

Oconto County Lakes Project

MUNGER & BEAR LAKES MANAGEMENT PLAN

2019

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

Munger and Bear Lakes will be ideal Northwoods lakes, where residents can balance time with one another, fishing, boating, swimming and exploring while immersing in the nature and wildlife that comprise this high-quality resource.

Munger/Bear Lakes Management Plan

The authors would like to acknowledge the support and enthusiasm of the Munger/Bear Lakes District, 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 Munger and Bear Lake watersheds, 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.

The following individuals and organizations contributed to the content of this plan.

Munger/Bear Lakes Planning Participants

Fay & Bob Boerschinger

Rodney Buege

Terry Buss

Jim Dunks

Gregg & Cheryl Erickson

Beck Hilliker

Wayne O'Connell

Maurice Olson

E. John Rabe

Jeff & Karen Rugotska

Randy & Claudia Ryczkowski

Connie Schaus

Charles Thompson

Technical Contributors to the Planning Process

Dale Mohr, UW-Extension -Oconto County

Ken Dolata, Oconto County Land Conservation Department

Brenda Nordin, Wisconsin Department of Natural Resources

Christopher Long, Wisconsin Department of Natural Resources

Ryan Haney, UW Stevens Point Center for Watershed Science and Education

Sarah Hull, UW Stevens Point Center for Watershed Science and Education

Paul McGinley, UW Stevens Point Center for Watershed Science and Education



Table of Contents

TABLE OF CONTENTS

Table of Contents	2
About Munger and Bear Lakes	3
Lake Management Plans (LMP)	5
About this Plan	6
The Planning Process	6
Who created the strategic plan?	6
How were various opinions incorporated?	6
Goals for Munger/Bear Lakes	7
List of Goals	9
In-Lake Habitat and a Healthy Lake	10
The Fish Community	10
Aquatic Plants	14
Critical Habitat	20
Landscapes and the Lake	21
Munger/Bear Lake Watershed	21
Why does land matter?	22
Shorelands	25
Water Quality	29
People and the Lake	33
Recreation	33
Dam	33
Communication and Organization	35
Updates and Revisions	37
References	38

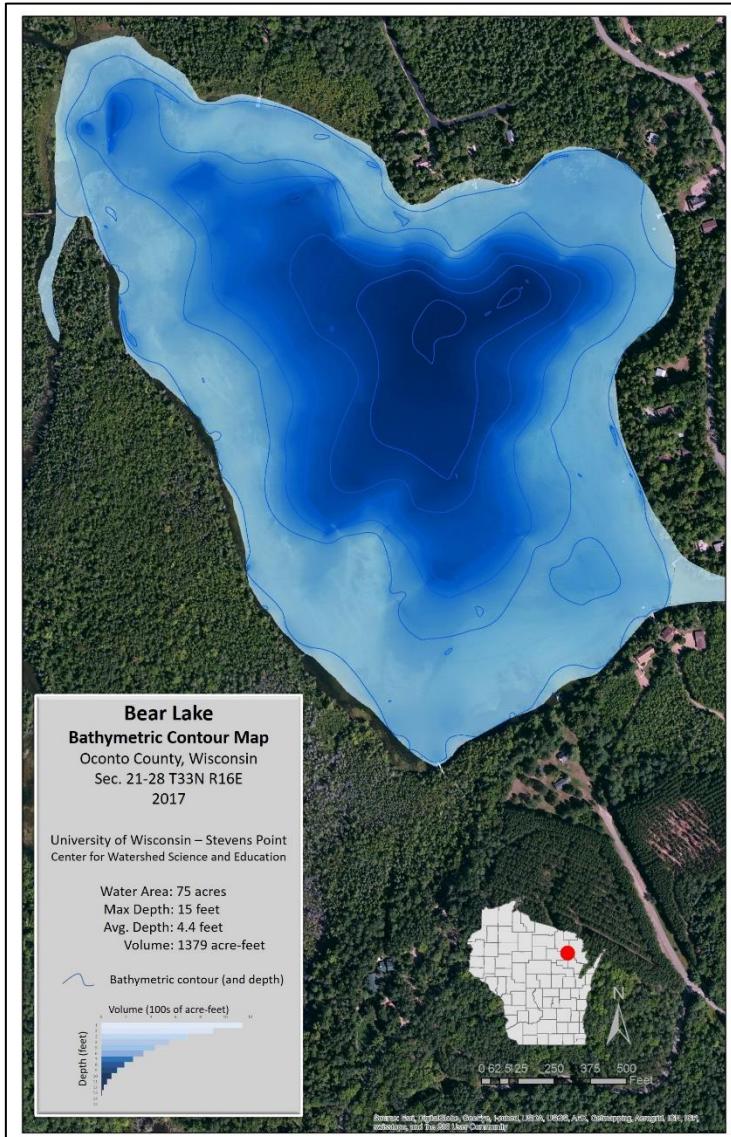
Appendices	39
Appendix A. Oconto County Lake Information Directory	40
Appendix B. Rapid Response Plan	45
Appendix C. Lake User Survey Results	47

Resource	Acronym or Truncated Name
Citizen Lake Monitoring Network	CLMN
Clean Boats Clean Waters	CBCW
Lumberjack Resource Conservation & Development	LRCD
Munger/Bear Lake District	MBLD
Oconto County Land Conservation Dept.	OC LCD
Oconto County Board of Supervisors	OC Board
Oconto County Lakes and Waterways Association	OCLAWA
Northeast Wisconsin Land Trust	NWLT
Town of Lakewood	TOL
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

