

# Oconto County Lakes Project

## NELLIGAN LAKE MANAGEMENT PLAN

**2022**

### Oconto County Lakes Project Reports:

**State of the  
Oconto County  
Lakes**

**Lake Study  
Summary  
Reports**

**Operational Strategy and  
Plan for Surface Water  
Management and  
Protection**

**Lake  
Management  
Plans**

### **VISION**

*Nelligan Lake will remain a quiet Northwoods lake where great swimming and fishing, clean water and family traditions come together.*

# Nelligan Lake Management Plan

The authors would like to acknowledge the commitment and enthusiasm of Oconto County Lakes & Waterways Association, Oconto County Land and Water Conservation Department, UW Extension – Oconto County, Wisconsin Department of Natural Resources, UW-Stevens Point Water and Environmental Analysis Laboratory, landowners in the Nelligan Lake watershed, and participants in the Oconto County Lakes Project.

This plan was prepared by the Center for Watershed Science and Education at University of Wisconsin – Stevens Point.

Along with the Oconto County Lakes Project participants, the following individuals and organizations contributed to the content of this plan.

## Nelligan Lake Planning Participants

Mike Holloway	Grace Eide
Tom Petersen	Sean Denker
Brian Denker	Maggie Peterson
Merle & Gail Denker	Adam Laehn
Mike Denker	
Kurt Yndestad	
Chris Denker	
Susan Kirk	
Robert Wenberg	

## Technical Contributors to the Planning Process

Dale Mohr, UW-Extension - Oconto County

Ken Dolata, Oconto County Land & Water Conservation Department

Brenda Nordin, Wisconsin Department of Natural Resources

Brian Zalay, Wisconsin Department of Natural Resources

Christopher Long, Wisconsin Department of Natural Resources

Ryan Haney, UWSP Center for Watershed Science and Education

Sarah Hull, UWSP Center for Watershed Science and Education

Paul McGinley, UWSP Center for Watershed Science and Education

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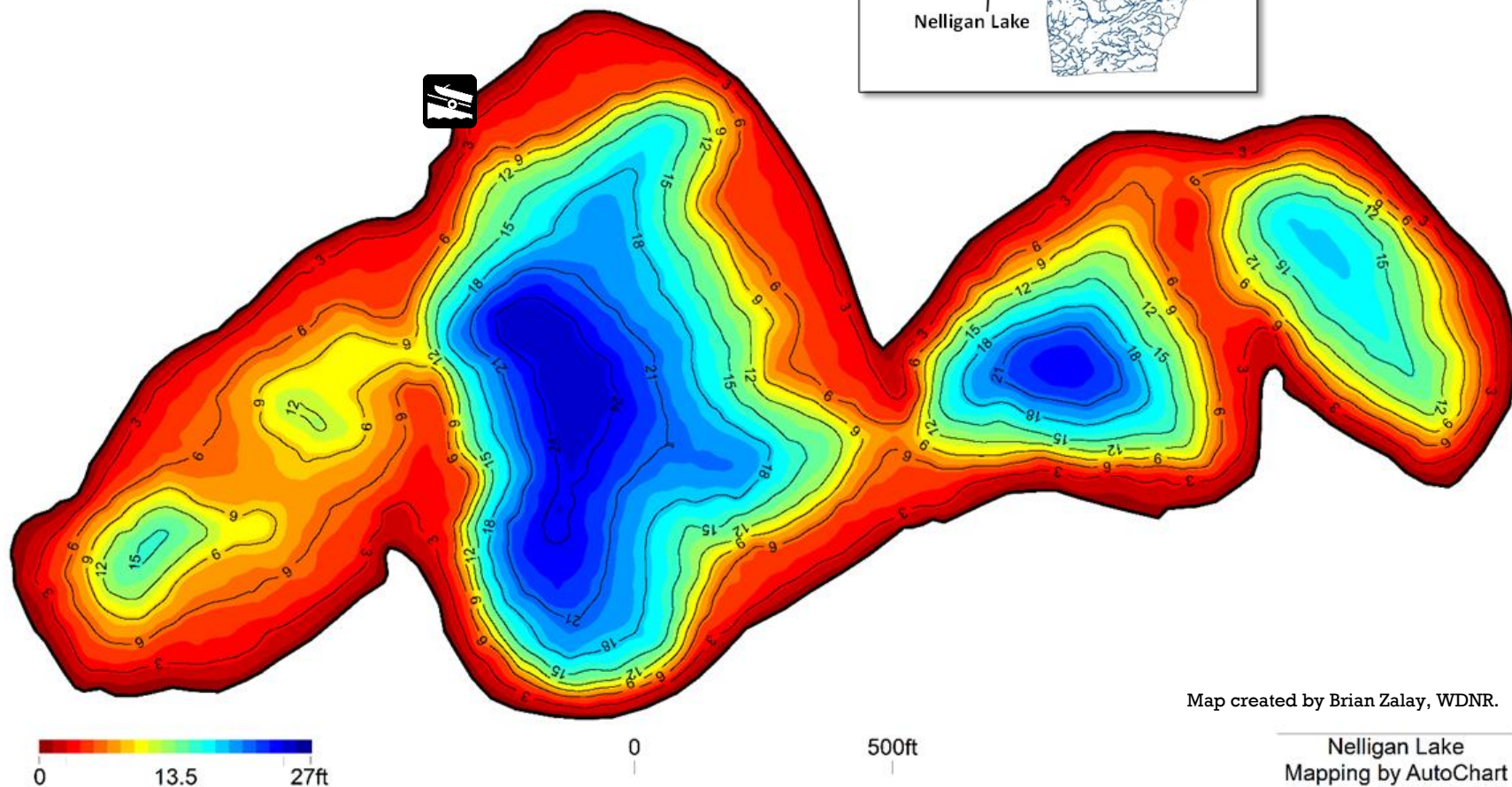
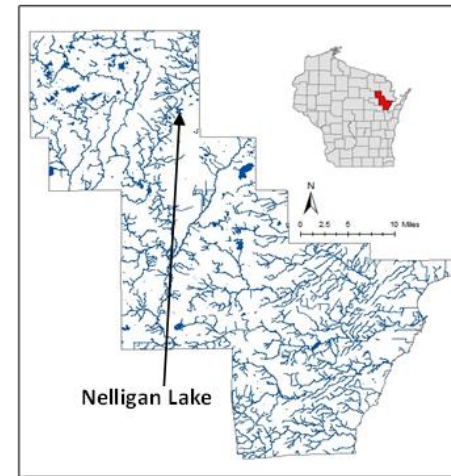
Resource	Acronym or Truncated Name
Citizen Lake Monitoring Network	CLMN
Clean Boats Clean Waters	CBCW
Lumberjack Resource Conservation & Development Council	LRCD
Oconto County Land & Water Conservation Dept.	OC LCD
Oconto County Board of Supervisors	OC Board
Oconto County Lakes and Waterways Association	OCLAWA
Town of Riverview	TOR
University of Wisconsin - Extension	UWEX
UWSP Water & Environmental Analysis Laboratory	WEAL
UWSP Center for Watershed Science and Education	CWSE
USDA Natural Resources Conservation Service	NRCS
Wisconsin Department of Natural Resources	WDNR
Wisconsin Department of Transportation	WDOT
Crooked Lake Sportsmen's Club	CLSC



# Background

## ABOUT NELLIGAN LAKE

Nelligan Lake is located in the Town of Riverview, in northeast Wisconsin. This 48-acre seepage lake has a maximum depth of 23 feet with clear water. Its bottom sediments are primarily muck and sand. Visitors have access to the lake from one public boat landing on the northwest side of the lake, which is owned and maintained by the US Forest Service. Water enters and leaves Nelligan Lake primarily from groundwater.



Map created by Brian Zalay, WDNR.

Nelligan Lake  
Mapping by AutoChart

# What Is A Lake Management Plan?

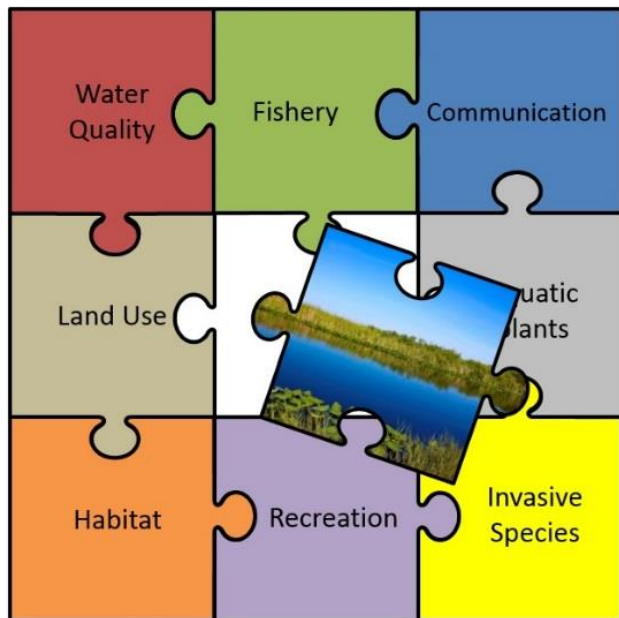
## LAKE MANAGEMENT PLANS (LMP)

### What is an LMP?

A management plan is a living document that changes over time to meet the current needs, challenges and desires of the lake and its community. Although each lake is different, the WDNR requires that each comprehensive lake management plan addresses a specific list of topics affecting the character of the lake, whether each topic has been identified as a priority, or as simply something to consider. In this way, every LMP considers the many aspects associated with lakes.

### What is the purpose of this LMP?

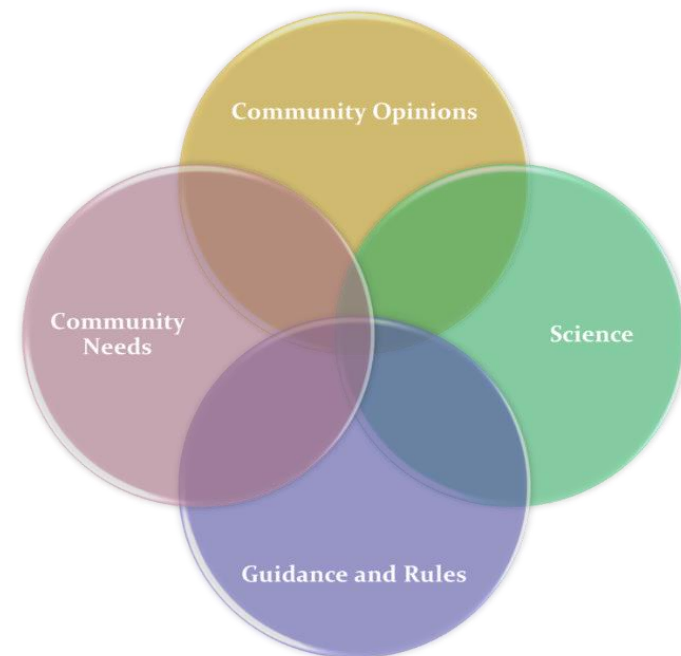
This plan was created to ensure that Nelligan Lake is healthy now and for future generations. It was designed to learn about Nelligan Lake and identify features important to the Nelligan Lake community, in order to provide a framework for the protection and improvement of the lake.



Implementing the content of this LMP will enable citizens and others to work together to achieve the vision for Nelligan Lake now and in the years to come. It is a dynamic document that identifies goals and action items for the purpose of

maintaining, protecting and/or creating desired conditions in the lake and identifies steps to correct past problems, improve on current conditions, and provide guidance for future boards, lake users, and technical experts.

Because many entities are involved in lake and land management, it can be challenging to navigate the roles, partnerships and resources that are available. The planning process and content of this plan have been designed to identify where some key assistance exists. The actions identified in this LMP can serve as a gateway for obtaining grant funding and other resources to help implement activities outlined in the plan.



# How Was This Plan Created?

## **ABOUT THIS PLAN**

One of the first steps in creating this plan was to gather and compile data about the lake and its ecosystem to understand past and current conditions. This was done in 2019-2020 alongside 5 other lakes as part of the Oconto County Lakes Project. The project was initiated by citizens in the Oconto County Lakes and Waterways Association who encouraged Oconto County to prioritize lake interests. This effort led to funding from the WDNR Lake Protection Grant Program. There was insufficient data available for many of the lakes to evaluate current water quality, aquatic plant communities, invasive species, and shorelands. The data that were available had been collected at differing frequencies or periods of time, making it difficult to compare lake conditions. Professionals and students from UW-Stevens Point, Oconto County Land Conservation Department, UW Extension, Oconto County citizens and WDNR staff collected the data for use in the development of lake management plans. Sources of information used in the planning process are listed at the end of this document.

Reports from the Nelligan Lake Study and the materials associated with the planning process and reports can be found on the Oconto County website: [www.co.oconto.wi.us](http://www.co.oconto.wi.us) and navigating to Departments>Land Conservation>County Waterways>County-wide Lake Study.

## **THE PLANNING PROCESS**

### **Who created the strategic plan?**

This plan is the result of a stakeholder-driven effort which involved many partners combining insight, knowledge, and expertise throughout the process. Area residents, lake users, and representatives of local municipalities gathered at public

meetings held on June 14, 2019 at the Bear Paw Scout Camp and on March 8, 2022 via an online platform to learn from one another and make decisions about the fishery, water quality, habitat, and land management in the Nelligan Lake watershed. Technical assistance during the planning process was provided by staff from OCLCD, UWEX, WDNR, and the CWSE.

### **How were various opinions incorporated?**

Participation in the planning process was open to everyone and was encouraged by letters mailed to Nelligan Lake waterfront property owners and by press releases in local newspapers. In addition, those individuals and organizations who provided their information were provided with emails about upcoming meetings, which could be forwarded to additional contact lists. To involve and collect input from as many people as possible, including those who might not be able to attend the public meetings, an online survey was conducted. Property owners and interested lake users were notified about the survey and how to access it via direct mailings to waterfront property owners and associated lake organizations and press releases in local newspapers. The surveys could be filled out anonymously online, or paper copies were available upon request. Survey questions and responses were shared at the planning sessions and can be found in the Appendix.



# How Is This Management Plan Used?

## Who will use this plan?

- **Individuals:** Individuals can use this plan to learn about the lake they love and their connection to it. People living near the lake can have the greatest influence on the lake by understanding and choosing lake-friendly options to manage their land and the lake.
- **A future lake organization:** This plan provides an association with guidance for the whole lake and lists options that can easily be prioritized. Resources and funding opportunities for lake management activities are made more available by placement of goals into the lake management plan, and the association can identify partners to help achieve their goals for the lake.
- **Neighboring lake groups, sporting and conservation clubs:** Groups with similar goals for lake stewardship can combine their efforts and provide each other with support, improve competitiveness for funding opportunities, and make efforts more fun.
- **The Town of Riverview:** Municipalities can utilize the visions, objectives, and goals documented in this lake management plan when considering town-level planning or decisions within the watershed that may affect the lake.
- **Oconto County:** County professionals will better know how to identify needs, provide support, base decisions, and allocate resources to assist in lake-related efforts documented in this plan. This plan can also inform county board supervisors in decisions related to Oconto County lakes, streams, wetlands, and groundwater.
- **Wisconsin Department of Natural Resources (WDNR):** Professionals working with lakes in Oconto County can use this plan as guidance for management activities and decisions related to the management of the resource, including the fishery, and invasive species. LMPs help them to identify and

prioritize needs, and where to apply resources. A well thought out lake management plan increases an application's competitiveness for funding from the State.

## Who can help implement this plan?

Lead persons and resources are identified under each action in this plan. These individuals and organizations are able to provide information, suggestions, or services to achieve goals. The following table lists organization names and their common acronyms used in this plan. This list should not be considered all-inclusive – assistance may also be provided by other entities, consultants, and organizations.



# Management Plan Structure

## GOALS FOR NELLIGAN LAKE

The foundation of any effective strategic plan is clear identification of goals and the steps needed to achieve the goals. The selected goals should achieve the overall vision for Nelligan Lake. This plan also identifies available resources within each objective.



The topics comprise the chapters in this plan and have been grouped as follows:

### **In-Lake Habitat and a Healthy Lake**

Fish Community—fish species, abundance, size, important habitat and other needs

Aquatic Plant Community—habitat, food, health, native species, and invasive species

Critical Habitat—areas of special importance to the wildlife, fish, water quality, and aesthetics of the lake

### **Landscapes and the Lake**

Water Quality—water chemistry, clarity, contaminants, lake levels

Shorelands—habitat, erosion, contaminant filtering, water quality, vegetation, access

Watershed—land use, management practices, conservation programs

### **People and the Lake**

Recreation—access, sharing the lake, informing lake users, rules

Communication and Organization—maintaining connections for partnerships, implementation, community involvement

Updates & Revisions—plan for maintaining a living document



# Nelligan Lake Management Plan Goals

## ***Goals for Nelligan Lake***

The following goals and actions were derived from the values and concerns of citizens interested in Nelligan Lake and members of the planning committee, as well as the known science about Nelligan Lake, its ecosystem and the landscape within its watershed. Implementing and regularly updating the goals and actions in this plan will ensure that the vision is supported and that changes are incorporated into the plan.

## **LIST OF GOALS**

<b>Goal 1</b>	<b>Maintain a healthy well-balanced fishery in Nelligan Lake.</b>
<b>Goal 2</b>	<b>Nelligan Lake will maintain a healthy, diverse aquatic plant community free of invasive species that provides good habitat and is protective of water quality.</b>
<b>Goal 3</b>	<b>Sensitive areas in Nelligan Lake, which provide essential habitat and/or water quality benefits, will be protected.</b>
<b>Goal 4</b>	<b>Property owners in the Nelligan Lake watershed will be familiar with and implement strategies for healthy land management.</b>
<b>Goal 5</b>	<b>Nelligan Lake will have healthy shorelands that protect water quality and provide essential habitat.</b>
<b>Goal 6</b>	<b>Maintain good water quality in Nelligan Lake.</b>
<b>Goal 7</b>	<b>Lake users will be informed about and respectful of Nelligan Lake.</b>
<b>Goal 8</b>	<b>Increase participation in the stewardship of Nelligan Lake.</b>
<b>Goal 9</b>	<b>Review plan annually and update as needed.</b>

# Fish Community

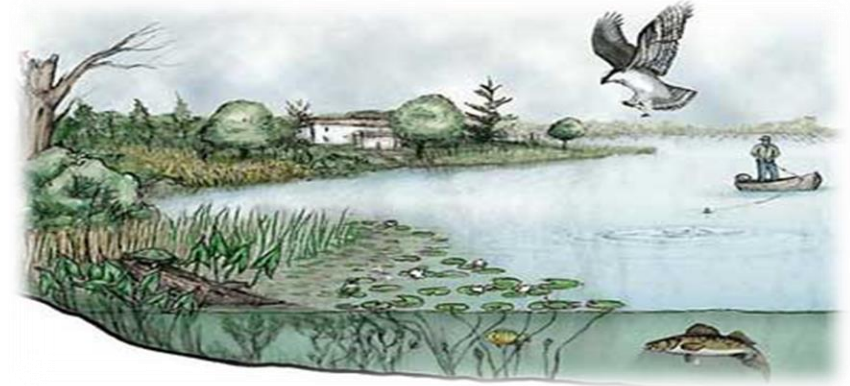
## IN-LAKE HABITAT AND A HEALTHY LAKE

The health of one part of the lake system affects the health of the rest of the plant and animal community, the experiences of the people seeking pleasure at the lake, and the quality and quantity of water in the lake. Habitat is the structure for a healthy fishery and wildlife community. It can provide shelter for some animals and food for others. Many animals that live in and near the lake are only successful if their habitat needs are met.

### What is lake-habitat?

Healthy lake-habitat in Nelligan Lake includes native aquatic plants and shoreland vegetation, as well as tree branches/limbs above and below the water.

Habitat exists within the lake, along the shoreland, and even extends into its watershed for some wildlife species. Native vegetation (including wetlands) along the shoreline and connected to the lake provides shelter and food for waterfowl, small mammals, turtles, frogs, and fish. Native plants in and near the lake can also improve water quality and balance water quantity. Aquatic plants infuse oxygen into the water, which is essential for the fish community. Some lake visitors such as birds, frogs, and turtles use limbs from trees that are sticking out of the water for perches or to warm themselves in the sun. The types and abundance of plants and animals that comprise the lake community also vary based on the water quality, and the health and characteristics of the shoreland and watershed.



## The Fish Community

A balanced fish community has a mix of predator and prey species, each with different food, habitat, nesting substrate, and water quality needs to flourish.

### What can affect the fishery?

Activities in and around a lake that can affect a fishery include:

- disturbances to the native aquatic plant community or substrate,
- excessive additions of nutrients or harmful chemicals,
- removal of woody habitat,
- shoreline alterations,
- shoreland erosion can cause sediment to settle onto the substrate, causing the degradation of spawning habitat.

### What People Value about Nelligan Lake

Quiet lake with little development  
Fishing  
Scenery



**Habitat provides shelter  
and food for fish and  
wildlife.**

# Fish Community

## Can the fishery be improved?

Managing a lake for a balanced fishery can result in fewer expenses to lake stewards and the public. While some efforts may be required to provide a more suitable environment to meet the needs of the fish, they usually do not have to be repeated on a frequent basis. Ideally, a lake contains the habitat, water quality, and food necessary to support the fish communities present within the lake and provide fishing opportunities for people without a lot of supplemental effort and associated expenses to maintain these conditions.

- Protecting existing habitat such as emergent, aquatic, and shoreland vegetation, and allowing trees that naturally fall into the lake to remain in the lake, are free of cost.
- Restoring habitat in and around a lake can have an up-front cost, but the effects will often continue for decades.
- Costs in time, travel, and other expenses are associated with routine efforts such as fish stocking and aeration.

Stocking Date	Species	# Stocked	Age Class
	Yellow perch		
	Walleye		

### ***Nelligan Lake Fish Management History***

- ✓ No fish surveys have been conducted on Nelligan Lake.
- ✓ Walleye and panfish stocking conducted by Crooked Lake Sportsmen's Club.
- ✓ Soft water limits biological activity and production.
- ✓ Residents report good fishing with little change over time.





# Fish Community

## Goal 1. Maintain a healthy well-balanced fishery in Nelligan Lake.

**Objective 1.1** Augment natural fish community as appropriate to maintain recreational fishing opportunities and species balance.

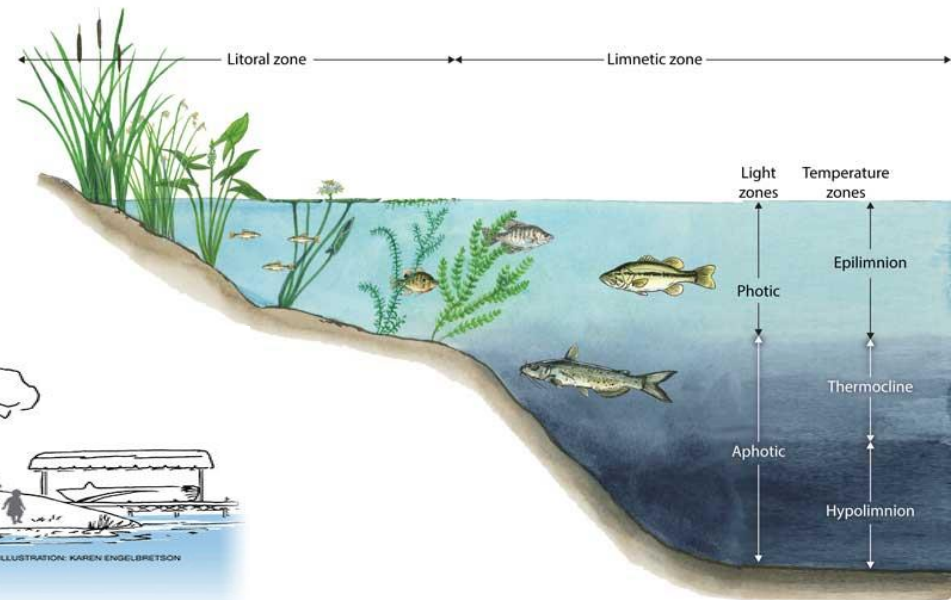
Actions	Lead person/group	Resources	Timeline
Continue stocking of predator and panfish in Nelligan Lake.		WDNR-Chip Long CLSC	Ongoing

**Objective 1.2** Enhance fish habitat in Nelligan Lake. At least 5 fish stick clusters will be installed over the next 3 years.

