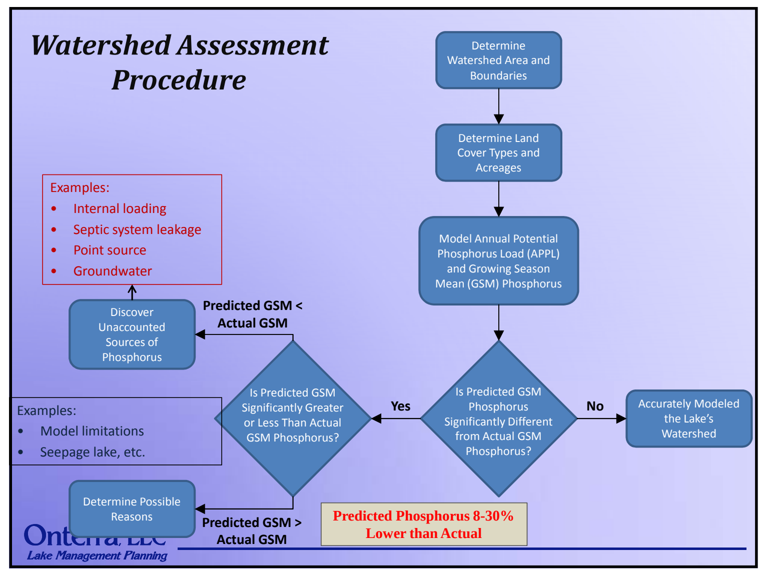

Watershed
Land Cover Types
Forest
Forested Wetlands
Pasture/Grass
Rural Open Space
Row Crops
Open Water
Wetlands
Rural Residential
Total Watershed: 5,405 acres


Watershed Assessment Procedure
Determine Watershed Area and Boundaries
Determine Land Cover Types and Acreages
Model Annual Potential Phosphorus Load (APPL) and Growing Season Mean (GSM) Phosphorus
Is Predicted GSM Phosphorus Significantly Different from Actual GSM Phosphorus?
No
Accurately Modeled the Lake's Watershed
Yes
Is Predicted GSM Significantly Greater or Less Than Actual GSM Phosphorus?
Predicted GSM < Actual GSM
Discover Unaccounted Sources of Phosphorus
Examples:
Internal loading
Septic system leakage
Point source
Groundwater
Predicted GSM > Actual GSM
Determine Possible Reasons
Examples:
Model limitations
Seepage lake, etc.
Predicted Phosphorus 8-30% Lower than Actual
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Discrepancy between WiLMS watershed modeling predicted phosphorus and 2012 field measurements

- **Unaccounted source(s) of phosphorus**
  - ~~Point source input?~~
  - Septic system inputs? Possible, but not probable…
  - Ground water inputs? Not likely…
  - Internal loading from bottom sediments? Potentially
    - Summer hypolimnion oxygen not known
    - Summer hypolimnetic phosphorus not known
    - Osgood Index value of 2.6; polymictic lake

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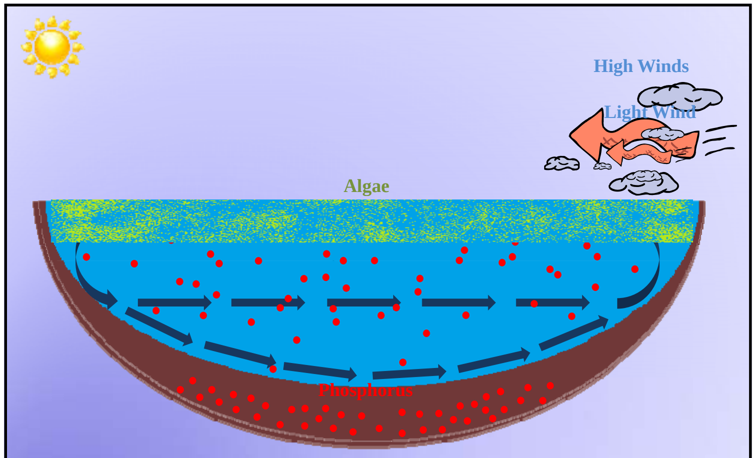

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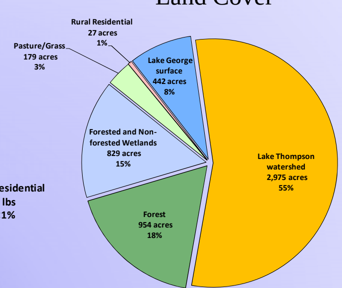
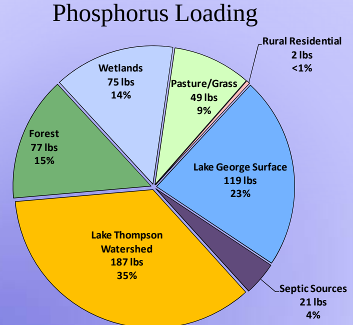
Watershed





Annual Potential Phosphorus Load:
530 lbs

Predicated Growing Season Mean Phosphorus:
21.0-28.0 µg/L

Measured Growing Season Mean Phosphorus:
30.3 µg/L

Additional Annual Phosphorus Load:
8-39% (44 to 376 lbs)

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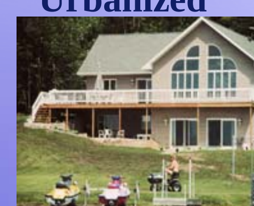
Lake Management Planning

Shoreland Assessment

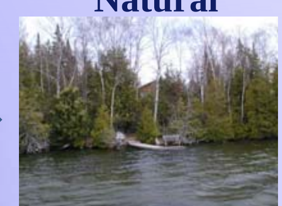
- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- It does not look at lake shoreline on a property-by-property basis.
- Assessment ranks shoreland area from shoreline back 35 feet

Urbanized



Range

Natural



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Shoreline Assessment Category Descriptions

More Natural Habitat

Greater Need for Restoration

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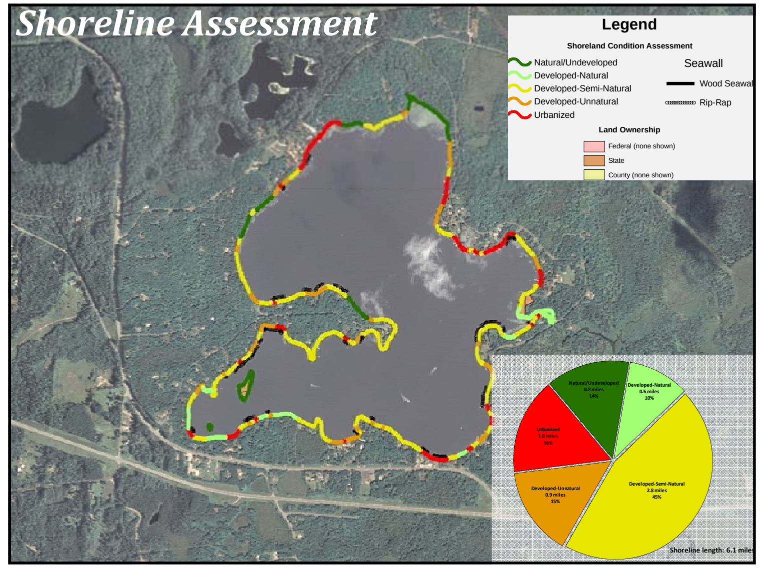
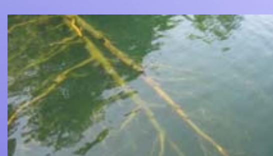
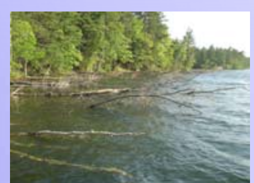


Coarse Woody Habitat

- Provides shoreland erosion control and prevents suspension of sediments.
- Preferred habitat for a variety of aquatic life.
  - Periphyton growth fed upon by insects.
  - Refuge, foraging and spawning habitat for fish.
  - Complexity of CWH important.
- Changing of logging and shoreland development practices = reduced CWH in Wisconsin lakes.
- Survey aimed at quantifying CWH in Lake George





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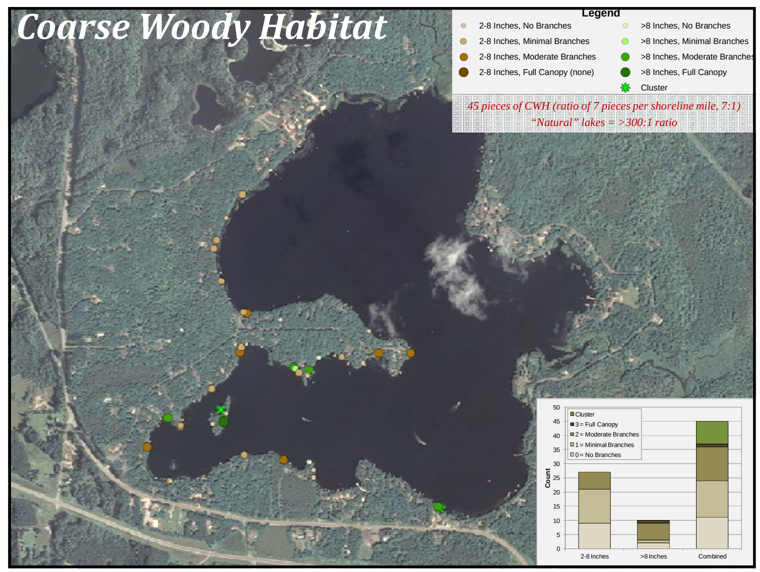
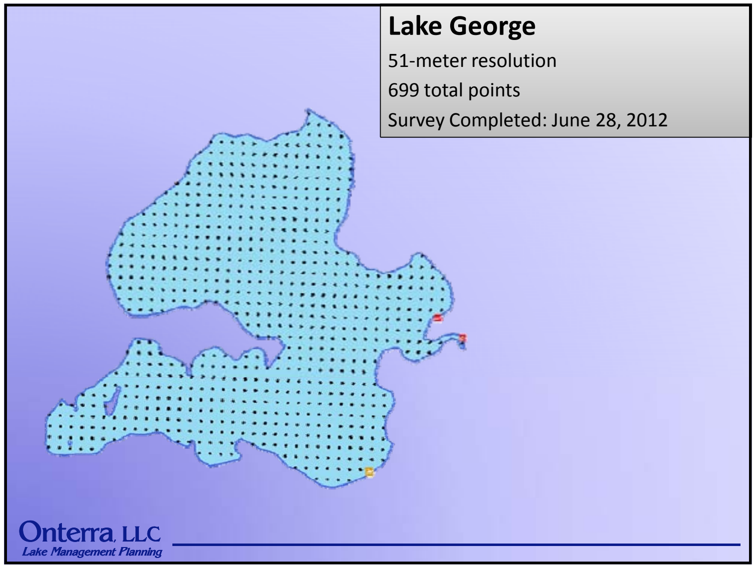
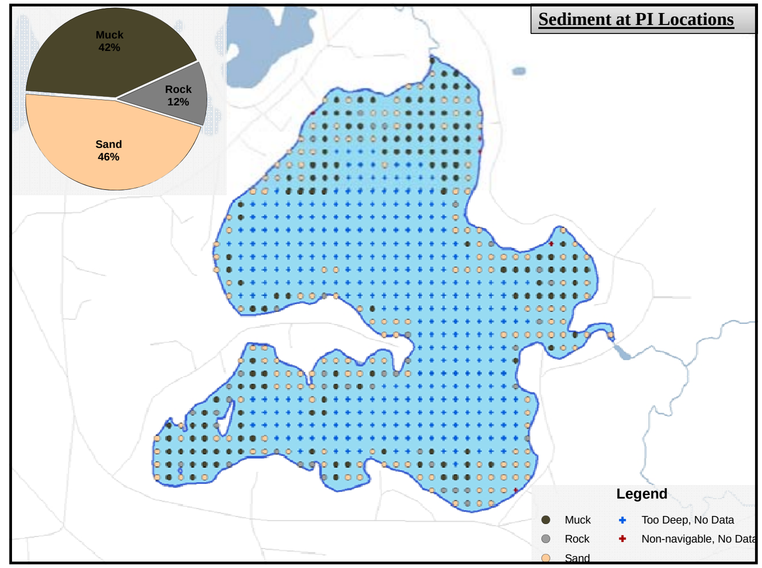
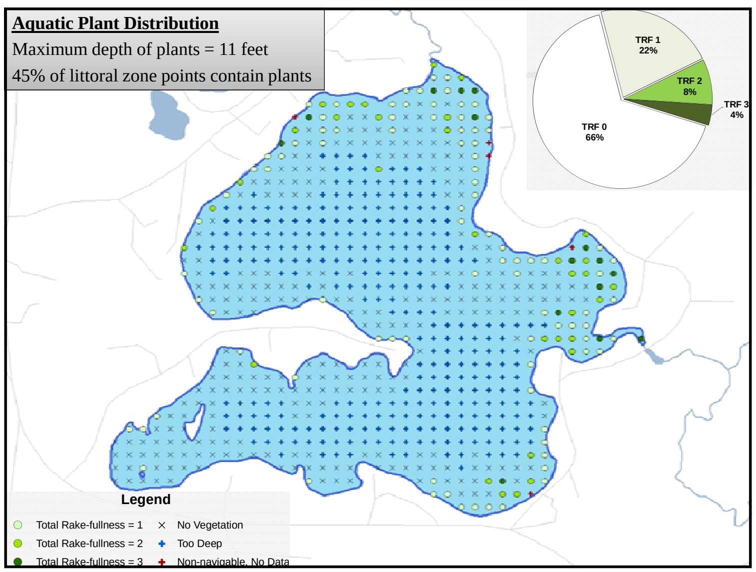
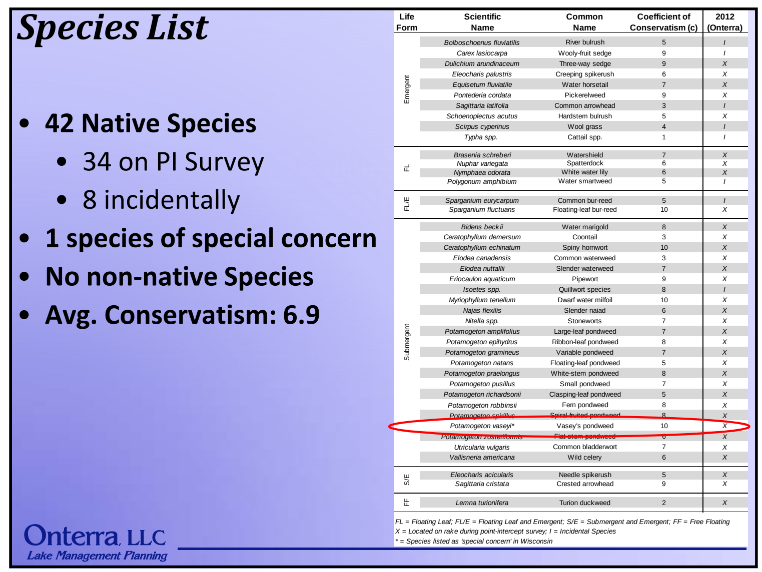
Lake Management Planning





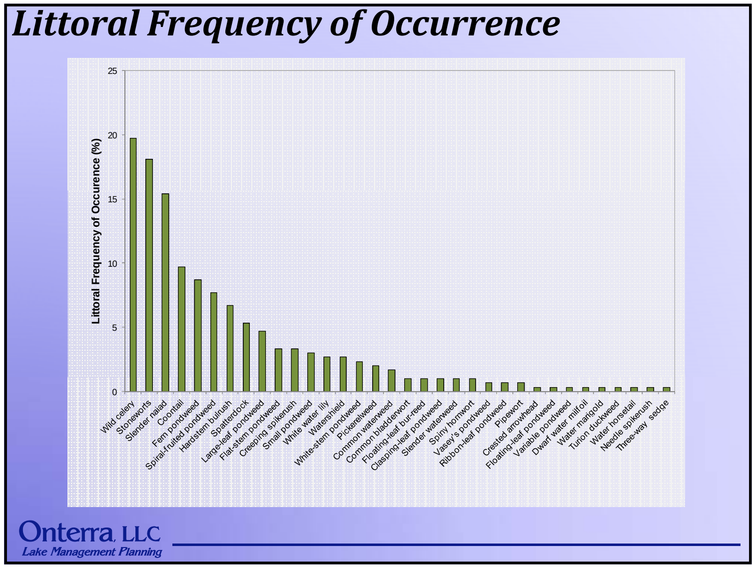






Life Form	Scientific Name	Common Name	Coefficient of Conservatism (c)	2012 (Onterra)
Emergent	*Bolboschoenus fluviatilis*	River bulrush	5	*I*
	Carex lasiocarpa	Wooly-fruit sedge	9	*I*
	Dulichium arundinaceum	Three-way sedge	9	*X*
	Eleocharis palustris	Creeping spikerush	6	*X*
	Equisetum fluviatile	Water horsetail	7	*X*
	Pontederia cordata	Pickerelweed	9	*X*
	Sagittaria latifolia	Common arrowhead	3	*I*
	Schoenoplectus acutus	Hardstem bulrush	5	*X*
	Scirpus cyperinus	Wool grass	4	*I*
	Typha spp.	Cattail spp.	1	*I*
FL	*Brasenia schreberi*	Watershield	7	*X*
	Nuphar variegata	Spatterdock	6	*X*
	Nymphaea odorata	White water lily	6	*X*
	Polygonum amphibium	Water smartweed	5	*I*
FL/E	*Sparganium eurycarpum*	Common bur-reed	5	*I*
	Sparganium fluctuans	Floating-leaf bur-reed	10	*X*
Submergent	*Bidens beckii*	Water marigold	8	*X*
	Ceratophyllum demersum	Coontail	3	*X*
	Ceratophyllum echinatum	Spiny hornwort	10	*X*
	Elodea canadensis	Common waterweed	3	*X*
	Elodea nuttallii	Slender waterweed	7	*X*
	Eriocaulon aquaticum	Pipewort	9	*X*
	Isoetes spp.	Quillwort species	8	*I*
	Myriophyllum tenellum	Dwarf water milfoil	10	*X*
	Najas flexilis	Slender naiad	6	*X*
	Nitella spp.	Stoneworts	7	*X*
	Potamogeton amplifolius	Large-leaf pondweed	7	*X*
	Potamogeton epihydrus	Ribbon-leaf pondweed	8	*X*
	Potamogeton gramineus	Variable pondweed	7	*X*
	Potamogeton natans	Floating-leaf pondweed	5	*X*
	Potamogeton praelongus	White-stem pondweed	8	*X*
	Potamogeton pusillus	Small pondweed	7	*X*
	Potamogeton richardsonii	Clasping-leaf pondweed	5	*X*
	Potamogeton robbinsii	Fern pondweed	8	*X*
	Potamogeton spirillus	Spiral-fruited pondweed	8	*X*
	*Potamogeton vaseyi**	Vasey's pondweed	10	*X*
	Potamogeton zosteriformis	Flat-stem pondweed	6	*X*
	Utricularia vulgaris	Common bladderwort	7	*X*
	Vallisneria americana	Wild celery	6	*X*
S/E	*Eleocharis acicularis*	Needle spikerush	5	*X*
	Sagittaria cristata	Crested arrowhead	9	*X*
FF	*Lemna turionifera*	Turion duckweed	2	*X*

FL = Floating Leaf; FL/E = Floating Leaf and Emergent; S/E = Submergent and Emergent; FF = Free Floating
X = Located on rake during point-intercept survey; I = Incidental Species
** = Species listed as 'special concern' in Wisconsin*


Littoral Frequency of Occurrence
Littoral Frequency of Occurence (%)
0
5
10
15
20
25
Wild celery
Stoneworts
Slender naiad
Coontail
Fern pondweed
Spiral-fruited pondweed
Hardstem bulrush
Spatterdock
Large-leaf pondweed
Flat-stem pondweed
Creeping spikerush
Small pondweed
White water lily
Watershield
White-stem pondweed
Pickerelweed
Common waterweed
Common bladderwort
Floating-leaf bur-reed
Clasping-leaf pondweed
Slender waterweed
Spiny hornwort
Vasey's pondweed
Ribbon-leaf pondweed
Pipewort
Crested arrowhead
Floating-leaf pondweed
Variable pondweed
Dwarf water milfoil
Water marigold
Turion duckweed
Water horsetail
Needle spikerush
Three-way sedge
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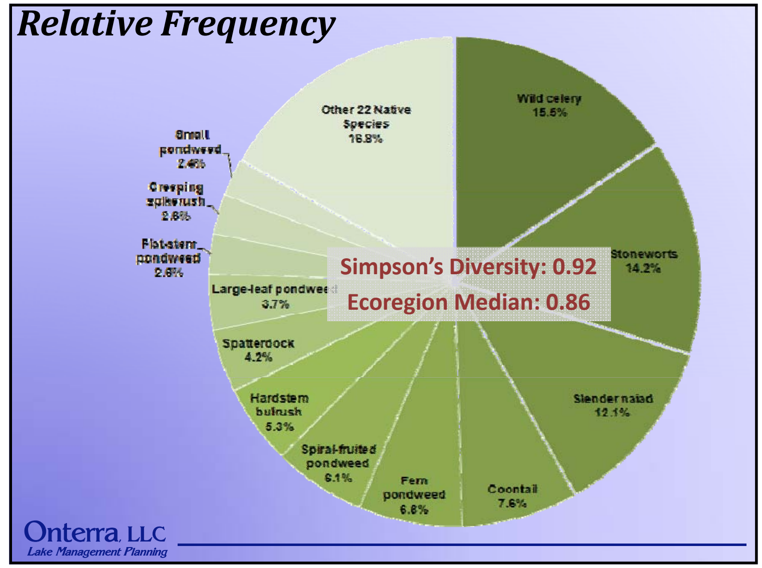
Relative Frequency
Wild celery 15.5%
Stoneworts 14.2%
Slender naiad 12.1%
Coontail 7.6%
Fern pondweed 6.8%
Spiral-fruited pondweed 6.1%
Hardstem bulrush 5.3%
Spatterdock 4.2%
Large-leaf pondweed 3.7%
Flat-stem pondweed 2.6%
Creeping spikerush 2.6%
Small pondweed 2.4%
Other 22 Native Species 16.8%
Simpson's Diversity: 0.92
Ecoregion Median: 0.86
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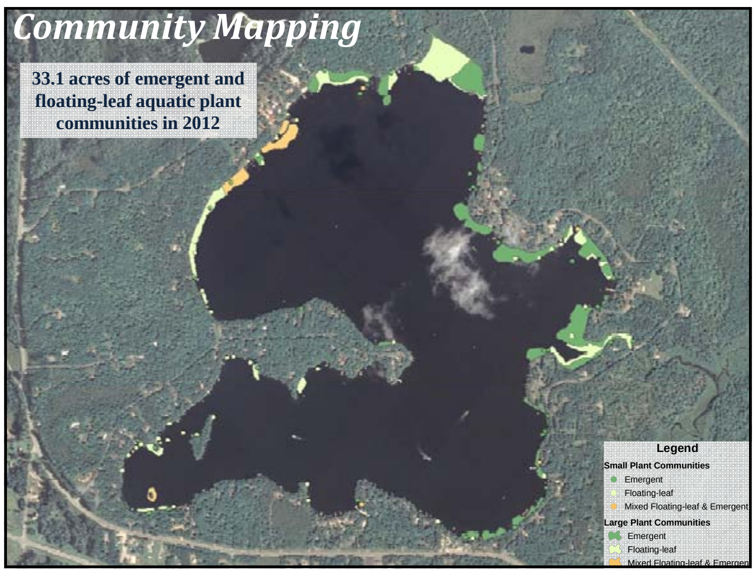
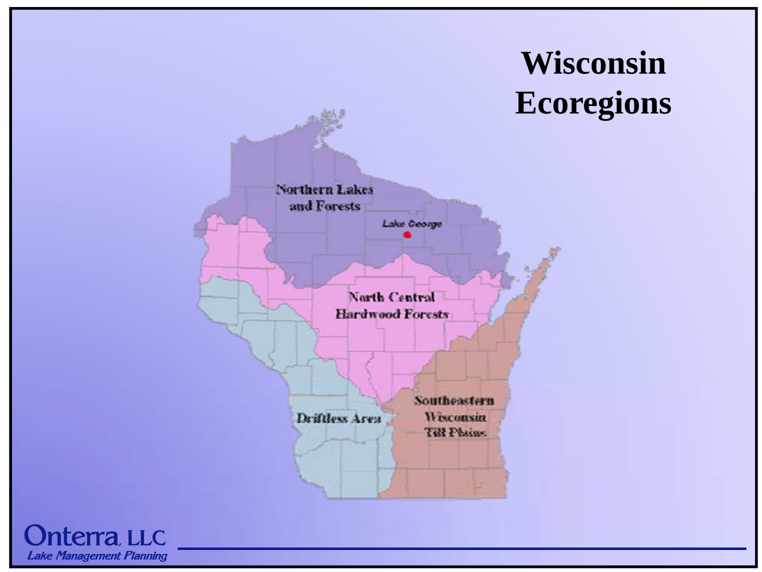

Community Mapping
33.1 acres of emergent and floating-leaf aquatic plant communities in 2012
Legend
Small Plant Communities
Emergent
Floating-leaf
Mixed Floating-leaf & Emergent
Large Plant Communities
Emergent
Floating-leaf
Mixed Floating-leaf & Emergent


Wisconsin Ecoregions
Northern Lakes and Forests
Lake George
North Central Hardwood Forests
Driftless Area
Southeastern Wisconsin Till Plains
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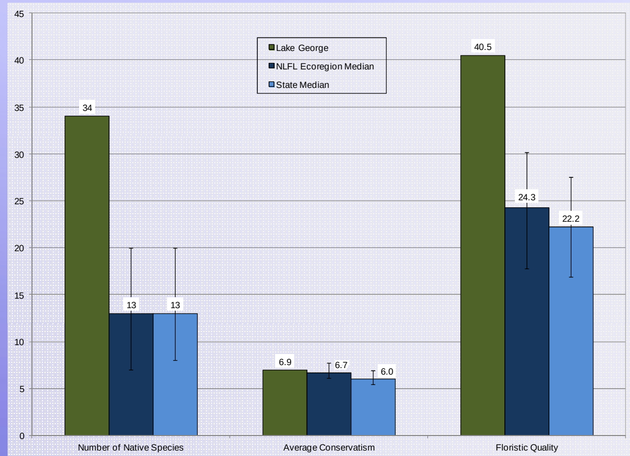
Floristic Quality Analysis



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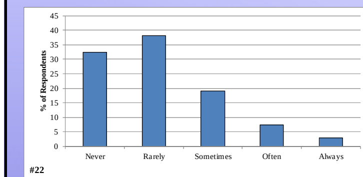
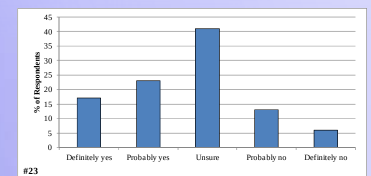
Stakeholder Survey – Aquatic Plants and Algae

During open water season, how often does aquatic plant growth, including algae, negatively impact your enjoyment of the lake?



Considering your answer to Question #22, do you believe aquatic plant control is needed on Lake George?