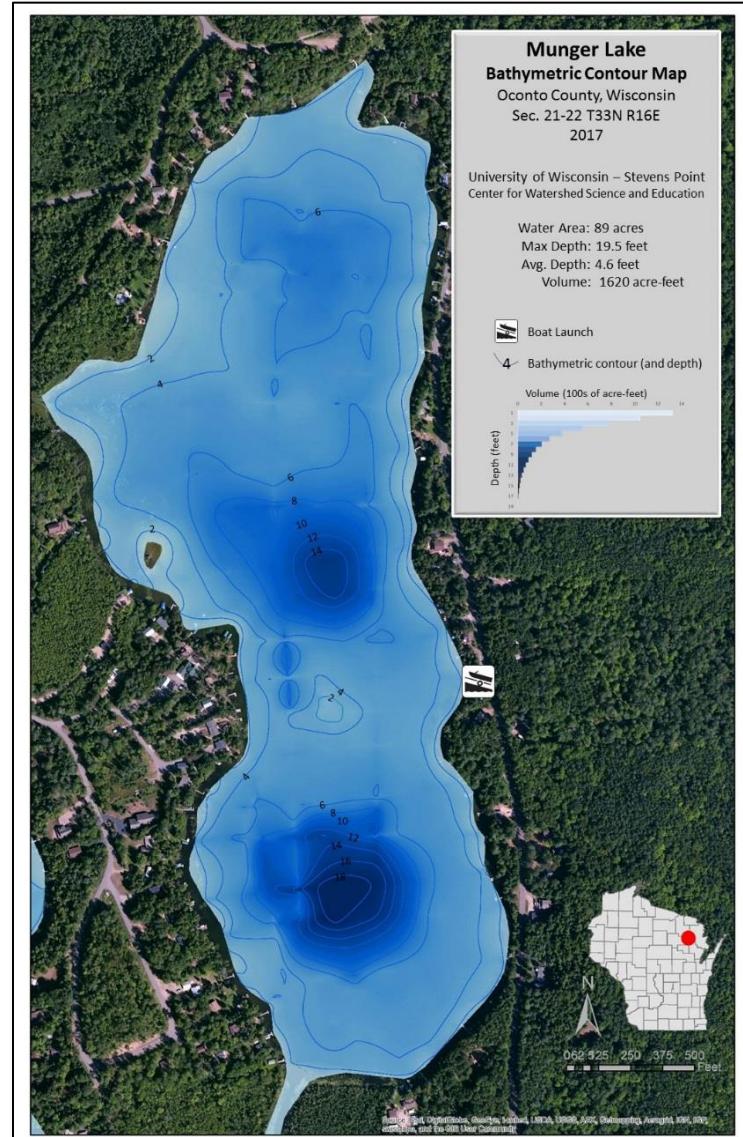
Background

ABOUT MUNGER AND BEAR LAKES

Munger and Bear Lakes are located in the Town of Lakewood, in the Chequamegon-Nicolet National Forest in northeast Wisconsin.



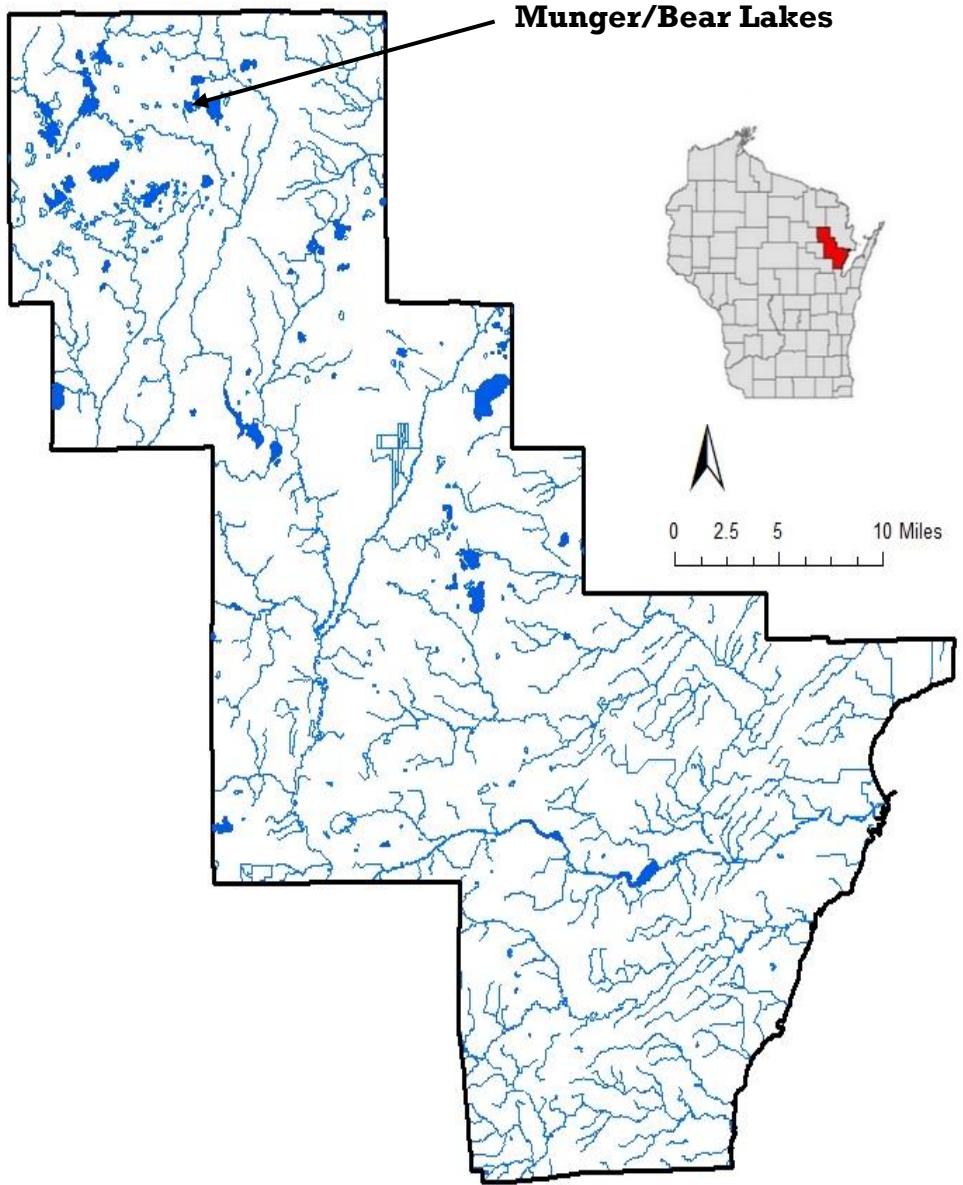
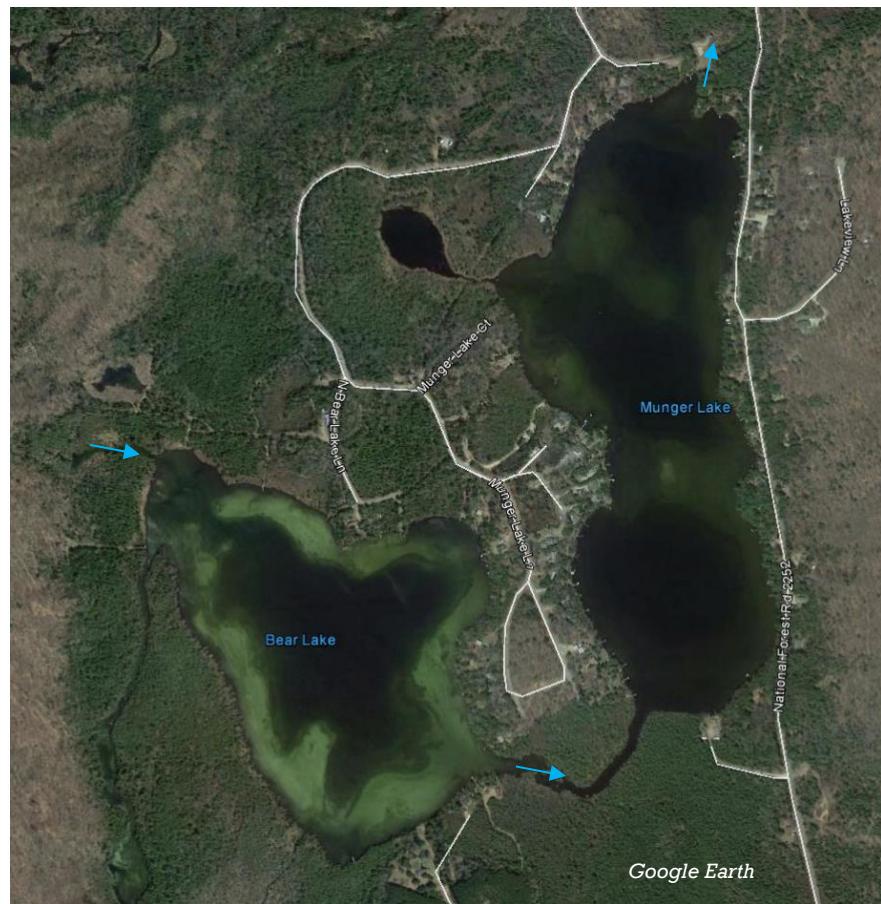
Munger is an 89-acre drainage lake with a maximum depth of 19 feet with very clear water. Its bottom sediment is mostly muck, with small areas of sand primarily on the southern end. Visitors have access to the lake from one public boat landing owned by