Actions	Lead person/group	Resources	Timeline
Identify willing property owners for fish stick installations (250 logs/mile is recommended). Also identify properties seeking tree removal (>35 feet from water's edge) as a source of material.		WDNR-Chip Long	Ongoing
Educate property owners about healthy shoreland habitat and its importance to having a healthy fishery. See <b>Shorelands</b> section.		WDNR-Chip Long OCLCD	Ongoing



Fish cribs are good cover for small fish, but near shore habitat is essential for reproduction of most species.



# Aquatic Plant Community

## Aquatic Plants

Aquatic plants provide the forested landscape within Nelligan Lake. They provide food and habitat for spawning, breeding, and survival for a wide range of inhabitants and lake visitors including fish, waterfowl, turtles, amphibians, as well as invertebrates and other animals. They improve water quality by releasing oxygen into the water and utilizing nutrients that would otherwise be used by algae. A healthy lake typically has a variety of aquatic plant species, which makes the aquatic plant community more resilient and can help to prevent the establishment of non-native aquatic species. Additionally, they stabilize the bottom sediment and help filter out the suspended sediment from the water column.

Aquatic plants near shore and in shallows provide food, shelter, and nesting material for shoreland mammals, shorebirds and waterfowl. It is not unusual for otters, beavers, muskrats, weasels, and deer to be seen along a shoreline in their search for food, water or nesting material. Aquatic plants also serve as indicator species for environmental stressors that could be occurring in a lake or river, such as a runoff event.

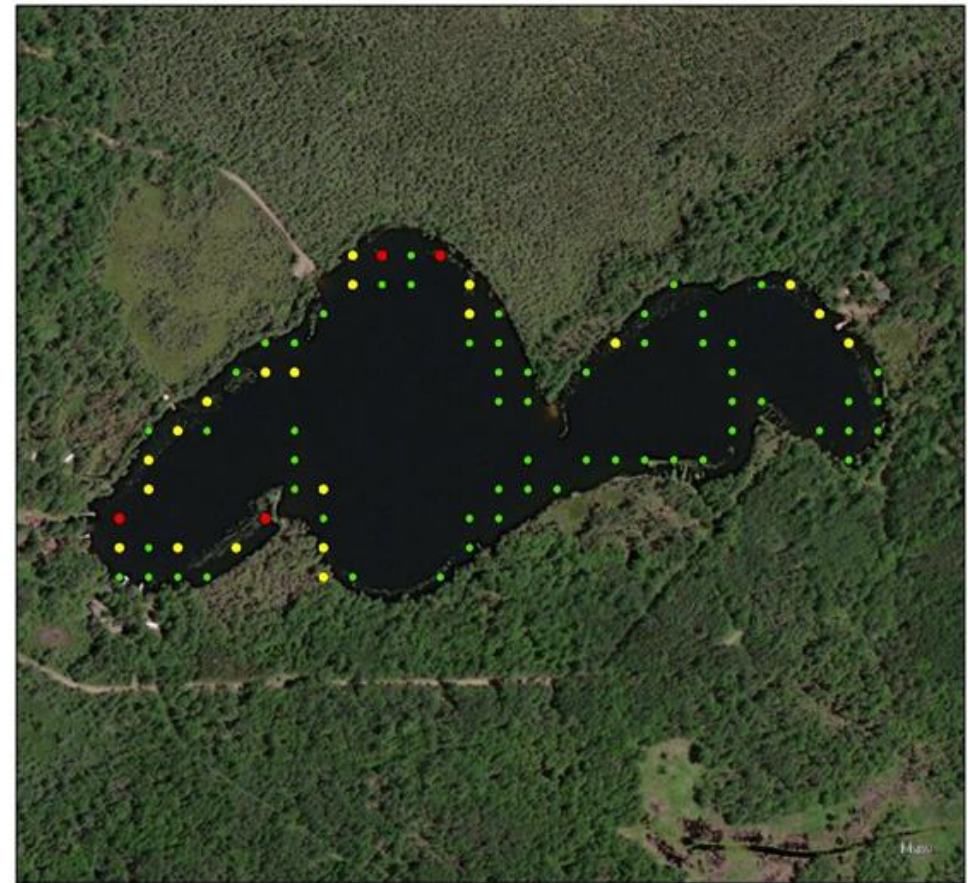
### *Nelligan Lake 2019 WDNR (Brenda Nordin) Aquatic Plant Survey Highlights*

- ✓ 44% (83 of 187) of the sites visited had vegetative growth.
- ✓ The greatest depth aquatic plants were found was 18 feet.
- ✓ 10 species of aquatic plants were identified. This is below the North Central Hardwood average of 16.2.
- ✓ The three most dominate species were Dwarf milfoil (76%), watershield (30%), and small purple bladderwort (23%).
- ✓ The Floristic Quality Index (FQI) was 20. The northcentral hardwood average is 23.3.
- ✓ No invasive species were observed.



Native plants provide essential food and habitat for fish and wildlife.

## Nelligan Lake Aquatic Plant Survey 2019: Rake Fullness



0 125 250 500 750 1,000  
Feet



Center for Watershed Science and Education  
College of Natural Resources  
University of Wisconsin-Stevens Point

### Rake Fullness

- 1
- 2
- 3





# Aquatic Plant Community

**Dwarf water-milfoil** is a very sensitive species with little tolerance for disturbance and, thus, is an indicator of a high-quality, natural environment. It grows in dense clusters of thin, unbranched stems from rhizomes in sandy soil. The fruit is eaten by waterfowl that often rises above the water surface in shallow areas.



**Watershield** has floating leaves with their distinctive jelly-like slime on the undersides and stems. While providing shade and shelter for aquatic animals and food for waterfowl, the plants secrete a number of chemicals that kill or inhibit growth of bacteria, algae, and other plants. Native Americans reportedly ate its tuberous roots.



**Sr all purple bladderwort** is a sensitive species considered Threatened in Minnesota and of Special Concern in Wisconsin, so it should not be disturbed. A carnivorous plant, it has tiny bladders that capture small invertebrates to be broken down and digested.



## Aquatic Invasive Species (AIS)

Aquatic invasive species are non-native aquatic plants and animals that are most often unintentionally introduced into lakes by lake users. This commonly occurs on trailers, boats, equipment, and from the release of bait. In some lakes, aquatic invasive plant species can exist as a part of the plant community, while in other lakes populations explode, creating dense beds that can damage boat motors, make areas non-navigable, inhibit activities like swimming and fishing, and disrupt the lakes' ecosystems.

No invasive species were observed during the 2019 survey.

DNR protocol is recommended every 5 years to detect changes in the plant community and detect any AIS.

## Aquatic Plant Management in Nelligan Lake

Management strategies in Nelligan Lake were designed to achieve a balance between healthy aquatic habitat, good water quality, and eradication of invasive species.

### *Management Options for Invasive Species or Nuisance Native Aquatic Plants*

Management options that offer the most practical and effective approaches for managing invasive species or nuisance native plants, while minimizing impacts to Nelligan Lake as a whole, have been identified. Depending upon conditions, the following options may be used alone or in combination with others.

#### **Hand-pulling.** No permit required.

Hand-pulling is the preferred method for removing invasive species. Additionally, lakefront property owners are allowed to manually remove native aquatic plants from an area up to 30 feet wide without a permit for swimming and boat access (this does not include the excavation or removal of any bottom sediments).



# Aquatic Plant Community

Any denuded lakebed is prime real estate for invasive species, however, and close monitoring is necessary to ensure no populations are established.

## ***Aquatic Plant Management Plan Review***

A good aquatic plant management plan strategy should reduce the amount of management activity needed as time goes on. In

Nelligan Lake, a series of successful strategies (integrated plant management) should lead to a balance between healthy aquatic habitat, water quality, and recreation with minimal annual management.

**Goal 2. Nelligan Lake will maintain a healthy, diverse aquatic plant community free of invasive species that provides good habitat and is protective of water quality.**

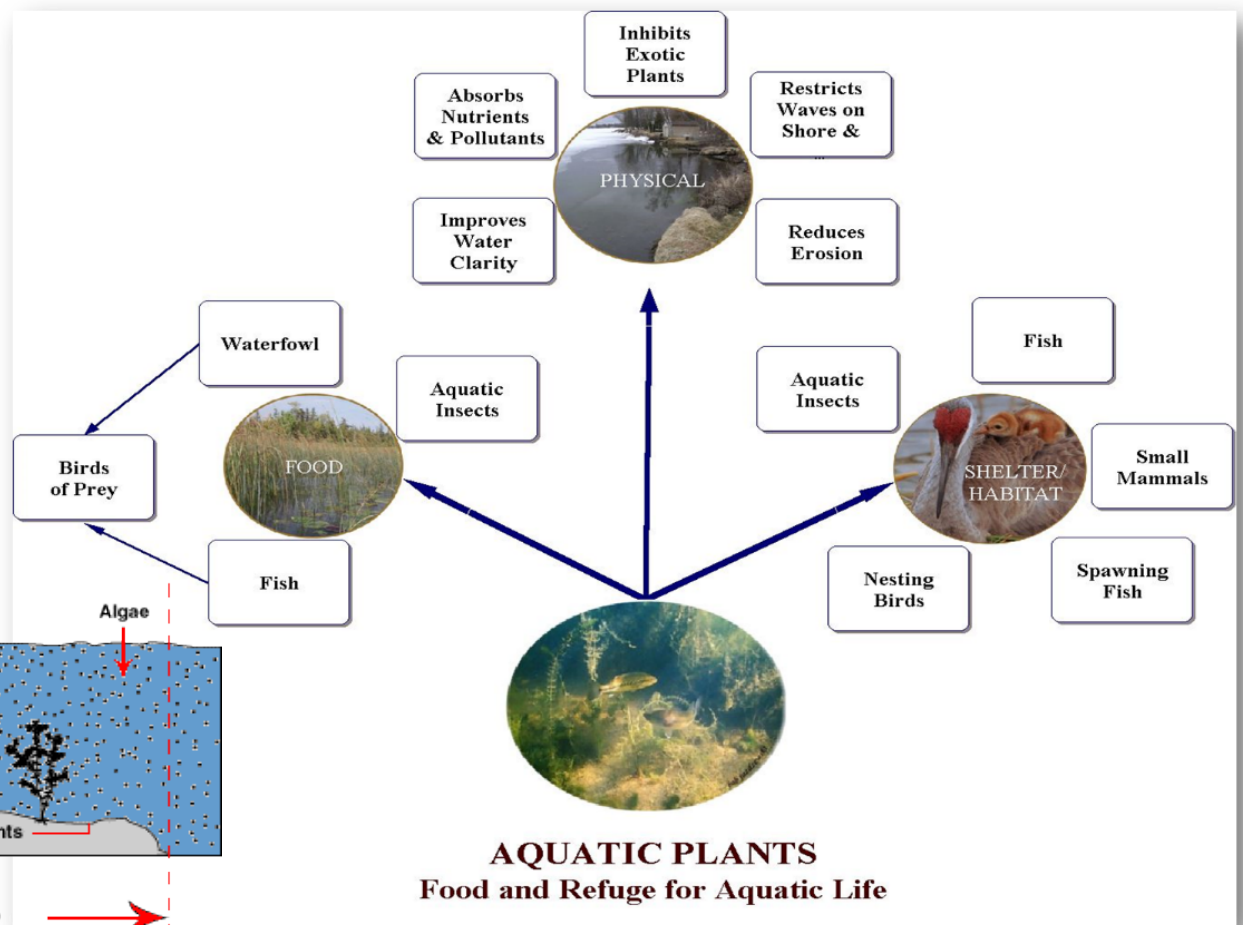
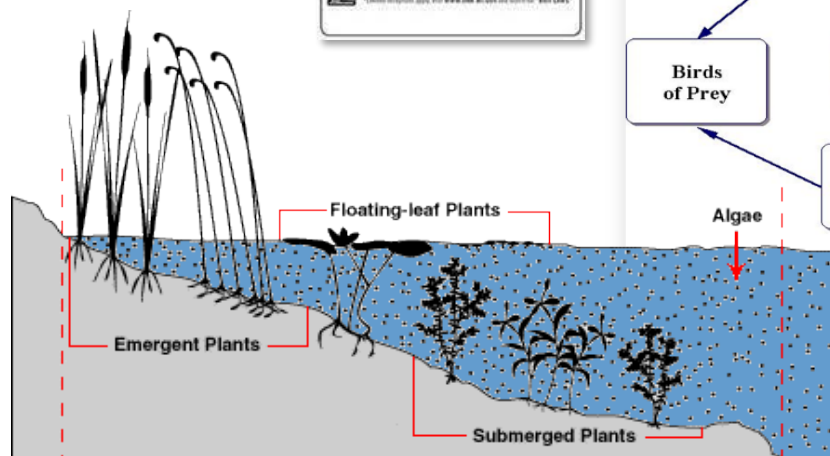
## ***Objective 2.1 Minimize disturbance to native aquatic plants.***

<b>Actions</b>	<b>Lead person/group</b>	<b>Resources</b>	<b>Timeline</b>
Inform property owners of the importance of native aquatic vegetation to impede the establishment of AIS, provide food and habitat for wildlife, and protect the shoreline. Include this information in direct mailings to residents, newsletter, or host a guest speaker.		WDNR-Brenda Nordin	Ongoing
Encourage landowners to limit plant removal to invasive species or skimming off those that have become unrooted and free-floating. If plants severely impede recreation, consider hand-pulling small areas around private docks (within WDNR guidelines). Cleared lakebed is ideal habitat for AIS to become established, so be vigilant about watching for AIS in these areas.		WDNR-Brenda Nordin	Ongoing
Regularly monitor the aquatic plant community to detect changes in lake conditions and ensure stable populations. A point-intercept survey is recommended.		WDNR-Brenda Nordin Consultants.	Every 10 years if no active plant management taking place
Reduce nutrient and sediment loading to the lake by improving shoreland buffers (see <b>Shorelands</b> section) and supporting BMPs in the watershed (see <b>Watershed</b> section).		WDNR-Brenda Nordin OCLCD	Ongoing

# Aquatic Plant Community

## Objective 2.2 Protect against the establishment of AIS.

Actions	Lead person/group	Resources	Timeline
Encourage or host training to identify and look for invasive species.		WDNR-Brenda Nordin	Ongoing
Educate landowners on importance of native aquatic vegetation for preventing AIS.		WDNR-Brenda Nordin	Ongoing
Consider having a volunteer staff the boat launch on busy days to monitor for AIS coming into the lake and educate boaters.		CBCW	Summers
If new AIS is suspected, follow the guidelines in <b>Appendix B</b> .		WDNR-Brenda Nordin	Ongoing



# Critical Habitat

## Critical Habitat

Special areas harbor habitat that is essential to the health of a lake and its inhabitants. In Wisconsin, critical habitat areas are identified by biologists and other lake professionals from the WDNR in order to protect features that are important to the overall health and integrity of the lake, including aquatic plants and animals. While every lake contains important natural features, not all lakes have official critical habitat designations. Designating areas of the lake as critical habitat enables these areas to be located on maps and information about their importance to be shared. Having a critical habitat designation on a lake can help lake groups and landowners plan waterfront projects that will minimize impact to important habitat, ultimately helping to ensure the long-term health of the lake.



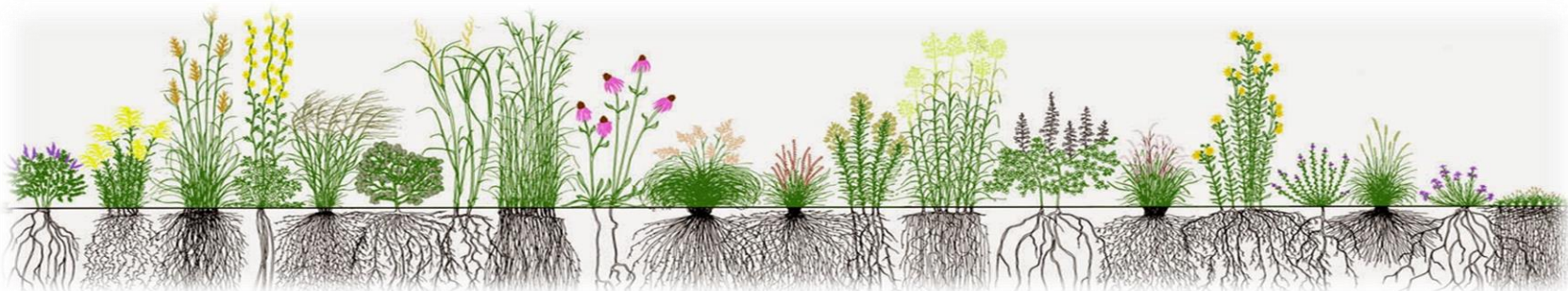
**Every waterbody has areas that are most important to the overall health of the lake.**

Although Nelligan Lake does not have an official critical habitat area designation, there are areas within Nelligan Lake that are important for fish and wildlife. Natural, minimally-impacted areas with woody habitat such as logs, branches, and stumps; areas with emergent and other forms of aquatic vegetation; areas with overhanging vegetation; and wetlands are elements of good quality habitat. Identifying other important areas around the lake that are important habitat and informing lake users of their value can help raise awareness for the protection of these areas.

**Goal 3. Sensitive areas in Nelligan Lake, which provide essential habitat and/or water quality benefits, will be protected.**

**Objective 3.1 Identify and inform others of quality habitat areas in and around Nelligan Lake.**

Actions	Lead person/group	Resources	Timeline
Request a Critical Habitat Designation from WDNR.		WDNR-Brenda Nordin	2023
If critical habitat is identified, communicate to property owners, visitors, and Town Board as to why these areas are important. Look for opportunities to protect these areas.			TBD





# Watershed

## LANDSCAPES AND THE LAKE

### Nelligan Lake Watershed

#### A Lake is a Reflection of its Watershed...

Understanding where Nelligan Lake's water originates is important to understanding lake health. During snowmelt or rainstorms, water moves across the surface of the landscape (runoff) towards lower elevations such as lakes, streams, and wetlands. This area is called the watershed. Groundwater also feeds Nelligan Lake; its land area may be slightly different than the surface watershed.

Less runoff is desirable because it allows more water to recharge the groundwater, which feeds the lake year-round - even during dry periods or when the lake is covered with ice. The capacity of the landscape to shed or hold water and contribute or filter particles determines the amount of erosion that may occur, the amount of groundwater feeding a lake, and the lake's water quality and quantity. Landscapes with greater capacities to hold water during rain events and snowmelt slow the delivery of the water to the lake.

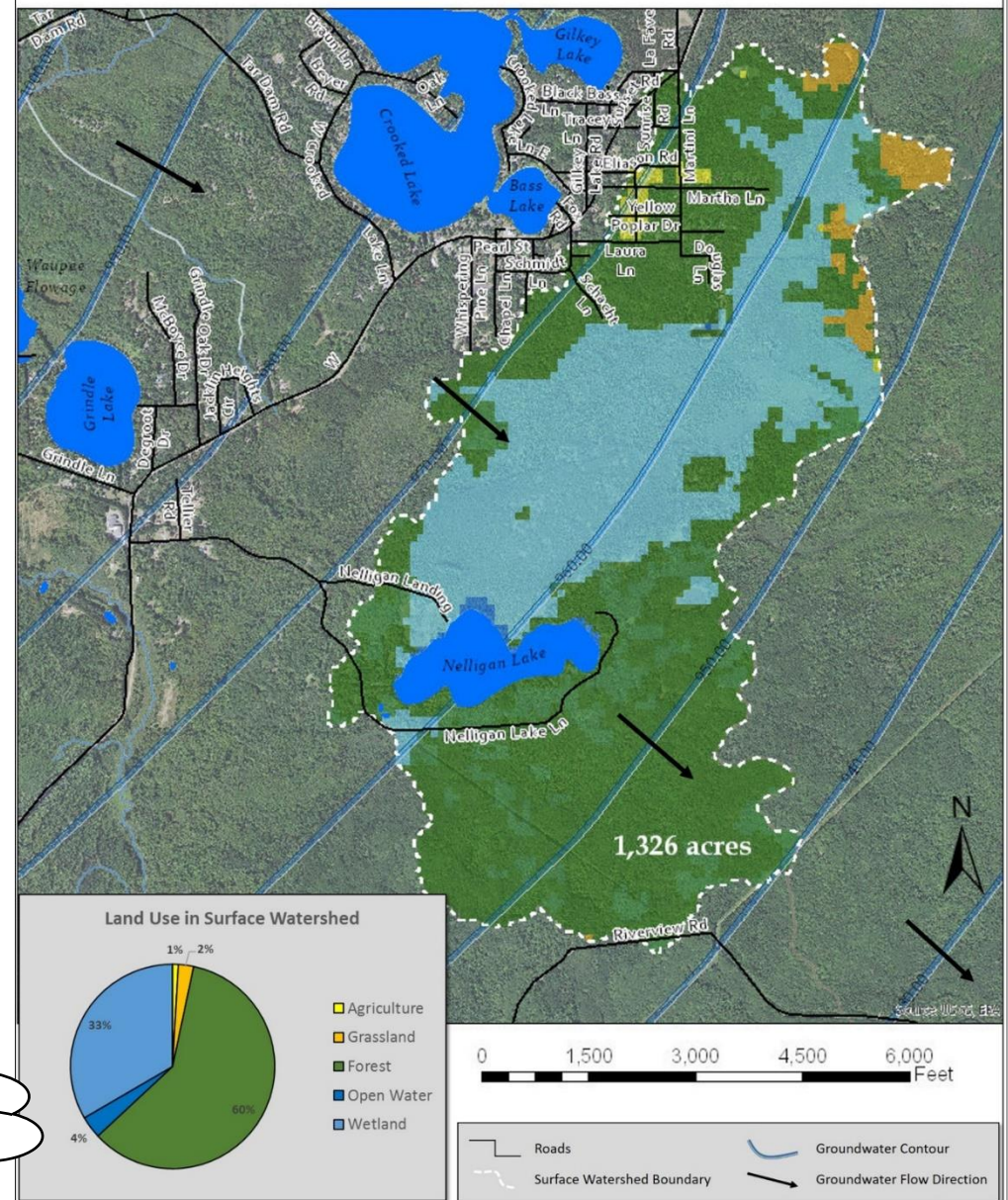
#### Nelligan Lake's Watershed

The Nelligan Lake watershed is 1,326 acres. Primary land use is forest and wetland. The lake's shoreland is surrounded primarily by forest, wetland and residential lots. In general, the land closest to the lake has the greatest immediate impact on water quality.



**Watershed: The area of land draining to a lake.**

### Nelligan Lake Surface Watershed & Groundwater Flow



# Watershed

## Why does land matter?

Land use and land management practices within the watershed can affect both its water quantity and quality. While forests, grasslands, and wetlands allow a fair amount of precipitation to soak into the ground, resulting in more groundwater and good water quality, other types of land uses may result in increased runoff and less groundwater recharge, and may also be sources of pollutants that can impact the lake and its inhabitants.

### **Soil and Erosion**

Areas of land with exposed soil can produce soil erosion. Soil entering the lake can make the water cloudy and cover fish spawning beds. Soil also contains nutrients that increase the growth of algae and aquatic plants.

### **Development**

Development on the land may result in changes to natural drainage patterns, alterations to vegetation on the landscape, and may be a source of pollutants. Impervious (hard) surfaces such as roads, rooftops, and compacted soil prevent rainfall from soaking into the ground, which may result in more runoff that carries pollutants to the lake. Wastewater, animal waste, and fertilizers used on lawns, gardens and crops can contribute nutrients that enhance the growth of algae and aquatic plants in our lakes.