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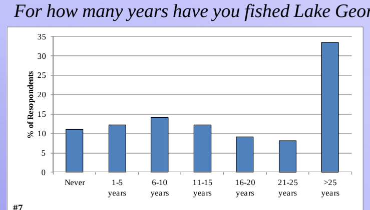
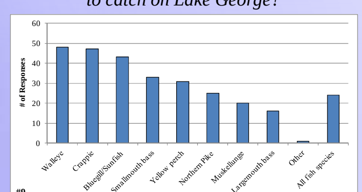
Stakeholder Survey - Lake George Fishery

For how many years have you fished Lake George?



What species of fish do you like to catch on Lake George?



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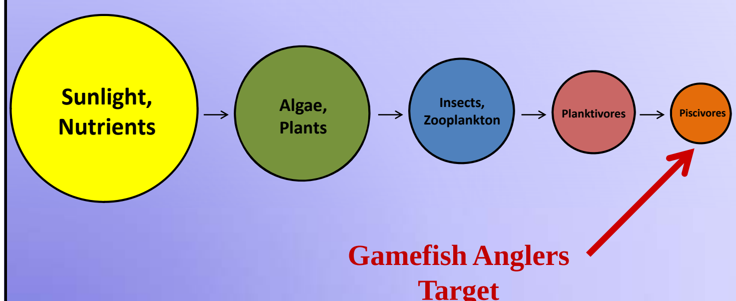
Lake George Fishery



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Lake George Fishery

- **Managed for a balanced fishery**
  - Naturally reproducing walleye
  - Stocked muskellunge
- **Considerable fishing pressure**
  - 2010 creel survey: 51.2 hours/acre
  - Oneida County 2010 average: 37.6 hours/acre
- **Native American spear harvest occurs**

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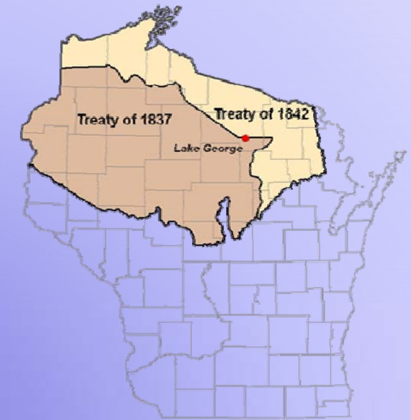
Native American Spear Harvest



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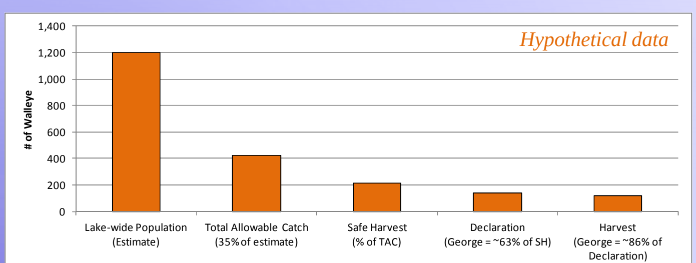
Native American Spear Harvest

Walleye Spear Harvest



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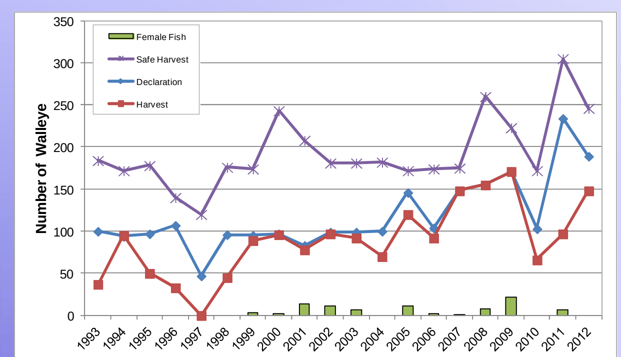
Native American Spear Harvest

Walleye Spear Harvest



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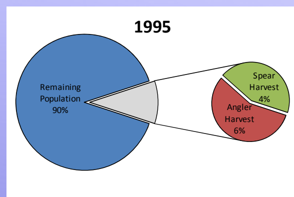
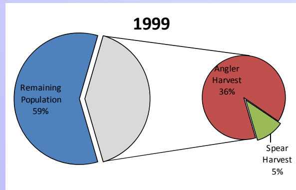
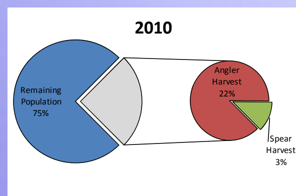
Native American Spear Harvest

Total Walleye Harvest – Anglers and Tribal Spearing







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Native American Spear Harvest

Muskellunge Spear Harvest

Year	Safe Harvest	Tribal Declaration	Total Harvest
1996	*n/a*	*n/a*	1
1997	*n/a*	*n/a*	-
1998	*n/a*	*n/a*	-
1999	11	5	1
2000	10	5	-
2001	10	5	1
2002	10	5	-
2003	11	5	-
2004	11	5	1
2005	11	6	1
2006	11	6	-
2007	11	6	-
2008	12	7	-
2009	12	7	-
2010	12	7	3
2011	12	7	1
2012	20	11	-

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Conclusions

- Water quality is good.
  - Ample historic data – no trends detected.
  - Lake is naturally productive, but additional sources of phosphorus are present.
    - Source of additional phosphorus unknown at this time
    - Impacts of additional phosphorus not present
    - Stakeholder survey – WQ is good, management actions aimed at improvement acceptable
- Overall watershed is in good condition.
  - Land cover exports minimal phosphorus
  - Shoreland zone mostly developed

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Conclusions continued

- Aquatic plant community
  - Based upon standard analysis, native plant community is of high quality.
    - Highly diverse
    - Sensitive species present
    - Species rich
  - Areas of organic substrate with abundant plant growth offer different habitat than rest of lake (sandy or rocky substrates = less plant growth).
- Fisheries
  - Naturally reproducing walleye population
  - Pressure seems to be substantial
  - Minimal coarse woody habitat

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Study and Plan Goals

- Collect & Analyze Data
- Construct Long-Term & Useable Plan

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Timeline of Activities

- January 2012 – Grant application submitted to WDNR
- March 2012 – Notice received; $23,000 project awarded to LGLA with 67% match from State of Wisconsin
- Spring/Summer/Fall 2012 – Ecological studies conducted
- June 2012 – Project Kick-Off Meeting held
- August 2012 – Stakeholder Survey circulated
- February 2013 – Planning Meeting I held
- March 2013 – Planning Meeting II held
- April 2013 –Implementation Plan sent to committee, revisions follow
- May 2013 – Board of Directors adopted draft management plan
- July 2013 – Draft Management Plan sent to WDNR for review

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Overall Project Results

- **Watershed (drainage basin)**
  - Supplies bulk of water to the lake
  - Consists of forests/wetlands; phosphorus load expected to be minimal
- **Water Quality (nutrients, algae and clarity)**
  - Water quality is good to excellent – no trends detected
  - Water clarity influenced by dissolved organic materials
- **Shoreland Condition (pollution buffering, habitat)**
  - Much developed shoreland exists
- **Aquatic plant community (native and non-native)**
  - Native plant community is of high diversity and quality
  - No aquatic invasive species found
- **Fishery (fish and fish habitat)**
  - Minimal coarse woody habitat exists

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Water Quality

Phosphorus (Limiting Plant Nutrient)

Nitrogen:Phosphorus = 27:1

Chlorophyll-*a* (Algal Abundance)

Moderate abundance

Water Clarity (Secchi Disk)

Low to moderate water clarity

- Color influences clarity

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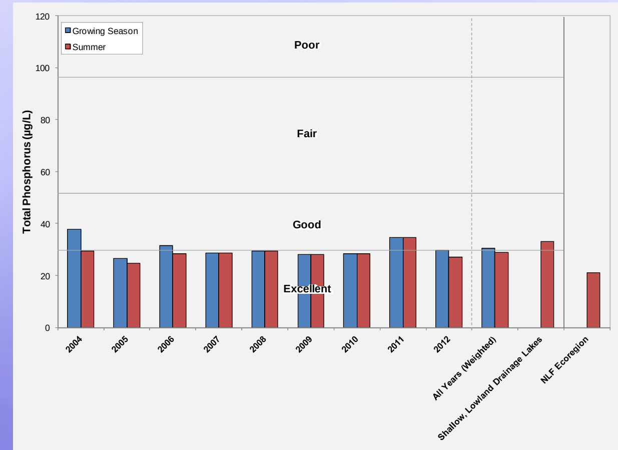
Average Annual Total Phosphorus



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Management Goal:
Maintain Current Water Quality Conditions

Management Actions

1. **Monitor water quality through the WDNR Citizen Lake Monitoring Network.**
   Continuation of current effort
2. **Investigate unaccounted-for phosphorus source.**
   Initiate with management plan update

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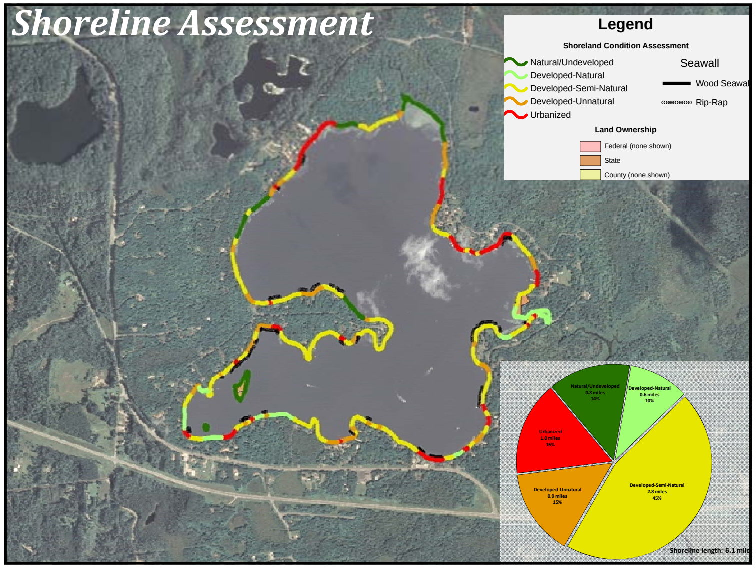

Management Goal:
Maintain Current Water Quality Conditions

Management Actions

1. **Monitor water quality through the WDNR Citizen Lake Monitoring Network.**
   Continuation of current effort
2. **Investigate unaccounted for phosphorus source.**
   Initiate with management plan update
3. **Restore highly developed shoreland areas on Lake George.**
   Demonstration site partially funded through Oneida County
4. **Protect natural shoreland zones along Lake George.**
   Initiate conservation easements, land trusts where applicable

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Overall Project Results

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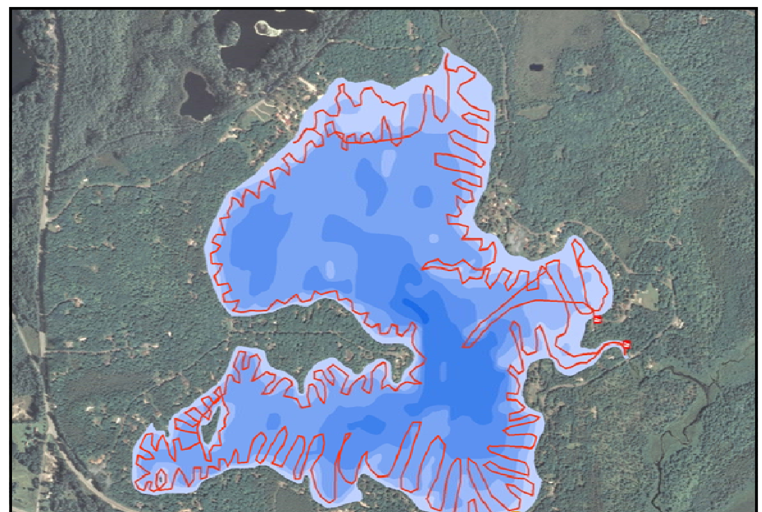

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Management Goal:
Strengthen Association's Relationships, Effectiveness and Lake Management Capability

Management Actions

1. **Enhance LGLA's involvement with other entities that have a hand in managing Lake George.**
   Establish/maintain relationships with defined partners
2. **Increase volunteerism within the LGLA.**
   Appoint volunteer coordinator
3. **Coordinate annual volunteer monitoring for AIS.**
   Lake Sweeps conducted with assistance from Oneida County AIS Coordinator
4. **Increase awareness of SNW zones in Lake George.**
   WI act 31 map, education on regulations

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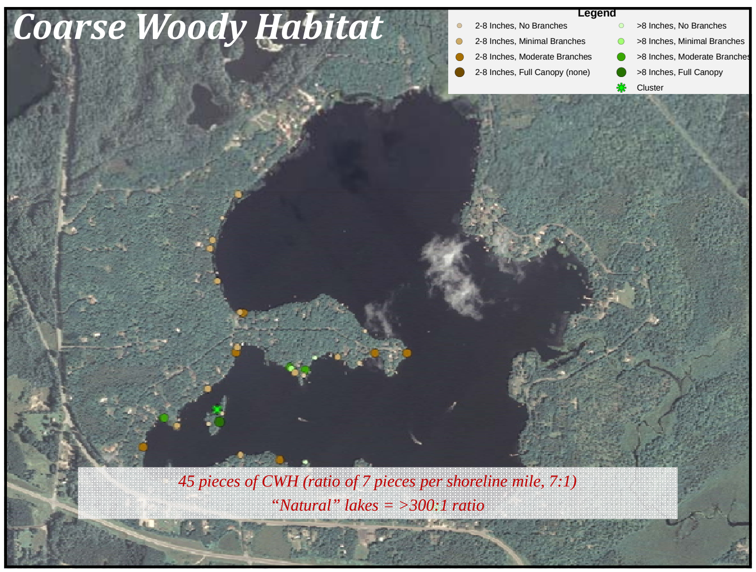

Management Goal:
Maximize Knowledge of and Habitat for Lake George's Fishery

Management Actions

1. **Work with fisheries managers to understand and enhance fishery while communicating aspects of fishery studies to LGLA members.**
   Contact with WDNR biologist
2. **Work with WDNR fisheries biologist to implement coarse woody habitat project.**
   Coordinated effort between private landowners, LGLA and WDNR.

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Management Goal:
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Management Actions

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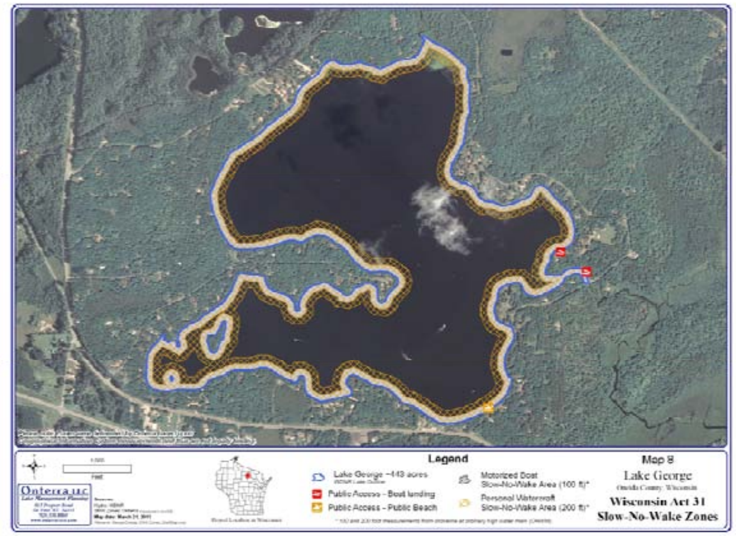

Management Goal:
Increase LGLS's Capacity to Communicate With and Educate Stakeholders

Management Actions

1. **Support an Education Committee to promote safe boating, water quality, public safety and quality of life on Lake George.**
   Oversees all educational components
2. **Engage stakeholders on priority education items.**
   Regulation of dam, CBCW protocols, shoreland buffers and navigational safety

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

Wisconsin Lakes Partnership · UW Extension · Wisconsin Dept. of Natural Resources

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B

APPENDIX B

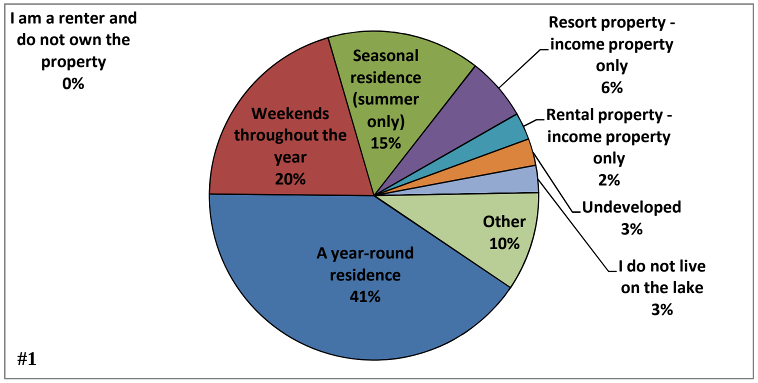
Stakeholder Survey Response Charts and Comments

Returned Surveys	103
Sent Surveys	172
Response Rate (%)	59.9

LAKE GEORGE PROPERTY

#1 How is your property on Lake George utilized?

	Total	%
A year-round residence	46	*40.7*
Weekends throughout the year	23	*20.4*
Seasonal residence (summer only)	17	*15.0*
Resort property - income property only	7	*6.2*
Rental property - income property only	3	*2.7*
Undeveloped	3	*2.7*
I do not live on the lake	3	*2.7*
I am a renter and do not own the property	0	*0.0*
Other	11	*9.7*
	113	100.0

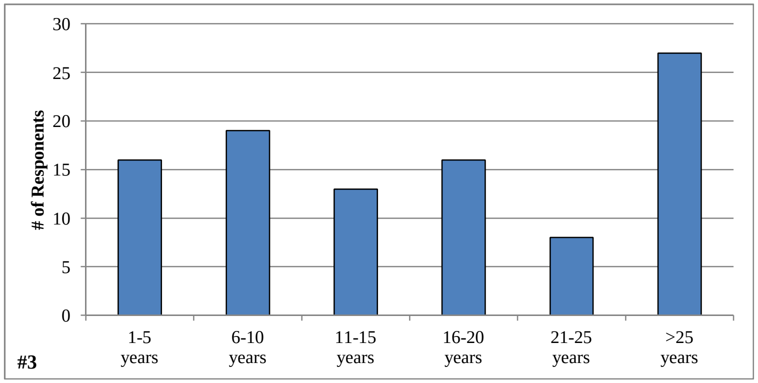


#2 How many days each year is your property used by you or others?

Answered Question	92
Average	191.8
Standard deviation	136.7

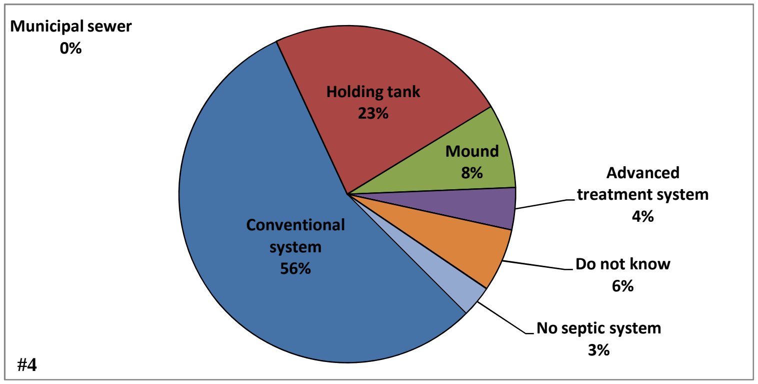
#3 How long have you owned or rented your property on Lake George?

	Total	%
1-5 years	16	*16.2*
6-10 years	19	*19.2*
11-15 years	13	*13.1*
16-20 years	16	*16.2*
21-25 years	8	*8.1*
>25 years	27	*27.3*
	99	*100.0*



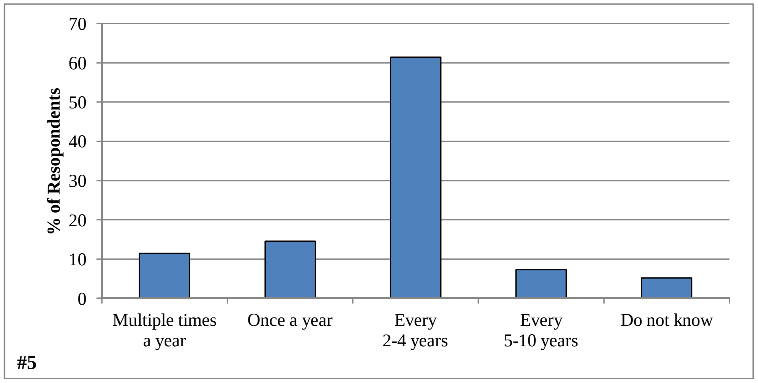
#4 What type of septic system does your property utilize?

	Total	%
Conventional system	55	*55.6*
Holding tank	23	*23.2*
Mound	8	*8.1*
Advanced treatment system	4	*4.0*
Municipal sewer	0	*0.0*
Do not know	6	*6.1*
No septic system	3	*3.0*
	99	*100.0*



#5 How often is the septic tank on your property pumped?

	Total	%
Multiple times a year	11	*11.5*
Once a year	14	*14.6*
Every 2-4 years	59	*61.5*
Every 5-10 years	7	*7.3*
Do not know	5	*5.2*
	96	*100.0*



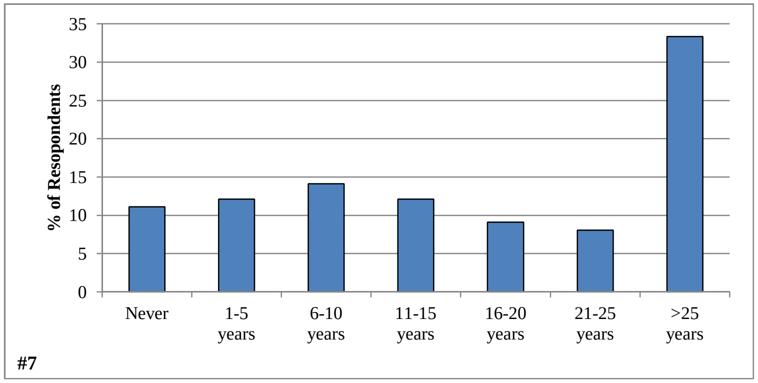
RECREATIONAL ACTIVITY ON LAKE GEORGE

#6 How many years ago did you first visit Lake George?

Answered Question	99
Average	29.7
Standard deviation	20.0

#7 For how many years have you fished Lake George?

	Total	%
Never	11	*11.1*
1-5 years	12	*12.1*
6-10 years	14	*14.1*
11-15 years	12	*12.1*
16-20 years	9	*9.1*
21-25 years	8	*8.1*
>25 years	33	*33.3*
	99	*100.0*

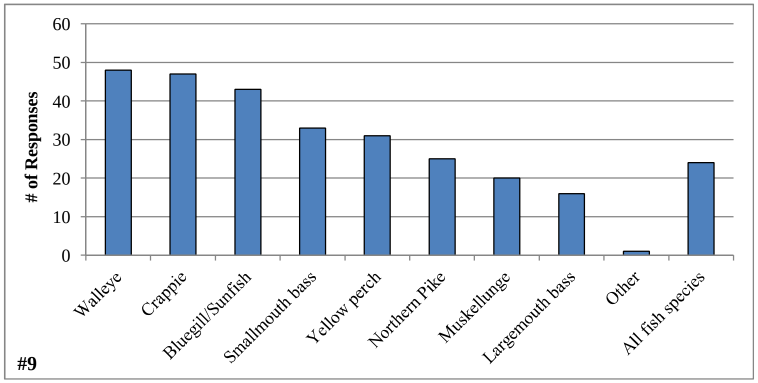


#8 Have you personally fished on Lake George in the past three years?

	Total	%
Yes	71	*73.2*
No	26	*26.8*
	97	*100.0*

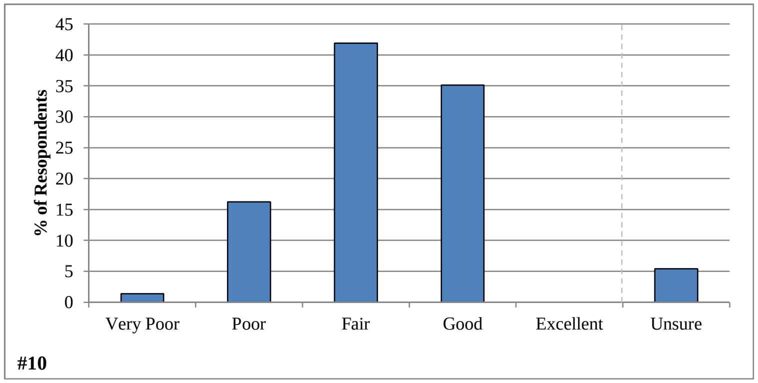
#9 What species of fish do you like to catch on Lake George?

	Total
Walleye	48
Crappie	47
Bluegill/Sunfish	43
Smallmouth bass	33
Yellow perch	31
Northern Pike	25
Muskellunge	20
Largemouth bass	16
Other	1
All fish species	24



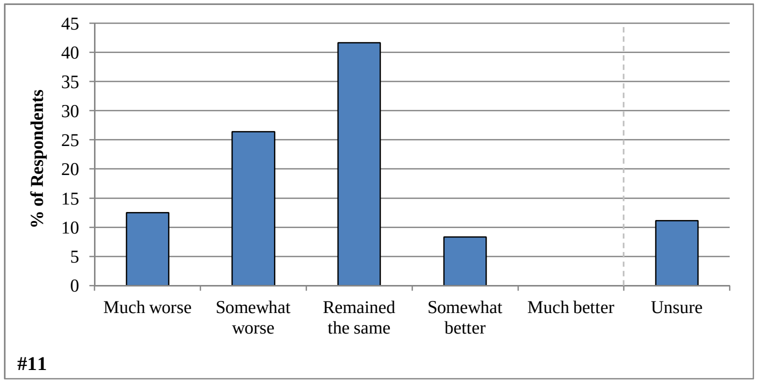
#10 How would you describe the current quality of fishing on Lake George?