Background

the Town of Lakewood. Bear Lake is a 75-acre drainage lake immediately upstream of Munger Lake with a maximum depth of 20 feet and very clear water. No public boat launches are located on Bear Lake, but it can be accessed via a channel that connects to the south end of Munger Lake.

Water enters the lakes primarily via a small stream on the northwest side of Bear Lake and flows out the channel on the southeast side that connects to Munger Lake's south end. Water leaves over a low-head dam into a creek that feeds Lake John to the north.



What Is A Lake Management Plan?

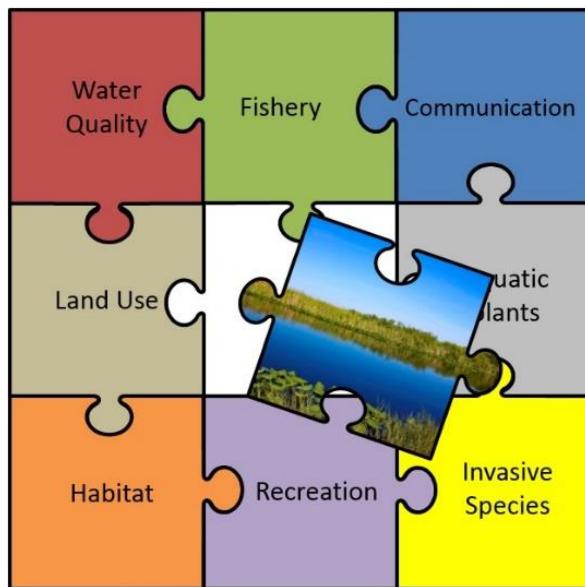
LAKE MANAGEMENT PLANS (LMP)

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 LMP address 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?

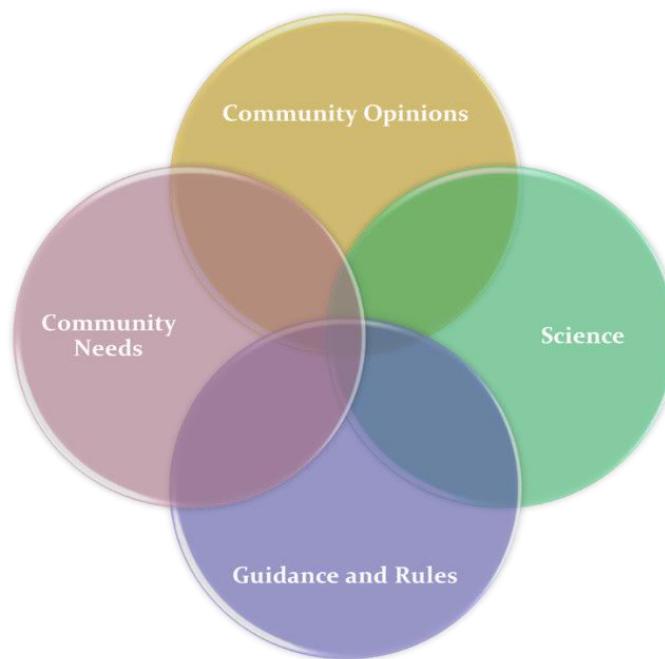
This plan was created to ensure that Munger and Bear Lakes are healthy now and for future generations. It was designed to learn about Munger and Bear Lakes and identify features important to the Munger/Bear Lakes community to provide a framework for the protection and improvement of the lakes.