### **What can be done?**

Land management practices can be put into place that mimic some of the natural processes, and reduction or elimination of nutrients added to the landscape will help prevent the nutrients from reaching the water. In general, the land nearest the lake has the greatest impact on the lake water quality and habitat and is often the easiest to manage (own property, no politics, etc.).

## ***Be Part of the Solution!***

Practices designed to reduce runoff include:

- protecting/restoring wetlands,
- installing rain gardens, swales, rain barrels, and other practices that increase infiltration
- routing drainage from pavement and roofs away from the lake
- meandering lake access paths to minimize direct flow to the lake.

Practices used to help reduce nutrients from moving across the landscape towards the lake include:

- eliminating/reducing the use of fertilizers,
- increasing the distance between the lake and a septic drainfield,
- protecting/restoring wetlands and native vegetation in the shoreland,
- controlling erosion,
- manure management and cropping practices.

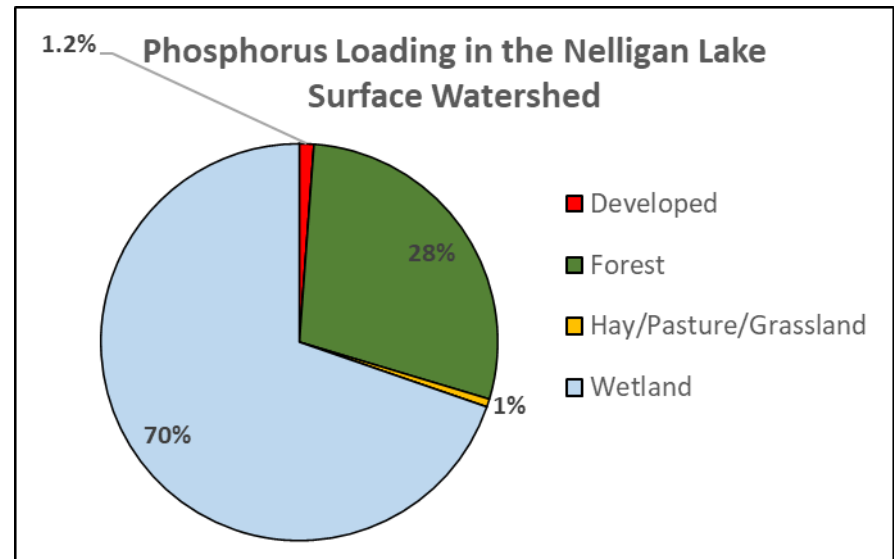


**Most of these activities  
are eligible for cost share  
and grant assistance!**

# Watershed

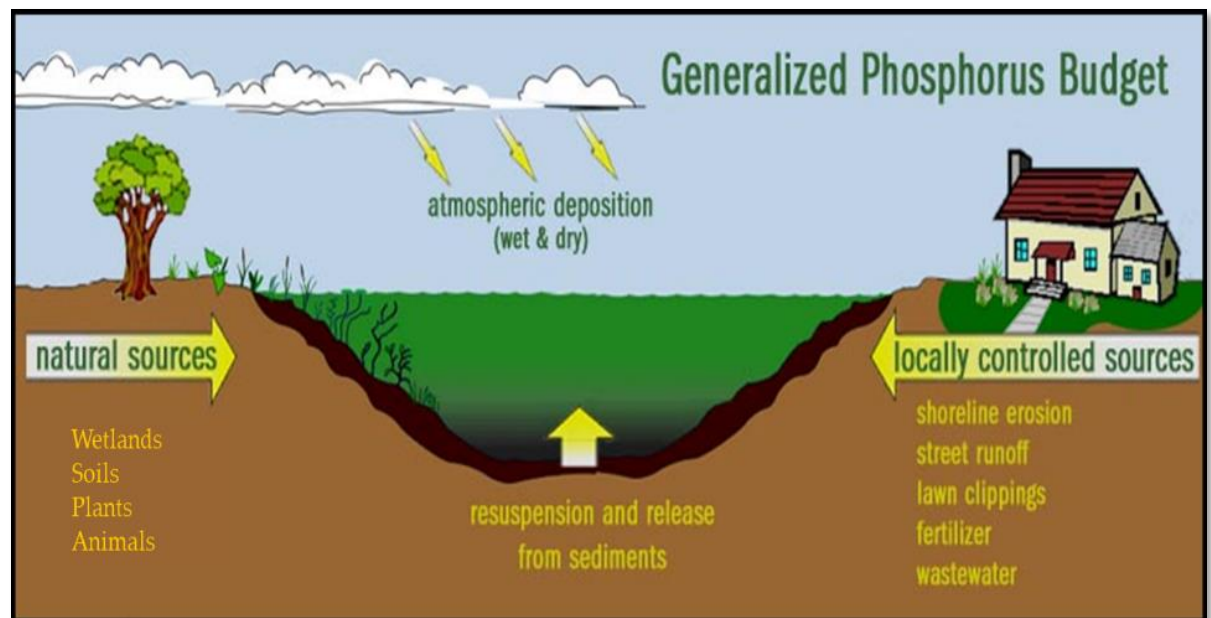
## **Phosphorus Modeling**

Estimates of phosphorus from the landscape can help to understand the phosphorus sources to Nelligan Lake. Land use in the surface watershed was evaluated and used to populate the Wisconsin Lakes Modeling Suite (WILMS) model. In general, each type of land use contributes different amounts of phosphorus in runoff and groundwater. The types of land management practices that are used and their distances from the lake also affect the contributions to the lake from a parcel of land. The phosphorus contributions by land use category, called phosphorus export coefficients, have been obtained from studies throughout Wisconsin (Panuska and Lillie, 1995). In the Nelligan Lake watershed, the vast majority of these sources are not anthropogenic.



## **Phosphorus Loading in Nelligan Lake Watershed**

Based on modeling results, wetland had the greatest percentage of phosphorus contributions from the watershed. Efforts to reduce nutrient inputs to the lake must be focused on land uses that we have some control over such as production and developed areas.



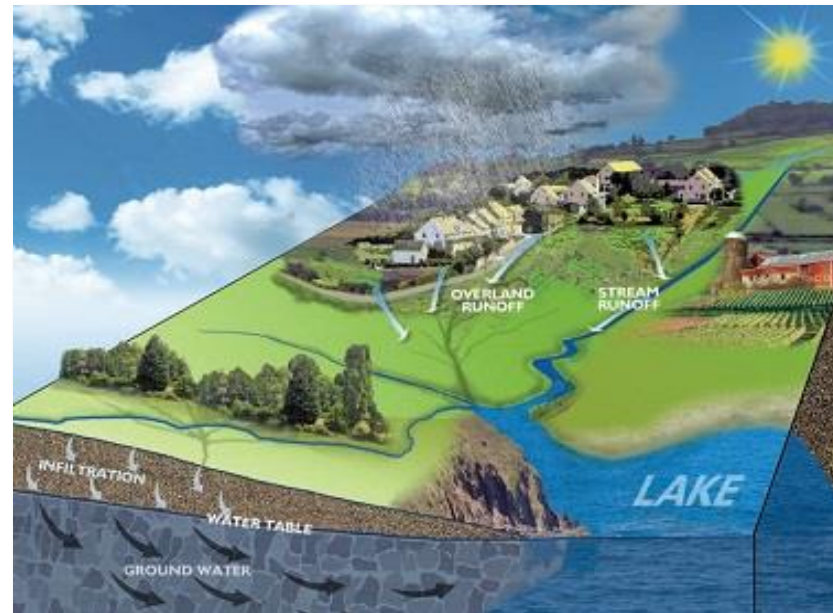


# Watershed

**Goal 4. Property owners in the Nelligan Lake watershed will be familiar with and implement strategies for healthy land management.**

**Objective 4.1 Support healthy land management activities in the Nelligan Lake watershed to maintain water quality.**

Actions	Lead person/group	Resources	Timeline
Encourage the County to support and follow up with water quality-based best management practices (BMPs) within the watershed. Include BMPs that reduce application of excess nitrogen and pesticides that leach to groundwater.		NRCS DATCP County Board Supervisors	Ongoing
Support landowners interested in the protection of their land via a land conservation program (i.e., Conservation Easement, Purchase of Development Rights, or sale of land for protection).		WDNR Lake Protection Grants Knowles-nelson Stewardship Fund NWLIT	As needed
Encourage any new developments to manage runoff on site. Any altered wetlands should be mitigated within the lake's watershed to maintain the water budget of Nelligan Lake.		Developers/Builders Town of Riverview	As needed
Encourage design of road and construction projects that will minimize impacts to lake.		Town of Riverview OC Highway Dept./WDOT	As needed



# Shorelands

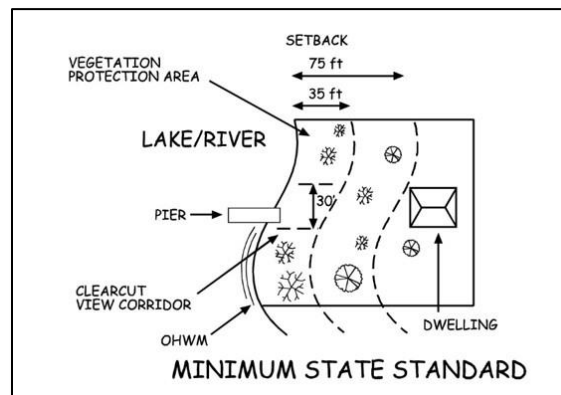
## Shorelands

Shoreland vegetation is critical to a healthy lake ecosystem. It provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and small and large mammals. It also helps to improve the quality of the runoff that is flowing across the landscape towards the lake.

**Healthy shoreland vegetation** includes a mix of unmowed grasses/flowers, shrubs, trees, and wetlands which extends at least 35 feet landward from the water's edge.

Shoreland ordinances have been in place since 1964 to improve water quality and habitat, and to protect our lakes. To protect our lakes, county and state (NR 115) shoreland ordinances state that vegetation should extend at least 35 feet inland from the water's edge, with the exception of an optional 30-foot wide view corridor for each shoreland lot. Although some properties were grandfathered in when the ordinance was initiated in 1966, following this guidance will benefit the health of the lake and its inhabitants.

Disturbed shoreland is measured as any shoreline without a shrub or herbaceous layer at the water's edge, regardless of buffer thickness. This may be a result of mowed lawn, artificial beach, etc.



**90% of lake life spends all or part of their life in the near shore zone.**

## ***Be Part of the Solution!***

### ***Follow Healthy Shoreland Practices***

- Mow Less: The simplest, most affordable way to improve your shoreland is to reduce mowing near shore. Native vegetation will re-establish itself over time.
- Leave natural shoreland vegetation in place.
- Restore native shoreland vegetation where it is lacking.
- Plant attractive native species of grasses/flowers, shrubs and trees that will add interest and beauty to your property.
- Don't use fertilizers or herbicides, they may run into the lake. Test your soil to determine if fertilizer is warranted.
- Add or leave woody habitat near the shore. Turtles, birds, and fish love it!
- Never transplant water garden plants or aquarium plants into lakes, streams, or wetlands.
- Visit [www.healthylakeswi.com](http://www.healthylakeswi.com) for additional resources.

### **State Shoreland Zoning Ordinance**

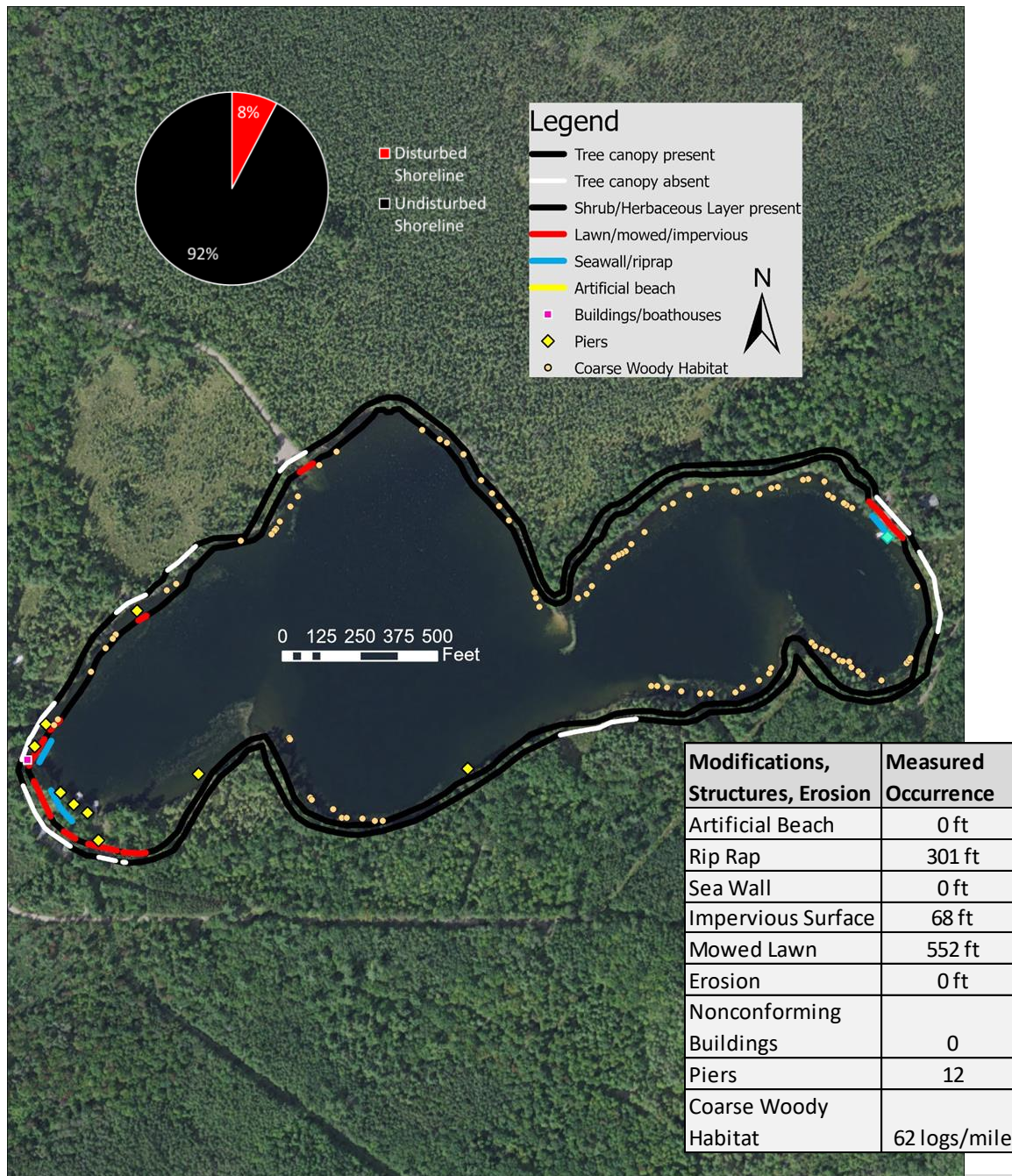
#### **NR 115 Wisc. Adm. Code for Unincorporated Municipalities**

No vegetation within 35 feet of the lake's edge shall be removed except for:

- Up to 30% of shoreline may be removed of shrubs and trees for a view corridor
- A mowed or constructed pedestrian path up to 5 feet wide to access lake



# Shorelands



## Nelligan Lake's Shorelands

To better understand the health of Nelligan Lake, shorelands were evaluated by WDNR (Brenda Nordin) in 2019. The survey inventoried shoreland vegetation, erosion, riprap, barren ground, seawalls, structures, and docks. Less than 10% of the 1.5 miles of shoreline is developed. A total of 12 piers were counted during the survey (1/670 ft).

- With 12 lakefront lots, 360 feet (9%) of disturbed shoreland is permitted under NR115. Based on the 2019 shoreland inventory, 8% (620 feet) of Nelligan Lake's shoreland was disturbed. Coarse woody habitat was measured at 62 logs/mile (250 logs/mile recommended.)
- Nelligan Lake had above average shoreland health compared to other lakes in the study. Most stretches are in good shape, but a few portions have challenges that should be addressed.





# Shorelands

## **Coarse Woody Habitat (CWH)**

Woody debris (i.e., branches, limbs, trees) that falls into the lake forms critical habitat for tiny aquatic organisms that feed bluegills, turtles, crayfish and other critters. Water insects such as mayflies graze on the algae that grow on decomposing wood. Dragonfly nymphs hunt for prey among the stems and branches. Largemouth and smallmouth bass often find food, shelter, or nesting habitat among these fallen trees.

Above water, a fallen tree is like a dock for wildlife. Ducks and turtles sun themselves on the trunk, muskrats use the tree as a feeding platform, predators such as mink and otter hunt for prey in the vicinity of fallen wood, and dead trees that remain along the shoreline are used as perches by belted kingfishers, ospreys and songbirds.

Undeveloped lakes typically contain hundreds of 'logs per mile' while they may completely disappear on developed lakes. Unless it is a hazard to navigation or swimming, consider leaving woody debris in the water.

## HOW WILL YOU IMPROVE YOUR LAKE?



ILLUSTRATION: KAREN ENGELBRETON

**1 FISH STICKS**  
**CREATE FISH AND WILDLIFE HABITAT.**  
Fish Sticks are feeding, breeding, and nesting areas for all sorts of critters – from fish to song birds. They can also prevent bank erosion – protecting lakeshore properties and your lake.



**2 NATIVE PLANTINGS**  
**IMPROVE WILDLIFE HABITAT, NATURAL BEAUTY AND PRIVACY, AND SLOW RUNOFF.**  
Native Plantings include grasses and wildflowers with shrubs and trees. Choose a template based on your property and interests – from bird/butterfly habitat to a low-growing garden showcasing your lake view.



**3 DIVERSION**  
**PREVENT RUNOFF FROM GETTING INTO YOUR LAKE.**  
Diversion Practices move water to areas where it can soak into the ground instead. Depending on your property, multiple diversions may be necessary.



**4 ROCK INFILTRATION**  
**CAPTURE AND CLEAN RUNOFF.**  
Rock Infiltration practices fit in nicely along roof drip lines and driveways and provide space for runoff to filter itself. They work best if your soil is sandy or loamy.



**5 RAIN GARDEN**  
**CREATE WILDLIFE HABITAT AND NATURAL BEAUTY WHILE CAPTURING AND CLEANING RUNOFF.**  
Rain Gardens multi-task - they improve habitat and filter runoff while providing a naturally beautiful view.



**IMPROVE 🐟 HABITAT AND 🌿 NATURAL BEAUTY ~ ⚠️ SLOW, 🔄 DIVERT, 🧼 CLEAN AND 🌊 FILTER RUNOFF**



# Shorelands

## Nelligan Lake 2019 Shoreland Survey Results

Total lakefront footage	# Riparian lots	Total allowable (NR115) disturbed shoreland	Measured disturbed shoreland
8,042	12	360 feet (4%)	620 feet (8%)

### Goal 5. Nelligan Lake will have healthy shorelands that protect water quality and provide essential habitat.

*Objective 5.1 Shoreland property owners will be knowledgeable about and make good decisions regarding their shoreland management that result in good water quality and habitat. Over the next 3 years, 200 feet (or about two properties) of disturbed shoreline will be restored.*

Actions	Lead person/group	Resources	Timeline
Provide informational materials to all shoreland property owners about basic lake stewardship including healthy shorelands and their composition (wildflowers, shrubs, trees, etc.). Include information on cost share programs. Consider including information in a welcome packet to new property owners.		OCLWA UWEX Lakes WDNR Healthy Lakes grants	Ongoing
Identify willing property owners to install fish sticks to improve fish habitat (see <b>Fish Community</b> section).		OCLCD WDNR-Chip Long	Ongoing
Encourage those interested in shoreland restoration to contact the OCLCD for guidance and resources.		OCLCD	Ongoing
Explore purchase of undeveloped shoreland property for protection.		UWEX Lakes Knowles-Nelson Stewardship Fund	As available
Work with USFS to design and install a water diversion structure at the boat ramp to keep runoff and sediment from flowing directly into lake.		USFS WDNR	

# Water Quality

## Water Quality

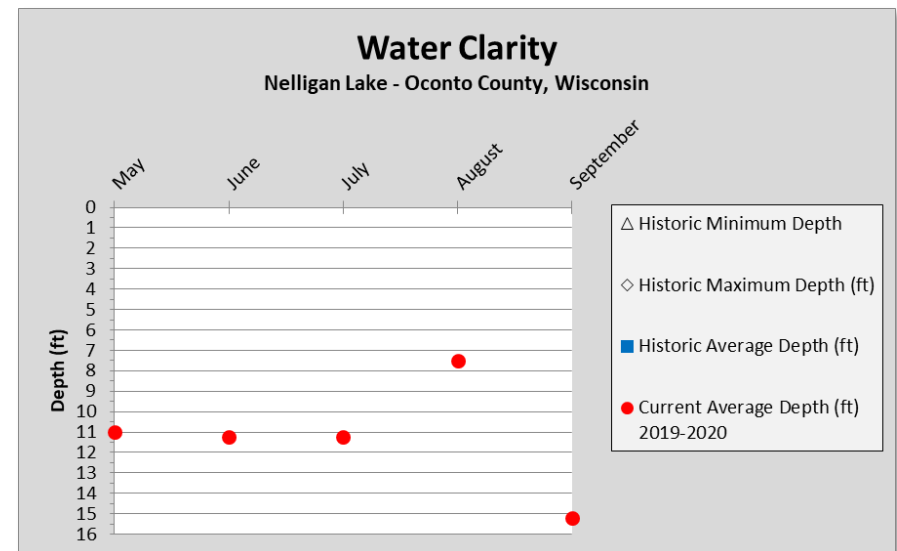
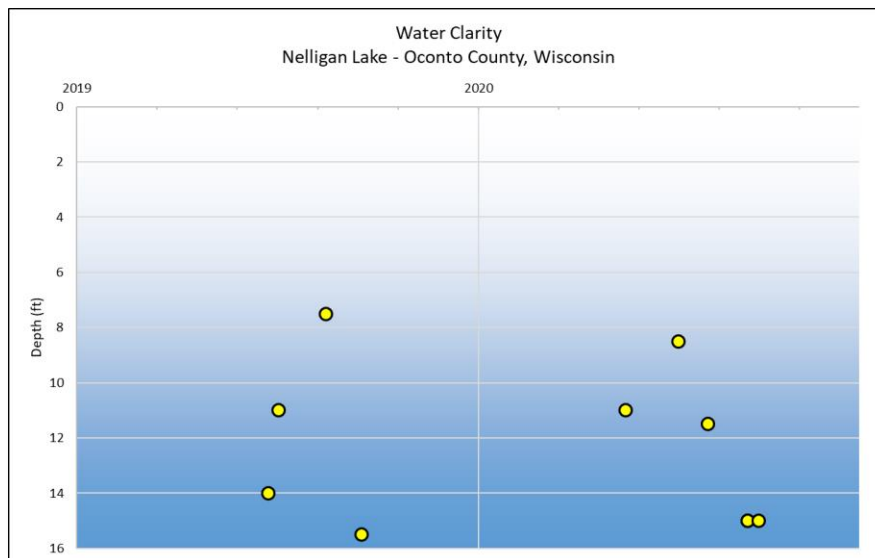
A variety of water chemistry measurements were used to characterize the water quality in Nelligan Lake. Water quality was assessed during the 2019-2020 lake study and involved a number of measures including temperature, dissolved oxygen, water chemistry, and nutrients (phosphorus and nitrogen). Nutrients are important measures of water quality in lakes because they contribute to algae and aquatic plant growth. Each of these interrelated measures plays a part in the lake's overall water quality. In addition, water quality data collected in past years was also reviewed to determine trends in Nelligan Lake's water quality.

## Water Clarity

Water clarity is a measure of how deep light can penetrate (Secchi depth). Clarity is affected by water color, turbidity, and algae and helps determine where rooted aquatic plants grow.