	Total	%
Very Poor	1	*1.4*
Poor	12	*16.2*
Fair	31	*41.9*
Good	26	*35.1*
Excellent	0	*0.0*
Unsure	4	*5.4*
	74	*100.0*



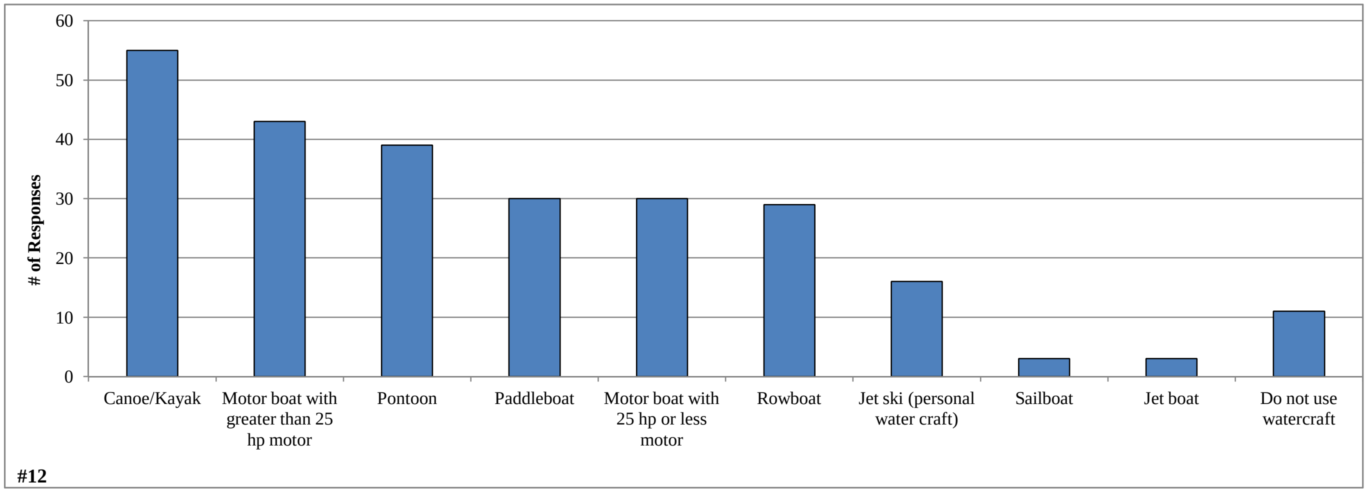
#11 How has the quality of fishing changed since you started fishing on the lake?

	Total	%
Much worse	9	*12.5*
Somewhat worse	19	*26.4*
Remained the Same	30	*41.7*
Somewhat better	6	*8.3*
Much better	0	*0.0*
Unsure	8	*11.1*
	72	*100.0*



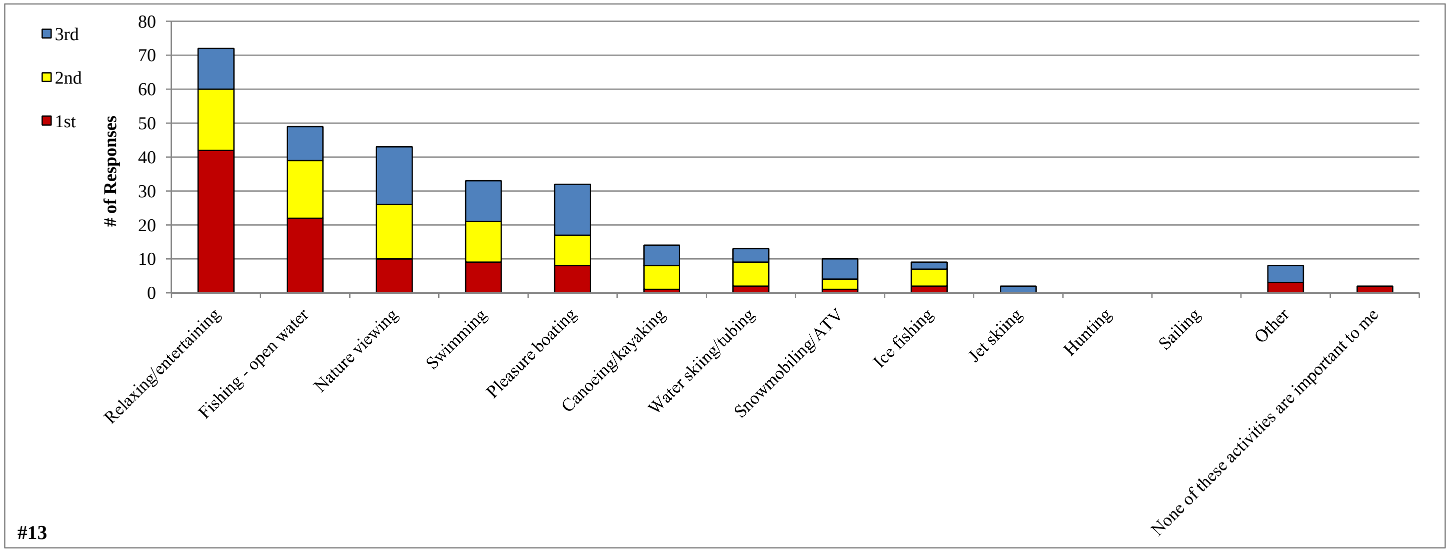
#12 What types of watercraft do you currently use on the lake?

	Total
Canoe/Kayak	55
Motor boat with greater than 25 hp motor	43
Pontoon	39
Paddleboat	30
Motor boat with 25 hp or less motor	30
Rowboat	29
Jet ski (personal water craft)	16
Sailboat	3
Jet boat	3
Do not use watercraft	11



#13 Please rank up to three activities that are important reasons for owning your property on or near the lake.

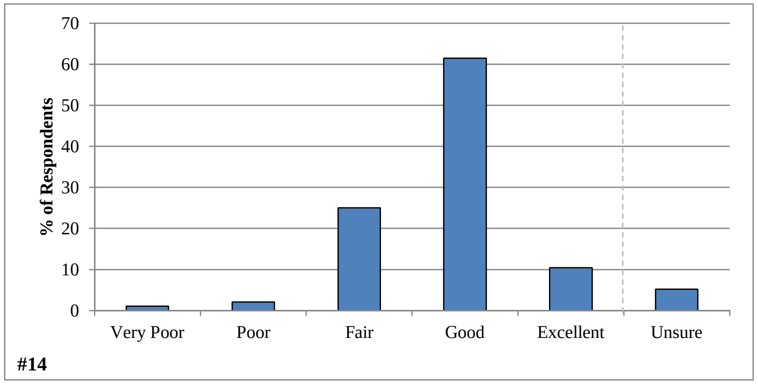
	1st	2nd	3rd	*% ranked*
Relaxing/entertaining	42	18	12	*25.1*
Fishing - open water	22	17	10	*17.1*
Nature viewing	10	16	17	*15.0*
Swimming	9	12	12	*11.5*
Pleasure boating	8	9	15	*11.1*
Canoeing/kayaking	1	7	6	*4.9*
Water skiing/tubing	2	7	4	*4.5*
Snowmobiling/ATV	1	3	6	*3.5*
Ice fishing	2	5	2	*3.1*
Jet skiing	0	0	2	*0.7*
Hunting	0	0	0	*0.0*
Sailing	0	0	0	*0.0*
Other	3	0	5	*2.8*
None of these activities are important to me	2	0	0	*0.7*
	102	94	91	*100.0*



LAKE GEORGE CURRENT AND HISTORIC CONDITION, HEALTH AND MANAGEMENT

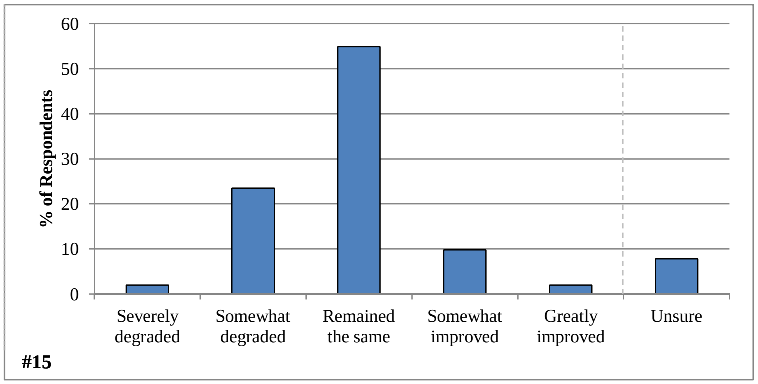
#14 How would you describe the current water quality of Lake George?

	Total	%
Very Poor	1	*1.0*
Poor	2	*2.1*
Fair	24	*25.0*
Good	59	*61.5*
Excellent	10	*10.4*
Unsure	5	*5.2*
	96	*100.0*



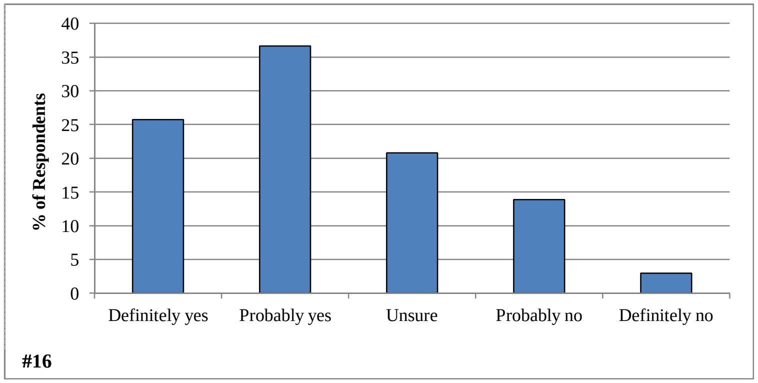
#15 How has the water quality changed in Lake George since you first visited the lake?

	Total	%
Severely degraded	2	*2.0*
Somewhat degraded	24	*23.5*
Remained the same	56	*54.9*
Somewhat improved	10	*9.8*
Greatly improved	2	*2.0*
Unsure	8	*7.8*
	102	*100.0*



#16 Do you believe that management actions specific to water quality are needed?

	Total	%
Definitely yes	26	*25.7*
Probably yes	37	*36.6*
Unsure	21	*20.8*
Probably no	14	*13.9*
Definitely no	3	*3.0*
	101	*100.0*



#17 Have you ever heard of aquatic invasive species?

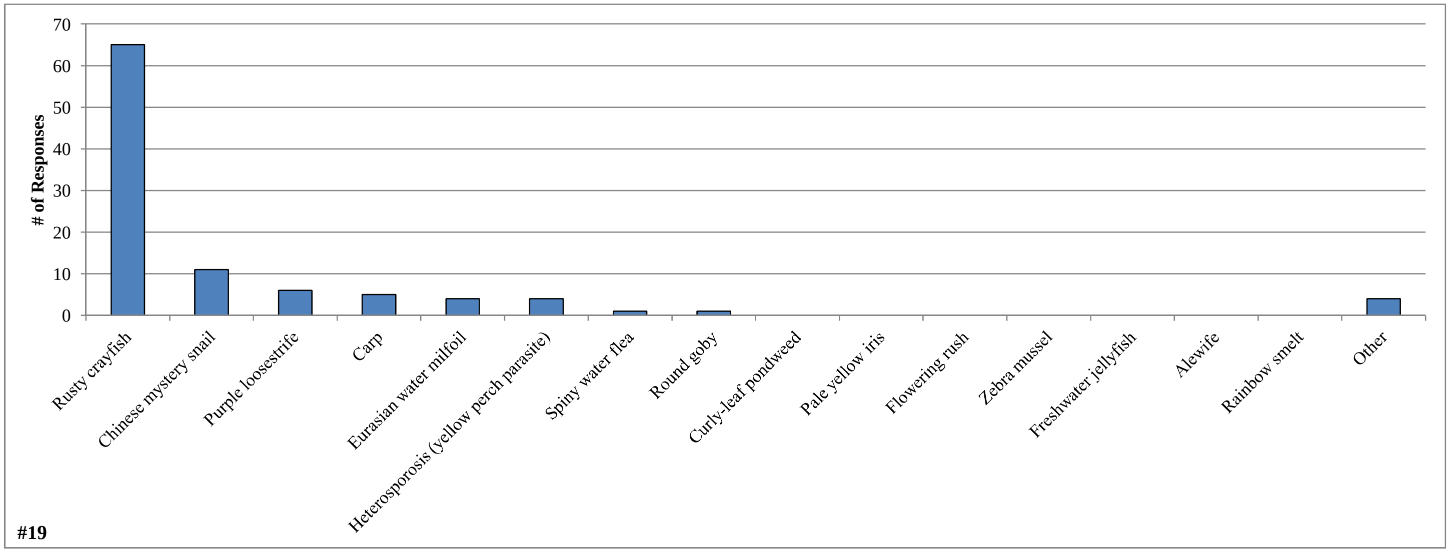
	Total	%
Yes	99	*97.1*
No	3	*2.9*
	102	*100.0*

#18 Are you aware of aquatic invasive species in the lake?

	Total	%
Yes	61	*63.5*
No	35	*36.5*
	96	*100.0*

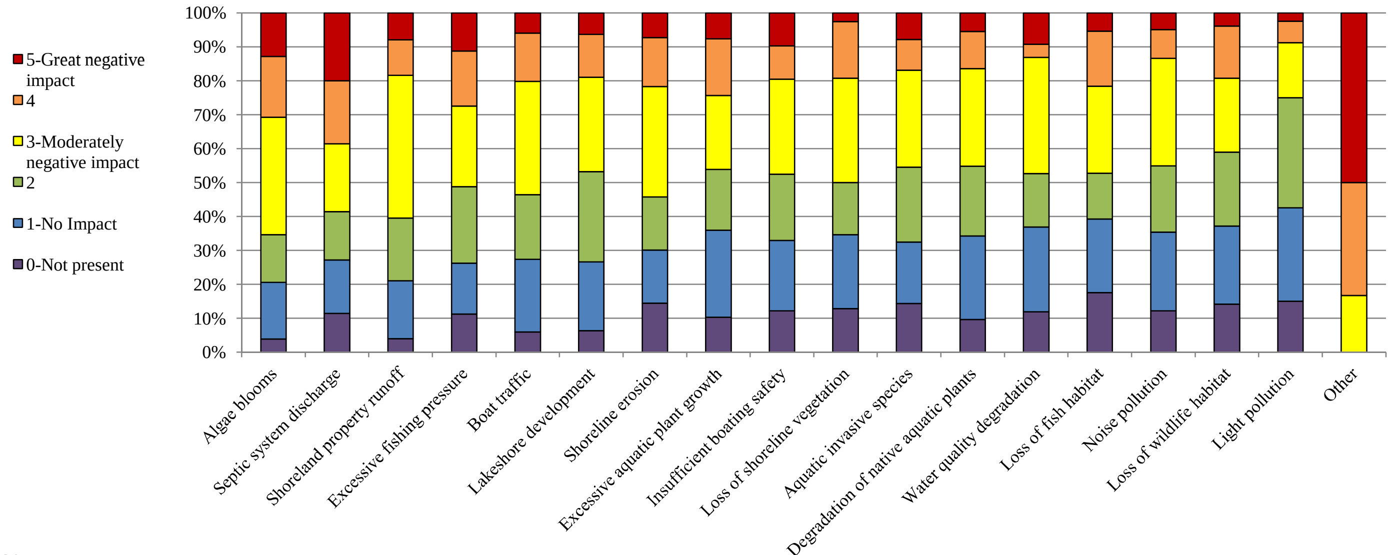
#19 Which aquatic invasive species are you aware of in the lake?

	Total
Rusty crayfish	65
Chinese mystery snail	11
Purple loosestrife	6
Carp	5
Eurasian water milfoil	4
Heterosporosis (yellow perch parasite)	4
Spiny water flea	1
Round goby	1
Curly-leaf pondweed	0
Pale yellow iris	0
Flowering rush	0
Zebra mussel	0
Freshwater jellyfish	0
Alewife	0
Rainbow smelt	0
Other	4



#20 To what level do you believe each of the following factors may be negatively impacting Lake George?

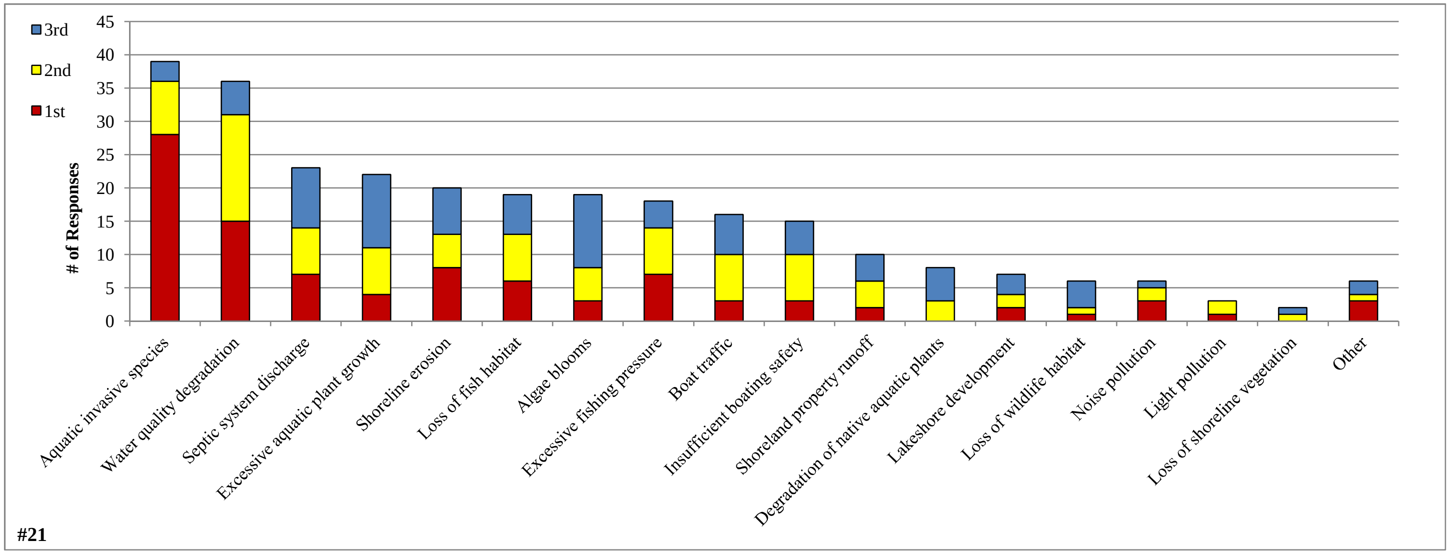
	0-Not present	1-No Impact	2	3-Moderately negative impact	4	5-Great negative impact	Unsure	*Total*	*Average*
Algae blooms	3	13	11	27	14	10	13	*75*	*2.8*
Septic system discharge	8	11	10	14	13	14	20	*62*	*2.8*
Shoreland property runoff	3	13	14	32	8	6	15	*73*	*2.6*
Excessive fishing pressure	9	12	18	19	13	9	11	*71*	*2.5*
Boat traffic	5	18	16	28	12	5	5	*79*	*2.5*
Lakeshore development	5	16	21	22	10	5	12	*74*	*2.4*
Shoreline erosion	12	13	13	27	12	6	8	*71*	*2.4*
Excessive aquatic plant growth	8	20	14	17	13	6	14	*70*	*2.3*
Insufficient boating safety	10	17	16	23	8	8	9	*72*	*2.3*
Loss of shoreline vegetation	10	17	12	24	13	2	12	*68*	*2.2*
Aquatic invasive species	11	14	17	22	7	6	13	*66*	*2.2*
Degradation of native aquatic plants	7	18	15	21	8	4	18	*66*	*2.2*
Water quality degradation	9	19	12	26	3	7	14	*67*	*2.2*
Loss of fish habitat	13	16	10	19	12	4	16	*61*	*2.2*
Noise pollution	10	19	16	26	7	4	9	*72*	*2.2*
Loss of wildlife habitat	11	18	17	17	12	3	12	*67*	*2.1*
Light pollution	12	22	26	13	5	2	11	*68*	*1.8*
Other	0	0	0	2	4	6	2	*12*	*4.3*



#20

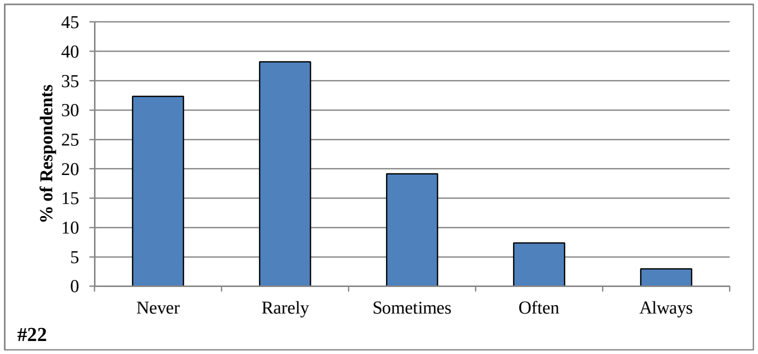
#21 From the list below, please rank your top three concerns regarding Lake George.

	1st	2nd	3rd	*% Ranked*
Aquatic invasive species	28	8	3	*14.2*
Water quality degradation	15	16	5	*13.1*
Septic system discharge	7	7	9	*8.4*
Excessive aquatic plant growth	4	7	11	*8.0*
Shoreline erosion	8	5	7	*7.3*
Loss of fish habitat	6	7	6	*6.9*
Algae blooms	3	5	11	*6.9*
Excessive fishing pressure	7	7	4	*6.5*
Boat traffic	3	7	6	*5.8*
Insufficient boating safety	3	7	5	*5.5*
Shoreland property runoff	2	4	4	*3.6*
Degradation of native aquatic plants	0	3	5	*2.9*
Lakeshore development	2	2	3	*2.5*
Loss of wildlife habitat	1	1	4	*2.2*
Noise pollution	3	2	1	*2.2*
Light pollution	1	2	0	*1.1*
Loss of shoreline vegetation	0	1	1	*0.7*
Other	3	1	2	*2.2*
	96	92	87	*100.0*



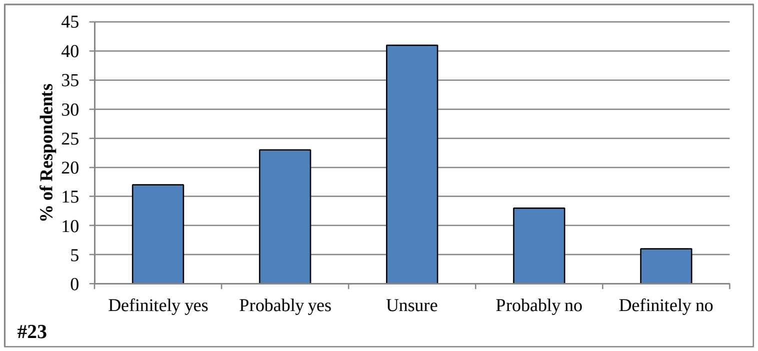
#22 During open water season how often does aquatic plant growth, including algae, negatively impact your enjoyment of the lake?

	Total	%
Never	22	*32.4*
Rarely	26	*38.2*
Sometimes	13	*19.1*
Often	5	*7.4*
Always	2	*2.9*
	68	*100.0*



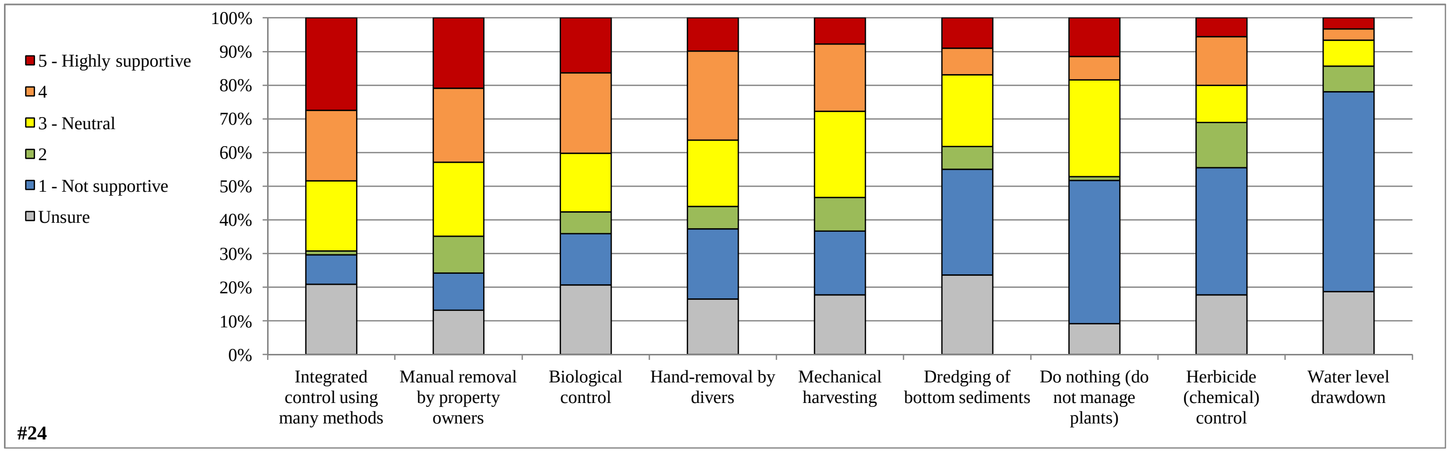
#23 Considering your answer to the question #22, do you believe aquatic plant control is needed on Lake George?

	Total	%
Definitely yes	17	*17.0*
Probably yes	23	*23.0*
Unsure	41	*41.0*
Probably no	13	*13.0*
Definitely no	6	*6.0*
	100	*100.0*



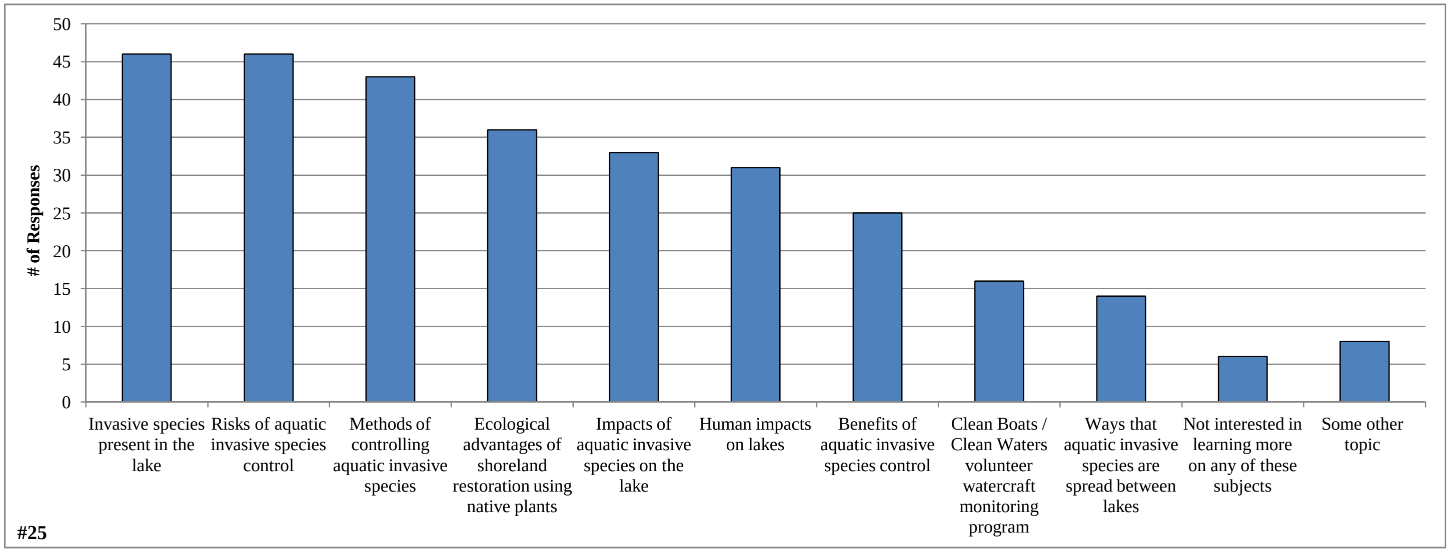
#24 Aquatic plants can be professionally managed using many techniques. What is your level of support for the responsible use of the following techniques on Lake George?