Implementing the content of this LMP will enable citizens and others to work together to achieve the vision for Munger/Bear Lakes 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 2016-2017 alongside 8 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 Munger and Bear 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 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. Members of the lake district, area residents, lake users, and representatives of local municipalities gathered at a public meeting held June 21, 2018 at the Lakewood Town Hall to learn from one another and make decisions about the fishery, water quality, habitat, and land management in the Munger/Bear Lake watershed. Technical assistance during the planning process was provided by the Oconto County Conservationist, and staff from WDNR, UWEX, and the CWSE.

How were various opinions incorporated?

Participation in the planning process was open to everyone and was encouraged by letters mailed to Munger and Bear 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 Munger/Bear Lakes can have the greatest influence on the lake by understanding and choosing lake-friendly options to manage their land and the lakes.
- **Munger/Bear Lake District:** This plan provides the District 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 District 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 Lakewood:** 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 lakes.
- **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 MUNGER/BEAR LAKES

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 Munger/Bear Lakes. 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

Munger/Bear Lakes Management Plan Goals

Goals for Munger/Bear Lakes

The following goals and actions were derived from the values and concerns of citizens interested in Munger and/or Bear Lake and members of the planning committee, as well as the known science about the lakes, their ecosystems and the landscape within their 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

Goal 1	Munger and Bear Lakes will have a well-structured, thriving fish population.
Goal 2	Munger and Bear Lakes will continue to have a healthy and diverse aquatic plant community that provides habitat and good water quality, while minimizing recreational impediments and remaining free of invasive species.
Goal 3	Sensitive areas in Munger and Bear Lakes, which provide essential habitat and/or water quality benefits, will be protected.
Goal 4	Watershed and shoreland property owners will know about and utilize resources for healthy land management practices.
Goal 5	Munger and Bear Lake's shorelands will become increasingly healthy over time. Over the next 5 years, 1000 feet of mowed shoreland will be restored.
Goal 6	Maintain or improve water quality in Munger and Bear Lakes.
Goal 7	Lake users will be informed and respectful of Munger and Bear Lakes.
Goal 8	Optimize conditions for safe and responsible recreational use.
Goal 9	Increase participation in lake stewardship.
Goal 10	Review plan annually and update as needed.

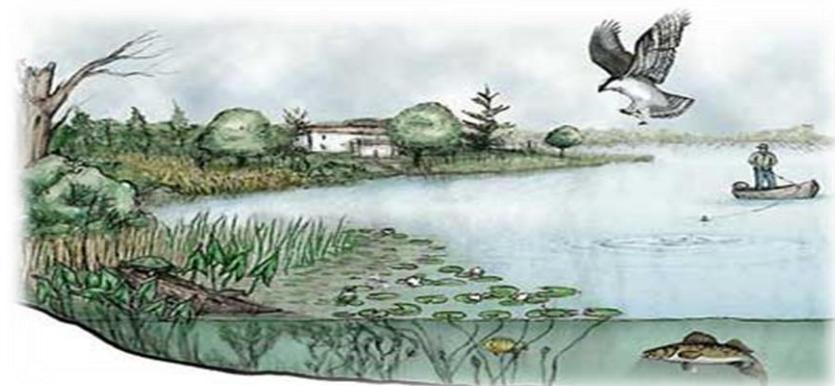
Fish Community

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 Munger/Bear Lakes 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 Munger and Bear Lakes

Peace and quiet it provides
Wildlife and fishing
Versatility
All the nature that lives in and around the lake
Great weekend getaway
Consistent water level
Family time
Clean, clear, panfish
Beauty and tranquility

Habitat provides shelter and food for fish and wildlife.

Fish Community

Can the fishery be improved?

Habitat can be improved by allowing shoreland vegetation to grow, minimizing the removal of aquatic plants, providing fallen trees or limbs in suitable areas, and protecting wetlands and other areas of critical habitat.

People are an important part of a sustainable fish community; their actions on the landscape and the numbers and sizes of fish taken out of the lake can influence the entire lake ecosystem. Putting appropriate fishing regulations in place and adhering to them can help to balance the fishery with healthy prey and predatory species. Regulations can be adjusted as the fish community changes and can provide for excellent fishing.

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.

Stocking Date	Species	# Stocked	Avg. Length (in)
1972	Muskellunge	300	13
1973	Muskellunge	300	9

1974	Muskellunge	300	9
1976	Muskellunge	200	13
1977	Muskellunge	200	9
1978	Muskellunge	200	8
1979	Muskellunge	200	8
1992	Largemouth Bass	280	9
1994	Largemouth Bass	3,350	1.9
1995	Largemouth Bass	1,000	3.9
1996	Largemouth Bass	1,200	5
1997	Yellow Perch	1,200	4
9/1/98	Yellow perch	1,575	
11/14/03	Yellow perch	625	4.7
11/2/03	Walleye	476	5
7/10/03	Largemouth bass	2,500	2.2
10/31/04	Walleye	600	
10/31/04	Yellow perch	625	
11/9/05	Walleye	500	
10/17/06	Walleye	500	7
11/8/07	Walleye	470	8
10/24/08	Walleye	313	7
11/8/08	Black crappie	750	5
11/24/10	Walleye	2,630	9
2012	Walleye	1,797	7
2013	Walleye	1,640	8
2014	Walleye	1,647	6
2015	Walleye	1,640	8
2016	Walleye	5,739	2
2017	Walleye	2,610	8
2018	Walleye	1,700	7-9