### *Nelligan Lake's Water Quality Summary*

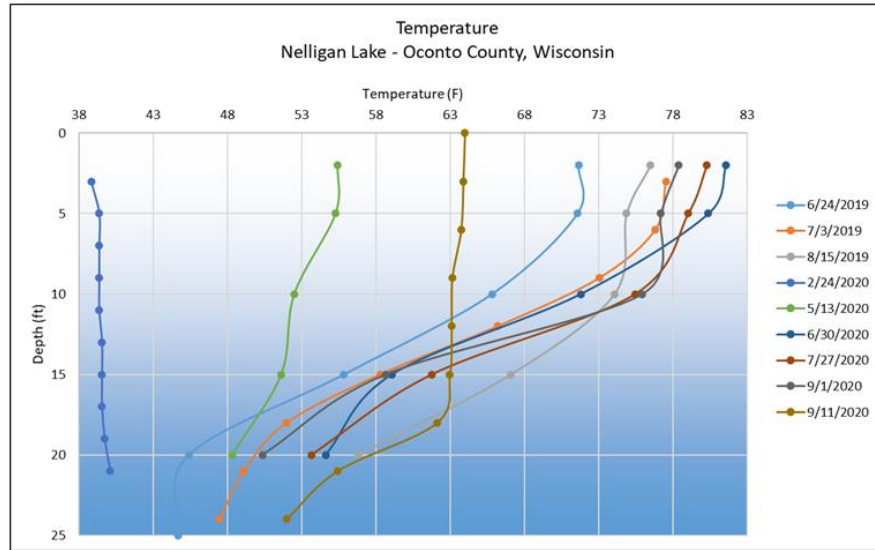
- ✓ **Water clarity** ranged from 7-15.5 feet (considered good). No other data is available for comparison or trend estimation.
- ✓ **Dissolved oxygen** was sufficient throughout the year for fish.
- ✓ Concentrations of **contaminants** were 'normal' during the study. Atrazine was not detected.
- ✓ **Phosphorus** concentrations remained below the standard of 20 ug/L throughout the study. **Inorganic nitrogen** remained below concentrations that spur algal blooms.



# Water Quality

## Temperature and Dissolved Oxygen

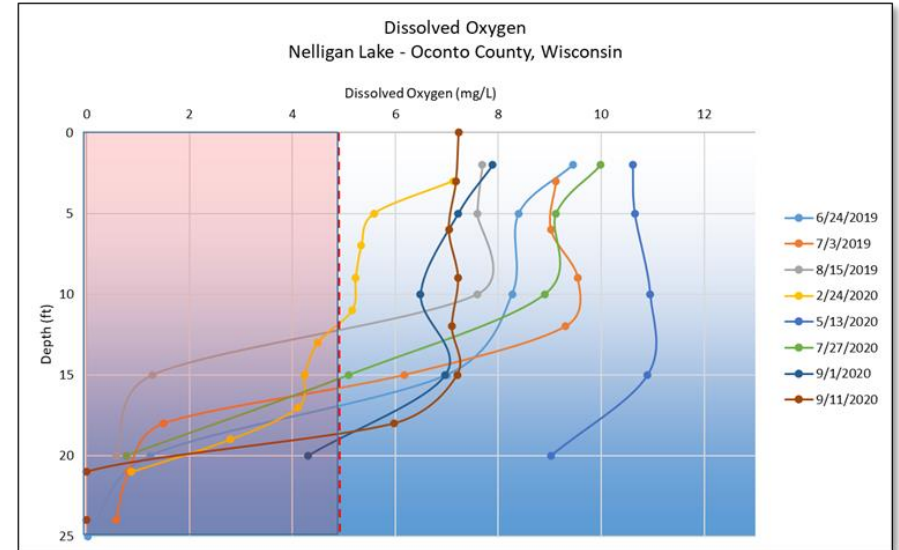
Temperature profiles for Nelligan Lake illustrate a slightly stratified lake with temperatures ranging from ambient surface temperatures to groundwater temperatures at depth.



Dissolved oxygen is an important measure in Nelligan Lake because a majority of organisms in the water depend on oxygen to survive. Oxygen is dissolved into the water from contact with air, which is increased by wind and wave action. Algae and aquatic plants also produce oxygen when sunlight enters the water, but the decomposition of dead plants and algae reduces oxygen in the lake.

Dissolved oxygen concentrations generally decline with depth as access to sources such as the atmosphere and growing plants is decreased. Because of its depth, oxygen levels in Nelligan Lake don't change drastically with depth until they reach the thermocline at about 10-12 feet. Oxygen is at its lowest in late winter, but Nelligan Lake's water column still has more than 10

feet of sufficient oxygen concentrations.



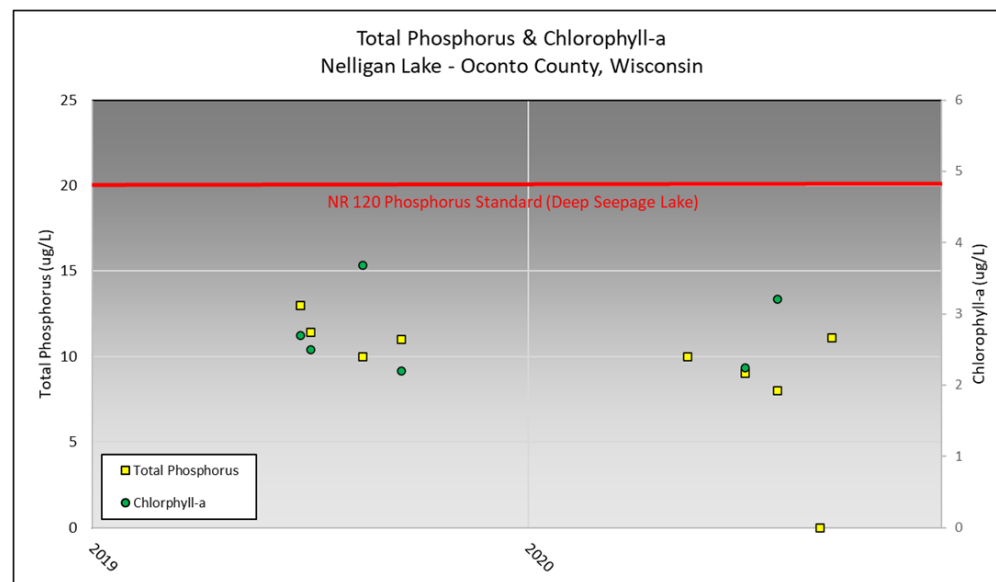
## Contaminants

Chloride, sodium and potassium concentrations are commonly used as indicators of how a lake is being impacted by human activity. The presence of these compounds where they do not naturally occur indicates sources of water contaminants. Although these elements are not detrimental to the aquatic ecosystem, they indicate that sources of contaminants such as road salt, fertilizer, animal waste and/or septic system effluent may be entering the lake from either surface runoff or via groundwater. Measurements of these compounds was low suggesting little impact by human activities.

# Water Quality

## Nutrients

Phosphorus is an element that is essential in trace amounts to most living organisms, including aquatic plants and algae. Naturally-occurring sources of phosphorus include soils and wetlands, and groundwater. Common sources from human activities include soil erosion, animal waste, fertilizers, and septic systems. Although a variety of compounds are important to biological growth, phosphorus receives so much attention because it is commonly the “limiting nutrient” in many Wisconsin lakes. Due to its relatively short supply compared to other substances necessary for growth, relatively small increases in phosphorus result in significant increases in aquatic plants and algae. NR 120, Wisconsin Administrative Code lists phosphorus limits for different lake types. Deep seepage lakes such as Nelligan have a standard of 20 ug/L they must stay below to remain healthy. The limited data available show concentrations in Nelligan to be well below this standard. Continued monitoring is necessary to verify this. Concentrations of 0.3 mg/L inorganic nitrogen in spring are sufficient to fuel algal blooms throughout





# Water Quality

## Goal 6. Maintain good water quality in Nelligan Lake.

**Objective 6.1 Maintain median summer total phosphorus concentrations below 20 ug/L and fall inorganic nitrogen concentrations below 0.3 mg/L.**

Actions	Lead person/group	Resources	Timeline
Inform others around the lake and in the watershed about the impact of nutrients and land management on water quality.		OCLWA WDNR UWEX Lakes	Ongoing
Refrain from the use of fertilizers. Encourage soil testing to determine if amendments are necessary.		OC UWEX	Ongoing
Encourage the restoration of disturbed shoreland to slow and absorb runoff and pollutants.		UWEX Lakes	Ongoing

**Objective 6.2 Develop an ongoing, robust water quality dataset for Nelligan Lake to monitor trends and/or changes over time.**

Actions	Lead person/group	Resources	Timeline
Identify and support volunteers to participate in CLMN.		CLMN	3+ times annually in summer
Submit all collected data to WDNR for archival and use by scientists and resource managers.		WDNR	Ongoing



# Recreation



Wisconsin has more than 500,000 registered boats-one for every 10 residents.

## PEOPLE AND THE LAKE

The people who interact with the lake are a key component of the lake and its management. In essence a lake management plan is a venue by which people decide how they would like people to positively impact the lake. The plan summarizes the decisions of the people to take proactive steps to improve their lake and their community. Individual decisions by lake residents and visitors can have positive impacts on the lake and on those who enjoy this common resource. Collaborative efforts may have bigger positive impacts; therefore, communication and cooperation between the community and suite of lake users are essential to maximize the effects of plan implementation.

Boating hours, regulations, and fishing limits are examples of principles that are put into place to minimize conflicts between lake users and balance human activities with environmental considerations for the lake.

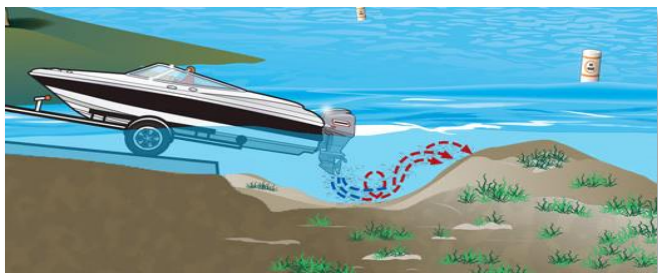
## Recreation

According to survey responses, the lake is enjoyed for its scenery, boating, and fishing. There is one public boat launch located on the northwest side of the lake which is owned and maintained by the US Forest Service. No Wake is allowed between 4pm and 10am.

### Goal 7. Lake users will be informed about and respectful of Nelligan Lake.

#### Objective 7.1 Cultivate an environment of compliance among lake users.

Actions	Lead person/group	Resources	Timeline
Work with other lake groups and towns to support a recreational officer and municipal court for enforcement of regulations.		TOR OCLWA	Ongoing
Upkeep boat ramp. Boat ramps in disrepair can be unhealthy to the lake if it results in spinning tires, power loading, etc. Ensure signage at boat landing is up-to-date and clear. Consider updating with a kiosk with basic information on regulations and expectations. This can convey to lake users that there is an active and watchful group on the lake.		WDNR USFS	Ongoing



# Communication & Organization



**LakeKit.net is a network of lake groups helping others to build and maintain websites.**

## Communication and Organization

Working together on common values will help to achieve the goals outlined in this plan. This will involve communication between individuals, the Town of Riverview, Oconto County, resource managers, and elected officials. In addition, staying informed about lake- and groundwater-related topics will be essential to achieving the goals laid out in this plan. See the Oconto County Lake Information Directory in the Appendices for contact information.

Many of the goals outlined in this plan focus on distributing information to lake and watershed residents and lake users in order to help them make informed decisions that will result in a healthy Nelligan Lake ecosystem that is enjoyed by many people. Working together on common values will help to achieve the goals that are outlined in this plan.

## Implementation of LMP When You Do Not Have a Lake Organization

The following is to help provide guidance for lake property owners seeking to grow cooperation and unified actions toward achieving the goals presented in their Lake Management Plan.

Clear and concise communication will lead to coordinated lake management efforts that are based on well-informed decisions. Though not required, it is beneficial to seek help in this situation, especially when lake property owners are unfamiliar with those living around the lake.

**Moving forward as a unified voice:** Conversations amongst property owners can help promote the goals of the plan.

1. Invite fellow residents to a meeting or two at least annually to discuss your Lake Management Plan, prioritize one or two

goals, and to develop a strategy going forward including who will call whom about what and when.

- a. Identify your lake's property owners and host a gathering, at your property, a local park, or community center.
  - i. Contact the County Land & Water Conservation or the UW-Extension to gain public records of your neighbors' addresses, to reach out and establish a dialog.
  - ii. See if your neighbors are willing to share their contact information to make dissemination of information quicker i.e., email, phone, social media.
2. Identify information to be readily available, most current, reviewed regularly on your lake.
  - a. Information can be stored on the Oconto County Land & Water Conservation website hosting your lake's information. Contact OCL&WC annually for updated information and anything you need posted concerning the lake.
  - b. Your published/printed papers should find a home base for them to be readily available for review by members/neighbors, and safe keeping. This could be the role of a neighbor or local government/Town Board dedicating space for a file cabinet being accessible during office hours.

Annually discuss each goal within the plan for relevance to keep in the plan and/or to pursue in the next 12 months.

## Develop Community Partnerships:

1. Identify partners within the community who can help with communication efforts, – i.e., Oconto's UW-Extension staff and Oconto County Land & Water Conservation Department

# Communication & Organization

staff, the Oconto County Lakes and Waterways Association leadership, local Town officials, local sports clubs, businesses, realtors, school clubs, and other organizations.

2. Look to these partners to assist in the creation, sponsorship, and dissemination of water information for lake users, property owners, and visitors by:
  - a. Assist in identifying key stakeholders (people or groups) needing to be consulted in making decisions and assisting in the plan's implementation of steps.
  - b. Helping to organize your lake.
  - c. Providing resources (i.e., Town could provide space for document storage/record storage within the

Clerk's office regarding one or more lakes for easy/central access by lake group members/leadership; Oconto County staff could host needed digital documents on their waterways related webpages; the Town Board could designate a sub-committee of the Board to focus and discuss all water related issues.)

- d. Helping to identify existing or potential barriers and their needed strategies to overcome them that which stands in the way of gaining broad stakeholder support.



## Goal 8. Increase participation in the stewardship of Nelligan Lake.

### Objective 8.1 Develop opportunities and incentives for active participation in the management of Nelligan Lake.

Actions	Lead person/group	Resources	Timeline
Maintain an email list of shoreland property owners and others interested in Nelligan Lake.		UWEX Lakes	Ongoing
Create and maintain a group website or Facebook page for sharing information.		UWEX Lakes OCLCD	Ongoing
Distribute a welcome packet to all new shoreland property owners with basic lake stewardship information. WDNR small-scale planning grants can pay for this.		WDNR OC UWEX	Ongoing
Communicate updates to lake management plan and management activities to residents and users (and WDNR) of the lake via email list or newsletter.		UWEX Lakes WDNR	Ongoing

### Objective 8.2. Maintain clear communication between residents, clubs, municipalities, County, WDNR, etc.

Actions	Lead person/group	Resources	Timeline
Network with other lake groups by having Nelligan lake represented at OCLWA.		OCLWA	Quarterly
Network and learn lake management strategies by attending the Wisconsin Lakes Convention in spring or Lake Leaders Institute.		UWEX Lakes	Annually



# Updates and Revisions

## Updates and Revisions

A management plan is a living document that changes over time to meet the current needs, challenges and desires of the lake and its community. The goals, objectives and actions listed in this plan should be reviewed annually and updated with any necessary

changes. Partners listed in the plan should be contacted annually, and updated information complied. A list of changes/updates to the plan should be documented. To ensure that everyone is informed about changes, appropriate approval for changes should be acquired by all partners signing on to this plan.

## Goal 9. Review plan annually and update as needed.

**Objective 9.1 Maintain an up to date and relevant lake management plan and communicate updates to the lake community, Oconto County and WDNR.**

Actions	Lead person/group	Resources	Timeline
Review plan annually and discuss accomplishments and identify goals/objectives/actions for coming year.			Annually
Formally update this plan every 5 years.		OC UWEX WDNR	2027



# References

## REFERENCES

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# Appendices

## **APPENDICES**



# Appendix A

## Appendix A. Oconto County Lake Information Directory

### Algae - Blue-Green

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

Website: <http://dnr.wi.gov/lakes/bluegreenalgae>

Contact: Wisconsin Department of Health Services

1 West Wilson Street, Madison, WI 53703

Phone: 608-267-3242

Website:

[www.dhs.wisconsin.gov/eh/bluegreenalgae/contactus.htm](http://www.dhs.wisconsin.gov/eh/bluegreenalgae/contactus.htm)

### Aquatic Invasive Species/Clean Boats Clean Water

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

Website: <http://dnr.wi.gov/topic/Invasives/>

### Aquatic Plant Management

(Native and Invasive)

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

Website: <http://dnr.wi.gov/lakes/plants/>

### Aquatic Plant Identification

Contact: Dr. Emmet Judziewicz

UWSP Freckmann Herbarium

TNR 301, 800 Reserve St., Stevens Point, WI 54481

Phone: 715-346-4248

E-mail: [ejudziew@uwsp.edu](mailto:ejudziew@uwsp.edu)

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

### Aquatic Plant Surveys/Management

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

Website: <http://dnr.wi.gov/lakes/plants/>

Best Management Practices (rain gardens, shoreland buffers, agricultural practices, runoff controls)

Contact: Ken Dolata

Oconto County Land & Water Conservation Department

410 ½ East Main Street, Lena, WI 54139

Phone: 920-834-7152

E-mail: [ken.dolata@co.oconto.wi.us](mailto:ken.dolata@co.oconto.wi.us)

Website: <http://www.co.oconto.wi.us/departments/>

### Boat Landings, Signage, Permissions (County)

Contact: Monty Brink

Oconto County Forestry/Park/Recreation

301 Washington Street, Oconto, WI 54153

Phone: 920-834-6995

E-mail: [monty.brink@co.oconto.wi.us](mailto:monty.brink@co.oconto.wi.us)

Website: <http://www.co.oconto.wi.us/departments/>

### Boat Landings (State)

Contact: Chip Long

Wisconsin Department of Natural Resources

101 N. Ogden Road, Peshtigo, WI 54157

Phone: 715-582-5017

E-mail: [Christopher.long@wisconsin.gov](mailto:Christopher.long@wisconsin.gov)

Website: <http://dnr.wi.gov/org/land/facilities/boataccess/>

# Appendix A

## Boat Landings (Town)

Contact the clerk for the specific town/village in which the boat landing is located.

## Conservation Easements

Contact: Gathering Waters Conservancy  
211 S. Paterson St., Suite 270, Madison, WI 53703  
Phone: 608-251-9131  
E-mail: [info@gatheringwaters.org](mailto:info@gatheringwaters.org)  
Website: <http://gatheringwaters.org/>

Contact: Brenda Nordin  
Wisconsin Department of Natural Resources  
Phone: 920-360-3167  
E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

Contact: Northeast Wisconsin Land Trust  
14 Tri-Park Way, Suite 1, Appleton, WI 54914  
Phone: 920-738-7265  
E-mail: [newlt@newlt.org](mailto:newlt@newlt.org)  
Website: [www.newlt.org](http://www.newlt.org)

Contact: NRCS Lena Service Center  
410 ½ East Main Street, Lena, WI 54139  
Phone: 920-829-5406

## Critical Habitat and Sensitive Areas

Contact: Brenda Nordin  
Wisconsin Department of Natural Resources  
Phone: 920-360-3167  
E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)  
Website: <http://dnr.wi.gov/lakes/criticalhabitat/>

## Dams

Contact: Meg Galloway  
Wisconsin Department of Natural Resources  
PO Box 7921, Madison, WI 53707

Phone: 608-266-7014

E-mail: [meg.galloway@wisconsin.gov](mailto:meg.galloway@wisconsin.gov)

Website: <http://dnr.wi.gov/org/water/wm/dsfm/dams/>

## Fertilizers/Soil Testing

Contact: Dale Mohr  
Oconto County UW- Extension  
301 Washington Street, Oconto, WI 54153  
Phone: 920-835-6845  
E-mail: [dale.mohr@wisc.edu](mailto:dale.mohr@wisc.edu)  
Website: <http://oconto.uwex.edu>

## Fisheries Biologist (management, habitat)

Contact: Chip Long  
Wisconsin Department of Natural Resources  
101 N. Ogden Road, Peshtigo, WI 54157  
Phone: 715-582-5017  
E-mail: [Christopher.long@wisconsin.gov](mailto:Christopher.long@wisconsin.gov)  
Website: <http://dnr.wi.gov/fish/>

## Frog Monitoring—Citizen Based

Contact: Andrew Badje  
Wisconsin Department of Natural Resources  
Phone: 608-785-9472  
E-mail: [Andrew.badje@wisconsin.gov](mailto:Andrew.badje@wisconsin.gov)  
Website: [WFTS@wisconsin.gov](mailto:WFTS@wisconsin.gov)

## Grants

Contact: Brenda Nordin  
Wisconsin Department of Natural Resources  
Phone: 920-360-3167  
E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)  
Website: <http://dnr.wi.gov/Aid/Grants.html>

# Appendix A

Contact: Ken Dolata  
Oconto County Land & Water Conservation Department  
410 ½ East Main Street, Lena, WI 54139  
Phone: 920-834-7152  
E-mail: [ken.dolata@co.oconto.wi.us](mailto:ken.dolata@co.oconto.wi.us)  
Website: <http://www.co.oconto.wi.us/departments/>

## Groundwater Quality

Contact: Kevin Masarik  
UWSP Center for Watershed Science & Education  
TNR 224, 800 Reserve St., Stevens Point, WI 54481  
Phone: 715-346-4276  
E-mail: [kmasarik@uwsp.edu](mailto:kmasarik@uwsp.edu)  
Website: <http://www.uwsp.edu/cnr/watersheds/>

## Groundwater Levels/Quantity

Contact: Ken Dolata  
Oconto County Land & Water Conservation Department  
410 ½ East Main Street, Lena, WI 54139  
Phone: 920-834-7152  
E-mail: [ken.dolata@co.oconto.wi.us](mailto:ken.dolata@co.oconto.wi.us)  
Website: <http://www.co.oconto.wi.us/departments/>

Contact: George Kraft  
UWSP Center for Watershed Science & Education  
TNR 224, 800 Reserve St., Stevens Point, WI 54481  
Phone: 715-346-2984  
E-mail: [george.kraft@uwsp.edu](mailto:george.kraft@uwsp.edu)

## Informational Packets

Contact: UW Extension - Lakes  
TNR 224, 800 Reserve St. Stevens Point, WI 54481  
Phone: 715-346-2116  
E-mail: [uwexlakes@uwsp.edu](mailto:uwexlakes@uwsp.edu)

## Lake Groups – Friends, Associations, Districts

Contact: Dale Mohr  
Oconto County UW- Extension  
301 Washington Street, Oconto, WI 54153

Phone: 920-835-6845  
E-mail: [dale.mohr@wisc.edu](mailto:dale.mohr@wisc.edu)  
Website: <http://oconto.uwex.edu>

Contact: Patrick Goggin  
UWEX Lakes  
TNR 203, 800 Reserve St., Stevens Point, WI 54481  
Phone: 715-365-8943  
E-mail: [pgoggin@uwsp.edu](mailto:pgoggin@uwsp.edu)  
Website: <http://www.uwsp.edu/cnr/uwexlakes/organizations/>

Contact: Eric Olson  
UWEX Lakes  
TNR 206, 800 Reserve St., Stevens Point, WI 54481  
Phone: 715-346-2192  
E-mail: [eolson@uwsp.edu](mailto:eolson@uwsp.edu)  
Website: <http://www.uwsp.edu/cnr/uwexlakes/organizations/>

Contact: Susan Tesarik  
Wisconsin Lakes  
4513 Vernon Blvd., Suite 101, Madison, WI 53705  
Phone: 1-800-542-5253  
E-mail: [lakeinfo@wisconsinlakes.org](mailto:lakeinfo@wisconsinlakes.org)  
Website: <http://wisconsinlakes.org/>

Lake Levels  
See: Groundwater

Lake-Related Law Enforcement (no-wake, transporting invasives, etc.)