	1 - Not supportive	2	3 - Neutral	4	5 - Highly supportive	Unsure	Total	Average
Integrated control using many methods	8	1	19	19	25	19	*72*	*3.7*
Manual removal by property owners	10	10	20	20	19	12	*79*	*3.4*
Biological control	14	6	16	22	15	19	*73*	*3.2*
Hand-removal by divers	19	6	18	24	9	15	*76*	*3.0*
Mechanical harvesting	17	9	23	18	7	16	*74*	*2.9*
Dredging of bottom sediments	28	6	19	7	8	21	*68*	*2.4*
Do nothing (do not manage plants)	37	1	25	6	10	8	*79*	*2.4*
Herbicide (chemical) control	34	12	10	13	5	16	*74*	*2.2*
Water level drawdown	54	7	7	3	3	17	*74*	*1.6*



#25 Which of these subjects would you like to learn more about?

	Total
Invasive species present in the lake	46
Risks of aquatic invasive species control	46
Methods of controlling aquatic invasive species	43
Ecological advantages of shoreland restoration using native plants	36
Impacts of aquatic invasive species on the lake	33
Human impacts on lakes	31
Benefits of aquatic invasive species control	25
Clean Boats / Clean Waters volunteer watercraft monitoring program	16
Ways that aquatic invasive species are spread between lakes	14
Not interested in learning more on any of these subjects	6
Some other topic	8



NAVIGATION AND SAFETY ON LAKE GEORGE

#26 Wisconsin Act 31 states that is is illegal to operate a boat at a speed faster than slow-no-wake while within 100 feet, or a personal watercraft within 200 feet, from a shoreline, pier, raft, or buoyed area. Were you aware of this regulation?

	Total	%
Yes	87	*92.6*
No	7	*7.4*
Unsure	1	*1.1*
	94	*100.0*

#27 The minimum distance between the big island and piers along the mainland to the northwest is less than 200 feet making it illegal for any watercraft, including all boats and personal watercraft, to operate at a speed faster than slow-no wake through this channel while piers are in the water. Do you believe the channel between the big island and the mainland should be marked with slow-no wake buoys to alert watercraft operators to this safety issue?

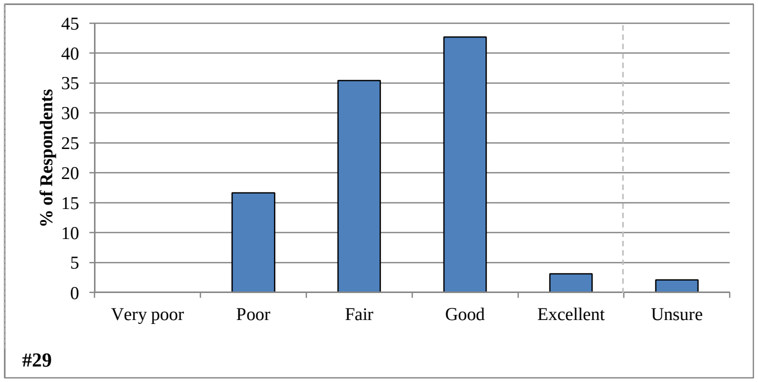
	Total	%
Yes	76	*79.2*
No	14	*14.6*
Unsure	6	*6.3*
	96	*100.0*

#28 What is your opinion of the number of buoys identifying rocks, channels, the public beach, and other areas of navigational interest on Lake George?

	Total	%
Too many	1	*1.0*
Just right	58	*60.4*
Too few	29	*30.2*
Unsure	8	*8.3*
	96	*100.0*

#29 In general, would you say the safety practices of boaters on Lake George are:

	Total	%
Very poor	0	*0.0*
Poor	16	*16.7*
Fair	34	*35.4*
Good	41	*42.7*
Excellent	3	*3.1*
Unsure	2	*2.1*
	96	*100.0*



LAKE GEORGE LAKE ASSOCIATION

#30 Before receiving this mailing, have you ever heard of the Lake George Lake Association?

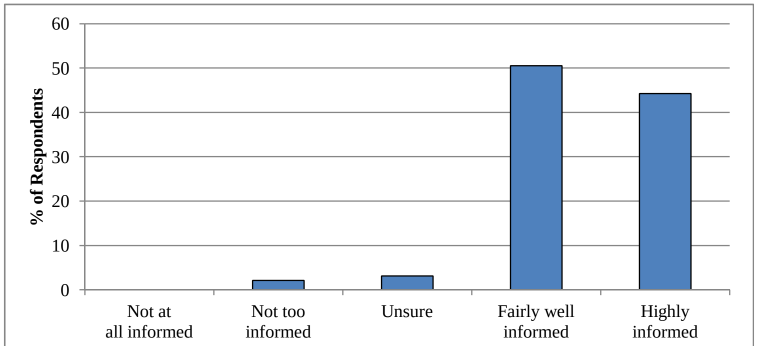
	Total	%
Yes	98	*99.0*
No	1	*1.0*
	99	*100.0*

#31 What is your membership status with the Lake George Lake Association?

	Total	%
Current member	86	*88.7*
Former member	4	*4.1*
Never been a member	7	*7.2*
	97	*100.0*

#32 How informed has the Lake George Lake Association kept you regarding issues with the lake and its management?

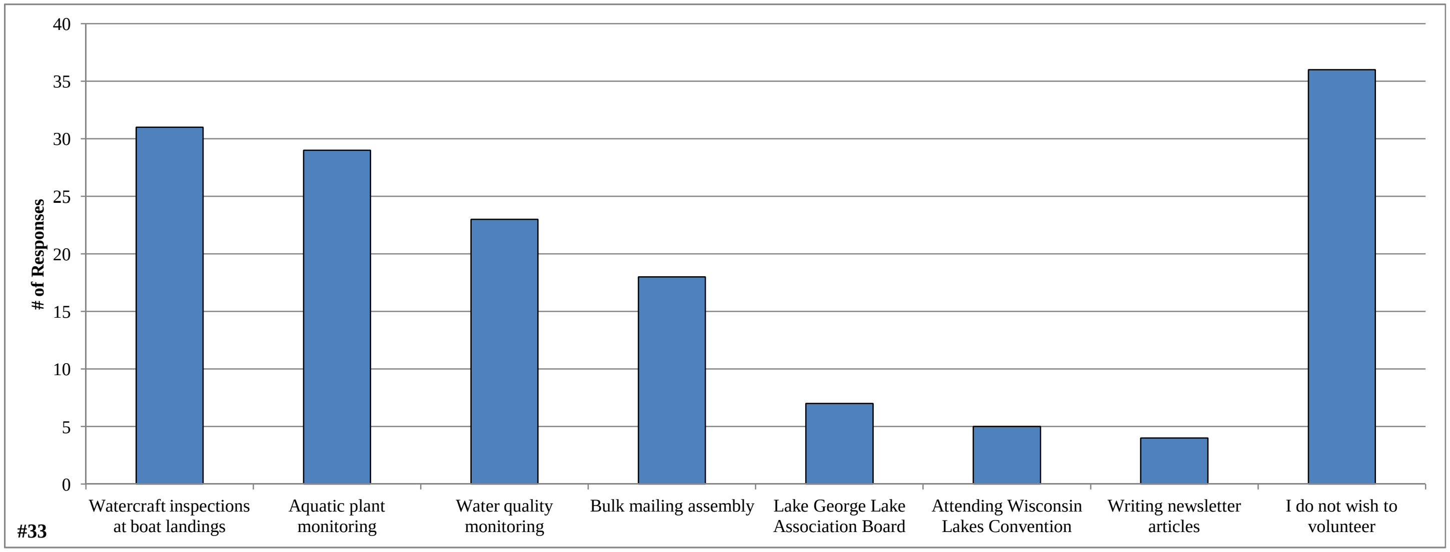
	Total	%
Not at all informed	0	*0.0*
Not too informed	2	*2.1*
Unsure	3	*3.2*
Fairly well informed	48	*50.5*
Highly informed	42	*44.2*
	95	*100.0*



#32

#33 Please circle the activities you would be willing to participate in if the Lake George Lake Association requires additional assistance.

	Total
Watercraft inspections at boat landings	31
Aquatic plant monitoring	29
Water quality monitoring	23
Bulk mailing assembly	18
Lake George Lake Association Board	7
Attending Wisconsin Lakes Convention	5
Writing newsletter articles	4
I do not wish to volunteer	36



Survey Number	1g Comment	9i Comment	13m Comment	19p Comment	20r Comment	21r Comment	25k Comment	Other Comments (and Question 34)
1						I think they are all important		Keep up the good work.
2								
3								See attached comment sheet.
4								See attached comment sheet.
5					Indian spearfishing	Spearing		
6								
7								See attached comment sheet.
8					Control lake water level and need to clean up inlet		See attached comment sheet.	See attached comment sheet.
9								Excessive fishing pressure = spearing. Noise pollution and boat traffic = jet skis
10								
11	was previous property owner							Current plans for a community sewage system-costs, disruption, etc. Setback of houses from water. Housing code.
12	Recreational							See attached comment sheet.
13								
14			Proximity to town				Methods to control fishing pressure, jet skis, boat traffic and ensure safety.	
15								
16								
17								
18			All are important			The Lake Association making rules.		See attached comment sheet.
19								See attached comment sheet.
20					Little/no enforcement of no wake near shores after hours			See attached comment sheet.
21				Species of aquatic plants that were not present 5 years ago				
22								
23								
24					Litter pollution			See attached comment sheet.
25								
26								
27								
28								
29	Used 4/5 mos a yr		Beats St. Louis in the summer					You people do a good job and please know it's appreciated.
30								
31								See attached comment sheet.
32								
33		Rock bass						The lake assoc has been doing a fantastic job. Thanks to all.
34					Spearfishing			See attached comment sheet.
35								See attached comment sheet.
36								See attached comment sheet.
37								
38								
39					Fish spearing in spring	Fish spearing by Indians yearly		See attached comment sheet.
40								See attached comment sheet.
41		6 months per yr	Cooler weather		Climate change (warming waters)	Temperature increase (This question mixes causes and effects)	Agree edicuation is critical. We are fimiliar w/ all these issues. Think you should add info on effects of warming temperatures on lake ecology.	See attached comment sheet.
42			Privacy					
43								
44								Thank you to the Lake George Assoc active volunteers! We appreciate your hard work and dedication.
45					Spearing in spring		boating and PWC safety	See attached comment sheet.
46					Spearing			
47	and our use							
48					Over population of muskies		How to improve lakes fishing for all species of fish	Markers are removed too early in the fall.
49								See attached comment sheet.
50							well read on topics-lifelong lake residents	See attached comment sheet.
51								
52								
53								
54	rental and personal use							
55								

Survey Number	1g Comment	9i Comment	13m Comment	19p Comment	20r Comment	21r Comment	25k Comment	Other Comments (and Question 34)
56								Boating safety practices of tourists is a 2, of locals is a 5.
57								I appreciate the efforts to educate stakeholders and bringing these important topics forward for discussion. Many thanks
58								See attached comment sheet.
59								
60								
61								
62				Indiginous milfoil in our bay this year.			Getting rid of increased native milfoil.	See attached comment sheet
63								
64								
65			Family gathering spot					
66								See attached comment sheet
67	I use it for myself about 1 week a year.					I appreciate the fact that I have never seen jetskis, water skiing, lg motor boats on Lake George.		See attached comment sheet
68								See attached comment sheet
69								
70								
71								See attached comment sheet
72								
73								
74								See attached comment sheet.
75								
76				No idea			Tell me anything I need to know - am elderly - don't fish.	
77								
78								
79					Spearing			
80								
81	Free renter year round is family member, other family uses throught year, our family visits on weekends.							
82								
83								
84								
85								
86								See attached comment sheet
87			Income					See attached comment sheet
88								
89	Resort/Residence							See attached comment sheet
90								
91	2nd home visiting at least 2 wks every month			increased moss	In summer ski boats and jetskis cause boat traffic and noise pollution	Boat traffic from ski boats and jet skis		
92								
93								
94	Part time year round				Spearing			See attached comment sheet
95								
96								
97								
98								
99								
100			Location/proximity					See attached comment sheet
101								See attached comment sheet
102								
103								See attached comment sheet

C

APPENDIX C

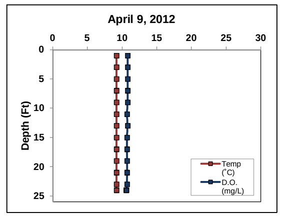
Water Quality Data

Lake George

Date: 4/9/2012
Time: 9:15
Weather: 100% sun, windy, 40°F
Entry: TWH

Max Depth: 25.7
LGS Depth (ft): 3.0
LGB Depth (ft): 21.0
Secchi Depth (ft): 3.6

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	9.2	10.8	8.4	96.0
3	9.2	10.8	8.5	96.0
5	9.2	10.8	8.5	97.0
7	9.2	10.8	8.5	97.0
9	9.2	10.8	8.5	96.0
11	9.2	10.7	8.5	97.0
13	9.2	10.8	8.5	96.0
15	9.2	10.7	8.5	97.0
17	9.2	10.7	8.5	96.0
19	9.2	10.7	8.5	96.0
21	9.2	10.7	8.5	96.0
23	9.2	10.7	8.5	96.0
24	9.2	10.6	8.5	96.0



Parameter	LGS	LGB
Total P (µg/L)	33.00	34.00
Dissolved P (µg/L)	ND	ND
Chl-a (µg/L)	10.10	NA
TKN (µg/L)	670.00	860.00
NO_3 + NO_2-N (µg/L)	111.00	113.00
NH_3-N (µg/L)	ND	ND
Total N (µg/L)	781.00	973.00
Lab Cond. (µS/cm)	113.00	111.00
Lab pH	7.68	7.71
Alkalinity (mg/L $CaCO_3$)	32.40	32.60
Total Susp. Solids (mg/L)	5.00	5.00
Calcium (mg/L)	10.20	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	60.00	NA
Turbidity (NTU)	NA	NA

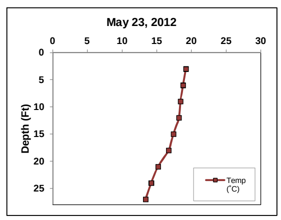
Data collected by TWH (Onterra) Brown colored water observed.

Lake George

Date: 5/23/2012
Time:
Weather:
Entry: TWH

Max Depth:
LGS Depth (ft): 6.0
LGB Depth (ft):
Secchi Depth (ft): 8.0

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3	19.2			
6	18.8			
9	18.4			
12	18.2			
15	17.4			
18	16.7			
21	15.2			
24	14.2			
27	13.4			



Parameter	LGS	LGB
Total P (µg/L)	20.00	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	NA	NA
TKN (µg/L)	630.00	NA
NO_3 + NO_2-N (µg/L)	ND	NA
NH_3-N (µg/L)	ND	NA
Total N (µg/L)	630.00	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

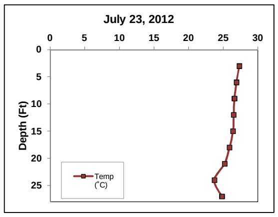
Data collected by Pam McVety (Citizen Lake Monitoring Network)

Lake George

Date: 7/23/2012
Time:
Weather:
Entry: TWH

Max Depth:
LGS Depth (ft): 6.0
LGB Depth (ft):
Secchi Depth (ft): 6.5

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3	27.3			
6	26.9			
9	26.6			
12	26.5			
15	26.4			
18	25.9			
21	25.2			
24	23.7			
27	24.8			



Parameter	LGS	LGB
Total P (µg/L)	26.00	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	9.31	NA
TKN (µg/L)	690.00	NA
NO_3 + NO_2-N (µg/L)	ND	NA
NH_3-N (µg/L)	ND	NA
Total N (µg/L)	690.00	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

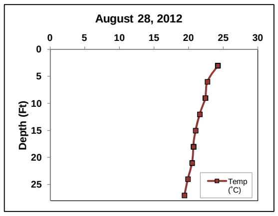
Data collected by Pam McVety (Citizen Lake Monitoring Network)

Lake George

Date: 8/28/2012
Time:
Weather:
Entry: TWH

Max Depth:
LGS Depth (ft): 6
LGB Depth (ft):
Secchi Depth (ft): 5

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3	24.2			
6	22.7			
9	22.4			
12	21.6			
15	21			
18	20.7			
21	20.5			
24	19.9			
27	19.4			



Parameter	LGS	LGB
Total P (µg/L)	28.00	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	22.40	NA
TKN (µg/L)	870*	NA
NO_3 + NO_2-N (µg/L)	ND	NA
NH_3-N (µg/L)	ND	NA
Total N (µg/L)	870.00	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

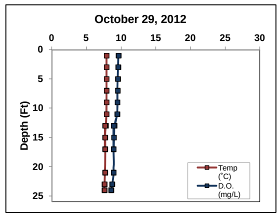
Data collected by Pam McVety (Citizen Lake Monitoring Network)

Lake George

Date: 10/29/2012
Time: 16:15
Weather: 100% sun, 46F, slight breeze
Entry: EEC

Max Depth: 24.4
LGS Depth (ft): 3
LGB Depth (ft): 21
Secchi Depth (ft): 4.7

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	7.9	9.63		
3	7.9	9.58	7.34	
5	7.9	9.54		
7	7.9	9.5		
9	7.9	9.47		
11	7.9	9.45		
13	7.8	9.05	7.29	
15	7.7	8.98		
17	7.7	8.92		
13	7.7	8.91		
21	7.7	8.92	7.26	
23	7.6	8.71		
24	7.6	8.57	7.24	



Parameter	LGS	LGB
Total P (µg/L)	41.00	45.00
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	11.30	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

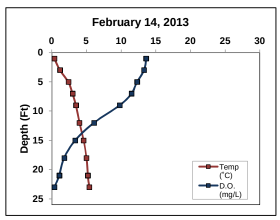
Data collected by EJG (Onterra)

Lake George

Date: 2/14/2013
Time: 9:06
Weather: Moderate breeze, 26°F, snowing
Entry: DAC

Max Depth: 24
LGS Depth (ft): 3
LGB Depth (ft): 21
Secchi Depth (ft): 7

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	0.4	13.6		
3	1.2	13.3		
5	2.4	12.3		
7	3	11.5		
9	3.5	9.8		
12	4	6.1		
15	4.6	3.4		
18	5	1.8		
21	5.2	1.1		
23	5.4	0.4		



Onterra, LLC

Parameter	LGS	LGB
Total P (µg/L)	26.00	28.00
Dissolved P (µg/L)	ND	4.00
Chl-a (µg/L)	NA	NA
TKN (µg/L)	550.00	980.00
$NO_3 + NO_2$-N (µg/L)	52.00	293.00
NH_3-N (µg/L)	27.00	390.00
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

Water Quality Data

2012	Surface		Bottom	
Parameter	Count	Mean	Count	Mean
Secchi Depth (feet)	6	5.8	NA	NA
Total P (µg/L)	6	29.0	3	35.7
Dissolved P (µg/L)	2	ND	2	4.0
Chl a (µg/L)	4	13.3	0	NA
TKN (µg/L	4	635.0	2	920.0
NO3+NO2-N (µg/L)	5	81.5	2	203.0
NH3-N (µg/L)	5	27.0	2	390.0
Total N (µg/L)	4	742.8	1	973.0
Lab Cond. (µS/cm)	1	113.0	1	111.0
Lab pH	1	7.7	1	7.7
Alkal (mg/l CaCO3)	1	32.4	1	32.6
Total Susp. Solids (mg/l)	1	5.0	1	5.0
Calcium (µg/L)	1	10.2	0	NA
Magnesium (mg/L)	0	NA	0	NA
Hardness (mg/L)	0	NA	0	NA
Color (SU)	1	60.0	0	NA
Turbidity (NTU)	0	NA	0	NA

Morphological / Geographical Data

Parameter	Value
Acreage	
Volume (acre-feet)	
Perimeter (miles)	
Shoreland Developmetnt Factor	
Maximum Depth (feet)	
County	
WBIC	
Lillie Mason Region (1983)	NLF Ecoregion
Nichols Ecoregion (1999)	NLFL

Watershed Data

WiLMS Class	Acreage	kg/yr	lbs/yr
Forest			0.0
Open Water			0.0
Pasture/Grass			0.0
Row Crops			0.0
Urban - Rural Residential			0.0
Wetland			0.0
Watershed to Lake Area			

4477.61194

2600

May	1		
June	2		
July	3		
Aug	2		
Sept	2		
Oct	1		
	11	528	

Trophic State Index (TSI)

Year	TP	Chl-a	Secchi
1973			57.1
1974			60.4
1979			
2003			
2004	53.0	61.7	52.1
2005	50.4	53.2	49.3
2006	52.4	55.9	54.0
2007	52.5	58.3	51.9
2008	52.9	54.8	54.7
2009	52.2	56.7	52.6
2010	52.4	59.7	54.1
2011	55.3	58.8	58.1
2012	51.7	59.7	51.9
All Years (Weighted)	52.6	57.8	53.3
Shallow, Lowland Drainage Lakes	54.6	52.6	52.4
NLF Ecoregion	48.1	47.5	45.7

	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
1973	2	4.4	1	4.0								
1974	3	4.8	1	3.2								
1979					1	23.5	0					
2003	3	3.5	0									
2004	12	5.7	8	5.7	3	28.3	2	23.8	3	37.7	2.0	29.5
2005	5	6.0	3	6.9	4	10.9	3	10.1	4	26.5	3.0	24.7
2006	7	4.8	6	5.0	4	14.8	3	13.2	4	31.5	3.0	28.3
2007	4	5.8	4	5.8	3	16.8	3	16.8	3	28.7	3.0	28.7
2008	5	4.8	5	4.8	3	11.8	3	11.8	3	29.3	3.0	29.3
2009	4	5.6	2	5.5	3	14.3	3	14.3	3	28.0	3.0	28.0
2010	3	4.9	3	4.9	3	19.4	3	19.4	3	28.3	3.0	28.3
2011	3	3.8	3	3.8	3	17.7	3	17.7	3	34.7	3.0	34.7
2012	5	5.6	2	5.8	5	15.9	3	19.4	5	29.6	2.0	27.0
All Years (Weighted)		5.2		5.2		16.6		16.0		30.3		28.8
Shallow, Lowland Drainage Lakes				5.6				9.4				33.0
NLF Ecoregion				8.9				5.6				21.0

July 2012 N: 690.0
July 2012 P: 26.0

Summer 2012 N:P 27 :1

D

APPENDIX D

Watershed Analysis WiLMS Results

Date: 2/11/2013 Scenario: Lake George Current

Lake Id: Lake George
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 1989.0 acre
Total Unit Runoff: 12.20 in.
Annual Runoff Volume: 2022.2 acre-ft
Lake Surface Area <As>: 442.0 acre
Lake Volume <V>: 4798.3 acre-ft
Lake Mean Depth <z>: 10.9 ft
Precipitation - Evaporation: 5.8 in.
Hydraulic Loading: 5045.8 acre-ft/year
Areal Water Load <qs>: 11.4 ft/year
Lake Flushing Rate <p>: 1.05 1/year
Water Residence Time: 0.95 year
Observed spring overturn total phosphorus (SPO): 33.0 mg/m^3
Observed growing season mean phosphorus (GSM): 30.3 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	0.0	0.50	1.00	3.00	0.0	0	0	0
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	179.0	0.10	0.30	0.50	9.1	7	22	36
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)	27.0	0.05	0.10	0.25	0.5	1	1	3
Wetlands	829.0	0.10	0.10	0.10	14.0	34	34	34
Forest	954.0	0.05	0.09	0.18	14.5	19	35	69
Lake Surface	442.0	0.10	0.30	1.00	22.4	18	54	179

POINT SOURCE DATA

Point Sources	Water Load (m^3/year)	Low (kg/year)	Most Likely (kg/year)	High (kg/year)	Loading %
Lake Thompson Input	3466135.0	0.0	84.9	0.0	35.5

SEPTIC TANK DATA

Description		Low	Most Likely	High	Loading %
Septic Tank Output (kg/capita-year)		0.30	0.50	0.80	
# capita-years	190.0				
% Phosphorus Retained by Soil		98.0	90.0	80.0	
Septic Tank Loading (kg/year)		1.14	9.50	30.40	4.0

TOTALS DATA

Description	Low	Most Likely	High	Loading %
Total Loading (lb)	175.6	527.3	774.4	100.0
Total Loading (kg)	79.7	239.2	351.3	100.0
Areal Loading (lb/ac-year)	0.40	1.19	1.75	
Areal Loading (mg/m^2-year)	44.54	133.72	196.38	
Total PS Loading (lb)	0.0	187.2	0.0	35.5
Total PS Loading (kg)	0.0	84.9	0.0	35.5
Total NPS Loading (lb)	133.7	200.9	313.0	60.5
Total NPS Loading (kg)	60.6	91.1	142.0	60.5

Phosphorus Prediction and Uncertainty Analysis Module

Date: 2/11/2013   Scenario: 71

Observed spring overturn total phosphorus (SPO): 33.0 mg/m^3

Observed growing season mean phosphorus (GSM): 30.3 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	7	22	32	-8	-26
Canfield-Bachmann, 1981 Natural Lake	8	21	28	-9	-30
Canfield-Bachmann, 1981 Artificial Lake	9	20	26	-10	-33
Rechow, 1979 General	3	8	12	-22	-73
Rechow, 1977 Anoxic	10	30	44	0	0
Rechow, 1977 water load<50m/year	5	16	24	-14	-46
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	7	21	31	-12	-36
Vollenweider, 1982 Combined OECD	7	18	24	-14	-44
Dillon-Rigler-Kirchner	3	10	15	-23	-70
Vollenweider, 1982 Shallow Lake/Res.	5	14	19	-18	-57
Larsen-Mercier, 1976	6	19	29	-14	-42
Nurnberg, 1984 Oxic	4	12	17	-18	-59

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	11	32	FIT	0	GSM
Canfield-Bachmann, 1981 Natural Lake	7	60	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	6	58	FIT	1	GSM
Rechow, 1979 General	4	12	FIT	0	GSM
Rechow, 1977 Anoxic	16	43	FIT	0	GSM
Rechow, 1977 water load<50m/year	8	24	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	9	35	FIT	0	SPO
Vollenweider, 1982 Combined OECD	8	31	FIT	0	ANN
Dillon-Rigler-Kirchner	5	15	FIT	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	6	24	FIT	0	ANN
Larsen-Mercier, 1976	10	27	P Pin	0	SPO
Nurnberg, 1984 Oxic	5	19	FIT	0	ANN

Water and Nutrient Outflow Module

Date: 2/11/2013 Scenario: 62
Average Annual Surface Total Phosphorus: 31.7mg/m^3
Annual Discharge: 5.05E+003 AF => 6.22E+006 m^3
Annual Outflow Loading: 415.6 LB => 188.5 kg