Fish Community

Munger/Bear Lake 2017 Fish Survey Highlights

- ✓ Due to Munger and Bear Lakes' connection, they behave as one fishery and are managed as a single system.
- ✓ Previous surveys were conducted in 2003 and 2009.
- ✓ Muskellunge were stocked from 1957-1979 but was discontinued due to lack of natural reproduction and small lake size.
- ✓ The five most abundant species were rock bass, bluegill, hybrid sunfish and black crappie.
- ✓ Black crappie are successfully reproducing. Future stockings are not recommended.
- ✓ Bluegill are within the desirable range for a balanced population.
- ✓ Successful reproduction and recruitment of largemouth bass was evident. Growth is below average.
- ✓ Walleye growth is average. No evidence of reproduction. Minimum length increased to 18" in 2015 (3 bag). Stocking of 10 fingerlings/acre is recommended. Neither Munger or Bear Lake have adequate substrate or fetch for spawning beds.
- ✓ Successful reproduction and recruitment of yellow perch was evident. Future stocking is not recommended.
- ✓ Northern pike have above average abundance with good size structure. Regulation change to no minimum length (5 bag) is recommended.
- ✓ Though Bear Lake has a lot of undeveloped shoreline, it has very little in the way of coarse woody habitat necessary for many species of fish spawning.
- ✓ The next fish survey is scheduled for 2025.



Fish Community

Goal 1. Munger and Bear Lakes will have a well-structured, thriving fish population.

Objective 1.1 Continue to manage for a healthy balance of predator and panfish populations.

Actions	Lead person/group	Resources	Timeline
Continue stocking as recommended (including walleye at 10/acre in years opposite of WDNR stocking).	MBLD	WDNR-Chip Long	Fall 2018
Discontinue minimum length regulation on northern pike (2 or 3 bag).	WDNR	WNDR-Chip Long	2019

Objective 1.2 Continue to enhance fish and wildlife habitat in and around the lakes. At least 5 more fish stick clusters will be installed on each lake (Bear and Munger) in the next 3 years.

Actions	Lead person/group	Resources	Timeline
Identify landowners for fish stick installations (at least 10% of properties with fish sticks is recommended). Trees can be sourced by identifying other landowners who need a tree removed.	MBLD	WDNR-Chip Long	Winter 2019-2020
Educate and encourage landowners to leave logs, tree branches and limbs in place in the water, whenever possible.	MBLD	WDNR-Chip Long UWEX-Pat Goggin	Ongoing
Continue to protect and restore shoreland areas and avoid shoreland alterations to improve fish habitat.	MBLD	Shoreland property owners	Ongoing

Aquatic Plant Community

Aquatic Plants

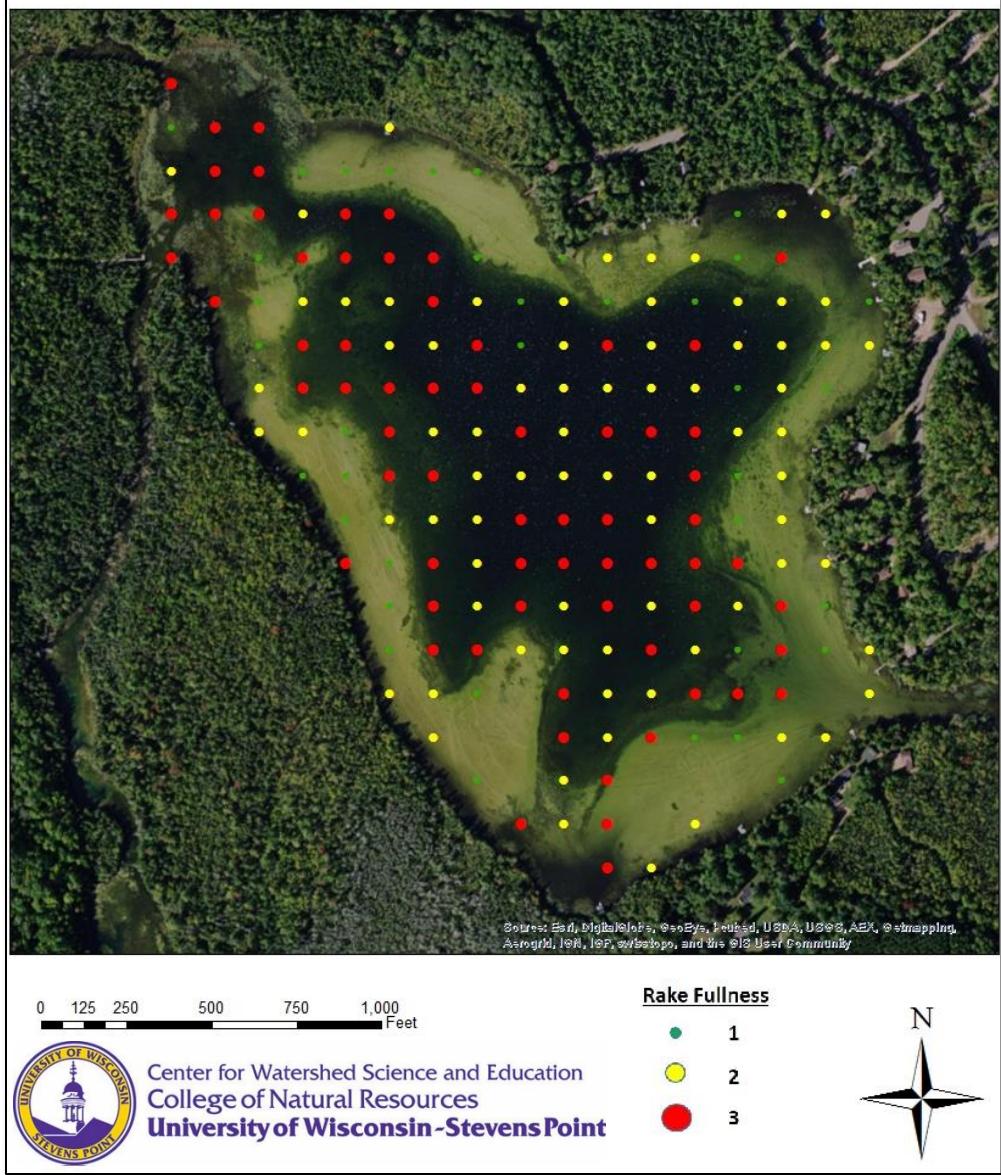
Aquatic plants provide the forested landscape within a lake. They provide food and habitat for spawning, breeding, and survival for a wide range of inhabitants and lake visitors including fish, waterfowl, turtles, amphibians, as well as invertebrates and other animals. They improve water quality by releasing 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 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. The aquatic plants that attract the animals to these areas contribute to the beauty of the lake. Aquatic plants also serve as indicator species for environmental stressors that could be occurring in a lake or river, such as a runoff event.