Contact: Ben Mott  
State Conservation Warden  
Wisconsin Department of Natural Resources  
427 E. Tower Drive, Suite 100, Wautoma, WI 54982  
Phone: 920-896-3383  
Website: <http://www.wigamewarden.com/>



# Appendix A

## Land Use Plans and Zoning Ordinances

Contact: Patrick Virtues  
Oconto County Planning/Zoning/Solid Waste  
301 Washington Street, Oconto, WI 54153  
Phone: 920-834-6827  
E-mail: [Patrick.virtues@co.oconto.wi.us](mailto:Patrick.virtues@co.oconto.wi.us)  
Website: <http://www.co.waushara.wi.us/zoning.htm>

Contact: UWSP Center for Land Use Education  
TNR 208, 800 Reserve St., Stevens Point, WI 54481  
Phone: 715-346-3783  
E-mail: [Center.for.Land.Use.Education@uwsp.edu](mailto:Center.for.Land.Use.Education@uwsp.edu)  
Website: <http://www.uwsp.edu/cnr/landcenter/>

## Nutrient Management Plans

Contact: Ken Dolata  
Oconto County Land & Water Conservation Department  
410 ½ East Main Street, Lena, WI 54139  
Phone: 920-834-7152  
E-mail: [ken.dolata@co.oconto.wi.us](mailto:ken.dolata@co.oconto.wi.us)  
Website: <http://www.co.oconto.wi.us/departments/>

Contact: NRCS Lena Service Center  
410 ½ East Main Street, Lena, WI 54139  
Phone: 920-829-5406

## Parks (County)

Contact: Monty Brink  
Oconto County Forestry/Park/Recreation  
301 Washington Street, Oconto, WI 54153  
Phone: 920-834-6995  
E-mail: [monty.brink@co.oconto.wi.us](mailto:monty.brink@co.oconto.wi.us)  
Website: <http://www.co.oconto.wi.us/departments/>

## Purchase of Development Rights

Contact: Northeast Wisconsin Land Trust  
14 Tri-Park Way, Suite 1, Appleton, WI 54914  
Phone: 920-738-7265  
E-mail: [newlt@newlt.org](mailto:newlt@newlt.org)  
Website: [www.newlt.org](http://www.newlt.org)

## Purchase of Land

Contact: Brenda Nordin  
Wisconsin Department of Natural Resources  
Phone: 920-360-3167  
E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)  
Website: <http://dnr.wi.gov/topic/stewardship/>

## Rain Gardens and Stormwater Runoff

Contact: Ken Dolata  
Oconto County Land & Water Conservation Department  
410 ½ East Main Street, Lena, WI 54139  
Phone: 920-834-7152  
E-mail: [ken.dolata@co.oconto.wi.us](mailto:ken.dolata@co.oconto.wi.us)  
Website: <http://www.co.oconto.wi.us/departments/>

## Septic Systems/Onsite Waste

Contact: Patrick Virtues  
Oconto County Planning/Zoning/Solid Waste  
301 Washington Street, Oconto, WI 54153  
Phone: 920-834-6827  
E-mail: [Patrick.virtues@co.oconto.wi.us](mailto:Patrick.virtues@co.oconto.wi.us)  
Website: <http://www.co.waushara.wi.us/zoning.htm>

## Shoreland Management

Contact: Ken Dolata  
Oconto County Land & Water Conservation Department  
410 ½ East Main Street, Lena, WI 54139  
Phone: 920-834-7152  
E-mail: [ken.dolata@co.oconto.wi.us](mailto:ken.dolata@co.oconto.wi.us)  
Website: <http://www.co.oconto.wi.us/departments/>

## Shoreland Vegetation

<http://dnr.wi.gov/topic/ShorelandZoning/>

## Shoreland Zoning Ordinances

See: Land Use Plans and Zoning Ordinances

# Appendix A

## Soil Fertility Testing

Contact: Dale Mohr

Oconto County UW- Extension

301 Washington Street, Oconto, WI 54153

Phone: 920-835-6845

E-mail: [dale.mohr@wisc.edu](mailto:dale.mohr@wisc.edu)

Website: <http://oconto.uwex.edu>

## Water Quality Monitoring

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

## Water Quality Problems

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: [brenda.nordin@wisconsin.gov](mailto:brenda.nordin@wisconsin.gov)

## Wetlands

Contact: Jason Fleener

Wisconsin Department of Natural Resources

GEF2 DNR Central Office, Madison, WI 53707

Phone: 608-266-7408

E-mail: [jason.fleener@wisconsin.gov](mailto:jason.fleener@wisconsin.gov)

Website: <http://dnr.wi.gov/wetlands/>

Contact: Wisconsin Wetlands Association

214 N. Hamilton Street, #201, Madison, WI 53703

Phone: 608-250-9971

Email: [info@wisconsinwetlands.org](mailto:info@wisconsinwetlands.org)

## Wetland Inventory

Contact: Dr. Emmet Judziewicz

UWSP Freckmann Herbarium

TNR 301, 800 Reserve St., Stevens Point, WI 54481

Phone: 715-346-4248

E-mail: [ejudziew@uwsp.edu](mailto:ejudziew@uwsp.edu)

## Woody Habitat

Contact: Chip Long

Wisconsin Department of Natural Resources

101 N. Ogden Road, Peshtigo, WI 54157

Phone: 715-582-5017

E-mail: [Christopher.long@wisconsin.gov](mailto:Christopher.long@wisconsin.gov)

Website: <http://dnr.wi.gov/fish/>

## Appendix B. Rapid Response Plan

### REPORTING A SUSPECTED INVASIVE SPECIES

#### 1. Collect specimens or take photos.

Regardless of the method used, provide as much information as possible. Try to include flowers, seeds or fruit, buds, full leaves, stems, roots and other distinctive features. In photos, place a coin, pencil or ruler for scale. Deliver or send specimen ASAP.

Collect, press and dry a complete sample. This method is best because a plant expert can then examine the specimen.

**-OR-**

Collect a fresh sample. Enclose in a plastic bag with a moist paper towel and refrigerate.

**-OR-**

Take detailed photos (digital or film).

#### 2. Note the location where the specimen was found.

If possible, give the exact geographic location using a GPS (global positioning system) unit, topographic map, or the Wisconsin Gazetteer map book. If using a map, include a photocopy with a dot showing the plant's location.

Provide one or more of the following:

- Latitude & Longitude
- UTM (Universal Transverse Mercator) coordinates
- County, Township, Range, Section, Part-section

- Precise written site description, noting nearest city & road names, landmarks, local topography

#### 3. Gather information to aid in positive species identification.

- Collection date and county
- Your name, address, phone, email
- Exact location (lat/long or UTM, Township/Range)
- Plant name
- Land ownership (if known/applicable)
- Population description (estimated # plants, area covered)
- Habitat type where found (forest, field, prairie, wetland, open water)

**4. Mail or bring specimens and information to any of the following locations (digital photos may be emailed):**

**Wisconsin Dept. Natural Resources**

2984 Shawano Avenue,  
Green Bay, WI 54313  
Phone: (920) 662-5100

**UW-Stevens Point Herbarium**

301 Trainer Natural Resources Building  
800 Reserve Street  
Stevens Point, WI 54481  
Phone: 715-346-4248  
E-Mail: [ejudziew@uwsp.edu](mailto:ejudziew@uwsp.edu)

**Wisconsin Invasive Plants Reporting & Prevention Project**

Herbarium-UW-Madison  
430 Lincoln Drive  
Madison, WI 53706  
Phone: (608) 267-7612  
E-Mail: [invasiveplants@mailplus.wisc.edu](mailto:invasiveplants@mailplus.wisc.edu)



# Appendix C

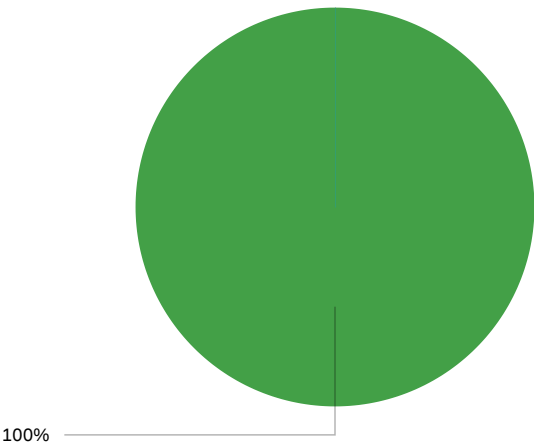
## **Appendix C. Lake User Survey Results**

# Default Report

Nelligan Lake Survey - Oconto County Lakes Project

February 14, 2023 12:29 PM MST

## Q2 - How did you hear about this survey?



E-mail Newspaper Postcard/letter Other

Showing sample data... ☐

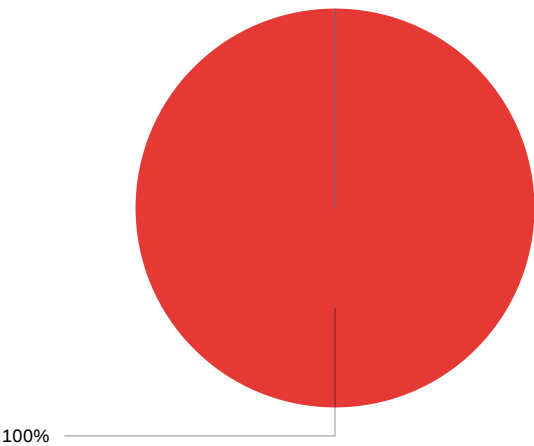
#	Field	Choice Count
1	E-mail	0% 0
2	Newspaper	0% 0
3	Postcard/letter	0% 0
4	Other	100% 2

2

Showing rows 1 - 5 of 5

Showing sample data... ☐

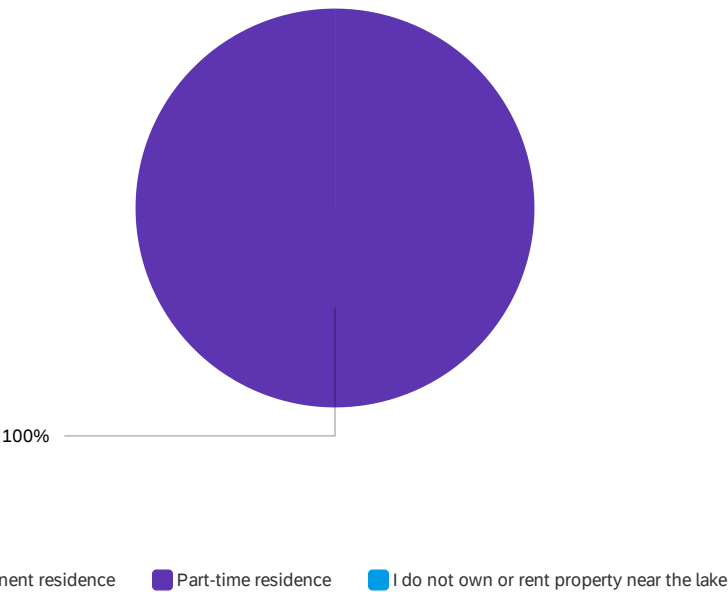
Q3 - Do you own or rent property...



■ Around the lake    ■ Less than 1/2 mile from the lake    ■ Near the lake, but more than 1/2 mile away    ■ I do not own or rent property near the lake

#	Field	Choice	Count
1	Around the lake	100%	2
2	Less than 1/2 mile from the lake	0%	0
3	Near the lake, but more than 1/2 mile away	0%	0
4	I do not own or rent property near the lake	0%	0

Q4 - If you own or rent property near the lake, is this property your...

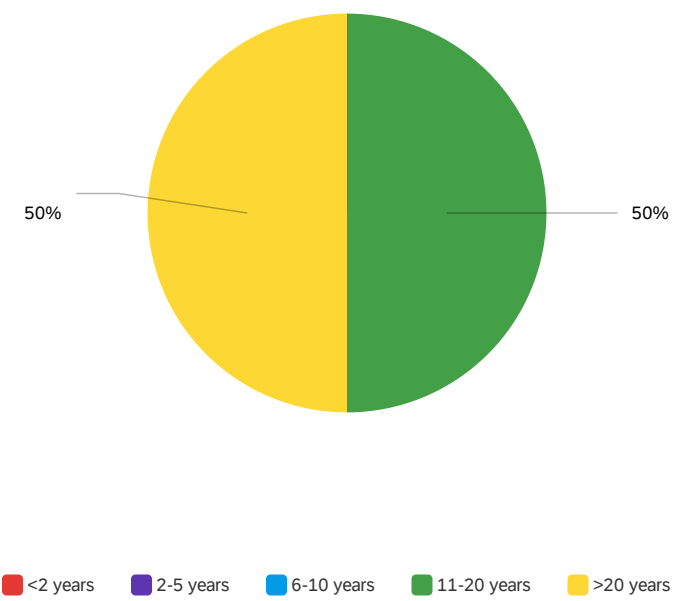


#	Field	Choice	Count
1	Permanent residence	0%	0
2	Part-time residence	100%	2
3	I do not own or rent property near the lake	0%	0
			2

Showing rows 1 - 4 of 4



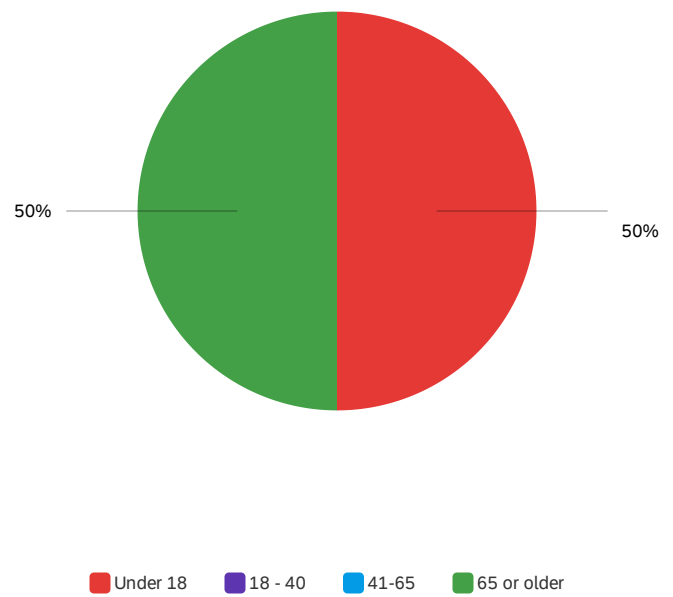
Q5 - How long have you lived on, visited or recreated on the lake?



#	Field	Choice	Count
1	<2 years	0%	0
2	2-5 years	0%	0
3	6-10 years	0%	0
4	11-20 years	50%	1
5	>20 years	50%	1
			2

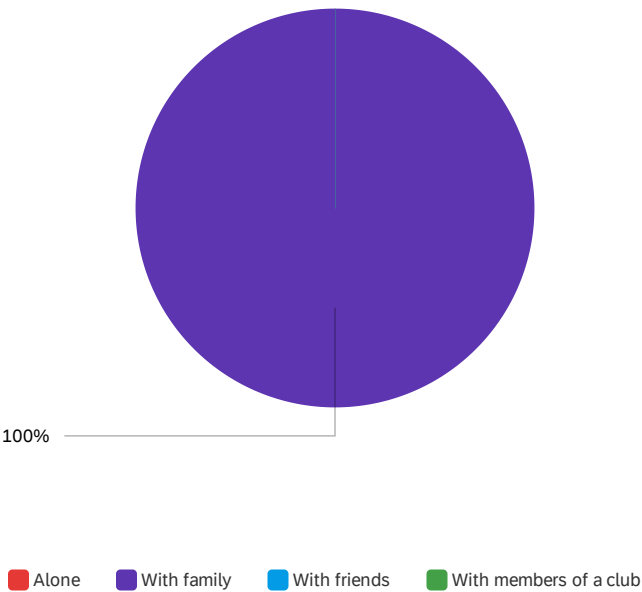
Showing rows 1 - 6 of 6

Q8 - Which category below includes your age?



#	Field	Choice Count
1	Under 18	50% 1
2	18 - 40	0% 0
3	41-65	0% 0
4	65 or older	50% 1

Q9 - When you visit Nelligan Lake, are you typically ...(check all that apply)



#	Field	Choice	Count
1	Alone	0%	0
2	With family	100%	2
3	With friends	0%	0
4	With members of a club	0%	0

Q10 - I live on or near the lake...

100%  
Strongly Agree

Strongly Agree   Agree   Neither agree nor disagree   Disagree   Strongly disagree   I do not live on or near the lake

#	Field	Strongly Agree		Agree		Neither agree nor disagree		Disagree		Strongly disagree		I do not live on or near the lake		Total
1	To spend time with family or friends	100%	2	0%	0	0%	0	0%	0	0%	0	0%	0	2
2	For the peace and tranquility	50%	1	0%	0	50%	1	0%	0	0%	0	0%	0	2
3	Because I enjoy the view	50%	1	50%	1	0%	0	0%	0	0%	0	0%	0	2
4	Because its a good investment	0%	0	50%	1	0%	0	50%	1	0%	0	0%	0	2

Showing rows 1 - 4 of 4



## Q11 - What do you value most about Nelligan Lake?

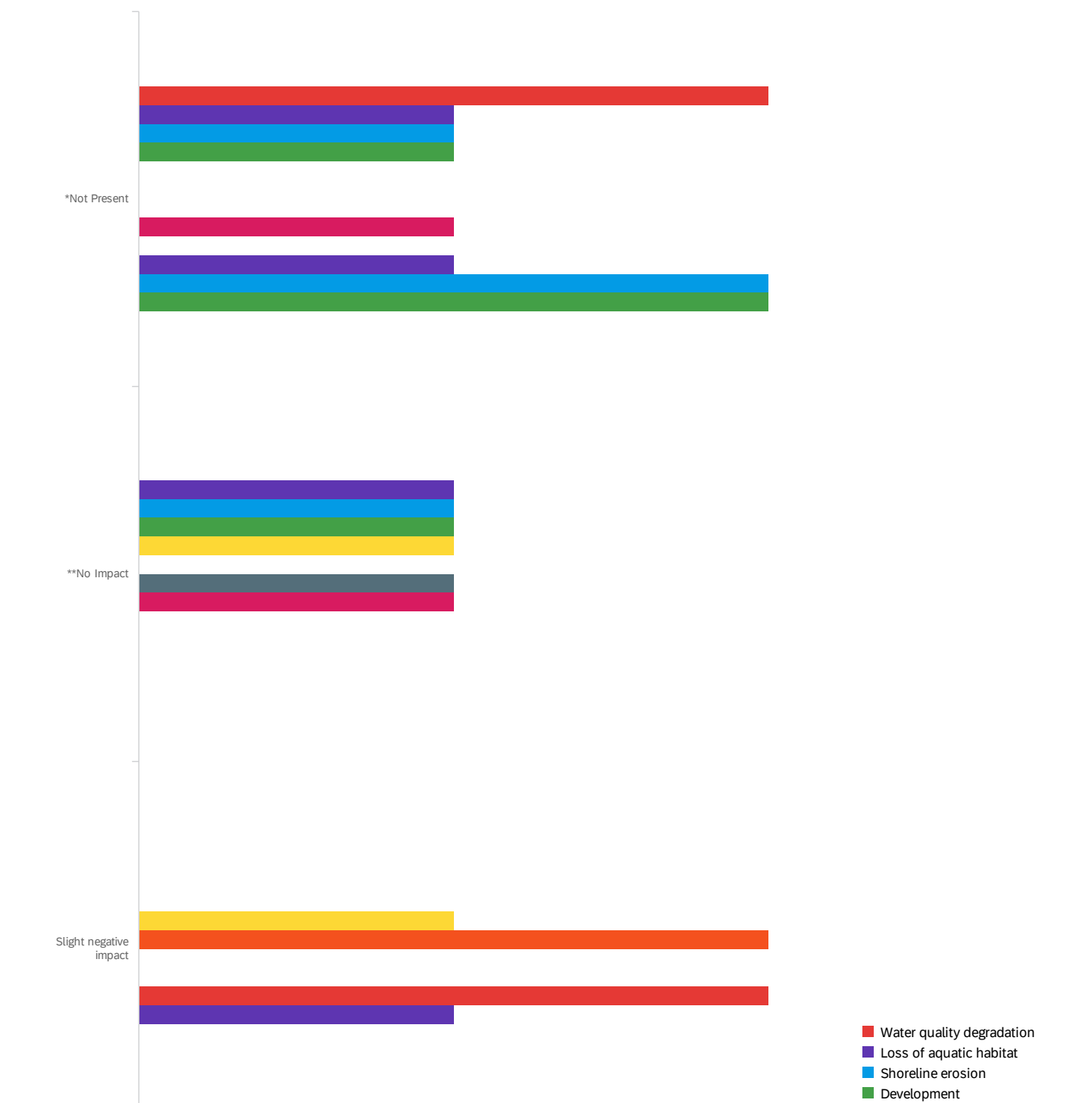
What do you value most about Nelligan Lake?