E

APPENDIX E

Aquatic Plant Survey Data

Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
1	45.6175827	-89.33018017	2	M	P		2											1							1		1																			
2	45.6171237	-89.33018563	2	S	P		1																1						1											1						
3	45.6171199	-89.32953153	3	M			1	1														1	1																1							
4	45.617116	-89.32887744	2	M	P		2	2	1																															1						
5	45.6166724	-89.33149928	2	S	P		1														1																									
6	45.6166685	-89.33084519	2	S	P		1														1	1																			1					
7	45.6166647	-89.3301911	4	M	P		3	1	1																									1							2					
8	45.6166609	-89.329537	4	M	P		1	1	1															1																1						
9	45.616657	-89.32888291	4	M	P		3	1	2					1																						1										
10	45.6166532	-89.32822882	2	M	P		3		3															1												1										
11	45.6162401	-89.33608335	1	S	P		1																1		1													1								
12	45.6162363	-89.33542926	4	M	P		2	1	1														1										2													
13	45.6162324	-89.33477517	4	S	P		1		1				1													1						1	1													
14	45.6162286	-89.33412109	5	M	P		2		2														1																1							
15	45.6162248	-89.333467	5	M	P		2		1																								2													
16	45.6162172	-89.33215882	3	S	P		1																1			1										1					1					
17	45.6162134	-89.33150474	6	M	P		1														1													1							1					
18	45.6162095	-89.33085065	6	M	P																																									
19	45.6162057	-89.33019656	6	M	P		1																								1										1					
20	45.6162019	-89.32954247	3	S	P																																									1
21	45.616198	-89.32888839	2	S	P		1																										1					1								
22	45.6161942	-89.3282343	1	S	P		1									1									1													1							1	
23	45.6157848	-89.33674285				TERRESTRIAL																																								
24	45.615781	-89.33608877	5	M	P		3																										3													
25	45.6157772	-89.33543468	6	M	P		1		1												1													1												
26	45.6157734	-89.3347806	6	M	P		2		1												1	1												1							1					
27	45.6157696	-89.33412652	2	R	P																																									
28	45.6157658	-89.33347244	1	S	P																																									
29	45.615762	-89.33281835	5	S	P		2	1	1													1											1													
30	45.6157582	-89.33216427	5	S	P		1																										1			1					1					
31	45.6157543	-89.33151019	7	M	P																																									
32	45.6157505	-89.33085611	8	M	P																																									
33	45.6157467	-89.33020203	7	M	P		1														1	1																								
34	45.6157428	-89.32954794	5	M	P		2		1												1	1				1				1											1					
35	45.615739	-89.32889386	5	S	P		1																							1			1								1					
36	45.6157352	-89.32823978	5	M	P		3		1																								3													
37	45.6157313	-89.3275857	1	S	P		1							1							1																	1								
38	45.6153258	-89.33674826	5	S	P		2															1									1		1								2					
39	45.615322	-89.33609418	9	M	P																																									
40	45.6153182	-89.33544011	3	S	P		1															1																								1
41	45.6153144	-89.33478603	6	M	P		1																																		1					
42	45.6153106	-89.33413195	7	M	P																																									
43	45.6153068	-89.33347787	2	R	P																																									
44	45.615303	-89.3328238	3	R	P																																									
45	45.6152991	-89.33216972	5	S	P		1															1																								
46	45.6152953	-89.33151564	10	M	P																																									
47	45.6152915	-89.33086157	9	M	P																																									
48	45.6152877	-89.33020749	8	M	P																																									
49	45.6152838	-89.32955341	7	S	P		2														1	1												1												
50	45.61528	-89.32889934	7	M	P		1			1											1	1												1							1					
51	45.6152761	-89.32824526	6	M	P		1														1												1													
52	45.6152723	-89.32759119	1	S	P		1					1																									1				1					
53	45.6148706	-89.33740775	1	S	P		3														2												1		1											
54	45.6148668	-89.33675367	3	R	P		1																			1															1					
55	45.614863	-89.3360996	11	M	P																																									
56	45.6148592	-89.33544553	6	S	P		1		1																																					
57	45.6148554	-89.33479146	6	S	P																																									
58	45.6148516	-89.33413738	7	R	P																																									
59	45.6148478	-89.33348331	11	S	P																																									
60	45.6148439	-89.33282924	12	M	P																																									
61	45.6148401	-89.33217517	12	M	P																																									
62	45.6148363	-89.3315211	11	M	P																																									
63	45.6148325	-89.33086703	11	M	P																																									
64	45.6148286	-89.33021295	10	M	P																																									
65	45.6148248	-89.32955888	9	M	P																																									
66	45.614821	-89.32890481	7	M	P		1														1	1												1												
67	45.6148171	-89.32825074	5	M	P		1														1	1											1								1					
68	45.6148133	-89.32759667				DOCK																																								
69	45.6144154	-89.33806722		S	P		1														1																									
70	45.6144116	-89.33741315	2	S	P		1						1								1		1		1																					
71	45.6144078	-89.33675908	10	S	P																																									
72	45.614404	-89.33610502	13	M	P																																									
73	45.6144002	-89.33545095				DEEP																																								
74	45.6143964	-89.33479688				DEEP																																								
75	45.6143926	-89.33414282				DEEP																																								
76	45.6143887	-89.33348875				DEEP																																								
77	45.6143849	-89.33283468	12	M	P																																									
78	45.6143811	-89.33218062	12	M	P																																									
79	45.6143773	-89.33152655	12	M	P																																									
80	45.6143735	-89.33087249	12	M	P																																									

Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
81	45.6143696	-89.33021842	11	M	P																																									
82	45.6143658	-89.32956435	11	M	P																																									
83	45.6143619	-89.32891029	9	M	P																																									
84	45.6143581	-89.32825622	5	M	P		1																																		1					
85	45.6143543	-89.32760216				NONNAVIGABLE (PLANTS)																																								
86	45.6139601	-89.33872668	2	S	P		1				1		1							1	1			1	1																1					
87	45.6139564	-89.33807262	6	S	P		1																										1								1					
88	45.6139526	-89.33741856	9	S	P																																									
89	45.6139488	-89.33676449	12	M	P																																									
90	45.613945	-89.33611043	13	M	P																																									
91	45.6139412	-89.33545637	13	M	P																																									
92	45.6139374	-89.33480231				DEEP																																								
93	45.6139335	-89.33414825				DEEP																																								
94	45.6139297	-89.33349419				DEEP																																								
95	45.6139259	-89.33284013	4	S	P		2															2				1															1					
96	45.6139221	-89.33218607				DEEP																																								
97	45.6139183	-89.331532				DEEP																																								
98	45.6139144	-89.33087794				DEEP																																								
99	45.6139106	-89.33022388	11	M	P																																									
100	45.6139068	-89.32956982	10	M	P																																									
101	45.6139029	-89.32891576	10	M	P																																									
102	45.6138991	-89.3282617	3	S	P		1		1																					1			1								1					
103	45.6135049	-89.33938613	1	S	P		2														2							1																		
104	45.6135011	-89.33873208	4	S	P																																									
105	45.6134973	-89.33807802	11	M	P																																									
106	45.6134935	-89.33742396	10	S	P																																									
107	45.6134897	-89.33676991	13	M	P																																									
108	45.6134859	-89.33611585	13	M	P																																									
109	45.6134821	-89.33546179	13	M	P																																									
110	45.6134783	-89.33480774				DEEP																																								
111	45.6134745	-89.33415368				DEEP																																								
112	45.6134707	-89.33349963				DEEP																																								
113	45.6134669	-89.33284557				DEEP																																								
114	45.6134631	-89.33219151				DEEP																																								
115	45.6134592	-89.33153746				DEEP																																								
116	45.6134554	-89.3308834				DEEP																																								
117	45.6134516	-89.33022935				DEEP																																								
118	45.6134477	-89.32957529	12	M	P																																									
119	45.6134439	-89.32892124	10	M	P																																									
120	45.6134401	-89.32826718	6	S	P		1																							1											1					
121	45.6130497	-89.34004557	2	S	P		1														1		1																							
122	45.6130459	-89.33939152	8	S	P																																									
123	45.6130421	-89.33873747				DEEP																																								
124	45.6130383	-89.33808342	13	M	P																																									
125	45.6130345	-89.33742937	13	M	P																																									
126	45.6130307	-89.33677532	13	M	P																																									
127	45.6130269	-89.33612127	13	M	P																																									
128	45.6130231	-89.33546721				DEEP																																								
129	45.6130193	-89.33481316				DEEP																																								
130	45.6130155	-89.33415911				DEEP																																								
131	45.6130117	-89.33350506				DEEP																																								
132	45.6130079	-89.33285101				DEEP																																								
133	45.6130041	-89.33219696				DEEP																																								
134	45.6130002	-89.33154291				DEEP																																								
135	45.6129964	-89.33088886				DEEP																																								
136	45.6129926	-89.33023481				DEEP																																								
137	45.6129887	-89.32958076	12	M	P																																									
138	45.6129849	-89.32892671	10	S	P																																									
139	45.612981	-89.32827266	3	S	P		1														1											1									1					
140	45.6125944	-89.340705	4	M	P		2														1	1	1			1															1					
141	45.6125906	-89.34005096				DEEP																																								
142	45.6125869	-89.33939691				DEEP																																								
143	45.6125831	-89.33874287				DEEP																																								
144	45.6125793	-89.33808882				DEEP																																								
145	45.6125755	-89.33743477				DEEP																																								
146	45.6125717	-89.33678073				DEEP																																								
147	45.6125679	-89.33612668				DEEP																																								
148	45.6125641	-89.33547264				DEEP																																								
149	45.6125603	-89.33481859				DEEP																																								
150	45.6125565	-89.33416455				DEEP																																								
151	45.6125527	-89.3335105				DEEP																																								
152	45.6125489	-89.33285645				DEEP																																								
153	45.612545	-89.33220241				DEEP																																								
154	45.6125412	-89.33154837				DEEP																																								
155	45.6125374	-89.33089432				DEEP																																								
156	45.6125336	-89.33024028				DEEP																																								
157	45.6125297	-89.32958623				DEEP																																								
158	45.6125259	-89.32893219	5	R	P		1																																		1					
159	45.6121392	-89.34136442	2	S	P		1																	1																						
160	45.6121354	-89.34071038	12	M	P																																									

Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
161	45.6121316	-89.34005634				DEEP																																								
162	45.6121279	-89.3394023				DEEP																																								
163	45.6121241	-89.33874826				DEEP																																								
164	45.6121203	-89.33809422				DEEP																																								
165	45.6121165	-89.33744018				DEEP																																								
166	45.6121127	-89.33678614				DEEP																																								
167	45.6121089	-89.3361321				DEEP																																								
168	45.6121051	-89.33547806				DEEP																																								
169	45.6121013	-89.33482402				DEEP																																								
170	45.6120975	-89.33416998				DEEP																																								
171	45.6120937	-89.33351594				DEEP																																								
172	45.6120898	-89.3328619				DEEP																																								
173	45.612086	-89.33220786				DEEP																																								
174	45.6120822	-89.33155382				DEEP																																								
175	45.6120784	-89.33089978				DEEP																																								
176	45.6120745	-89.33024574				DEEP																																								
177	45.6120707	-89.3295917				DEEP																																								
178	45.6120669	-89.32893766	2	S	P		1																													1		1								
179	45.6116802	-89.3413698	9	S	P																																									
180	45.6116764	-89.34071576				DEEP																																								
181	45.6116726	-89.34006173				DEEP																																								
182	45.6116688	-89.33940769				DEEP																																								
183	45.611665	-89.33875365				DEEP																																								
184	45.6116613	-89.33809962				DEEP																																								
185	45.6116575	-89.33744558				DEEP																																								
186	45.6116537	-89.33679155				DEEP																																								
187	45.6116499	-89.33613751				DEEP																																								
188	45.6116461	-89.33548348				DEEP																																								
189	45.6116423	-89.33482944				DEEP																																								
190	45.6116385	-89.33417541				DEEP																																								
191	45.6116346	-89.33352137				DEEP																																								
192	45.6116308	-89.33286734				DEEP																																								
193	45.611627	-89.33221331				DEEP																																								
194	45.6116232	-89.33155927				DEEP																																								
195	45.6116193	-89.33090524				DEEP																																								
196	45.6116155	-89.3302512				DEEP																																								
197	45.6116117	-89.32959717				DEEP																																								
198	45.6116078	-89.32894314	11	S	P																																									
199	45.611604	-89.3282891	4	S	P		2															1				1										1					1					
200	45.6116001	-89.32763507	2	S	P		1																															1								1
201	45.6115731	-89.32305684	1	S	P		2		1					1	1						1				1									1		1								1		
202	45.6112249	-89.3420292	2	S	P		2														2																									
203	45.6112211	-89.34137517				DEEP																																								
204	45.6112174	-89.34072114				DEEP																																								
205	45.6112136	-89.34006711				DEEP																																								
206	45.6112098	-89.33941308				DEEP																																								
207	45.611206	-89.33875905				DEEP																																								
208	45.6112022	-89.33810502				DEEP																																								
209	45.6111985	-89.33745099				DEEP																																								
210	45.6111947	-89.33679696				DEEP																																								
211	45.6111909	-89.33614293				DEEP																																								
212	45.6111871	-89.3354889				DEEP																																								
213	45.6111832	-89.33483487				DEEP																																								
214	45.6111794	-89.33418084				DEEP																																								
215	45.6111756	-89.33352681				DEEP																																								
216	45.6111718	-89.33287278				DEEP																																								
217	45.611168	-89.33221875				DEEP																																								
218	45.6111642	-89.33156472				DEEP																																								
219	45.6111603	-89.3309107				DEEP																																								
220	45.6111565	-89.33025667				DEEP																																								
221	45.6111527	-89.32960264				DEEP																																								
222	45.6111488	-89.32894861				DEEP																																								
223	45.611145	-89.32829458	12	M	P																																									
224	45.6111411	-89.32764055	11	S	P																																									
225	45.6111373	-89.32698653	2	R	P		1		1																																					
226	45.611118	-89.32371639				DOCK																																								
227	45.6111141	-89.32306236	4	M	P		3		1	1											2	1				1					1			1		1										
228	45.6111102	-89.32240834	1	S	P		1		1				1				1				1												1								1					
229	45.6107659	-89.34203457	2	S	P																																									
230	45.6107621	-89.34138054	12	M	P																																									
231	45.6107584	-89.34072652				DEEP																																								
232	45.6107546	-89.34007249				DEEP																																								
233	45.6107508	-89.33941847				DEEP																																								
234	45.610747	-89.33876444				DEEP																																								
235	45.6107432	-89.33811042				DEEP																																								
236	45.6107394	-89.33745639				DEEP																																								
237	45.6107356	-89.33680237				DEEP																																								
238	45.6107318	-89.33614834				DEEP																																								
239	45.610728	-89.33549432				DEEP																																								
240	45.6107242	-89.3348403				DEEP																																								

Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
241	45.6107204	-89.33418627				DEEP																																								
242	45.6107166	-89.33353225				DEEP																																								
243	45.6107128	-89.33287822				DEEP																																								
244	45.610709	-89.3322242				DEEP																																								
245	45.6107051	-89.33157018				DEEP																																								
246	45.6107013	-89.33091615				DEEP																																								
247	45.6106975	-89.33026213				DEEP																																								
248	45.6106936	-89.32960811				DEEP																																								
249	45.6106898	-89.32895408				DEEP																																								
250	45.610686	-89.32830006				DEEP																																								
251	45.6106821	-89.32764604	8	S	P																																									
252	45.6106783	-89.32699202	2	S	P		1																														1									
253	45.6106744	-89.32633799	2	S	P		1																														1									
254	45.6106705	-89.32568397	2	S	P		1						1																								1									
255	45.6106667	-89.32502995	3	S	P		1							1							1	1														1		1			1					
256	45.6106628	-89.32437593	6	M	P		2															1				1																				
257	45.610659	-89.32372191	6	M	P		3														1	3								1																
258	45.6106551	-89.32306788	4	S	P		2		1													1											1													
259	45.6106512	-89.32241386	4	M	P		3																							1			3								1					
260	45.6106473	-89.32175984	2	S	P		1																			1													1		1					
261	45.6103069	-89.34203994	1	S	P		1															1																			1					
262	45.6103031	-89.34138592	12	M	P																																									
263	45.6102993	-89.3407319				DEEP																																								
264	45.6102956	-89.34007788				DEEP																																								
265	45.6102918	-89.33942386	14		R																																									
266	45.610288	-89.33876984	13		R																																									
267	45.6102842	-89.33811582	13		R																																									
268	45.6102804	-89.3374618				DEEP																																								
269	45.6102766	-89.33680778				DEEP																																								
270	45.6102728	-89.33615376	8	S	P																																									
271	45.610269	-89.33549974	11	S	P																																									
272	45.6102652	-89.33484572				DEEP																																								
273	45.6102614	-89.3341917	14		R																																									
274	45.6102576	-89.33353768				DEEP																																								
275	45.6102538	-89.33288367				DEEP																																								
276	45.6102499	-89.33222965				DEEP																																								
277	45.6102461	-89.33157563				DEEP																																								
278	45.6102423	-89.33092161				DEEP																																								
279	45.6102385	-89.33026759	14		R																																									
280	45.6102346	-89.32961358	13		R																																									
281	45.6102308	-89.32895956	10	S	P																																									
282	45.6102269	-89.32830554	4	S	P		1															1				1															11					
283	45.6102231	-89.32765152	8	S	P																																									
284	45.6102192	-89.32699751	12	S	P																																									
285	45.6102154	-89.32634349	7	M	P		1															1																								
286	45.6102115	-89.32568947	11	M	P																																									
287	45.6102077	-89.32503546	11	M	P																																									
288	45.6102038	-89.32438144	3	R	P																																									
289	45.6101999	-89.32372742	6	M	P		2														1	1												2												
290	45.6101961	-89.32307341	6	M	P		2															2									1															
291	45.6101922	-89.32241939	6	M	P		1		1																								1													
292	45.6101883	-89.32176537	5	M	P		3		1																								3													
293	45.6098441	-89.34139129	9	S	P																																									
294	45.6098403	-89.34073727	13	M	P																																									
295	45.6098365	-89.34008326	13		R																																									
296	45.6098328	-89.33942924	13		R																																									
297	45.609829	-89.33877523	13		R																																									
298	45.6098252	-89.33812122	13		R																																									
299	45.6098214	-89.3374672	13		R																																									
300	45.6098176	-89.33681319	16		R																																									
301	45.6098138	-89.33615917				DEEP																																								
302	45.60981	-89.33550516	14		R																																									
303	45.6098062	-89.33485115				DEEP																																								
304	45.6098024	-89.33419713				DEEP																																								
305	45.6097986	-89.33354312				DEEP																																								
306	45.6097948	-89.33288911				DEEP																																								
307	45.6097909	-89.33223509				DEEP																																								
308	45.6097871	-89.33158108				DEEP																																								
309	45.6097833	-89.33092707				DEEP																																								
310	45.6097794	-89.33027306				DEEP																																								
311	45.6097756	-89.32961904				DEEP																																								
312	45.6097718	-89.32896503	13		R																																									
313	45.6097679	-89.32831102	13		R																																									
314	45.6097641	-89.32765701	13		R																																									
315	45.6097602	-89.327003	13		R																																									
316	45.6097564	-89.32634898	13		R																																									
317	45.6097525	-89.32569497	12		R																																									
318	45.6097487	-89.32504096	12		R																																									
319	45.6097448	-89.32438695	10	M	P																																									
320	45.6097409	-89.32373294	7	R	P																																									

Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
321	45.609737	-89.32307893	6	S	P																																										
322	45.6097332	-89.32242492	6	M	P		3															3												1													
323	45.6097293	-89.32177091	4	S	P		2														1	1				1							1								1						
324	45.6093851	-89.34139666	3	S	P		1																																		1						
325	45.6093813	-89.34074265	13		R																																										
326	45.6093775	-89.34008864	13		R																																										
327	45.6093737	-89.33943463	13		R																																										
328	45.60937	-89.33878062	13	M	P																																										
329	45.6093662	-89.33812661	13	M	P																																										
330	45.6093624	-89.33747261	12	S	P																																										
331	45.6093586	-89.3368186	8	S	P																																										
332	45.6093548	-89.33616459	2	R	P																																										
333	45.609351	-89.33551058	2	S	P		11		1																																1						
334	45.6093472	-89.33485657	12		R																																										
335	45.6093434	-89.33420257	14		R																																										
336	45.6093396	-89.33354856				DEEP																																									
337	45.6093357	-89.33289455				DEEP																																									
338	45.6093319	-89.33224054				DEEP																																									
339	45.6093281	-89.33158653	22		R																																										
340	45.6093243	-89.33093253	23		R																																										
341	45.6093204	-89.33027852	20		R																																										
342	45.6093166	-89.32962451	18		R																																										
343	45.6093128	-89.32897051	15		R																																										
344	45.6093089	-89.3283165	14		R																																										
345	45.6093051	-89.32766249	14		R																																										
346	45.6093012	-89.32700849	14		R																																										
347	45.6092974	-89.32635448	14		R																																										
348	45.6092935	-89.32570047	13	M	P																																										
349	45.6092896	-89.32504647	9	M	P																																										
350	45.6092858	-89.32439246	9	M	P																																										
351	45.6092819	-89.32373846	8	M	P																																										
352	45.609278	-89.32308445	7	M	P																																										
353	45.6092741	-89.32243044	6	M	P		2															1									1										1						
354	45.6092703	-89.32177644	2	S	P								1																																		
355	45.6089223	-89.34074803	6	S	P		1																																		1						
356	45.6089185	-89.34009402	12	M	P																																										
357	45.6089147	-89.33944002	8	M	P																																										
358	45.6089109	-89.33878602	8	R	P																																										
359	45.6088843	-89.334208	6	S	P																																										
360	45.6088805	-89.33355399	13	M	P																																										
361	45.6088767	-89.33289999	15		R																																										
362	45.6088729	-89.33224599	17			DEEP																																									
363	45.6088691	-89.33159199	20			DEEP																																									
364	45.6088652	-89.33093798	23			DEEP																																									
365	45.6088614	-89.33028398	20			DEEP																																									
366	45.6088576	-89.32962998	20		R																																										
367	45.6088537	-89.32897598	17		R																																										
368	45.6088499	-89.32832198	16		R																																										
369	45.608846	-89.32766798	16		R																																										
370	45.6088422	-89.32701398	16		R																																										
371	45.6088383	-89.32635997	15		R																																										
372	45.6088345	-89.32570597	13		R																																										
373	45.6088306	-89.32505197	11	S	P		1															1																									
374	45.6088268	-89.32439797	6	S	P		3															3												1							1						
375	45.6088229	-89.32374397	6	S	P		2		1													1								1			1														
376	45.608819	-89.32308997	2	S	P		1																											1				1									
377	45.6084215	-89.33355943	10	S	P																																										
378	45.6084177	-89.33290543	11	S	P																																										
379	45.6084139	-89.33225144	12	S	P																																										
380	45.6084101	-89.33159744	8	S	P																																										
381	45.6084062	-89.33094344	14		R																																										
382	45.6084024	-89.33028945	24			DEEP																																									
383	45.6083986	-89.32963545				DEEP																																									
384	45.6083947	-89.32898145				DEEP																																									
385	45.6083909	-89.32832746				DEEP																																									
386	45.608387	-89.32767346				DEEP																																									
387	45.6083832	-89.32701947				DEEP																																									
388	45.6083793	-89.32636547				DEEP																																									
389	45.6083755	-89.32571147				DEEP																																									
390	45.6083716	-89.32505748				DEEP																																									
391	45.6083677	-89.32440348	5	R	P		1															1																			1						
392	45.6083639	-89.32374949	3	S	P		1																															1			1						1
393	45.60836	-89.32309549	2	S	P		1										1				1																	1									
394	45.6079587	-89.33291087	1	S	P		1															1		1																							
395	45.6079549	-89.33225688	1	S	P		1														1	1																									
396	45.607951	-89.33160289	2	R	P		1															1																									
397	45.6079472	-89.3309489	20			DEEP																																									
398	45.6079434	-89.33029491	22			DEEP																																									
399	45.6079395	-89.32964092				DEEP																																									
400	45.6079357	-89.32898693				DEEP																																									

Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
401	45.6079319	-89.32833294				DEEP																																								
402	45.607928	-89.32767894				DEEP																																								
403	45.6079242	-89.32702495				DEEP																																								
404	45.6079203	-89.32637096	11	S	P																																									
405	45.6079164	-89.32571697	4	S	P		1															1									1										1					
406	45.6079126	-89.32506298	4	S	P		2														1	1									1															
407	45.6079087	-89.32440899	5	S	P		2														1	2									1										1					
408	45.6079048	-89.323755	4	S	P		2		1												1	1											2								1					
409	45.607901	-89.32310101	1	S	P		1						1																									1								
410	45.6078971	-89.32244702	2	M	P		3		1										1		2		1	1										2												
411	45.6078932	-89.32179304	1	S	P		1		1												1	1		1			1					1		1	1						1					
412	45.6078854	-89.32048506	1	S	P		3			1				1	1						2	1									1			2							1					
413	45.6075414	-89.34011017	3	S	P																																									
414	45.6075377	-89.33945618	3	S	P		1																1																		1					
415	45.6074882	-89.33095436	16		R																																									
416	45.6074844	-89.33030037				DEEP																																								
417	45.6074805	-89.32964639				DEEP																																								
418	45.6074767	-89.3289924				DEEP																																								
419	45.6074728	-89.32833841				DEEP																																								
420	45.607469	-89.32768443				DEEP																																								
421	45.6074651	-89.32703044				DEEP																																								
422	45.6074613	-89.32637646	13			DEEP																																								
423	45.6074574	-89.32572247	2	R	P																																									
424	45.6074458	-89.32376052	5	M	P		2		1																	1							1													
425	45.607442	-89.32310654	4	S	P		1															1	1											1							1					
426	45.6074381	-89.32245255	1	S	P		1	1													1												1	1				1			1					
427	45.6070862	-89.34076954	2	S	P																																									
428	45.6070824	-89.34011555	10	M	P																																									
429	45.6070786	-89.33946157	10	S	P																																									
430	45.6070749	-89.33880759	2	S	P		2																1											1							2					
431	45.6070597	-89.33619166	6	S	P																																									
432	45.6070559	-89.33553768	7	S	P																																									
433	45.6070521	-89.3348837	2	S	P																																									
434	45.6070445	-89.33357574	6	S	P																																									
435	45.6070406	-89.33292176	7	S	P																																									
436	45.607033	-89.33161379	2	R	P																																									
437	45.6070292	-89.33095981				DEEP																																								
438	45.6070253	-89.33030583				DEEP																																								
439	45.6070215	-89.32965185				DEEP																																								
440	45.6070177	-89.32899787				DEEP																																								
441	45.6070138	-89.32834389				DEEP																																								
442	45.60701	-89.32768991				DEEP																																								
443	45.6070061	-89.32703593				DEEP																																								
444	45.6070023	-89.32638195	16			DEEP																																								
445	45.6069984	-89.32572797	2	M	P		1														1	1																			1					
446	45.6066272	-89.34077491	6	R	P																																									
447	45.6066234	-89.34012094	11	M	P																																									
448	45.6066196	-89.33946696	12	M	P																																									
449	45.6066158	-89.33881298	6	S	P																																									
450	45.6066121	-89.33815901	7	S	P																																									
451	45.6066083	-89.33750503	2	S	P																																									
452	45.6066045	-89.33685105	2	S	P		1																1																		1					
453	45.6066007	-89.33619708	5	R	P																																									
454	45.6065969	-89.3355431	10	M	P																																									
455	45.6065931	-89.33488912	10	S	P																																									
456	45.6065893	-89.33423515	11	S	P																																									
457	45.6065854	-89.33358117	11	M	P																																									
458	45.6065816	-89.3329272	12	R	P																																									
459	45.6065778	-89.33227322	2	R	P																																									
460	45.606574	-89.33161925	9	S	P																																									
461	45.6065702	-89.33096527	18			DEEP																																								
462	45.6065663	-89.3303113				DEEP																																								
463	45.6065625	-89.32965732				DEEP																																								
464	45.6065586	-89.32900335				DEEP																																								
465	45.6065548	-89.32834937				DEEP																																								
466	45.606551	-89.3276954				DEEP																																								
467	45.6065471	-89.32704142				DEEP																																								
468	45.6065433	-89.32638745	16			DEEP																																								
469	45.6061719	-89.34143426	6	R	P																																									
470	45.6061682	-89.34078029	12	M	P																																									
471	45.6061644	-89.34012632	12	M	P																																									
472	45.6061606	-89.33947235	12	M	P																																									
473	45.6061568	-89.33881838	11	S	P																																									
474	45.606153	-89.3381644	11	S	P																																									
475	45.6061492	-89.33751043	11	S	P																																									
476	45.6061455	-89.33685646	2	S	P																																									
477	45.6061417	-89.33620249	7	R	P																																									
478	45.6061379	-89.33554852	12	M	P																																									
479	45.606134	-89.33489455	11	R	P																																									
480	45.6061302	-89.33424058	12	M	P																																									

Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
481	45.6061264	-89.33358661	7	R	P																																									
482	45.6061226	-89.33293264	15		R																																									
483	45.6061188	-89.33227867	15		R																																									
484	45.606115	-89.3316247	17			DEEP																																								
485	45.6061111	-89.33097073	20			DEEP																																								
486	45.6061073	-89.33031676				DEEP																																								
487	45.6061035	-89.32966279				DEEP																																								
488	45.6060996	-89.32900882				DEEP																																								
489	45.6060958	-89.32835485				DEEP																																								
490	45.6060919	-89.32770088				DEEP																																								
491	45.6060881	-89.32704691				DEEP																																								
492	45.6060842	-89.32639294	18			DEEP																																								
493	45.6060804	-89.32573897	2	R	P		1																															1								
494	45.6057167	-89.3420936	10	M	P																																									
495	45.6057129	-89.34143963	7	R	P																																									
496	45.6057091	-89.34078567	11	S	P																																									
497	45.6057054	-89.3401317	13			DEEP																																								
498	45.6057016	-89.33947773	14			DEEP																																								
499	45.6056978	-89.33882377	113			DEEP																																								
500	45.605694	-89.3381698	13			DEEP																																								
501	45.6056902	-89.33751584				DEEP																																								
502	45.6056864	-89.33686187	12	S	P																																									
503	45.6056826	-89.3362079	12	M	P																																									
504	45.6056788	-89.33555394	14		R																																									
505	45.605675	-89.33489997	15			DEEP																																								
506	45.6056712	-89.33424601	19			DEEP																																								
507	45.6056674	-89.33359204				DEEP																																								
508	45.6056636	-89.33293808				DEEP																																								
509	45.6056598	-89.33228411				DEEP																																								
510	45.6056559	-89.33163015				DEEP																																								
511	45.6056521	-89.33097618				DEEP																																								
512	45.6056483	-89.33032222				DEEP																																								
513	45.6056445	-89.32966826				DEEP																																								
514	45.6056406	-89.32901429				DEEP																																								
515	45.6056368	-89.32836033				DEEP																																								
516	45.6056329	-89.32770636				DEEP																																								
517	45.6056291	-89.3270524				DEEP																																								
518	45.6056252	-89.32639844				DEEP																																								
519	45.6056214	-89.32574447				DEEP																																								
520	45.6056175	-89.32509051	11	S	P																																									
521	45.6052652	-89.34340689	3	R	P		1															1																								
522	45.6052614	-89.34275293	10	M	P																																									
523	45.6052577	-89.34209897	7	R	P																																									
524	45.6052501	-89.34079104	12	M	P																																									
525	45.6052464	-89.34013708	13			DEEP																																								
526	45.6052426	-89.33948312	14			DEEP																																								
527	45.6052388	-89.33882916				DEEP																																								
528	45.605235	-89.3381752				DEEP																																								
529	45.6052312	-89.33752124				DEEP																																								
530	45.6052274	-89.33686728	13	M	P																																									
531	45.6052236	-89.33621332	14	M	P																																									
532	45.6052198	-89.33555936				DEEP																																								
533	45.605216	-89.3349054				DEEP																																								
534	45.6052122	-89.33425144				DEEP																																								
535	45.6052084	-89.33359748				DEEP																																								
536	45.6052046	-89.33294352				DEEP																																								
537	45.6052008	-89.33228956				DEEP																																								
538	45.6051969	-89.3316356				DEEP																																								
539	45.6051931	-89.33098164				DEEP																																								
540	45.6051893	-89.33032768				DEEP																																								
541	45.6051854	-89.32967372				DEEP																																								
542	45.6051816	-89.32901976				DEEP																																								
543	45.6051777	-89.3283658				DEEP																																								
544	45.6051739	-89.32771185				DEEP																																								
545	45.6051701	-89.32705789				DEEP																																								
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548	45.6051585	-89.32509601	7	S	P																																									
549	45.6048137	-89.34472016	3	M	P		1																1																							
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553	45.6047986	-89.34210433	2	R	P																																									
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559	45.6047722	-89.33752664				DEEP																																								
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Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
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Sample Point	Latitiude (Decimal Degrees)	Longitude (Decimal Degrees)	Depth (ft)	Sediment type (M=M, S=S, R=R)	R (R); P (P)	Comment	Total Rake Fullness	Brasenia schreberi	Ceratophyllum demersum	Ceratophyllum echinatum	Dulichium arundinaceum	Eleocharis acicularis	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Equisetum fluviatile	Eriocaulon aquaticum	Lemna turionifera	Bidens beckii	Myriophyllum tenellum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton gramineus	Potamogeton natans	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria cristata	Schoenoplectus acutus	Sparganium fluctuans	Utricularia vulgaris	Vallisneria americana	Wolffia sp.	Zizania sp.	Aquatic Moss	Freshwater Sponge	Filamentous Algae
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F

APPENDIX F

WDNR Fisheries Studies

WISCONSIN DNR
FISHERIES INFORMATION SHEET

LAKE: GEORGE **COUNTY:** ONEIDA **YEAR:** 2010

The Department of Natural Resources surveyed George Lake, Oneida County, from April 1 through June 2, 2010, to determine the health of its fishery. The survey was designed to take a comprehensive look at the lake's fishery. George Lake is a drainage lake with chiefly sand substrate and a moderate-density walleye population. It has a surface area of 435 acres, 5.5 miles of shoreline and a maximum depth of 26 feet.

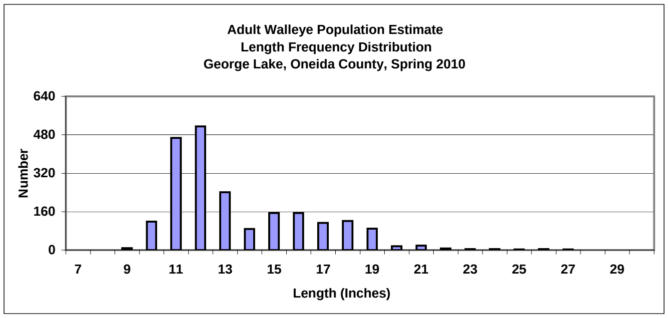


Figure 1. Length frequency distribution of 2,127 adult* walleye estimated to be in George Lake, Oneida County, based on a spring 2010 survey.

* Note: Adult walleye are defined as all sexable walleye and walleye of unknown sex ≥ 15 inches long.

Walleye

We conducted a mark-recapture survey of George Lake's adult* walleye population from April 1-7, 2010. We captured and marked (fin clipped) 478 adult walleye in seven days of fyke netting. A crew sampled George Lake with an electro-fishing boat on April 7th and captured 92 adult walleye. Nearly 22% (20 of 92) of those walleye bore the fin clip given during fyke netting.

Based on those results, we estimated that George Lake was inhabited by 2,127 adult walleye (4.9/acre). Approximately 37% (778 of 2,127) of adult walleye were 14 inches long or larger. The largest walleye we captured was a 27.2-inch female.

Smallmouth Bass

We also completed a mark-recapture survey of George Lake's smallmouth bass population from April 1 through June 2, 2010. We captured and marked 102 smallmouth bass through May 25th. An electro-fishing crew captured 19 smallmouth bass on June 2nd. Approximately 42% (8 of 19) of those smallmouth had been marked (fin clipped) in previous sampling.

From those results, we estimated that 226 smallmouth bass, 8-inches or larger, inhabited George Lake. Approximately 49% (111 of 226) of those smallmouth were 14 inches long or larger. The largest smallmouth we captured was 20.2 inches long.

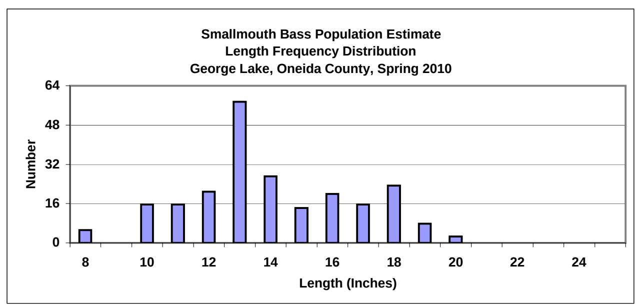


Figure 2. Length frequency distribution of 226 smallmouth bass ≥ 8" estimated to be in George Lake, Oneida County, based on a spring 2010 survey.

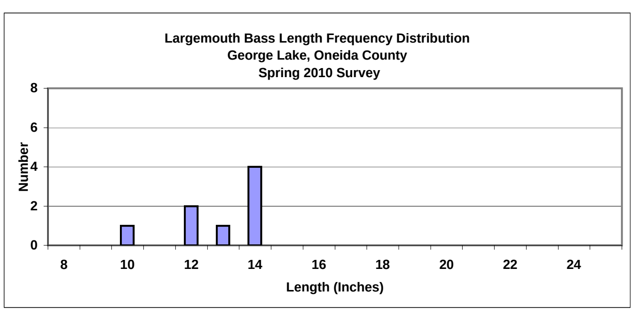


Figure 3. Length frequency distribution of eight largemouth bass ≥ 8" captured during a fisheries survey of George Lake, Oneida County, in spring 2010.

Largemouth Bass

We have captured eight largemouth bass, 8 inches or larger, during our fyke netting and electro-fishing sampling of George Lake. Four of those largemouth bass were 14 inches long or larger. The biggest largemouth bass we captured was 14.4 inches long.

Updated: July 12, 2010
By: Mike Coshun

File: Spring_Summary_2010

Northern Pike

We captured 72 adult* northern pike in fyke nets fished in George Lake from April 1-7, 2010. Nearly 24% (17 of 72) of adult northern pike we captured were larger than 26 inches long. The largest northern pike we captured was a 34.7-inch female.

* Note: Adult northern pike are defined as all sexable northern pike and northern pike of unknown sex ≥ 12 inches long.

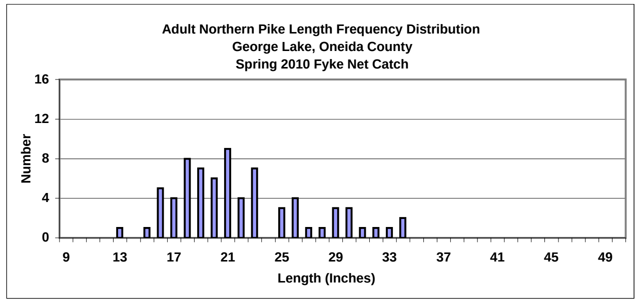


Figure 4. Length frequency distribution of 72 adult* northern pike captured in fyke nets during a fisheries survey of George Lake, Oneida County, in spring 2010.

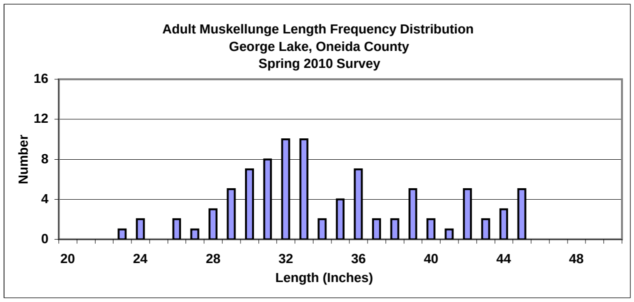


Figure 5. Length frequency distribution of 89 adult* muskellunge captured during a fisheries survey of George Lake, Oneida County, in spring 2010.

Muskellunge

We captured 89 adult* muskellunge during our fyke netting and electro-fishing sampling of George Lake. Nearly 45% of the adult muskellunge (40 of 89) we captured were 34 inches long or larger. Roughly one in five muskellunge (18 of 89) were 40 inches long or larger. The largest muskellunge we captured was a 45.8-inch female.

* Note: Adult muskellunge are defined as all sexable muskellunge and muskellunge of unknown sex ≥ 20 inches long.

Other Species

We captured 11 species of fish in our fyke netting and electro-fishing sampling of George Lake in addition to the game fish mentioned above. Yellow perch were common in our fyke net catches. We also caught black crappie, bluegill, burbot, common shiner, golden shiner, mimic shiner, pumpkinseed, rock bass, white sucker and yellow bullhead. In-water sampling will conclude with a survey of young-of-year walleye in fall 2010.

We are also conducting a creel (angler harvest) survey on George Lake this year. Creel clerk Jason Halverson will count and interview anglers and examine their catch throughout the 2010 open-water fishing season.

Table 1. General Fishing Regulations for George Lake, Oneida County, 2010

FISH SPECIES	OPEN SEASON	DAILY LIMIT	MINIMUM LENGTH
Walleye	May 1 - March 6	3	No minimum, only one over 14"
Largemouth and Smallmouth Bass	May 1 - June 18 (C&R) June 19 - March 6 (Harvest)	None 5 in total	14 inches
Muskellunge	May 29 - Nov. 30	1	34 inches
Northern Pike	May 1 - March 6	5	None

A brief summary of selected fishing regulations for George Lake is included above (Table 1). While the regulatory information provided was current at the time the surveys were conducted, it is not comprehensive and should not be used as a substitute for the current fishing regulation pamphlet. You may obtain a copy of current fishing regulations when you purchase your fishing license, or download a copy from our web site at:

http://www.dnr.wi.gov/fish/regulations/

This report is interim only; data and findings should not be considered final. Results of creel surveys should be available by June 2011. Spring survey and creel survey summaries will be posted at:
http://dnr.wi.gov/fish/nor/northern.html
or contact:

Mike Coshun, Treaty Fisheries Biologist
Wisconsin Department of Natural Resources
8770 Highway J
Woodruff, WI 54568
(715) 356-5211 Ext. 209
Email: Michael.Coshun@dnr.state.wi.us

For answers to questions about fisheries management activities and plans for George Lake, Oneida County, contact:

John Kubisiak, Fisheries Biologist
Wisconsin Department of Natural Resources
107 Sutliff Avenue
Rhinelander, WI 54501
(715) 365-8919
Email: JohnF1.Kubisiak@Wisconsin.gov

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CREEL SURVEY REPORT

GEORGE LAKE

ONEIDA COUNTY

2010-11

Treaty Fisheries Publication

Compiled by Tim Tobias
Treaty Fisheries Technician

CREEL SURVEY
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

WISCONSIN
DEPT. OF NATURAL RESOURCES

CONTENTS

SUMMARY TABLES

Cover Art: Steve Hilt, Minocqua, WI
Fish Graphics: Virgil Beck, Stevens Point, WI

INTRODUCTION

Fish populations can fluctuate due to natural forces (weather, predation, competition), management actions (stocking, regulations, habitat improvement), inappropriate development (habitat degradation), and harvest impacts. Wisconsin Department of Natural Resources fisheries crews regularly conduct fishery surveys on area lakes and reservoirs to gather the information needed to monitor changes, identify concerns, evaluate past management actions, and to prescribe good fishery management strategies. Netting and electrofishing surveys are used to gather data on the status of fish populations and communities (species composition, population size, reproductive success, size/age distribution, and growth rates). But the other key component of the fishery that we often need to measure is the harvest.

On many lakes in the Ceded Territory of northern Wisconsin, harvest of fish is divided between sport anglers and the six Chippewa tribes who harvest fish under rights granted by federal treaties. The tribes harvest fish mostly using a highly efficient method, spearing, during a relatively short time period in the spring. Every fish in the spear harvest is counted – a complete "census" of the harvest.

We also measure the sport harvest to assess its impact on the fishery. But because it would be highly impractical and very costly to conduct a complete census of every angler who fishes on a lake, we conduct creel surveys.

A creel survey is an assessment tool used to sample the fishing activities of anglers on a body of water and make projections of harvest and other fishery parameters. Creel survey clerks work on randomly-selected days and shifts, forty hours per week during the open season for gamefish from the first Saturday in May through the first Sunday in March, except during the month of November when fishing effort is low and ice conditions are often unsafe. The survey is run during daylight hours, and shift times change from month to month as day length changes.

Creel survey clerks travel their lakes using a boat or snowmobile to count numbers of anglers on a lake at predetermined times, and to interview anglers who have completed their fishing trip to collect data on what species they fished for, catch, harvest, lengths of fish harvested, marks (finclips or tags), and hours of fishing effort. Collecting completed-trip data provides the most accurate assessment of angling activities, and it avoids the need to disturb anglers while they are fishing.

A computer program is used to make projections of total catch and harvest of each species, catch and harvest rates, and total fishing effort, by month and for the year in total. Keep in mind that these are only projections based on the best information available, and not a complete accounting of effort, catch, and harvest. Accurate projections require that we sample a sufficient and representative portion of the angling activity on a lake. The accuracy of creel survey results, therefore, depends on good cooperation and truthful responses by anglers when a creel clerk interviews them.

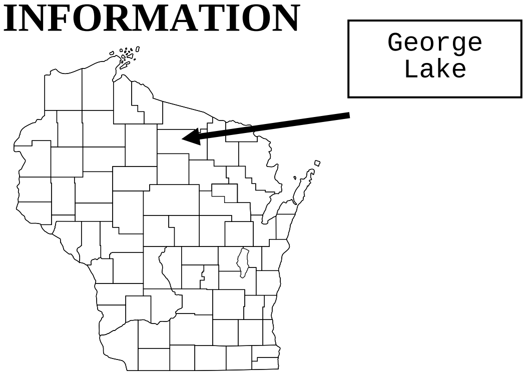
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.

This report provides projections of:

1. Overall fishing effort (pressure)
2. Fishing effort directed at each species
3. Catch and harvest rates
4. Numbers of fish caught and harvested

Also included are a physical description of George Lake; discussion of results of the survey; and detailed summaries, by species of fishing effort, catch and harvest.

GENERAL LAKE INFORMATION



Location
George Lake is located in Oneida County 4 miles southeast of the City of Rhinelander.

Physical Characteristics
George Lake is a 435-acre drainage lake with a maximum depth of 26 feet. Littoral substrate consists primarily of sand and gravel, with lesser amounts of muck, and rock. George Lake is a soft water drainage lake with slightly acidic, light brown water of moderate transparency.

Seasons Surveyed
The period referred to in this report as the 2010-11 fishing season ran from May 1, 2010 through March 6, 2011. The open water creel survey ran from May 1 through October 31, 2010 and the ice fishing creel survey ran from December 1, 2010 through March 6, 2011.

Weather
Ice-out on George Lake was around March 30, 2010. Fishable-ice formed on George Lake in early December.

Sportfishing Regulations
The following seasons, daily bag limits, and length limits were in place on George Lake during the 2010-fishing season:

Species	Season	Bag Limit	Min. Size
Largemouth Bass&	5/01-6/18	Catch & Release	
Smallmouth Bass	6/19-3/06	5	14"
Musky	5/29-11/30	1	34"
Northern Pike	5/01-3/06	5	none
Walleye	5/01-3/06	3*	none 1 > 14"
Panfish	year round	25	none
Rock Bass	year round	none	none

* The statewide bag limit was 5 walleye, but due to tribal declarations it was reduced on George Lake.

SPECIES CATCH AND HARVEST INFORMATION

Angling effort, catch, and harvest information is summarized for each species in Table 2 and Figures 1-10. Table 2 also includes a comparison of these statistics with the previous creel survey. Information presented about species whose fishing season extends beyond March 6 should be considered minimum estimates. Each species page has up to five graphs depicting the following:

1. **PROJECTED FISHING EFFORT**
   Total calculated number of hours during each month that anglers spent fishing for a species.

2. **PROJECTED SPECIFIC CATCH AND HARVEST RATES**
   Calculated number of hours it takes

an angler to catch or harvest a fish of the indicated species. Only information from anglers who were specifically targeting that species is reported.

3. **PROJECTED CATCH AND HARVEST**
Calculated number of fish of the indicated species caught or harvested by all anglers, regardless of targeted species.

4. **LENGTH DISTRIBUTION OF HARVESTED FISH**
All fish of a species that were measured by the clerk during the entire creel survey season.

5. **LARGEST AND AVERAGE LENGTH OF HARVESTED FISH**
Monthly largest and average length of harvested fish of a species. Only those fish measured by the creel survey clerk are reported.

CREEL SURVEY RESULTS AND DISCUSSION

Survey Logistics

The creel survey went well. We encountered no unusual problems conducting the survey or calculating the projections contained in the report. This was the third time the Department conducted a creel survey on George Lake. The last treaty surveys took place in 1999.

General Angler Information

Anglers spent 22,288 hours or 51.2 hours per acre fishing George Lake during the 2010 season (Table 1). That was more than the Oneida County average of 37.6 hours per acre. July was the most heavily fished month (9.9 hours per acre). Fishing effort was lightest in October and January (2.4 hours per acre).

RESULTS BY SPECIES

Walleye (Table 2, Figure 1)
Walleyes received 15.5 percent of the directed fishing effort (5,918 hours) during the 2010 season. Walleye fishing effort was greatest in February (1,326 hours). **The unusually high February walleye effort and low catch rate was attributed to a one-day ice-fishing tournament that heavily influenced survey results.** December had the least amount of walleye fishing effort (200 hours).

Total catch of walleyes was 1,145 fish with a harvest of 466 fish. Highest catch (451 fish) and harvest (148 fish) occurred in August. Anglers fished 6.0 hours to catch and 13.6 hours to harvest a walleye during 2010.

The mean length of harvested walleyes was 13.8 inches and the largest walleye measured was a 24.1-inch fish.

Northern Pike (Table 2, Figure 2)
Fishing effort directed at northern pike was 3,624 hours during the 2010 season. Northern pike fishing effort was greatest in February (1,224 hours).

Total catch of northern pike was 459 fish with a harvest of 123 fish.

The mean length of harvested northern pike was 23.8 inches and the largest northern pike measured was a 32.4-inch fish.

Muskellunge (Table 2, Figure 3)
Anglers spent 4,794 hours targeting muskellunge during the 2010 season. Muskellunge fishing effort was greatest in August (1,180 hours).

Total catch of muskellunge was 284 fish.

Highest catch (69 fish) occurred in July. Anglers fished 20.9 hours to catch a muskellunge during 2010.

Smallmouth Bass (Table 2, Figure 4)
Fishing effort targeted at smallmouth bass was 2,681 hours during the 2010 season. Smallmouth bass fishing effort was greatest in July (888 hours).

Total catch of smallmouth bass was 770 fish with 63 being harvested. Highest catch (245 fish) occurred in August. Anglers fished 5.2 hours to catch a smallmouth bass during 2010.

Largemouth Bass (Table 2, Figure 5)
Fishing effort directed at largemouth bass was 1,535 hours during the 2010 season. Largemouth bass fishing effort was greatest in August (551 hours).

Total catch of largemouth bass was 186 fish with no harvest. Highest catch (84 fish) occurred in August. Anglers fished 22.0 hours to catch a largemouth bass during 2010.

Panfish (Table 2, Figures 6-10)

Bluegills were the most sought after panfish species during the survey. Fishing effort directed at bluegills was 7,097 hours.

Total catch of bluegills was 9,473 fish with 2,614 harvested. The mean length of bluegills harvested was 6.8 inches.

Black crappies were the second most sought after panfish species during the survey. Fishing effort directed at black crappies was 6,829 hours.

Anglers caught 2,220 black crappies and harvested 1,397 fish. The mean length of black crappies harvested was 10.8 inches.

Yellow perch were the third most sought after panfish species during the survey. Fishing effort directed at yellow perch was 3,675 hours.

Total catch of yellow perch was 1,830 fish with 348 harvested. The mean length of yellow perch harvested was 8.3 inches.

Pumpkinseeds and rock bass were also caught during the 2010 season.

ACKNOWLEDGMENTS

Completion of this survey was possible because of the efforts of the technical staff of the fisheries management and Treaty Fisheries Unit. Treaty staff responsible for ensuring completion of this survey included Jeff Blonski, Steve Kramer, Joelle Underwood, Marty Kiepke, Jason Halverson, and Tim Tobias. Fisheries management staff included John Kubisiak and Steve Timler. Jason Halverson was the creel clerk on George Lake during the survey period.

We also thank all the anglers who took the time to offer information about their fishing trip to the survey clerk. Without their cooperation the survey would not have been possible.

The Department thanks the cooperator, Jim & Donna Forsyth, who generously allowed the Department to keep a boat and snowmobile on their property during this survey.

This creel report was reviewed by John Kubisiak and Dennis Scholl of the Wisconsin Department of Natural Resources.

Additional copies of this report and those covering other local lakes can be obtained from the Woodruff DNR or online at: http://dnr.wi.gov/fish/ceded/reports.html

Table 1. Sportfishing effort summary, George Lake, 2010-11 season.

Month	Total Angler Hours	Total Angler Hours/Acre	Oneida County Average Hours/Acre	Statewide Average Hours/Acre
May	2439	5.6	5.4	5.8
June	3789	8.7	7.3	6.1
July	4319	9.9	8.3	6.4
August	3777	8.7	6.3	5.4
September	1584	3.6	3.8	3.8
October	1024	2.4	1.8	1.6
December	2007	4.6	1.3	1.7
January	1027	2.4	1.7	1.5
February	2047	4.7	1.7	1.3
March	276	0.6	0.3	**
*Summer Total	16932	38.9	32.7	29.1
*Winter Total	5356	12.3	4.9	4.5
Grand Total	22288	51.2	37.6	33.6

*"Summer" is May-October; "Winter" is December-March
**Too few lakes have been surveyed in March to give a meaningful statewide average.

Total Angler Hours is the estimated total number of hours that anglers spent fishing on George Lake during each month surveyed.

Total Angler Hours/Acre is the total angler hours divided by the area of the lake in acres. This is useful if you wish to compare effort on George Lake to other lakes.

County Average Hours/Acre is the average angler effort in hours per acre for county lakes that have been surveyed since 1990. This value can be useful in comparisons as well.