Bear Lake 2017 Aquatic Plant Survey Highlights

- ✓ 78% (176 of 194) of the sites visited had vegetative growth.
- ✓ Greatest depth aquatic plants were found was 15.5 feet.
- ✓ 18 species of aquatic plants were identified. This is above the North Central Hardwood region average of 16.2.
- ✓ The most dominate species were chara (92%), wild celery (15%), northern water-milfoil (14%), and Illinois pondweed (14%).
- ✓ The Floristic Quality Index (FQI) was 23.5. The North Central Hardwood region average is 23.3.
- ✓ No invasive species were observed.

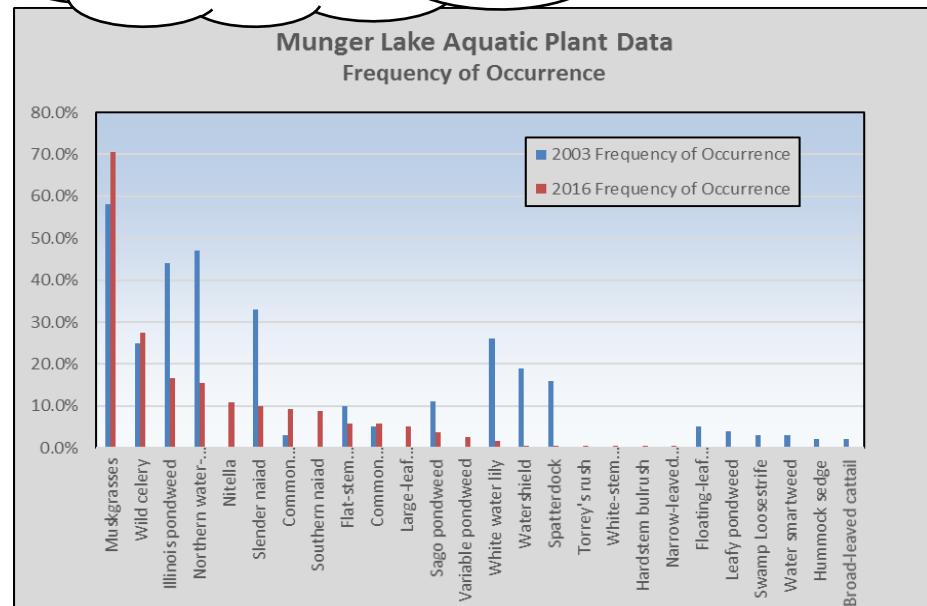
Bear Lake Aquatic Plant Survey 2017: Rake Fullness



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

Aquatic Plant Community

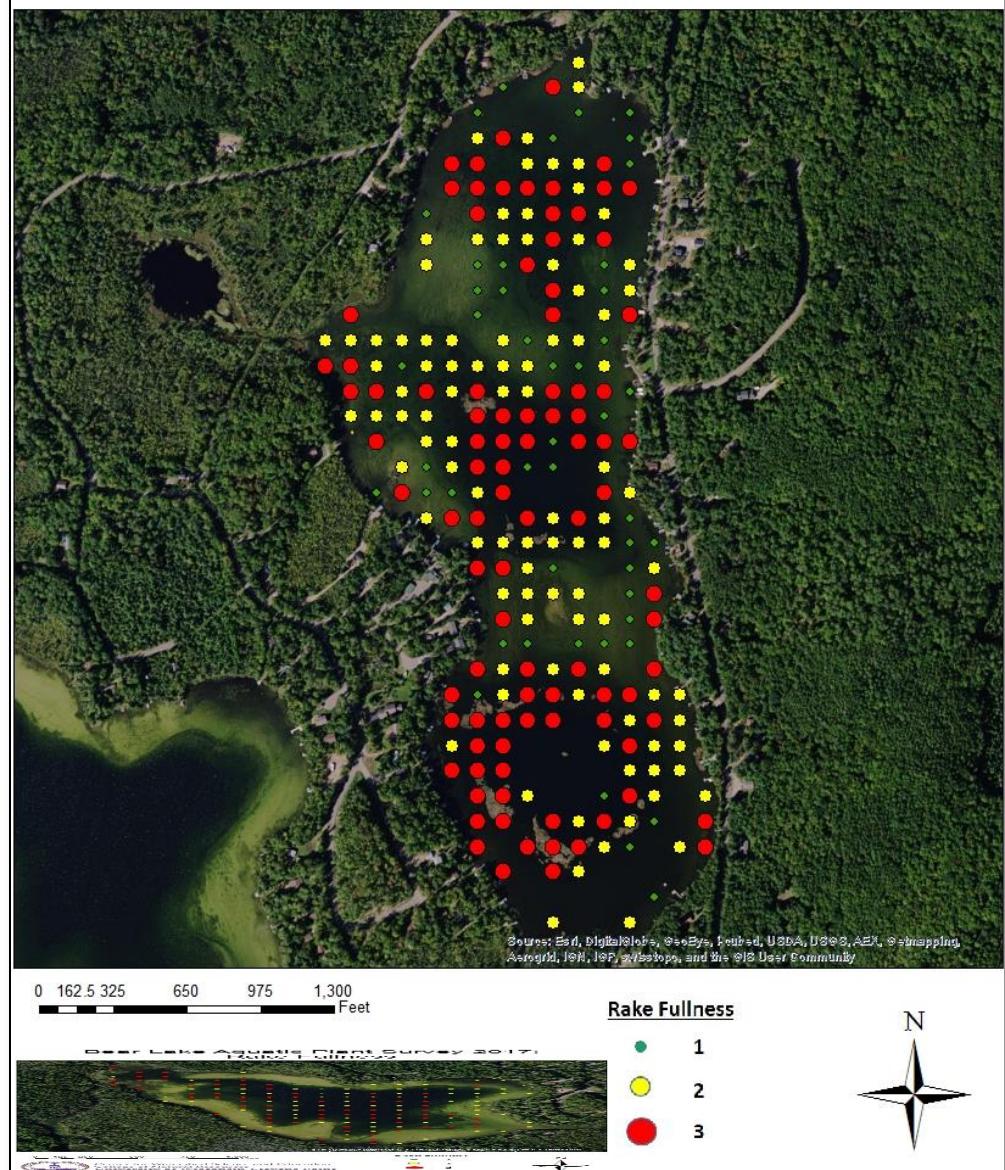
Native plants provide
essential food and habitat for
fish and wildlife.