---

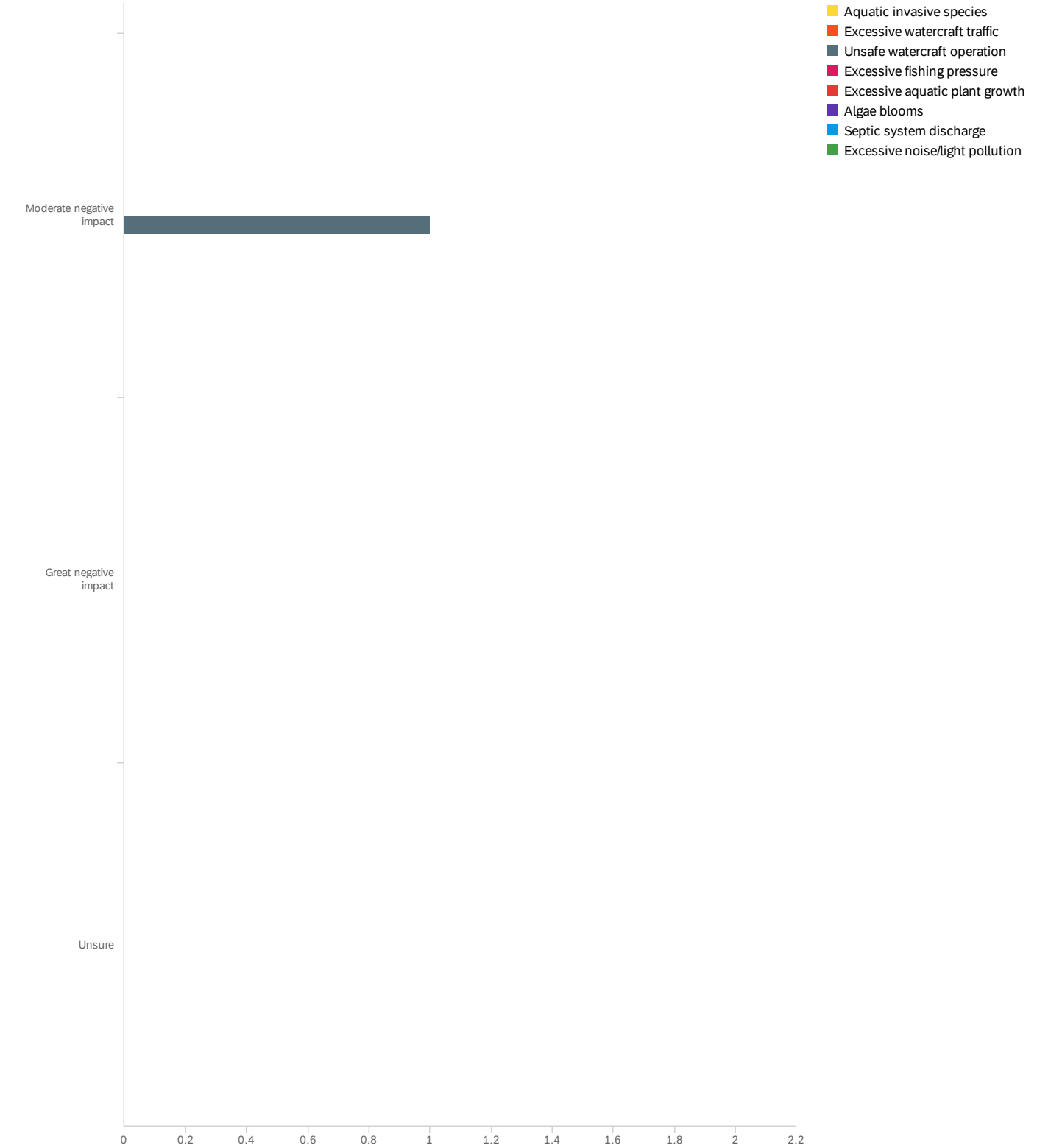
Water quality, not many boater from off the lake, Eagles, deer, views

The natural beauty and water-based activities

Q42 - Below is a list of negative impacts commonly found in Wisconsin lakes. To what level do you believe each of the following factors may be impacting Nelligan Lake? \*Not Present means that you believe the issue does not exist on Nelligan Lake\*\*No Impact means that the issue may exist, but is not negatively impacting Nelligan Lake



- Aquatic invasive species
- Excessive watercraft traffic
- Unsafe watercraft operation
- Excessive fishing pressure
- Excessive aquatic plant growth
- Algae blooms
- Septic system discharge
- Excessive noise/light pollution



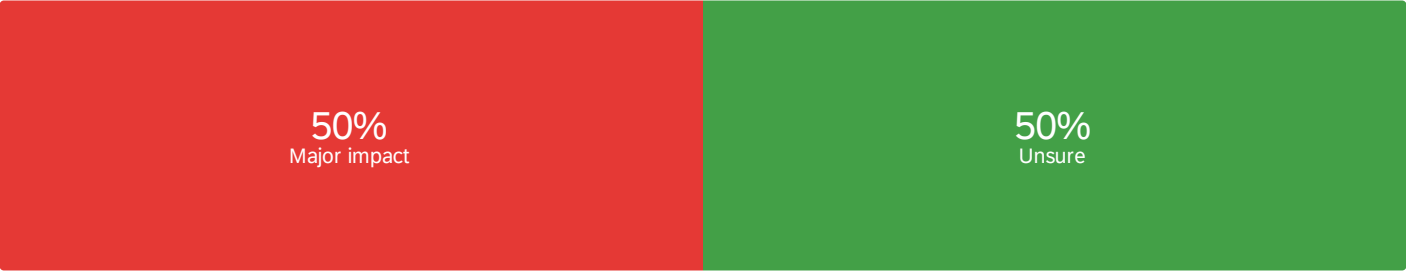
#	Field	*Not Present		**No Impact		Slight negative impact		Moderate negative impact		Great negative impact		Unsure		Total
1	Water quality degradation	100%	2	0%	0	0%	0	0%	0	0%	0	0%	0	2
2	Loss of aquatic habitat	50%	1	50%	1	0%	0	0%	0	0%	0	0%	0	2
3	Shoreline erosion	50%	1	50%	1	0%	0	0%	0	0%	0	0%	0	2

#	Field	*Not Present		**No Impact		Slight negative impact		Moderate negative impact		Great negative impact		Unsure		Total
4	Development	50%	1	50%	1	0%	0	0%	0	0%	0	0%	0	2
5	Aquatic invasive species	0%	0	50%	1	50%	1	0%	0	0%	0	0%	0	2
6	Excessive watercraft traffic	0%	0	0%	0	100%	2	0%	0	0%	0	0%	0	2
7	Unsafe watercraft operation	0%	0	50%	1	0%	0	50%	1	0%	0	0%	0	2
8	Excessive fishing pressure	50%	1	50%	1	0%	0	0%	0	0%	0	0%	0	2
9	Excessive aquatic plant growth	0%	0	0%	0	100%	2	0%	0	0%	0	0%	0	2
10	Algae blooms	50%	1	0%	0	50%	1	0%	0	0%	0	0%	0	2
11	Septic system discharge	100%	2	0%	0	0%	0	0%	0	0%	0	0%	0	2
12	Excessive noise/light pollution	100%	2	0%	0	0%	0	0%	0	0%	0	0%	0	2

Showing rows 1 - 12 of 12



Q16 - How much impact does the water quality of Nelligan Lake have on the following?

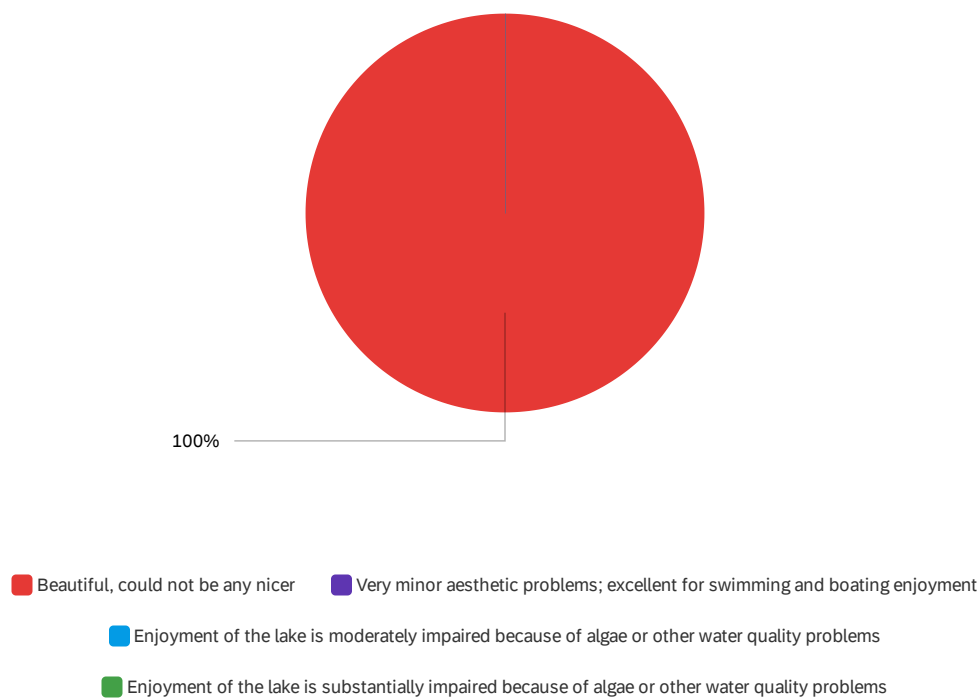


Major impact   Some impact   No impact   Unsure

#	Field	Major impact		Some impact		No impact		Unsure		Total
1	Personal enjoyment value	50%	1	0%	0	0%	0	50%	1	2
2	Economic value	50%	1	0%	0	0%	0	50%	1	2

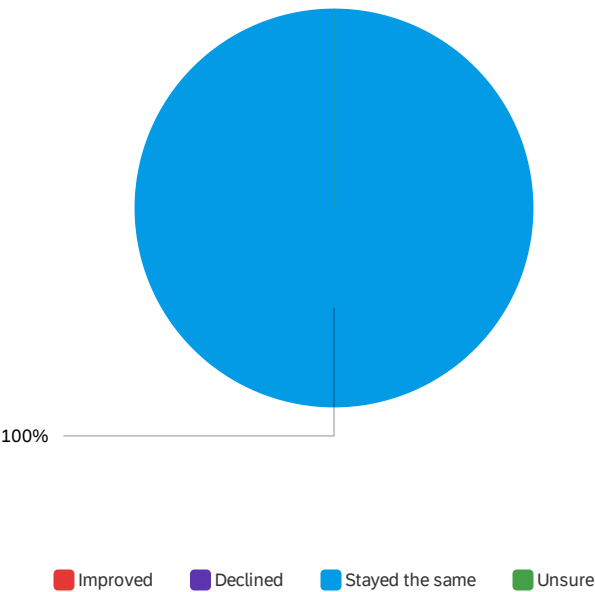
Showing rows 1 - 2 of 2

Q17 - Which statement best describes water clarity during the times you spend most on the lake?



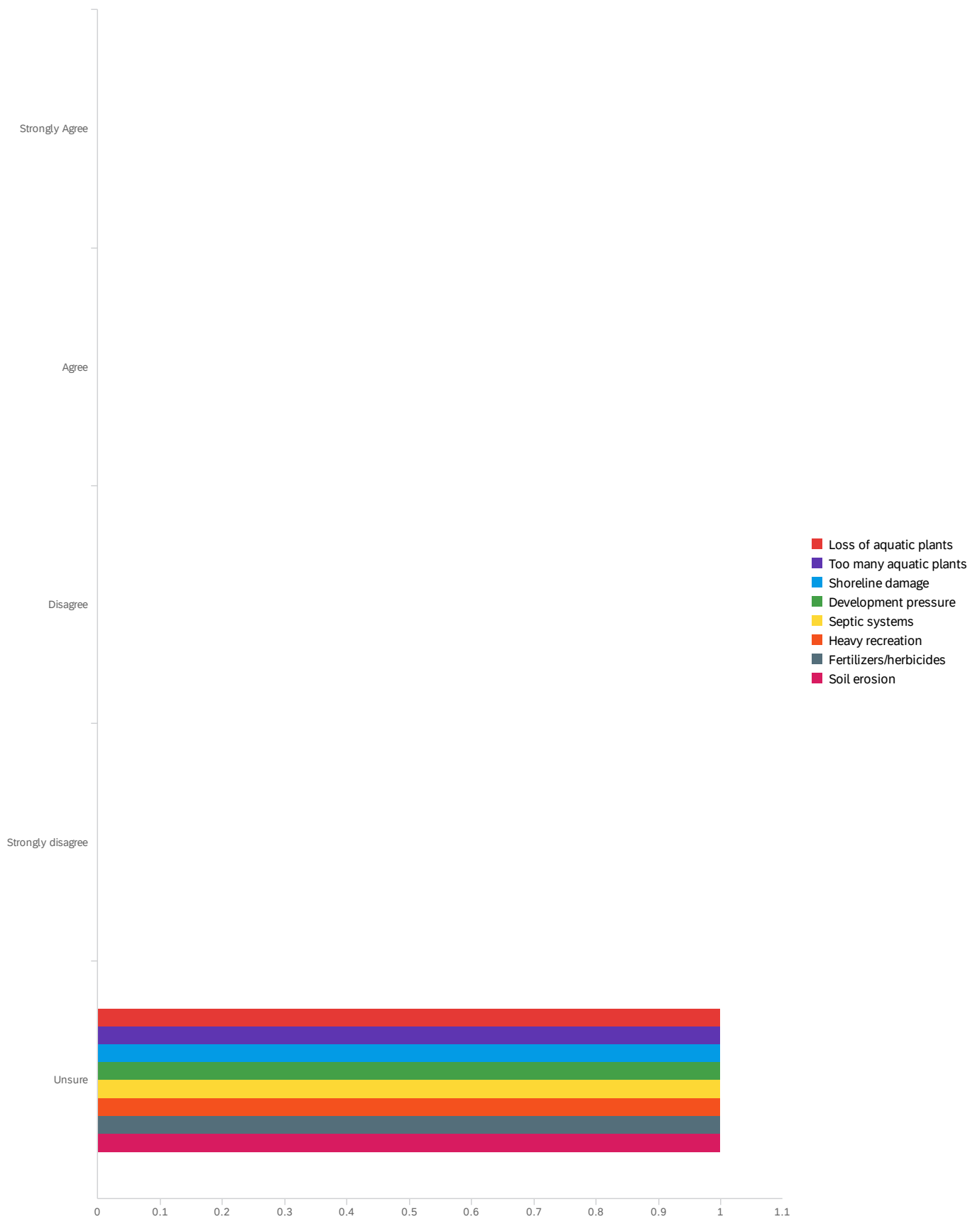
#	Field	Choice Count
1	Beautiful, could not be any nicer	100% 2
2	Very minor aesthetic problems; excellent for swimming and boating enjoyment	0% 0
3	Enjoyment of the lake is moderately impaired because of algae or other water quality problems	0% 0
4	Enjoyment of the lake is substantially impaired because of algae or other water quality problems	0% 0

Q18 - During the time that you have lived on, visited or recreated on the lake, how would you say the water quality has changed?



#	Field	Choice	Count
1	Improved	0%	0
2	Declined	0%	0
3	Stayed the same	100%	2
4	Unsure	0%	0

Q19 - If you think it has declined, what, in your opinion, are the primary causes?

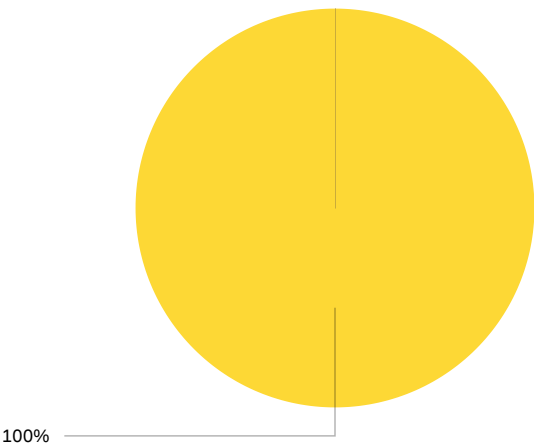


#	Field	Strongly Agree		Agree		Disagree		Strongly disagree		Unsure		Total
1	Loss of aquatic plants	0%	0	0%	0	0%	0	0%	0	100%	1	1
2	Too many aquatic plants	0%	0	0%	0	0%	0	0%	0	100%	1	1
3	Shoreline damage	0%	0	0%	0	0%	0	0%	0	100%	1	1
4	Development pressure	0%	0	0%	0	0%	0	0%	0	100%	1	1
5	Septic systems	0%	0	0%	0	0%	0	0%	0	100%	1	1
6	Heavy recreation	0%	0	0%	0	0%	0	0%	0	100%	1	1
7	Fertilizers/herbicides	0%	0	0%	0	0%	0	0%	0	100%	1	1
8	Soil erosion	0%	0	0%	0	0%	0	0%	0	100%	1	1

Showing rows 1 - 8 of 8



Q20 - If you use fertilizers or herbicides on your land, where are they applied?

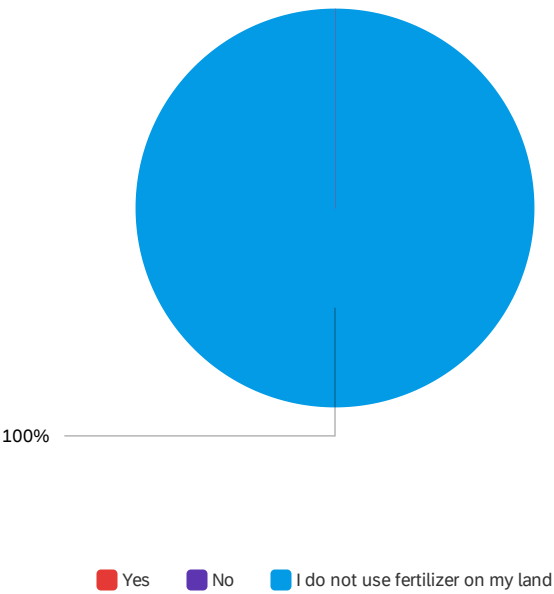


Lawn Garden Agricultural fields Other I do not use fertilizers or herbicides on my land

#	Field	Choice Count
1	Lawn	0% 0
2	Garden	0% 0
3	Agricultural fields	0% 0
4	Other	0% 0
5	I do not use fertilizers or herbicides on my land	100% 2
		2

Showing rows 1 - 6 of 6

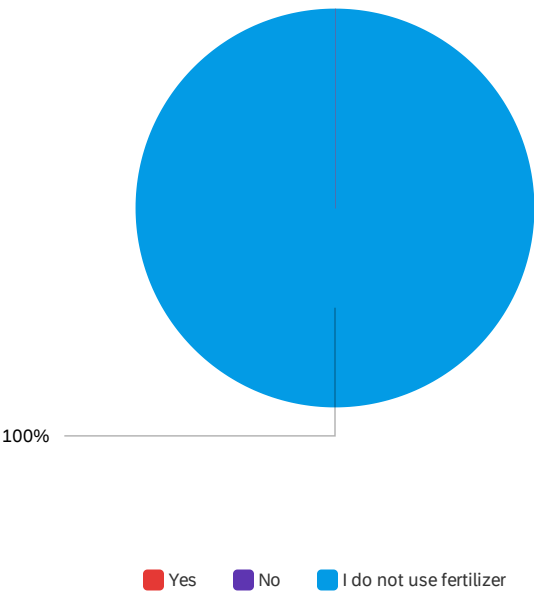
Q21 - Do you use fertilizer that contains phosphorus?



#	Field	Choice	Count
1	Yes	0%	0
2	No	0%	0
4	I do not use fertilizer on my land	100%	2
			2

Showing rows 1 - 4 of 4

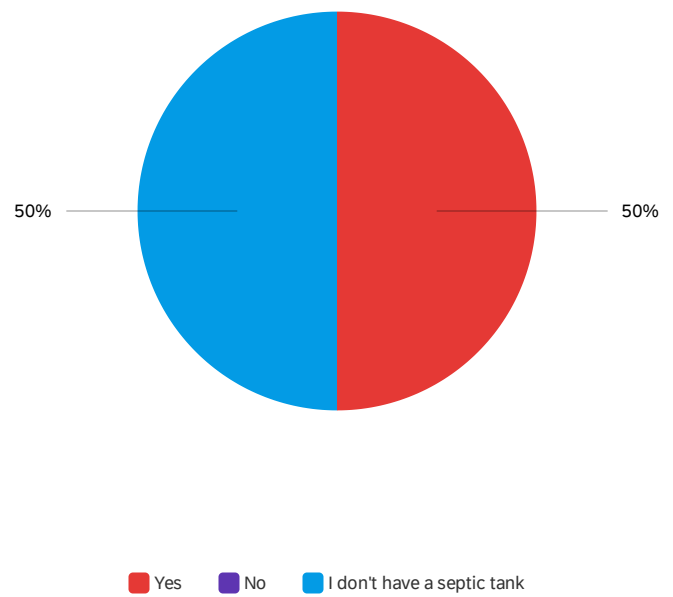
Q23 - Have you had your soil tested before using fertilizer?



#	Field	Choice	Count
1	Yes	0%	0
2	No	0%	0
3	I do not use fertilizer	100%	2
			2

Showing rows 1 - 4 of 4

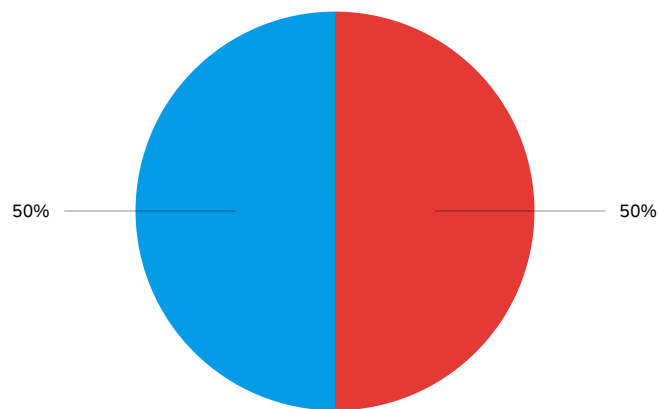
Q22 - Do you have your septic tank pumped regularly (at least every 3 years)?



#	Field	Choice	Count
1	Yes	50%	1
2	No	0%	0
3	I don't have a septic tank	50%	1
			2

Showing rows 1 - 4 of 4

Q25 - How do you currently manage the majority of your property within 35 feet of the lake?



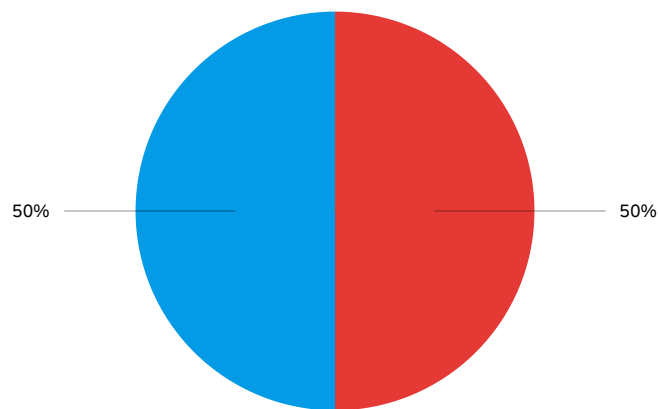
■ Mowed or weed-whacked    ■ Natural except for access path    ■ Restored shoreland/planted/landscaped

#	Field	Choice	Count
1	Mowed or weed-whacked	50%	1
2	Natural except for access path	0%	0
3	Restored shoreland/planted/landscaped	50%	1
			2

Showing rows 1 - 4 of 4



Q26 - If you have unmowed shoreland vegetation, how far inland from the water's edge  
does it extend?

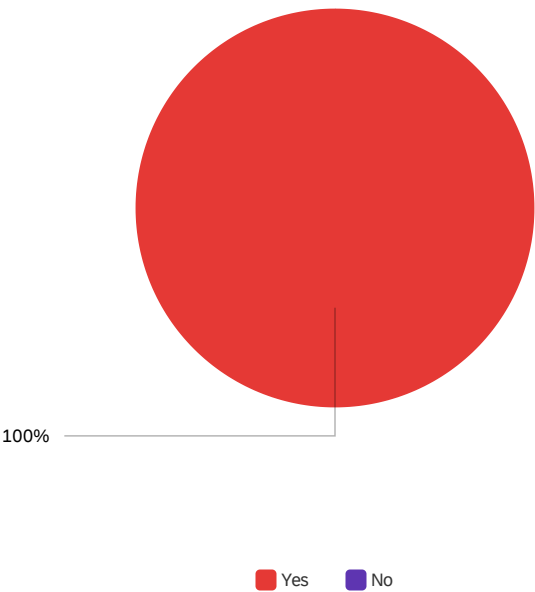


1-15 feet 16-35 feet over 35 feet

#	Field	Choice	Count
1	1-15 feet	50%	1
2	16-35 feet	0%	0
3	over 35 feet	50%	1
			2

Showing rows 1 - 4 of 4

Q31 - Do you have woody structure such as fallen trees or large branches in the shallow water along your property?

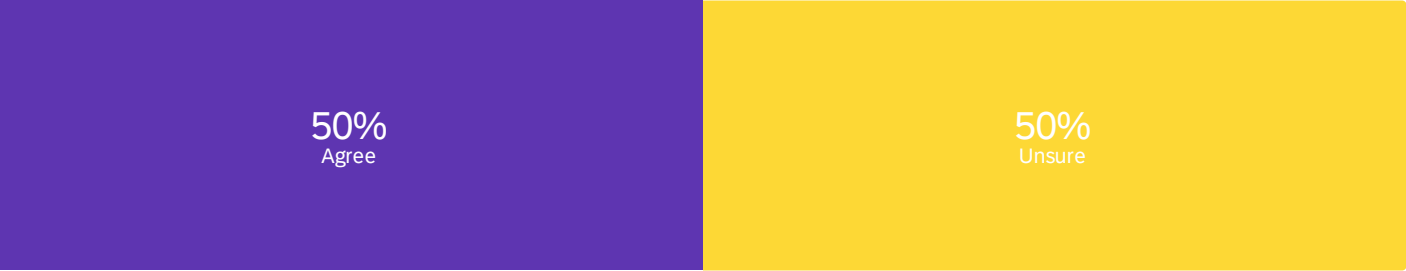


#	Field	Choice	Count
1	Yes	100%	2
2	No	0%	0

2

Showing rows 1 - 3 of 3

Q27 - In your opinion, does shoreland vegetation...