Statewide Average Hours/Acre is the average angler effort in hours per acre for inland lakes in the state surveyed between 1990 and 1995. This value can be used to compare George Lake to other lakes statewide.

Table 2. Comparison of creel survey synopses, George Lake, 2010-11and 1999-00 fishing seasons.

CREEL YEAR: 2010-11

SPECIES	DIRECTED EFFORT (Hours)	PERCENT OF TOTAL	TOTAL CATCH	SPECIFIC CATCH RATE (Hrs/Fish) *	TOTAL HARVEST	SPECIFIC HARVEST RATE (Hrs/Fish) **	MEAN LENGTH OF HARVESTED FISH
Walleye	5918	15.39%	1145	6.0	466	13.6	13.8
Northern Pike	3624	9.43%	459	16.1	123	42.9	23.8
Muskellunge	4794	12.47%	284	20.9	3	1428.6	35.5
Smallmouth Bass	2681	6.97%	770	5.2	63	58.8	15.0
Largemouth Bass	1535	3.99%	186	22.0	0		
Yellow Perch	3675	9.56%	1830	3.1	348	16.0	8.3
Bluegill	7097	18.46%	9473	0.8	2614	2.9	6.8
Pumpkinseed	2290	5.96%	673	4.9	86	32.3	6.1
Rock Bass	5	0.01%	694		42		7.1
Black Crappie	6829	17.76%	2220	3.2	1397	5.0	10.8

* A blank cell in this column indicates that no fish of a given species were caught by anglers who specifically targeted that species.

** A blank cell in this column indicates that no fish of a given species were harvested by anglers who specifically targeted that species.

CREEL YEAR: 1999-00

SPECIES	DIRECTED EFFORT (Hours)	PERCENT OF TOTAL	TOTAL CATCH	SPECIFIC CATCH RATE (Hrs/Fish)	TOTAL HARVEST	SPECIFIC HARVEST RATE (Hrs/Fish)	MEAN LENGTH OF HARVESTED FISH
Walleye	10678	27.75%	1768	6.3	722	14.8	13.5
Northern Pike	4680	12.16%	2155	5.0	383	19.3	20.4
Muskellunge	4510	11.72%	94	64.1	0		
Smallmouth Bass	1032	2.68%	253	16.5	0		
Largemouth Bass	1078	2.80%	104	42.0	0		
Yellow Perch	3952	10.27%	966	6.0	653	8.2	8.0
Bluegill	6103	15.86%	3400	1.9	1902	3.3	6.7
Pumpkinseed	53	0.14%	7	7.3	0		
Rock Bass		0.00%	414		108		8.2
Black Crappie	6391	16.61%	1359	5.1	1070	6.5	10.3

WALLEYE

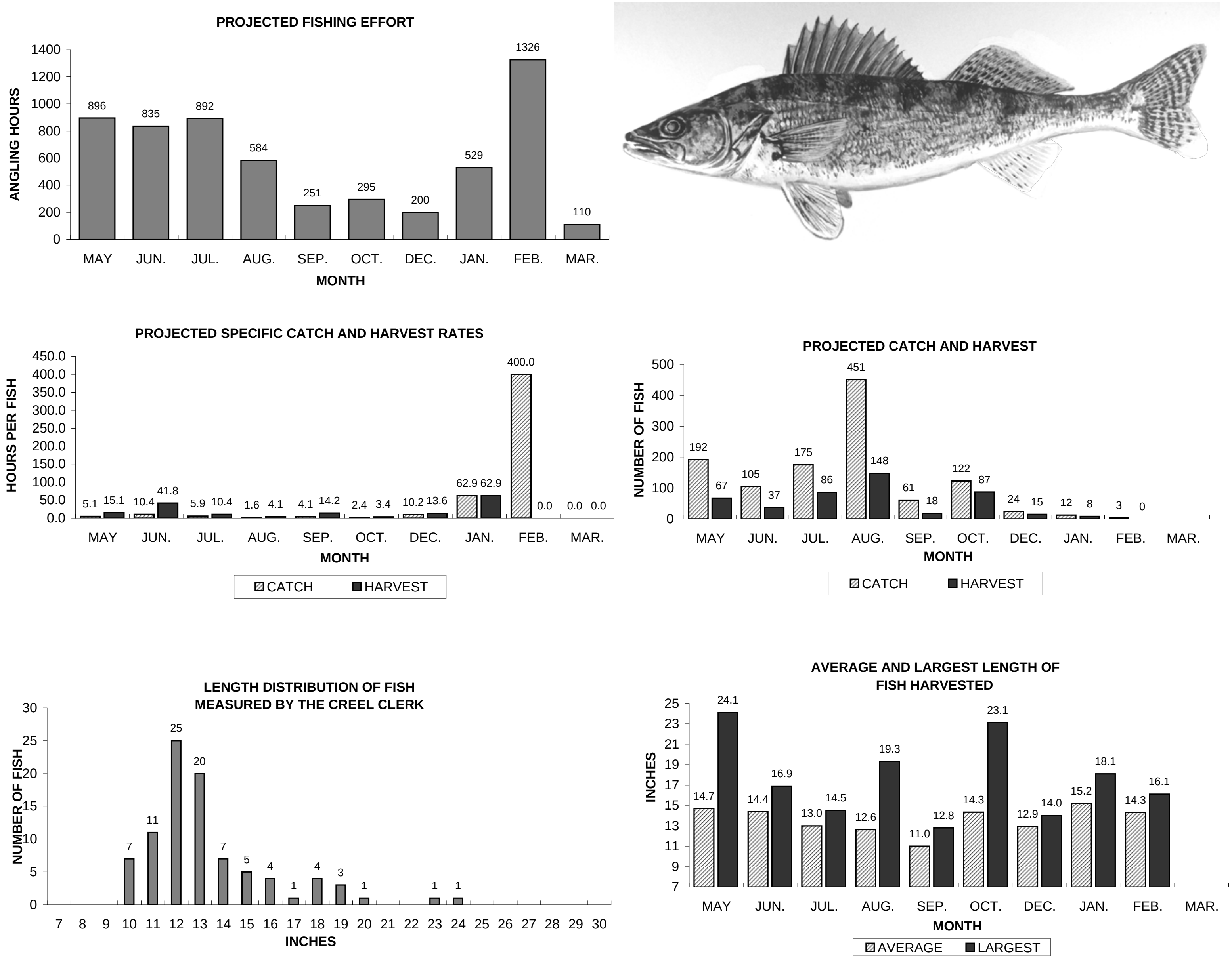


Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

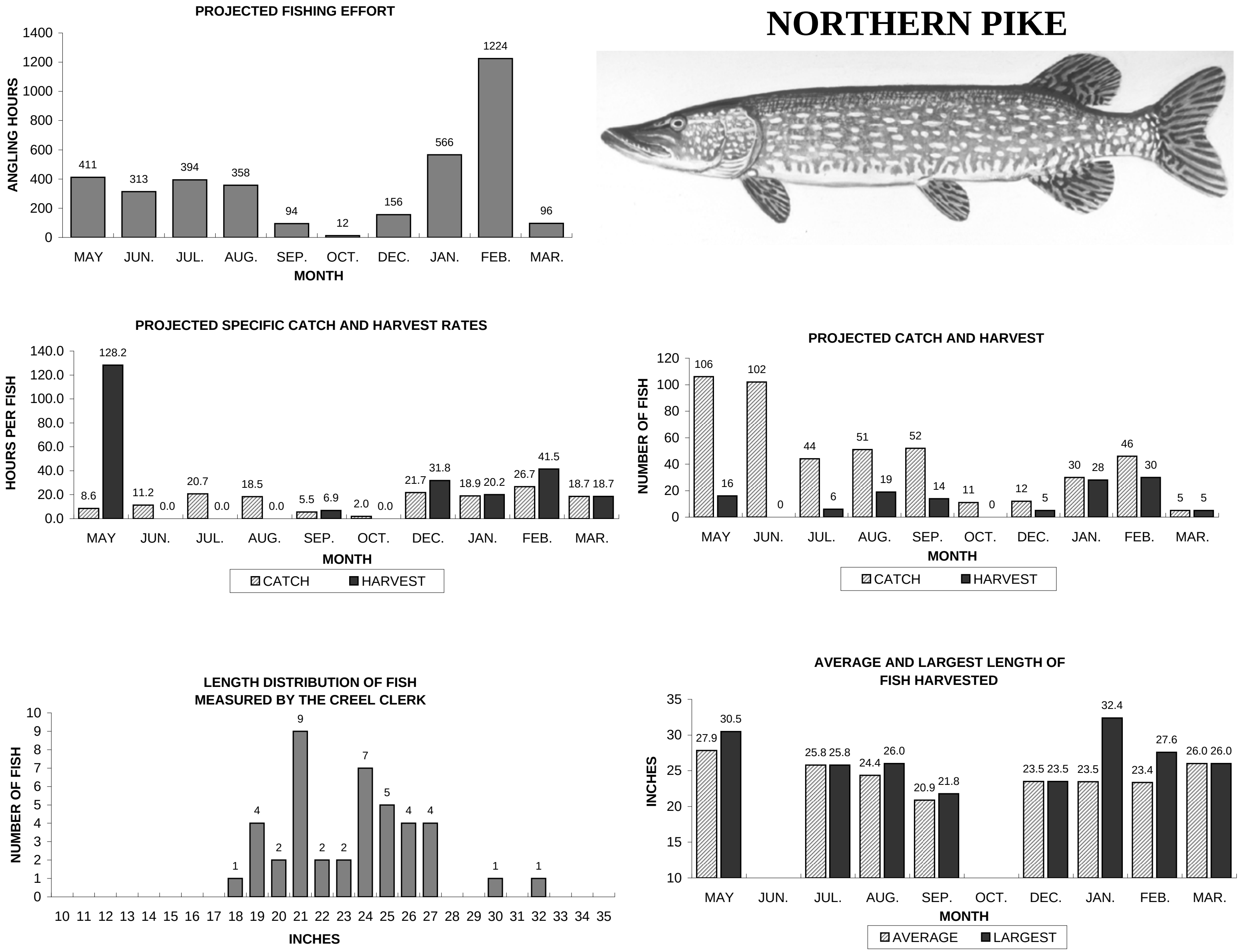
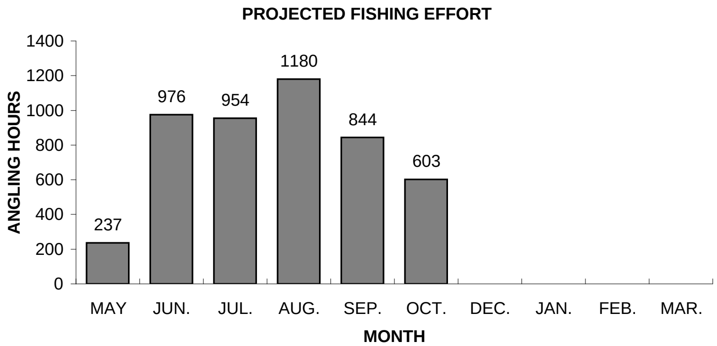
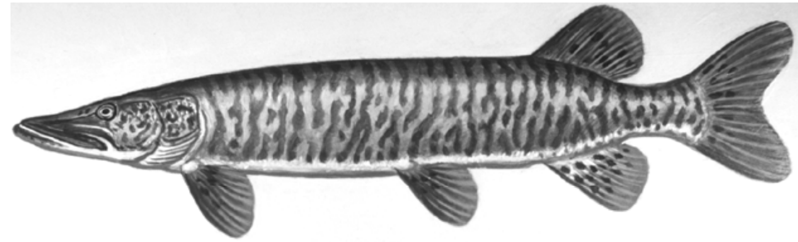
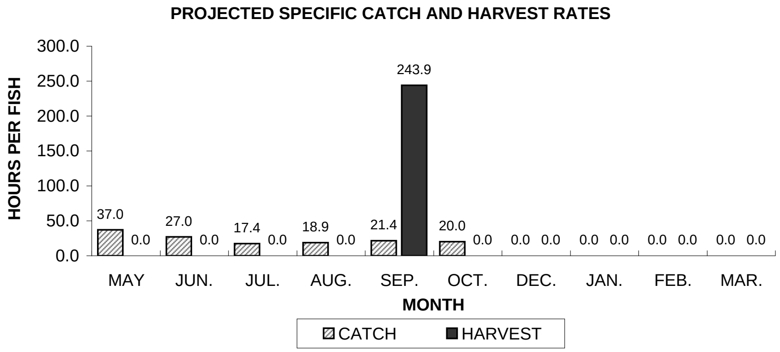


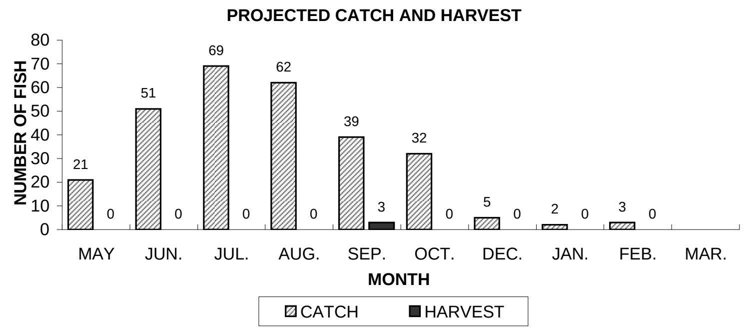
Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

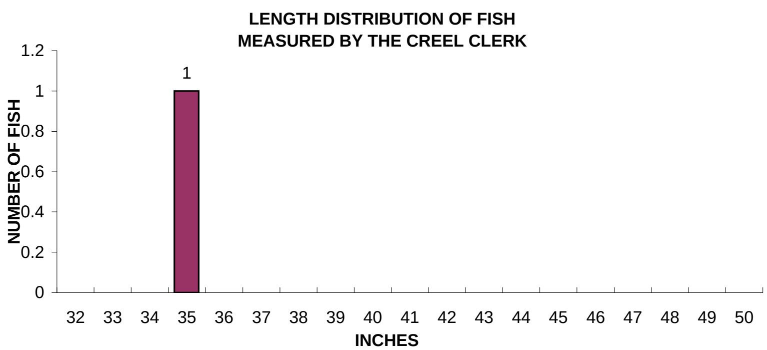
MUSKELLUNGE











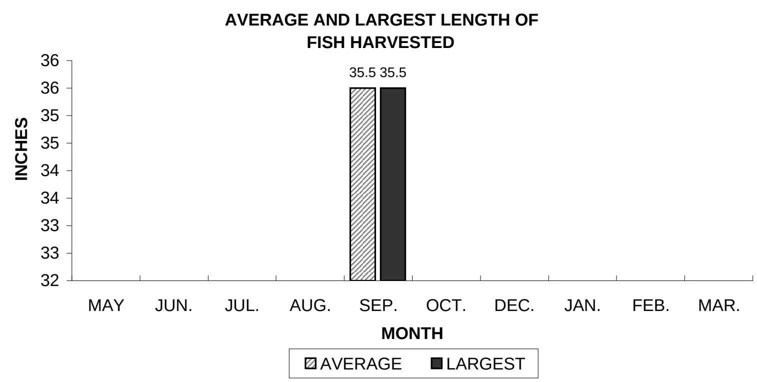


Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

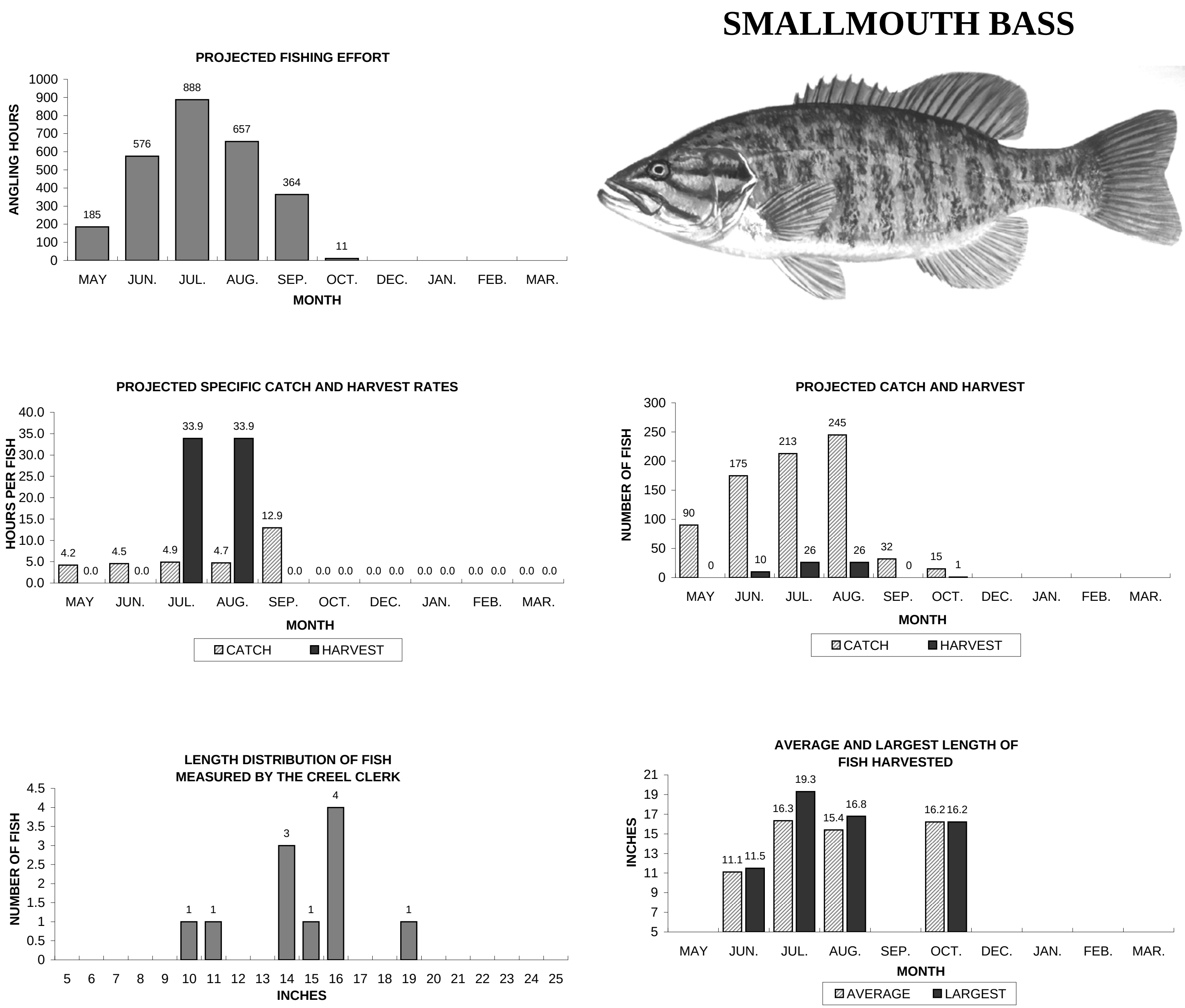
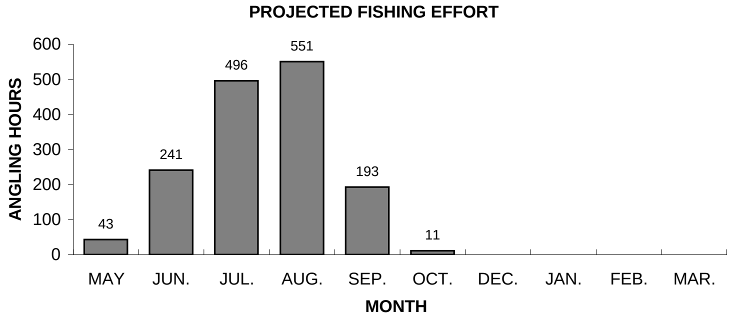
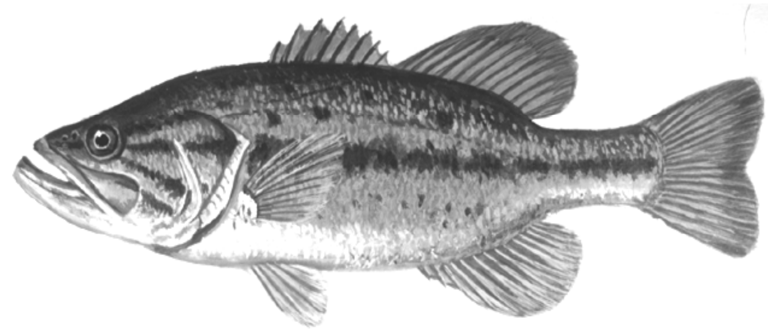
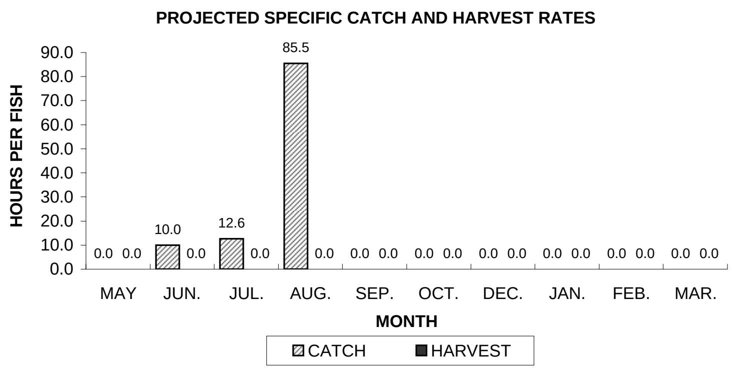


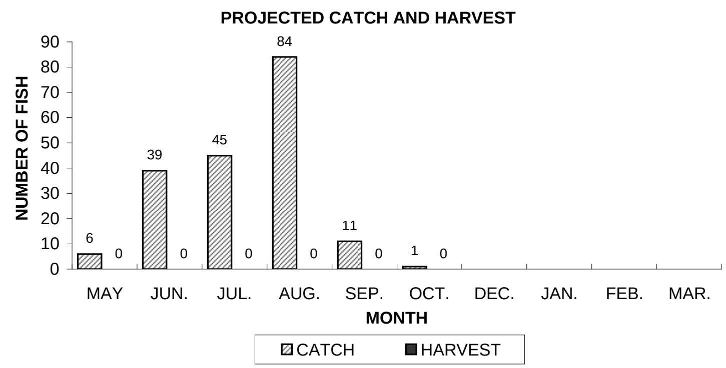
Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

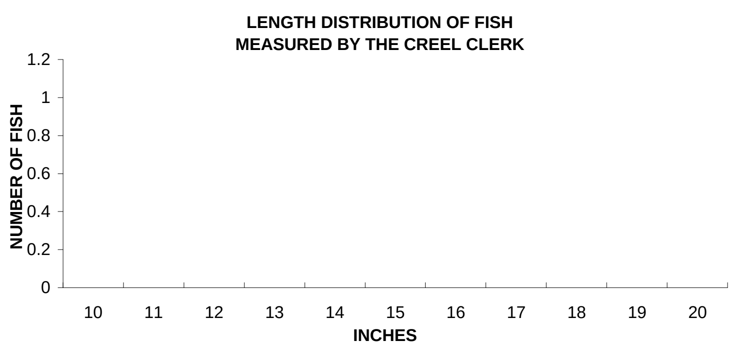
LARGEMOUTH BASS











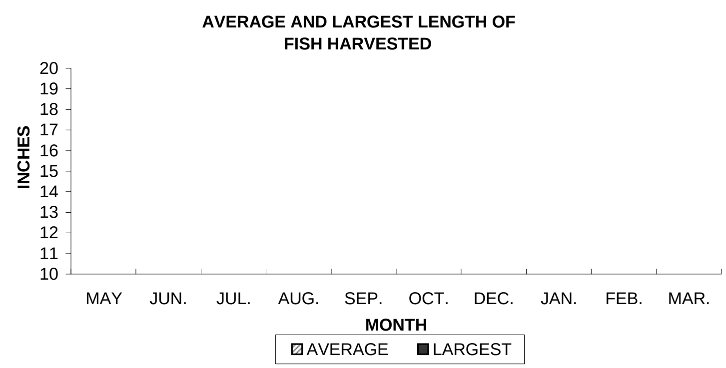
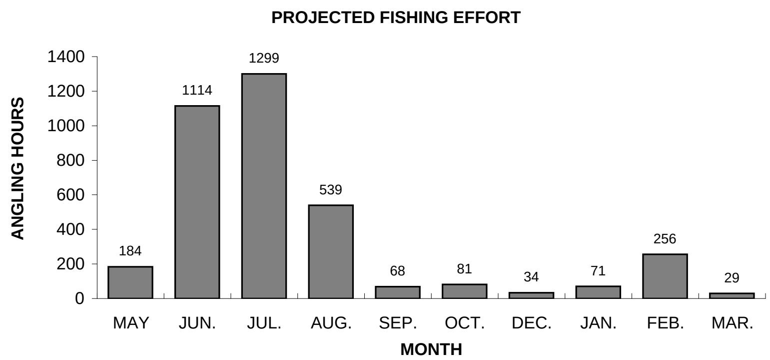
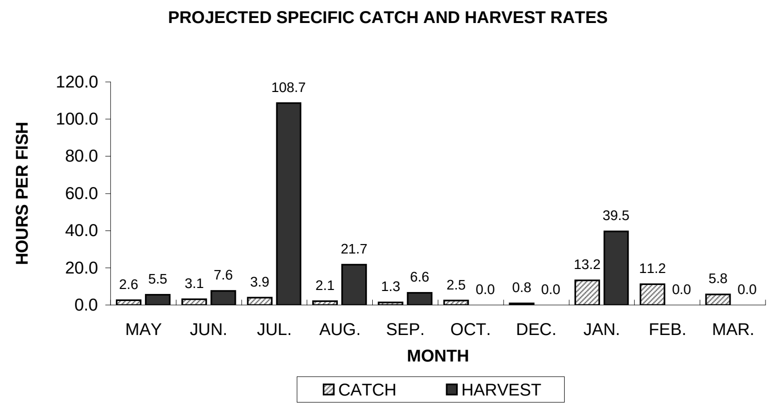
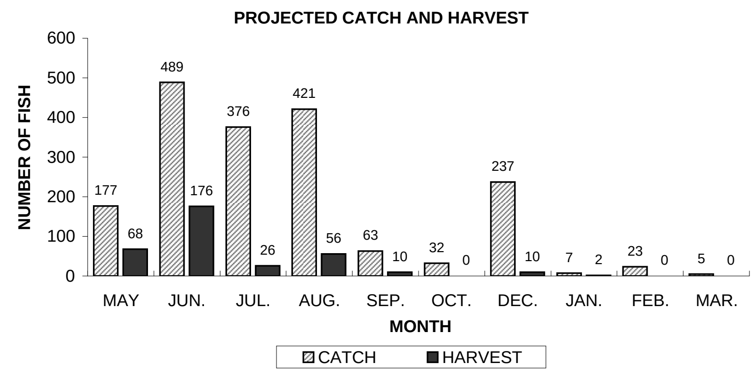