Munger Lake 2016 Aquatic Plant Survey Highlights

- ✓ 78% (241 of 308) of the sites visited had vegetative growth. This is about average for lakes in the region.
- ✓ Greatest depth aquatic plants were found was 19.4 feet.
- ✓ 28 species of aquatic plants were identified. This is above the North Central Hardwood region average of 16.2.
- ✓ The three most dominant species were chara (70%), water celery (27%), and Illinois pondweed (16%).
- ✓ The Floristic Quality Index (FQI) was 25.9 (compared to 22.2 in 2003). The North Central Hardwood average is 23.3.
- ✓ No invasive species were observed.

Munger Lake Aquatic Plant Survey 2016: Rake Fullness



Aquatic Plant Community

Chara is a type of macro-algae that grows attached to muddy lake bottoms and has a musky odor. Muskgrass, as it is known, filters the lake water helps prevent the establishment of invasive species, and provides excellent habitat for small fish and other organisms.



Wild celery has long, thin, ribbon-like leaves that are up to four feet long. The seeds, roots and leaves are consumed by ducks and other waterfowl. Water celery provides excellent habitat for fish.

Illinois pondweed is important forage and cover for aquatic animals and an important food source for waterfowl.



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, AIS 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.

Eurasian water-milfoil

Though Eurasian water-milfoil (EWM) was documented in Munger Lake in 1992, it is seldom, if ever, seen by residents. No EWM was observed during the 2016 aquatic plant survey. A point-intercept survey per WDNR protocol is recommended every 5 years to detect changes in the plant community and detect and AIS. If EWM is found and the lake chooses to address it, it is important to separate the surveyor from the herbicide applicator or the firm who is doing the control work. This eliminates the "fox guarding the henhouse" factor.

Aquatic Plant Management in Munger/Bear Lakes

Management strategies in Munger Lake were designed to achieve a balance between healthy aquatic habitat, good water quality, and recreation. A variety of management options were discussed during the development of this plan.

The problem

Periodically, portions of Munger Lake have an abundance of native aquatic plants that can impede navigation to areas of open water. This is primarily due to unrooted water celery, chara and lilies that can be moved by the wind and accumulate in an area of the lake.

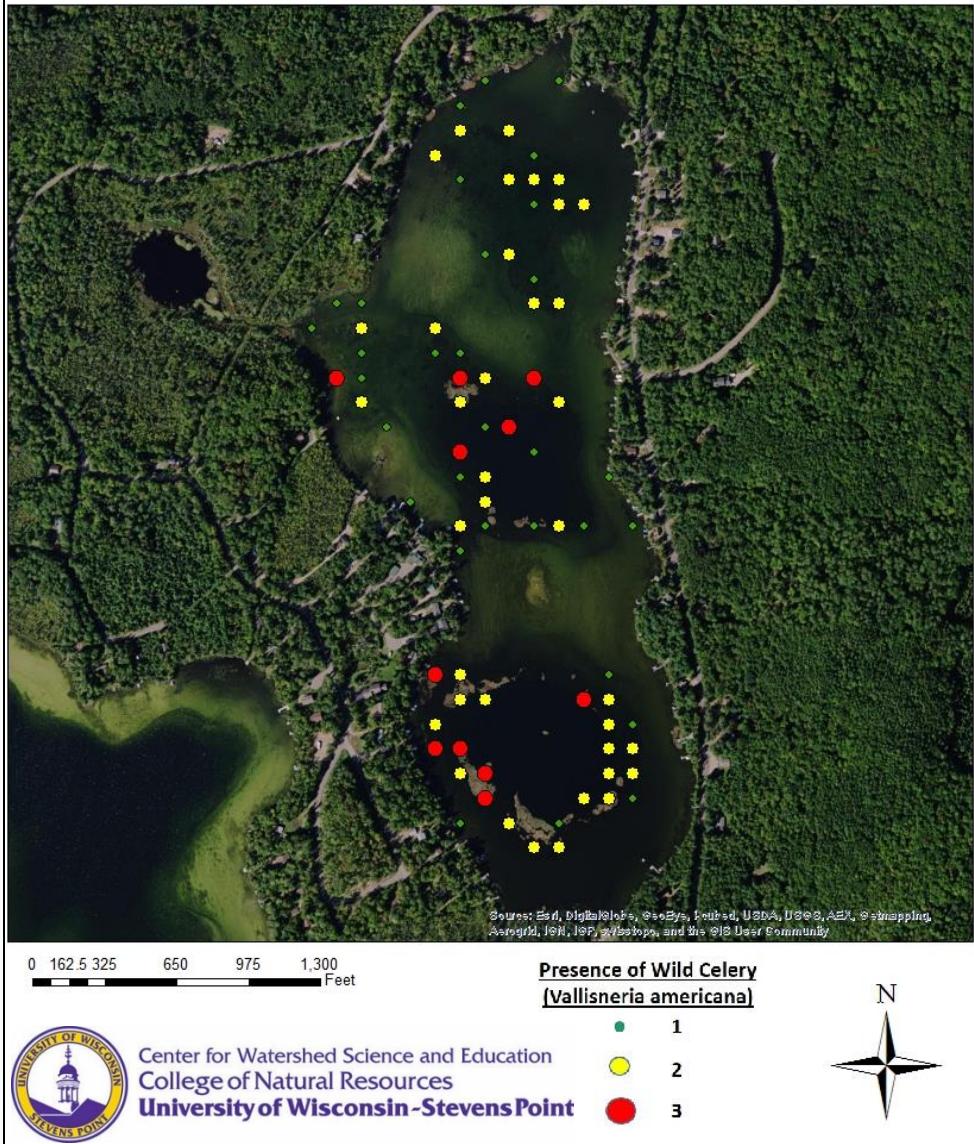
Management Options for Excessive Native Aquatic Plants

Planning session participants identified management options that offer the most practical and effective approaches for managing native plants, while minimizing impacts to Munger Lake as a whole. Depending upon conditions, the following options may be used alone or in combination with others.