Strongly Agree Agree Disagree Strongly disagree Unsure

#	Field	Strongly Agree		Agree		Disagree		Strongly disagree		Unsure	Total
1	enhance the beauty of the property	0%	0	50%	1	0%	0	0%	0	50% 1	2
2	increase the economic value of the property	0%	0	0%	0	0%	0	0%	0	100% 2	2

Showing rows 1 - 2 of 2

Q28 - What might motivate you to change how you manage your shoreland?

Q32 - In your opinion, which statement best describes the amount of aquatic plant growth in Nelligan Lake?



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Data source misconfigured for this visualization.

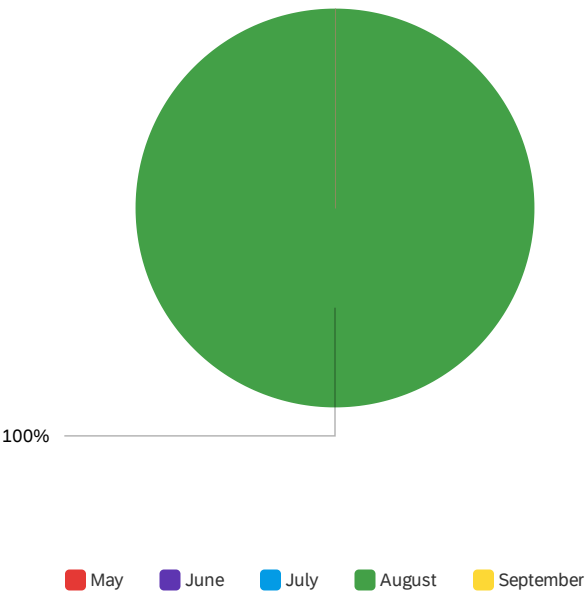


Data source misconfigured for this visualization.





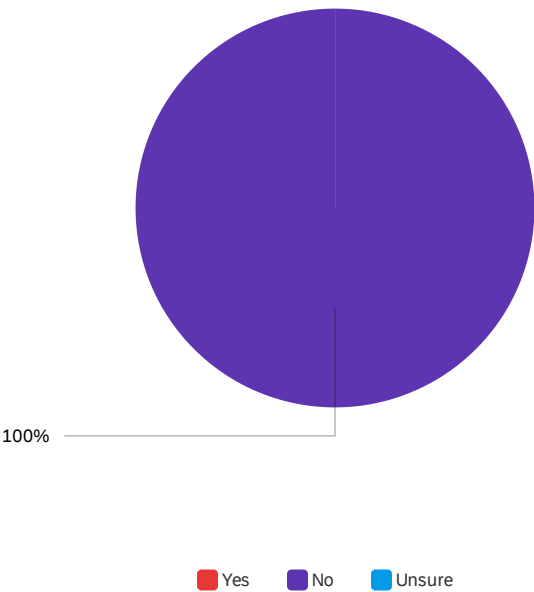
Q33 - If you think the plant growth in Nelligan Lake is dense, what month(s) do the problems occur? Check all that apply.



#	Field	Choice Count
1	May	0% 0
2	June	0% 0
3	July	0% 0
4	August	100% 1
5	September	0% 0
		1

Showing rows 1 - 6 of 6

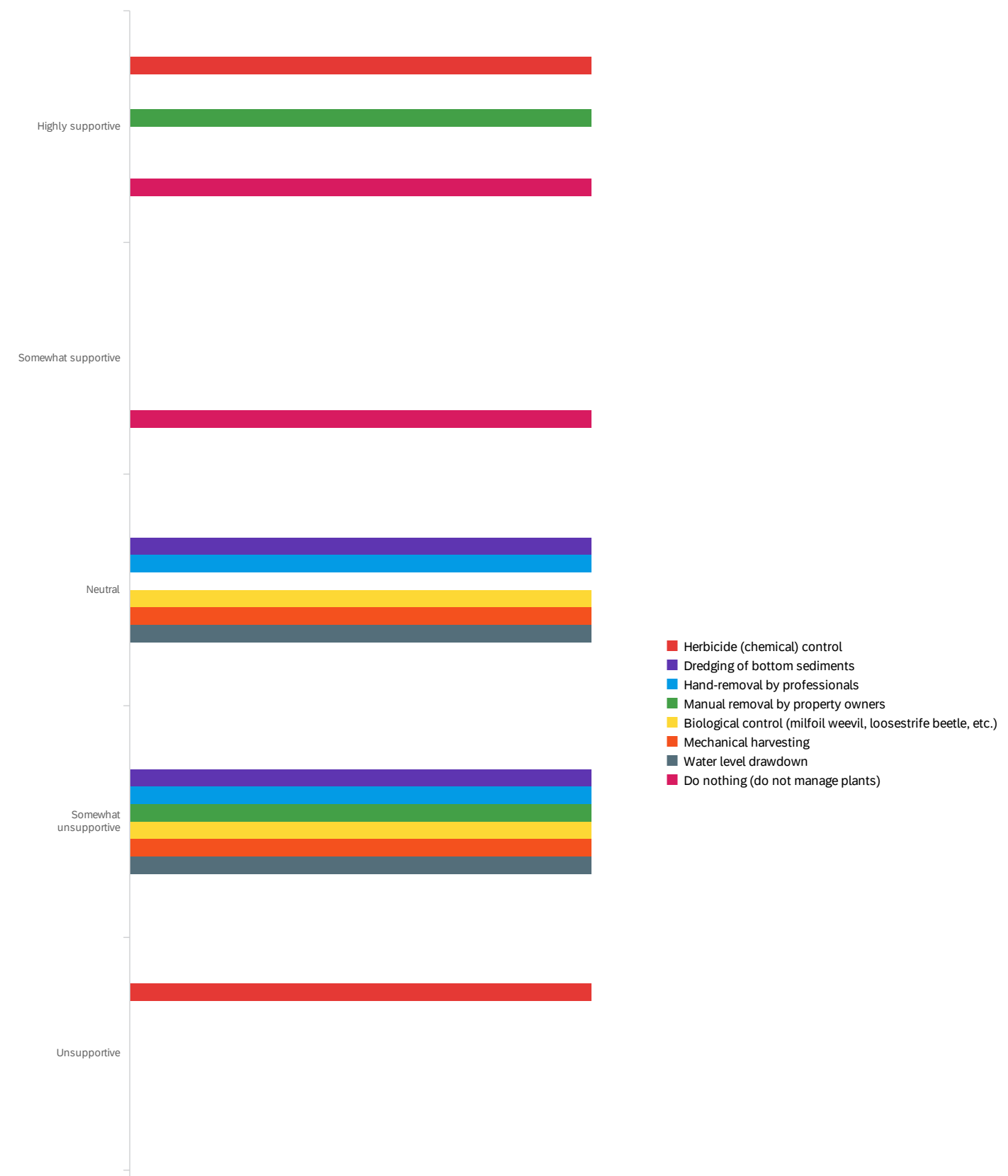
Q34 - Do you believe aquatic plant control is needed on Nelligan Lake?

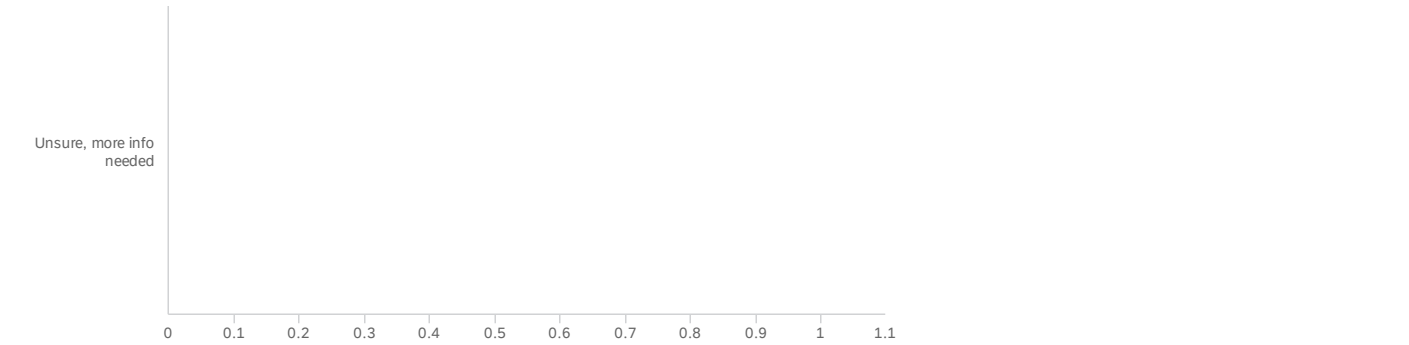


#	Field	Choice Count
1	Yes	0% 0
2	No	100% 2
3	Unsure	0% 0
		2

Showing rows 1 - 4 of 4

Q35 - What is your level of support for the responsible use of the following techniques to manage aquatic plants on Nelligan Lake?



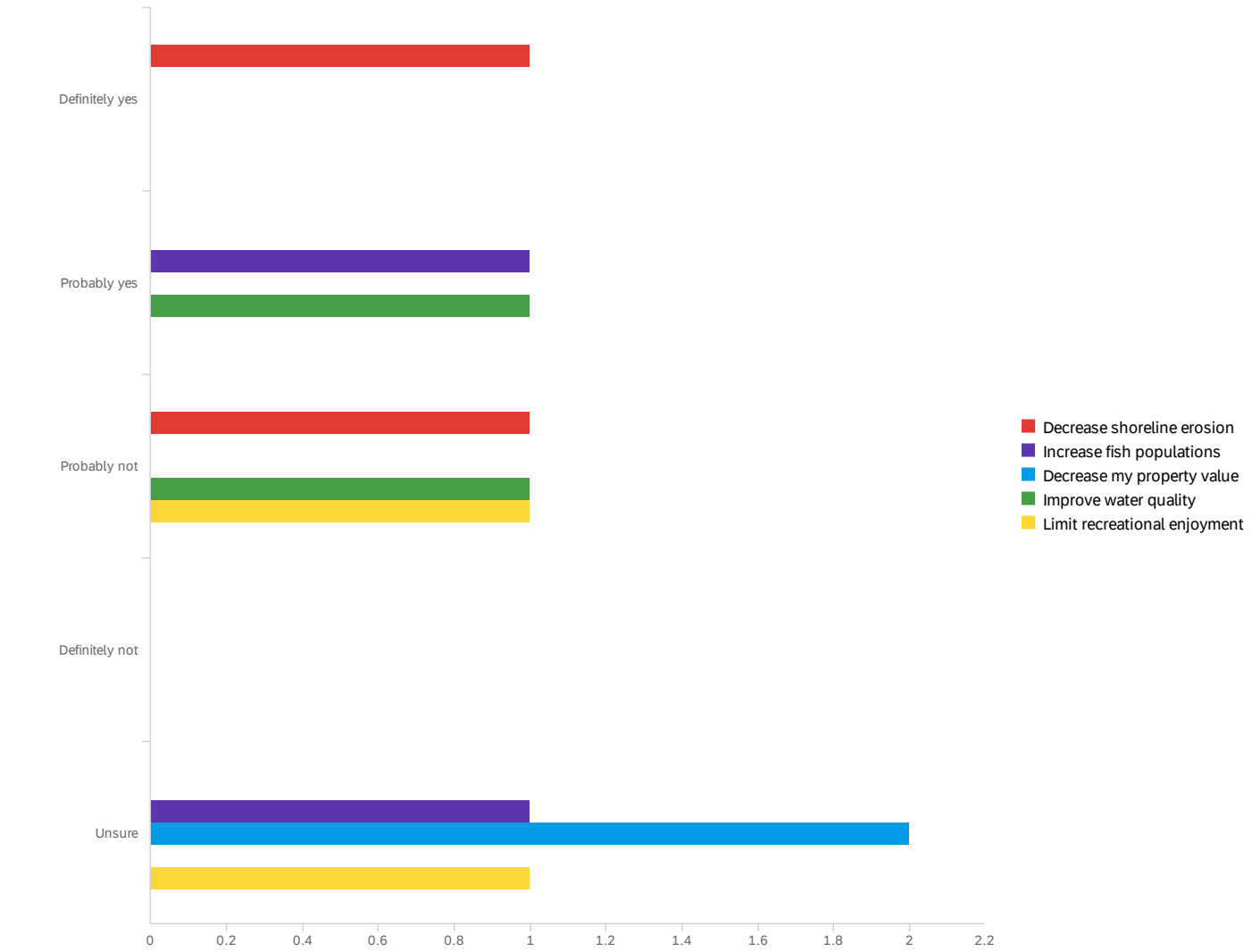


#	Field	Highly supportive		Somewhat supportive		Neutral		Somewhat unsupportive		Unsupportive		Unsure, more info needed		Total
1	Herbicide (chemical) control	50%	1	0%	0	0%	0	0%	0	50%	1	0%	0	2
2	Dredging of bottom sediments	0%	0	0%	0	50%	1	50%	1	0%	0	0%	0	2
3	Hand-removal by professionals	0%	0	0%	0	50%	1	50%	1	0%	0	0%	0	2
4	Manual removal by property owners	50%	1	0%	0	0%	0	50%	1	0%	0	0%	0	2
5	Biological control (milfoil weevil, loosestrife beetle, etc.)	0%	0	0%	0	50%	1	50%	1	0%	0	0%	0	2
6	Mechanical harvesting	0%	0	0%	0	50%	1	50%	1	0%	0	0%	0	2
7	Water level drawdown	0%	0	0%	0	50%	1	50%	1	0%	0	0%	0	2
8	Do nothing (do not manage plants)	50%	1	50%	1	0%	0	0%	0	0%	0	0%	0	2

Showing rows 1 - 8 of 8



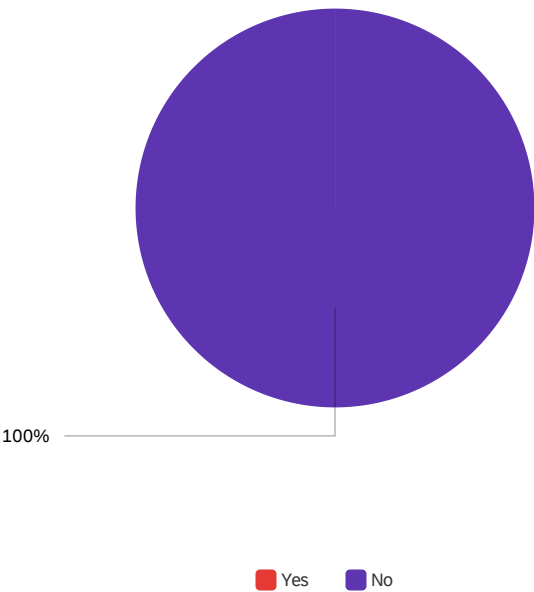
Q36 - In your opinion, does establishing or maintaining native vegetation in the water in the near-shore area...



#	Field	Definitely yes		Probably yes		Probably not		Definitely not		Unsure		Total
1	Decrease shoreline erosion	50%	1	0%	0	50%	1	0%	0	0%	0	2
2	Increase fish populations	0%	0	50%	1	0%	0	0%	0	50%	1	2
3	Decrease my property value	0%	0	0%	0	0%	0	0%	0	100%	2	2
4	Improve water quality	0%	0	50%	1	50%	1	0%	0	0%	0	2
5	Limit recreational enjoyment	0%	0	0%	0	50%	1	0%	0	50%	1	2

Showing rows 1 - 5 of 5

Q37 - Are you aware of invasive species (in general)?

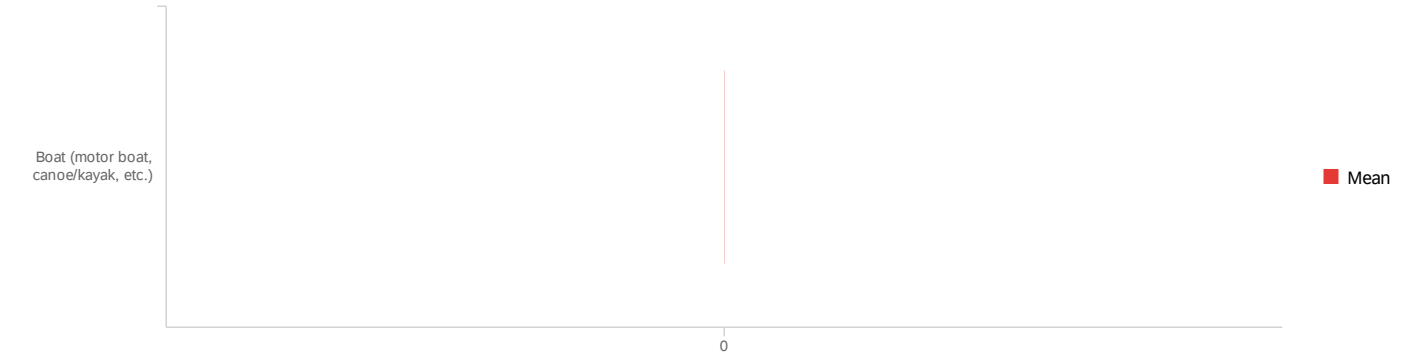


#	Field	Choice	Count
1	Yes	0%	0
2	No	100%	2

2

Showing rows 1 - 3 of 3

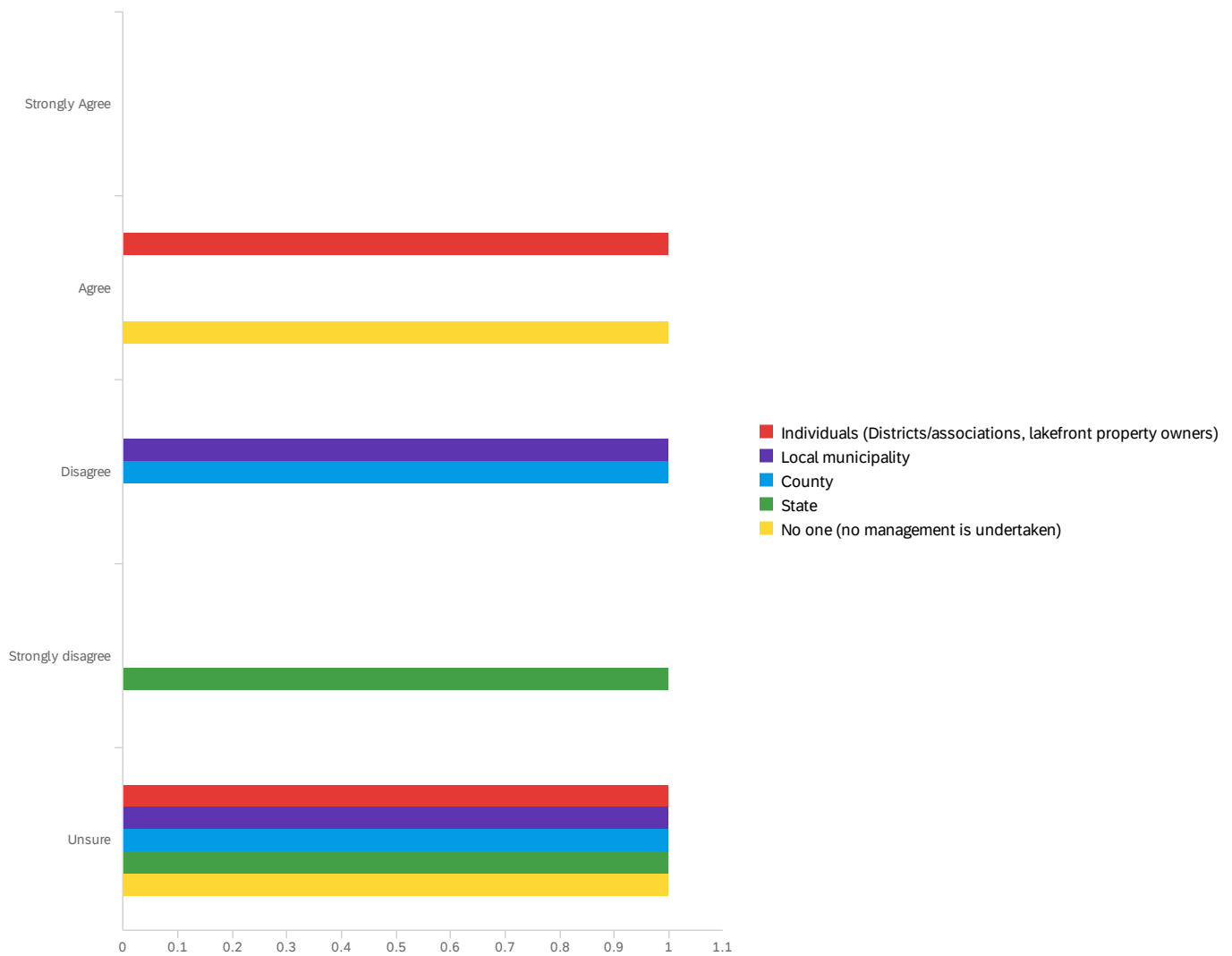
Q39 - After you have been to another lake, do you clean your.... before bringing it back to Nelligan Lake?



#	Field	Yes, always		Sometimes		Rarely		No, never		Total
1	Boat (motor boat, canoe/kayak, etc.)	0%	0	0%	0	0%	0	0%	0	0
2	Trailer	0%	0	0%	0	0%	0	0%	0	0
3	Fishing equipment	0%	0	0%	0	0%	0	0%	0	0
4	Live wells	0%	0	0%	0	0%	0	0%	0	0

Showing rows 1 - 4 of 4

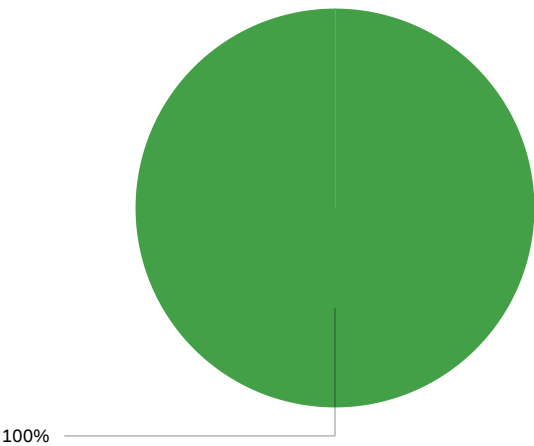
## Q40 - Who should pay the cost of managing invasive aquatic plants?



#	Field	Strongly Agree		Agree		Disagree		Strongly disagree		Unsure		Total
1	Individuals (Districts/associations, lakefront property owners)	0%	0	50%	1	0%	0	0%	0	50%	1	2
2	Local municipality	0%	0	0%	0	50%	1	0%	0	50%	1	2
3	County	0%	0	0%	0	50%	1	0%	0	50%	1	2
4	State	0%	0	0%	0	0%	0	50%	1	50%	1	2
5	No one (no management is undertaken)	0%	0	50%	1	0%	0	0%	0	50%	1	2

Showing rows 1 - 5 of 5

Q41 - What is the most effective way to inform others about aquatic invasive species?



Newspaper    Billboard    Info pamphlets    Lakeside signs/kiosks    Volunteer staff at boat launch    Other

#	Field	Choice Count
1	Newspaper	0% 0
2	Billboard	0% 0
3	Info pamphlets	0% 0
4	Lakeside signs/kiosks	100% 2
5	Volunteer staff at boat launch	0% 0
6	Other	0% 0

Q12 - In your opinion, what should be done to restore, maintain or improve Nelligan Lake?