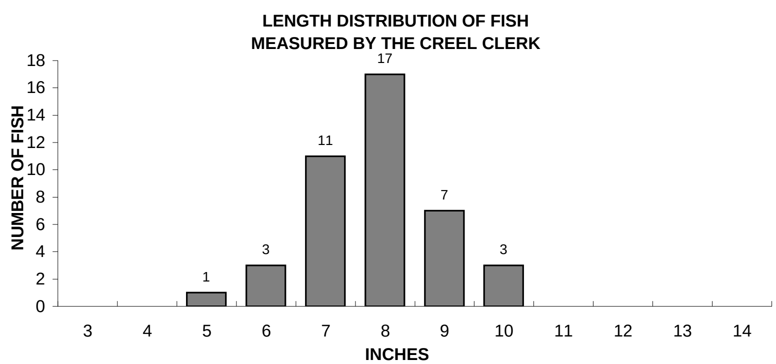
Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

YELLOW PERCH









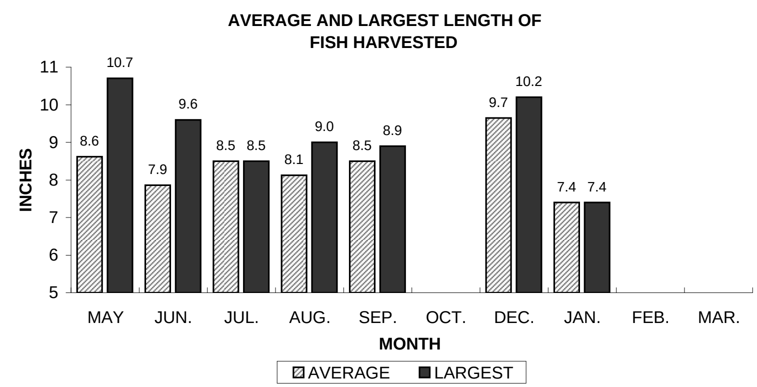
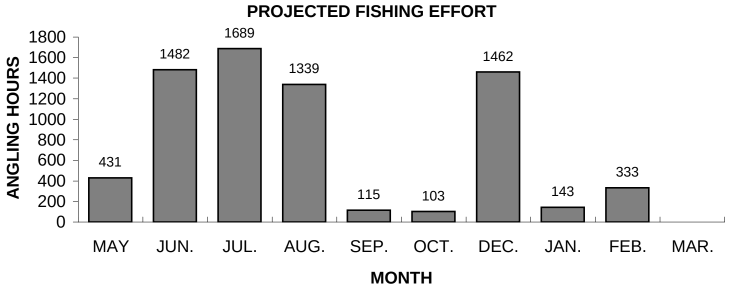
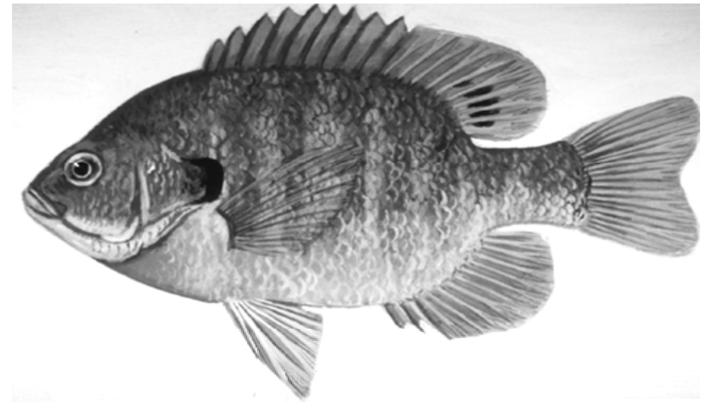
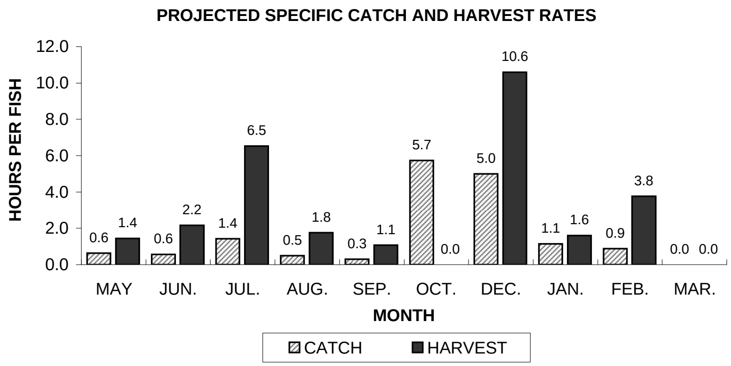


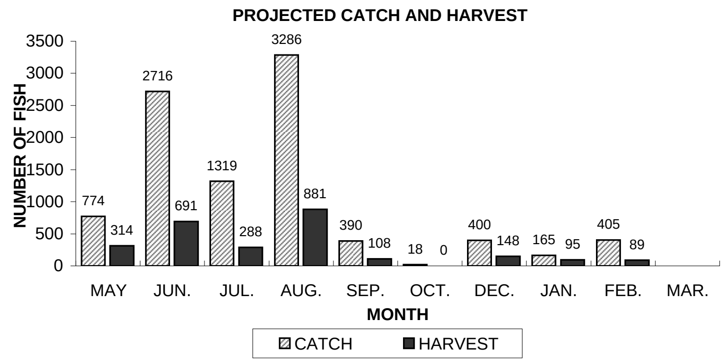
Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

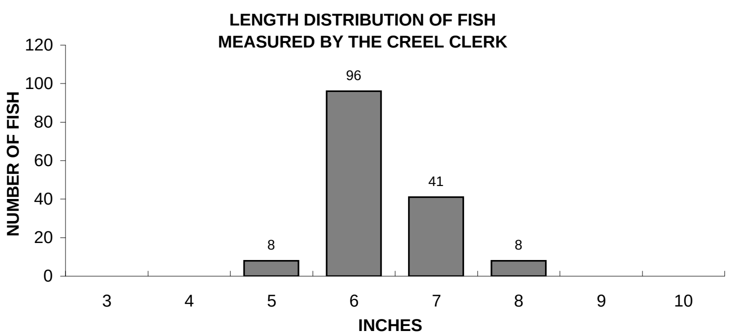
BLUEGILL











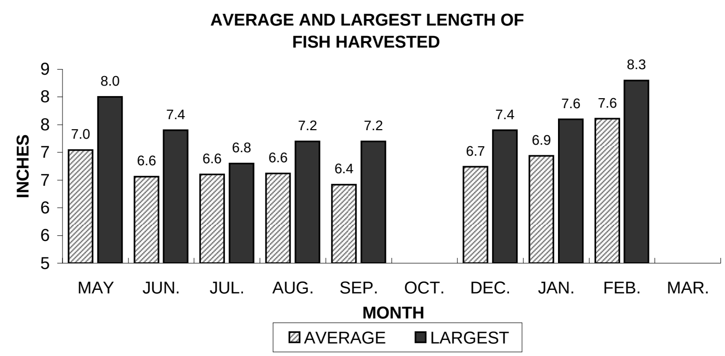


Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

PUMPKINSEED

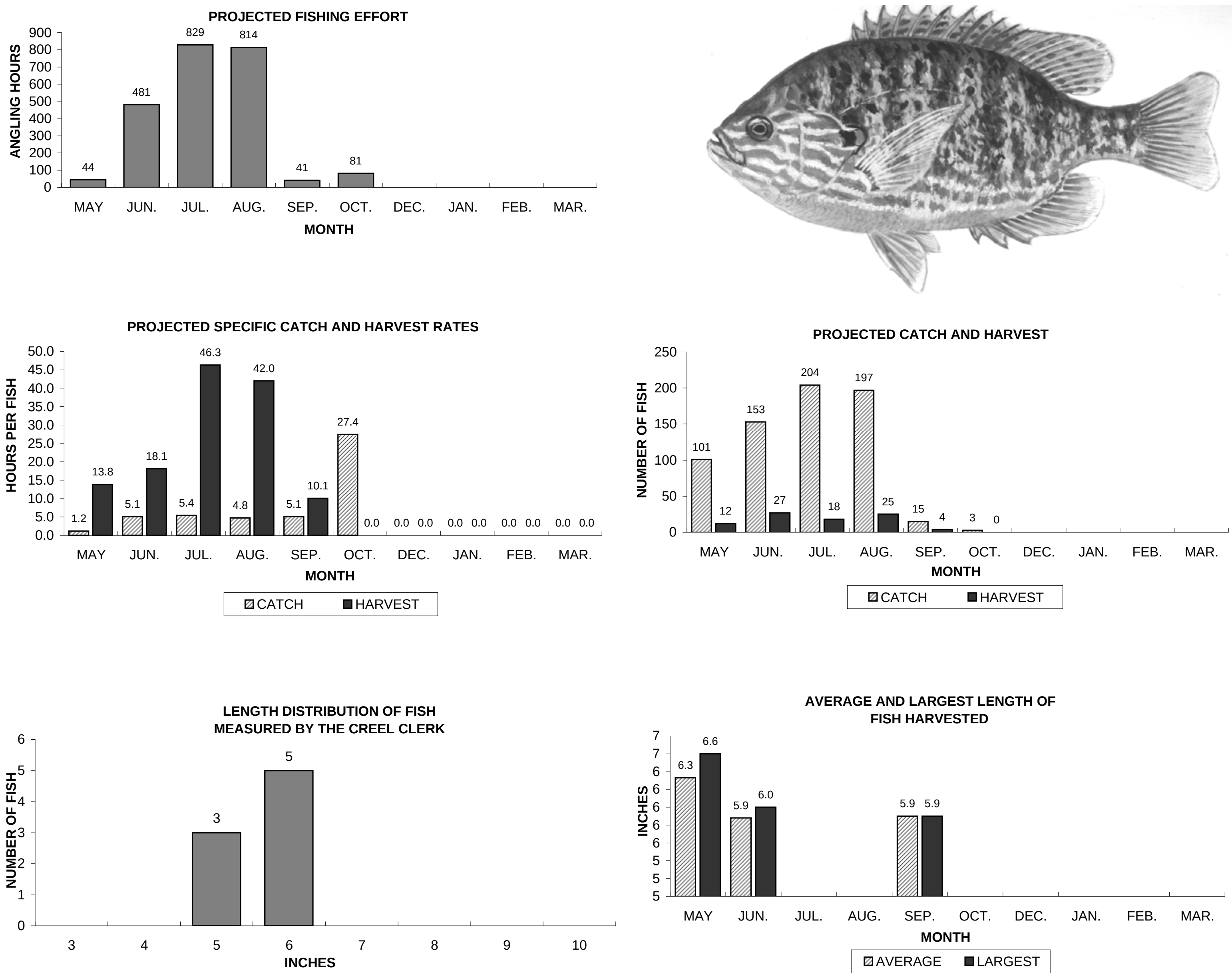
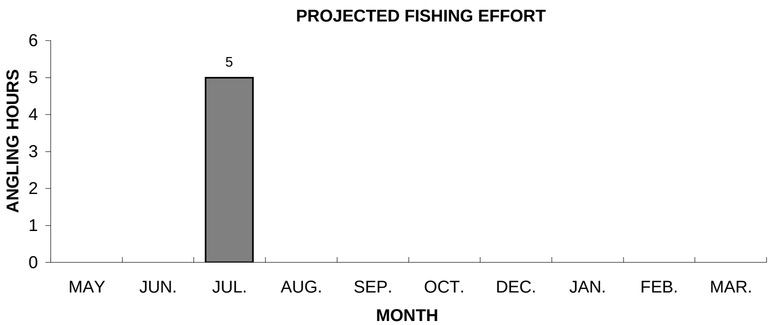
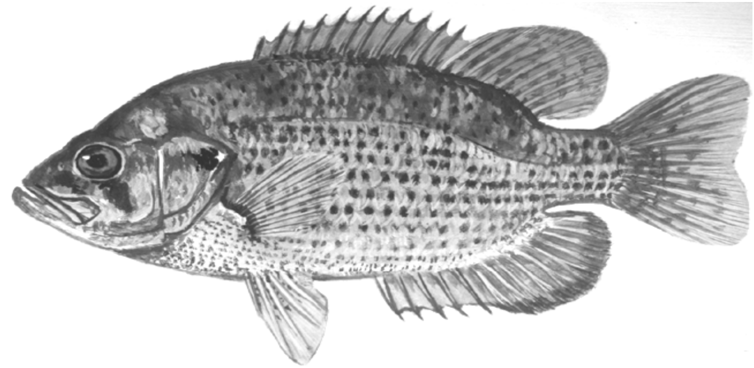
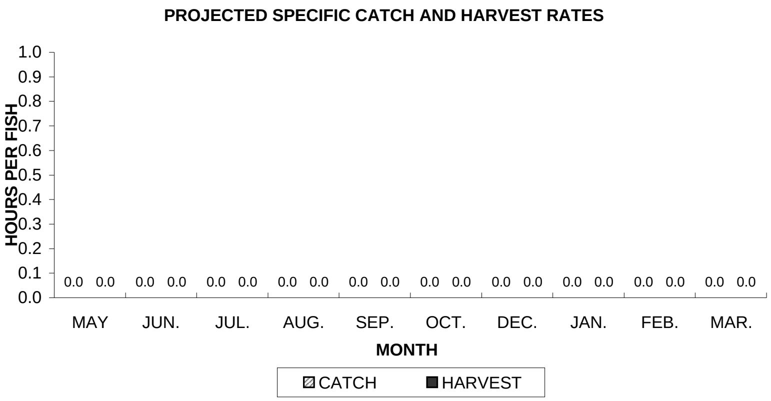


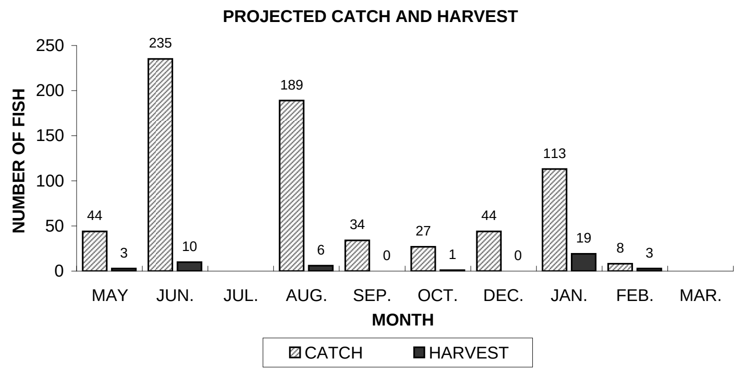
Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

ROCK BASS









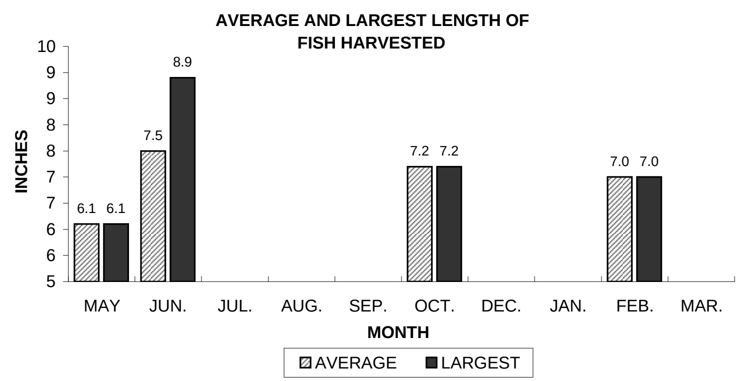
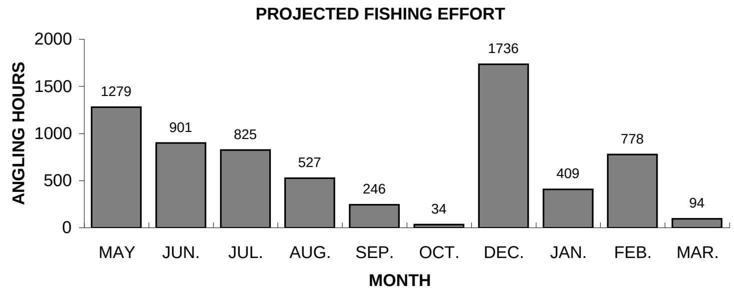
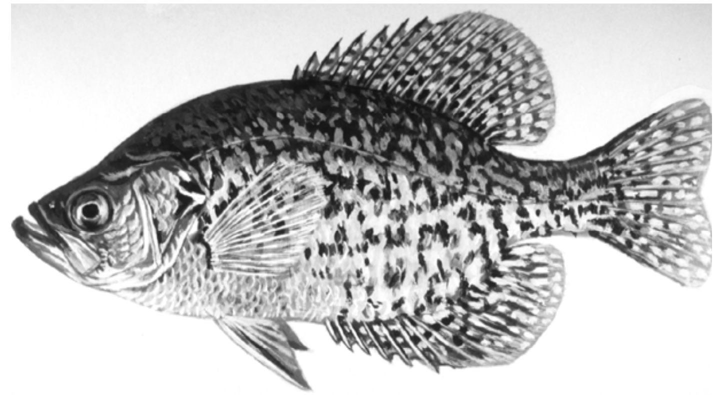
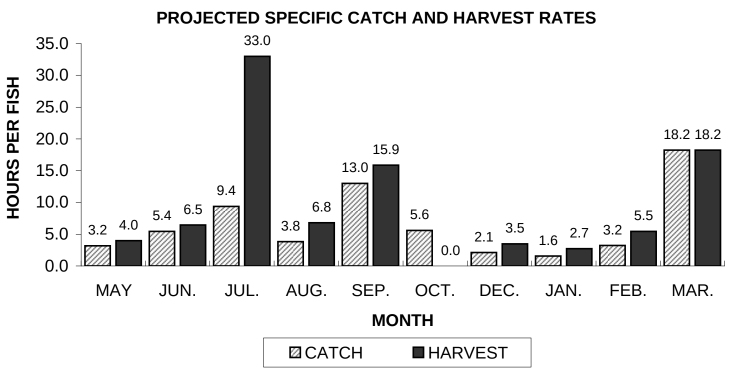


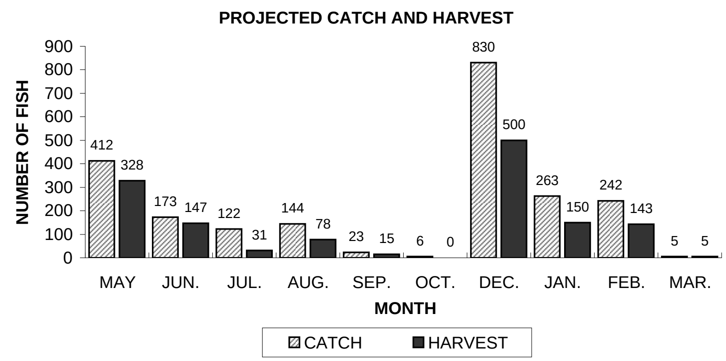
Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

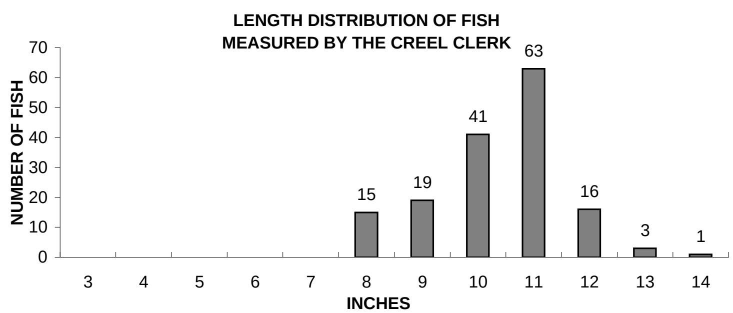
BLACK CRAPPIE











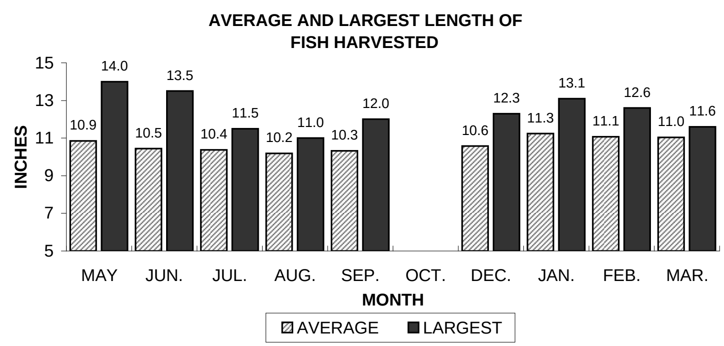


Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, George Lake, during 2010-11.

G

APPENDIX G

Lake George Dam Court Order

43.41

BEFORE THE

DEPARTMENT OF NATURAL RESOURCES

Application of the Town of Pelican for a Permit to Construct, Operate and Maintain a Dam at the Outlet of Lake George, Town of Pelican, Oneida County, Wisconsin	3-WR-1849

FINDINGS OF FACT, CONCLUSIONS OF LAW, PERMIT AND ORDER

The Town of Pelican on October 15, 1975 completed filing an application with the Department of Natural Resources for a permit under Chapter 31, Wisconsin Statutes, to construct, operate and maintain a dam at the outlet of Lake George in the Town of Pelican, Oneida County. Permit granted.

Pursuant to 30.02 and 31.06, Statutes, the Department of Natural Resources and the Town of Pelican gave proper notice of the proposal to construct, operate and maintain a dam on a navigable waterway. No request for hearing was received. The Town of Pelican requested that the Department conduct a hearing to consider the establishment of levels to be maintained by the dam. On March 25, 1976 an informational hearing was conducted by Edmund M. Brick at Rhinelander, Wisconsin.

APPEARANCES:

Robert C. Heide
Dorothy Turner
Major Turner
Fred Hoerchler
Alex Kafka
Joan Heide
Walter H. Steiner

Norman Skeway
Cal Ewert
Harvey A. Klotz
Harry Lassig
Thomas Cornelius
Romelle Ewert
Oscar O. Egger
Harold Campbell
Bon D. Bassett
Richard A. Strelow
Ronald Brekke
Neil Faust
Paul Wiedmann
Lorraine Pudlowski
Steve Koszarek

All of Rhinelander

Lake George Improvement Association, by

C. M. Riley, Sr.
Rhinelander

Department of Natural Resources, by

E. M. Brick
Madison

Tom Smith
Wisconsin Rapids

Dick Wendt
Woodruff

Herb Gross
Rhinelander

Dale Urso
Rhinelander

Carl Mastaglio
Woodruff

FINDINGS OF FACT

1. The Town of Pelican filed an application with the Department on October 15, 1975 for a permit to construct, operate and maintain a dam at the

outlet of Lake George, Oneida County. The Department determined that an Environmental Impact Statement was not required for this project. The Department thereafter issued a public notice of the proposed project. The Town of Pelican published a notice of the proposed project in the Rhinelander News, a daily newspaper of general circulation published at Rhinelander, Wisconsin. On February 16, 1976 proof of such publication was duly filed with the Department.

2. The dam will be located on the outlet of Lake George in the northwest quarter of the southwest quarter of section 13, township 36 north, range 9 east, Town of Pelican, Oneida County.

3. The outlet of Lake George, Lake George Creek is navigable at the location of the proposed dam.

4. The purpose of the proposed dam is to maintain the levels of Lake George at or below the ordinary high watermark of Lake George.

5. Lake George is a natural lake, 435 acres in surface area and having a maximum depth of 26 feet.

6. The dam will consist of two stoplog sections installed at the upstream end of two existing culverts through which the outflow from Lake George passes under a town road. The existing culverts are 58 inches by 36 inches corrugated metal pipe arches. The stoplog section will be 6'10" wide and 2'7" high from the toe of the foundation to the top of the abutment. The stoplogs will be 3" by 5" by 5'2" long. The sill of the stoplog section will be at the invert of the corrugated pipe arch or 90.10 feet when referenced to the crown of the upstream edge of the southerly most culvert at the outlet of the lake. The crown of said culvert is at 93.10 feet, DNR datum.

7. The proposed dam will not be capable of developing hydraulic power.

8. The nearest community to the proposed dam is the City of Rhinelander which is about three miles distant therefrom.

9. No dams exist above the proposed dam on Lake George Creek.

10. The nearest existing dam below the proposed dam site is the Hat Rapids Dam on the Wisconsin River, which is approximately 13 miles distant therefrom.

11. Elevations herein are referenced to the top of the upstream end of the southerly most culvert at the outlet of Lake George. Elevation is 93.10 feet, DNR datum.

12. The purpose of the dam is to stabilize the levels of Lake George, which stabilization will improve the aesthetic and recreational value of Lake George.

13. The ordinary high watermark of Lake George as determined by Department of Natural Resources staff is at elevation 91.22, DNR datum. The maximum observed water level during the period investigation conducted by the Department of Natural Resources was elevation 91.17, DNR datum. A maximum level for Lake George of 90.89 feet, DNR datum, and a minimum level for Lake George of 90.56 feet, DNR datum, are recommended by DNR staff. No objections to these proposed levels were made at or after the informational hearing.

14. The dam will be operated by insertion or removal of stoplogs to maintain levels within the ordered levels insofar as can be achieved by reasonable operation of the dam.

15. Construction, operation and maintenance of the proposed dam is in the public interest, considering ecological, aesthetic, economic and

recreational values and the applicant has complied with Wisconsin Statutes, Section 31.14(2) and Section 31.05(3), and approval of the permit will not cause environmental pollution as that term is defined in Wisconsin Statutes, Section 144.30(9), nor will it adversely affect water quality.

CONCLUSIONS OF LAW

1. The Department of Natural Resources has the authority under Section 31.06 and 31.14(2), Wisconsin Statutes, to enter the order herein approving the permit.

2. The Department of Natural Resources has complied with the requirements of Section 1.11 of the Wisconsin Statutes.

PERMIT

AND HEREBY THERE DOES ISSUE AND IS GRANTED to the applicant, the Town of Pelican, a permit to construct, operate and maintain a dam across the outlet of Lake George in the northwest quarter of the southwest quarter of section 13, township 36 north, range 9 east, in the Town of Pelican, Oneida County, subject to the conditions of the order which hereinafter follows. A copy of this permit and order shall constitute the certificate evidencing a grant of the permit as provided in Section 31.11, Wisconsin Statutes.

ORDER

1. The dam shall not be constructed until plans for the structure have been submitted and approved by the Department of Natural Resources.

2. The maximum elevation of Lake George shall be elevation 90.89, DNR datum, and the minimum elevation shall be elevation 90.56, DNR datum;

it being understood that the maximum level will likely be exceeded during periods of excessive streamflow even though the stoplogs are removed and that the minimum level will likely not be maintained during periods of drought even though all stoplogs are in place.

Dated at Madison, Wisconsin MAY 28 1976

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES
For the Secretary

By Andrew C. Damon

Andrew C. Damon, Administrator
Division of Enforcement

BEFORE THE

DEPARTMENT OF NATURAL RESOURCES

Application of the Town of Pelican for a Permit to Construct, Operate and Maintain a Dam at the outlet of Lake George, Town of Pelican, Oneida County	))))	3-WR-1849

AMENDED FINDINGS OF FACT & PERMIT

Findings of Fact No. 11 of Permit No. 3-WR-1849 is amended to read:

11. Elevations herein are referenced to the top of the upstream end of the southerlymost culvert at the outlet of Lake George. Elevation is 93.17 feet, DNR datum.

All other findings and conditions of Permit No. 3-WR-1849 remain unchanged and in effect.

Dated at Rhinelander, Wisconsin May 11, 1978

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES
For the Secretary

By John G. Brasch
John G. Brasch
District Director