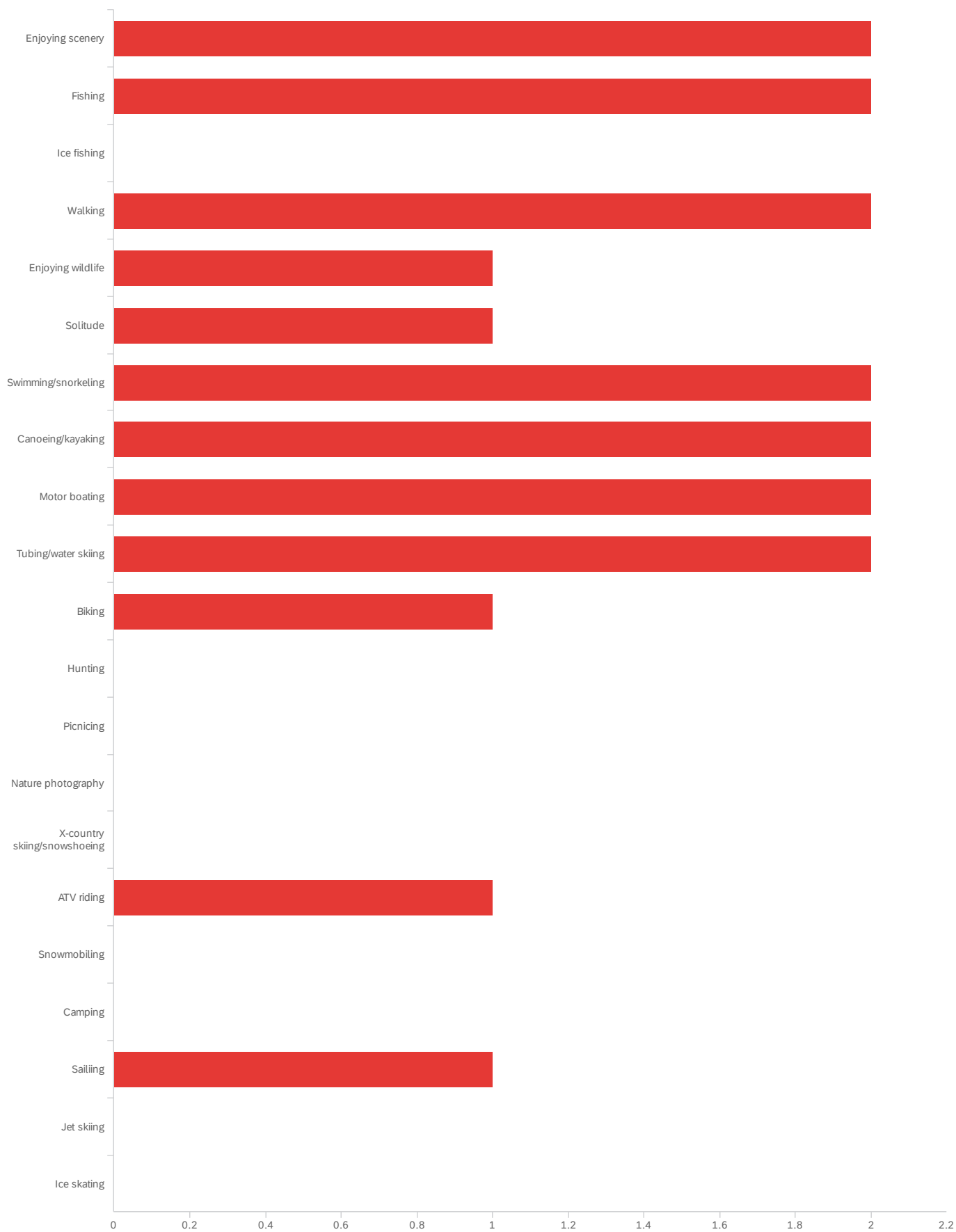
In your opinion, what should be done to restore, maintain or improve Nellig...

It seems pretty good and well respected by owners and visitors a like

Addition of fish cribs and more habitats

Q45 - What recreational activities do you partake in on Nelligan Lake (check all that apply)?





# Field

Choice  
Count

#	Field	Choice Count
1	Enjoying scenery	11% 2
2	Fishing	11% 2
3	Ice fishing	0% 0
4	Walking	11% 2
5	Enjoying wildlife	5% 1
6	Solitude	5% 1
7	Swimming/snorkeling	11% 2
8	Canoeing/kayaking	11% 2
9	Motor boating	11% 2
10	Tubing/water skiing	11% 2
11	Biking	5% 1
12	Hunting	0% 0
13	Picnicing	0% 0
14	Nature photography	0% 0
15	X-country skiing/snowshoeing	0% 0
16	ATV riding	5% 1
17	Snowmobiling	0% 0
18	Camping	0% 0
19	Sailing	5% 1
20	Jet skiing	0% 0
21	Ice skating	0% 0
		19

Showing rows 1 - 22 of 22

## Q46 - Other recreational activities not included above:

Other recreational activities not included above:

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None

## Q49 - What could be done to improve your recreation experience on Nelligan Lake?

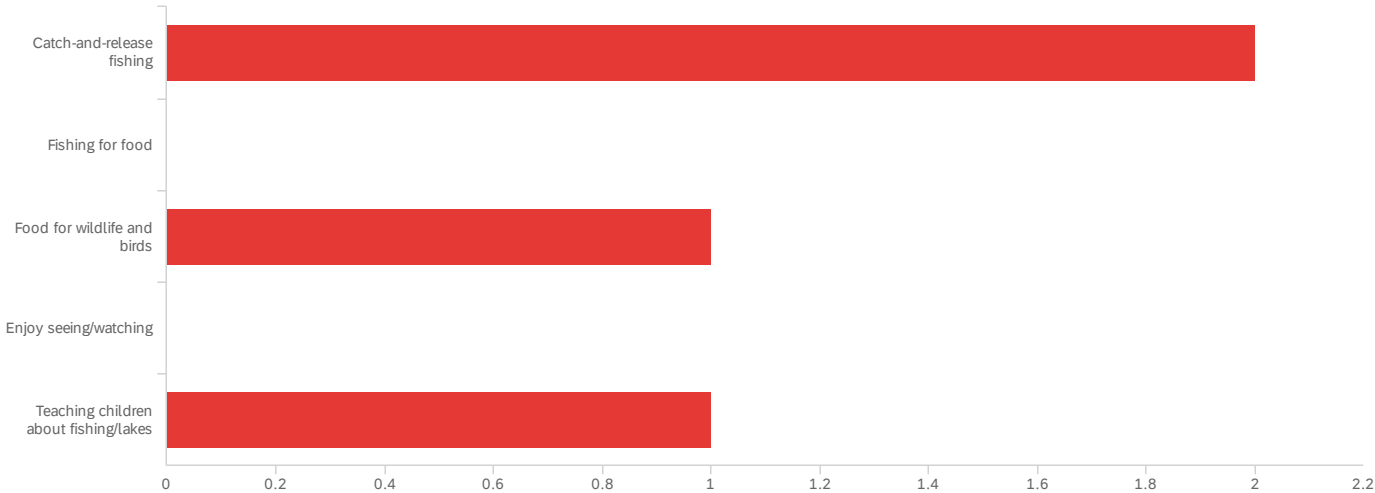
What could be done to improve your recreation experience on Nelligan Lake?


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Nothing, a great place

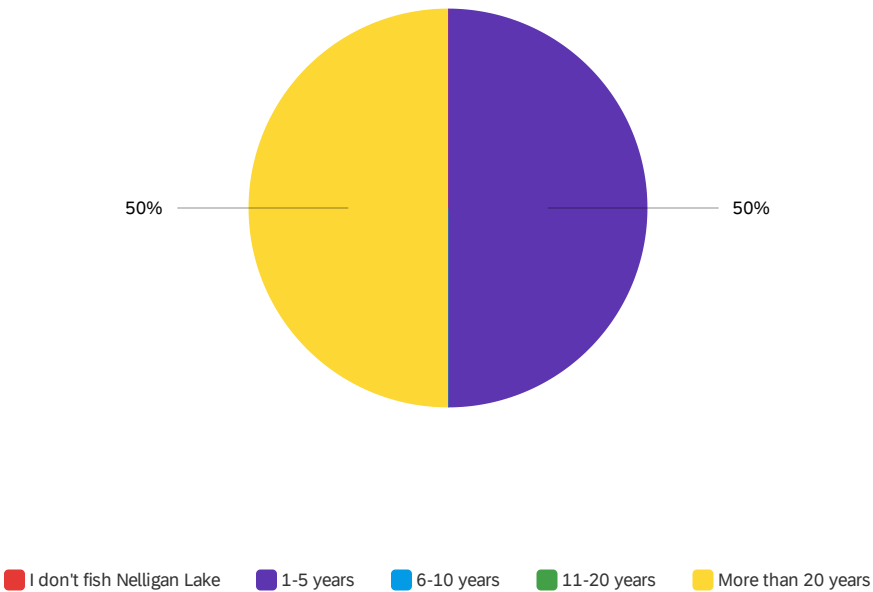
Continuing to uphold the 10-4 wake window

Q51 - For what purposes do you value the fishery in Nelligan Lake? (Check all that apply)



  
Data source misconfigured for this visualization.

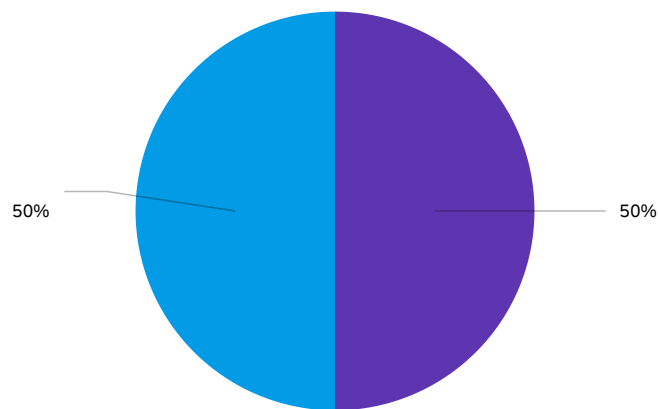
Q52 - How many years experience do you have fishing Nelligan Lake?



#	Field	Choice	Count
1	I don't fish Nelligan Lake	0%	0
2	1-5 years	50%	1
3	6-10 years	0%	0
4	11-20 years	0%	0
5	More than 20 years	50%	1
			2

Showing rows 1 - 6 of 6

Q53 - In the time you have been fishing Nelligan Lake, would you say the quality of fishing has...



Improved Stayed the same Declined Not sure/don't fish

#	Field	Choice	Count
1	Improved	0%	0
2	Stayed the same	50%	1
3	Declined	50%	1
4	Not sure/don't fish	0%	0

## Q54 - What do you think has contributed to the change in fishing?

What do you think has contributed to the change in fishing?

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over fished from off the lake visitors in May and June



Q55 - When and how often do you fish Nelligan Lake?



Error loading data



Error loading data

## Q56 - What type of fish do you catch on Nelligan Lake?

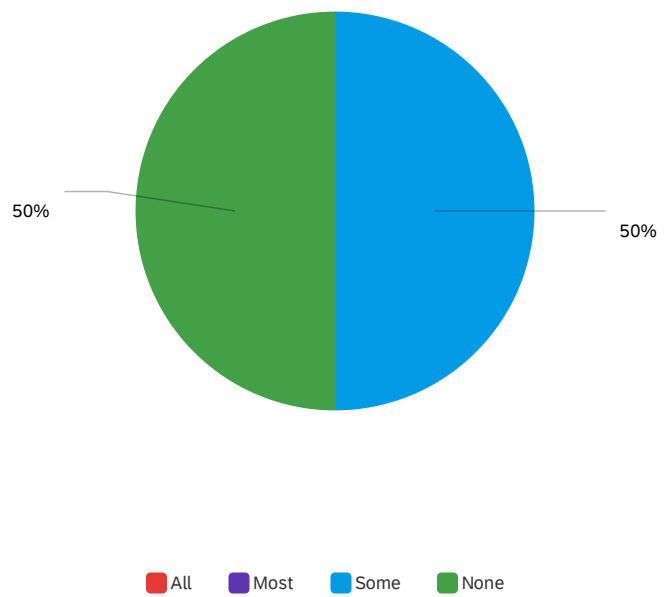
What type of fish do you catch on Nelligan Lake?

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Bluegill and bass

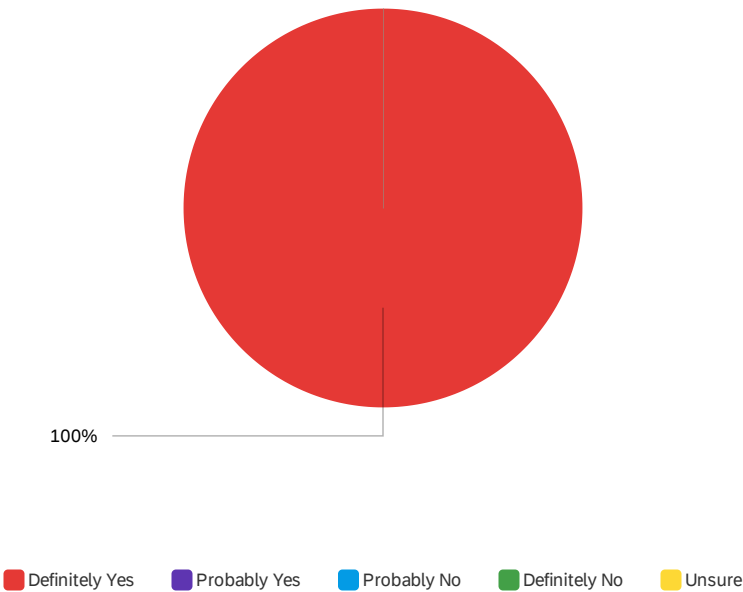
Bass and bluegill

Q57 - In general, how many of the fish you catch are big enough to keep?



#	Field	Choice Count	
1	All	0%	0
2	Most	0%	0
3	Some	50%	1
4	None	50%	1

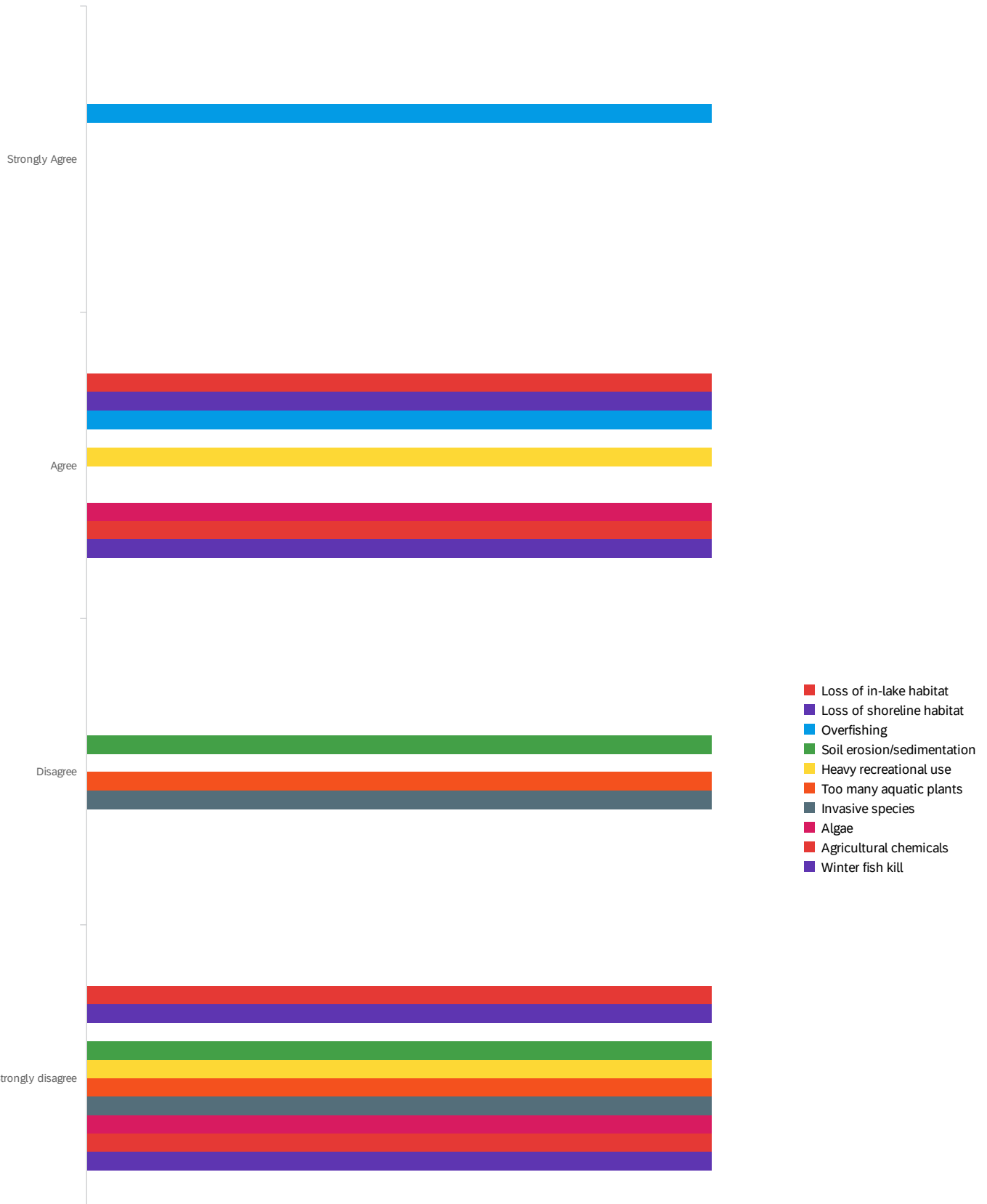
Q58 - Do you believe fish from Nelligan Lake are safe to eat?

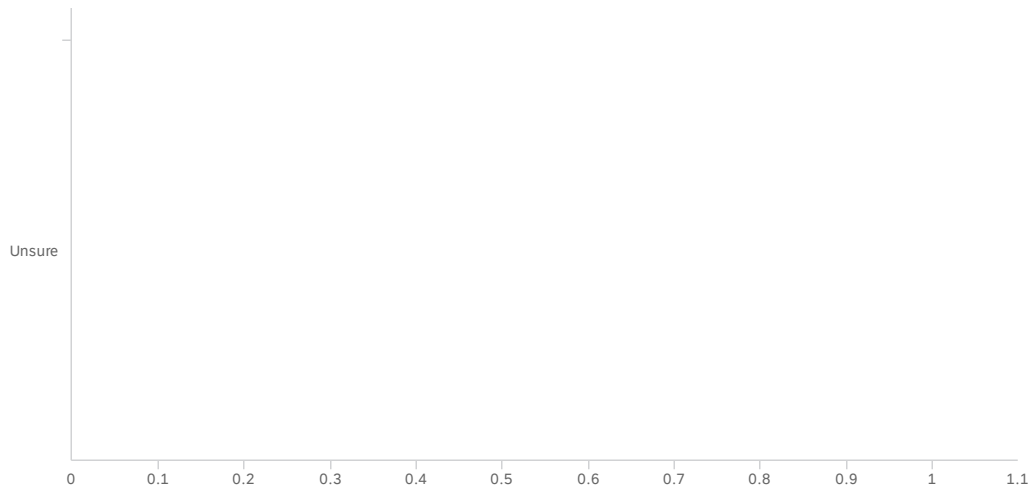


#	Field	Choice	Count
1	Definitely Yes	100%	2
2	Probably Yes	0%	0
3	Probably No	0%	0
4	Definitely No	0%	0
5	Unsure	0%	0
			2

Showing rows 1 - 6 of 6

Q59 - What do you think is the greatest threat to the fishery in Nelligan Lake in the next 10 years?





#	Field	Strongly Agree		Agree		Disagree		Strongly disagree		Unsure		Total
1	Loss of in-lake habitat	0%	0	50%	1	0%	0	50%	1	0%	0	2
2	Loss of shoreline habitat	0%	0	50%	1	0%	0	50%	1	0%	0	2
3	Overfishing	50%	1	50%	1	0%	0	0%	0	0%	0	2
4	Soil erosion/sedimentation	0%	0	0%	0	50%	1	50%	1	0%	0	2
5	Heavy recreational use	0%	0	50%	1	0%	0	50%	1	0%	0	2
6	Too many aquatic plants	0%	0	0%	0	50%	1	50%	1	0%	0	2
7	Invasive species	0%	0	0%	0	50%	1	50%	1	0%	0	2
8	Algae	0%	0	50%	1	0%	0	50%	1	0%	0	2
9	Agricultural chemicals	0%	0	50%	1	0%	0	50%	1	0%	0	2
10	Winter fish kill	0%	0	50%	1	0%	0	50%	1	0%	0	2

Showing rows 1 - 10 of 10

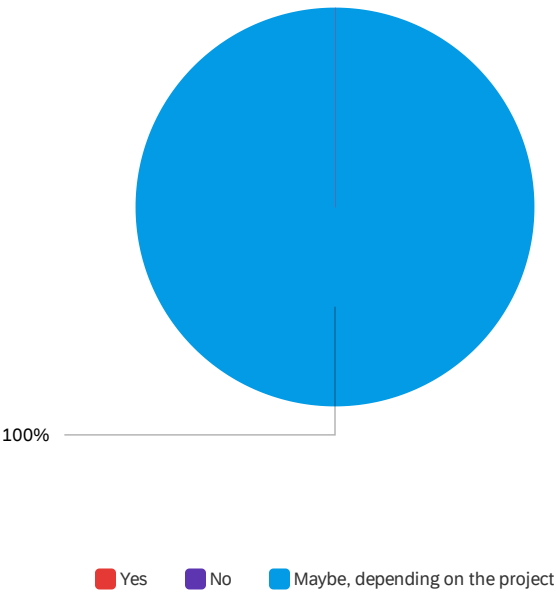
## Q61 - Do you have any additional comments regarding Nelligan Lake?

Do you have any additional comments regarding Nelligan Lake?

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no

Q63 - Would you be interested in volunteering on a project on your lake (such as shoreland restoration planting, invasive species monitoring/removal, water quality monitoring, highway cleanup, etc.)?



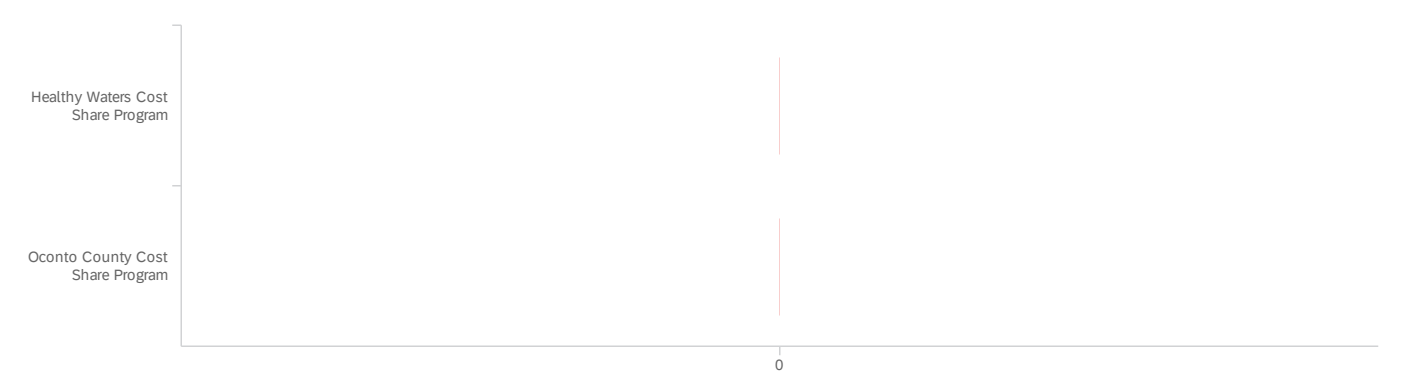
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you be interested in volunteering on a project on your lake (such as shoreland restoration planting, invasive species monitoring/removal, water quality monitoring, highway cleanup, etc.)?	3	3	3	0	0	2

#	Field	Choice Count
1	Yes	0% 0
2	No	0% 0
3	Maybe, depending on the project	100% 2
		2



Q64 - Are you aware of the following programs available to you from Oconto County?

(Check all that apply)



#	Field	Choice Count
1	Healthy Waters Cost Share Program	0% 0
2	Oconto County Cost Share Program	0% 0

0

Showing rows 1 - 3 of 3

End of Report