Hand-pulling. No permit required.

Aquatic Plant Community

Munger Lake Aquatic Plant Survey 2016: *Vallisneria americana* (Wild celery)



Lakefront property owners are allowed to remove aquatic plants from an area no more than 30 feet wide without a permit for swimming and boat access. Any denuded lakebed is prime real estate for invasive species, however, and close monitoring is necessary to ensure no populations are established.

Mechanical Harvesting. Permit required.

While harvesting, operators should take care (by raising and lowering the harvesting bar) to minimize the impact on habitat and to reduce sediment disturbance. Harvesting in depths less than 3 feet should be avoided but may be done with care in accordance with WDNR guidance, keeping in mind sediment resuspension can lead to additional plant growth and algae blooms. A second pass should be made on harvested areas to remove plant fragments and floaters. **Areas with EWM should be avoided to prevent its fragmentation and spread** unless it is specified in the plan. Some lakes the EWM can't be target for control due to flow or location. This is when the harvester is recommended. It is another tool in the toolbox and works when used properly.

Mechanical Harvesting Plan for Navigation: Harvesting of dense plant beds that are not comprised of EWM/HWM may be conducted as needed to provide navigation. Paths from piers to open water may be cut to improve navigation and the fishery. Lanes should be no wider than 15 yards. To minimize disturbances to sediment and important fish habitat, harvesting should be avoided or conducted carefully in water depths less than 3 feet. A depth finder on the cutter end of the harvester can aid in evaluating water depths.

Skimming, target: dense floating plant material, filamentous algae. Permit required.

This mechanical removal method would be applied when targeting uprooted aquatic plants that have accumulated in parts

Aquatic Plant Community

of Munger Lake. Skimming of floating plant material can be conducted by mechanical or non-mechanical means in areas where sediment and emergent plants would not be disturbed by this activity. The surface of the lake is skimmed to collect plant material for removal from the lake. When skimming with a harvester, aquatic plants are not cut.

Aquatic Plant Management Plan Review

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

Goal 2. Munger and Bear Lakes will continue to have a healthy and diverse aquatic plant community that provides habitat and good water quality, while minimizing recreational impediments and remaining free of invasive species.

Objective 2.1 Minimize disturbance to native aquatic plants while also reducing impacts to recreation.

Actions	Lead person/group	Resources	Timeline
Inform property owners of the importance of native aquatic vegetation to impede the establishment of additional AIS, provide food and habitat for wildlife, and protect the shoreline via educational materials provided at the annual meeting and in a newsletter.	MBLD	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.	MBLD	WDNR-Brenda Nordin	Ongoing
Regularly monitor aquatic plant community to detect any changes in lake conditions and ensure stable populations. A point-intercept survey is recommended.	MBLD	WDNR-Brenda Nordin Consultants	Every 10 years if no active plant management taking place.
Reduce nutrient and sediment loading to lake (to limit abundance of plants and algae) by improving shoreland buffers (see Shorelands section) and implementing BMPs in the watershed (see Watershed section).	MBLD	WDNR-Brenda Nordin OCLCD	Ongoing

Munger Lake, a series of successful strategies should lead to a balance between healthy aquatic habitat, water quality, and recreation with minimal annual management. To evaluate if management strategies are succeeding, updates to aquatic plant point-intercept surveys should be conducted at least every five years. If chemical treatments are pursued, more frequent (pre- and post-treatment) surveys are necessary. Assistance in updating surveys can be provided by the WDNR Aquatic Plant Specialist and/or consultants.

Aquatic Plant Community

Objective 2.2 Protect against establishment of AIS.

Actions	Lead person/group	Resources	Timeline
Encourage or host training to identify and look for invasive species, particularly EWM.	MBLD	WDNR-Brenda Nordin LRCD	Summer 2019
Identify Clean Boats Clean Waters volunteers or hire someone to staff boat launch on busy days.	MBLD	CBCW	Summers
Educate landowners on importance of native aquatic plants for preventing AIS. Bring in speaker for annual meeting, mail literature to property owners, etc.	MBLD	WDNR-Brenda Nordin	Ongoing
If new AIS is suspected or observed, follow the guidance in Appendix B .	MBLD	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 neither Munger or Bear Lake have an official critical habitat area designation, there are areas within the lakes 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 examples 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 Munger and Bear Lakes, 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 Munger and Bear Lakes.

Actions	Lead person/group	Resources	Timeline
Request a Critical Habitat Designation from WDNR.	MBLD	WDNR-Brenda Nordin	2019
If critical habitat is designated on Munger or Bear Lake, communicate to property owners, visitors, and Town Board as to why these areas are important.	MBLD		TBD

Watershed

LANDSCAPES AND THE LAKE

Munger/Bear Lake Watershed

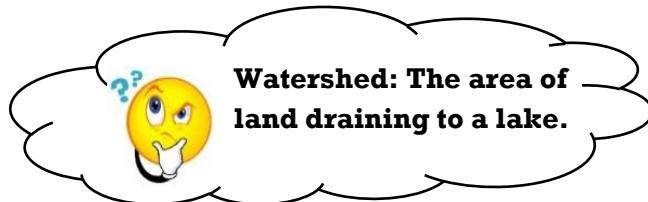
A Lake is a Reflection of its Watershed...

Understanding where a 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 Munger Lake; the ground watershed may be slightly different than the surface watershed.

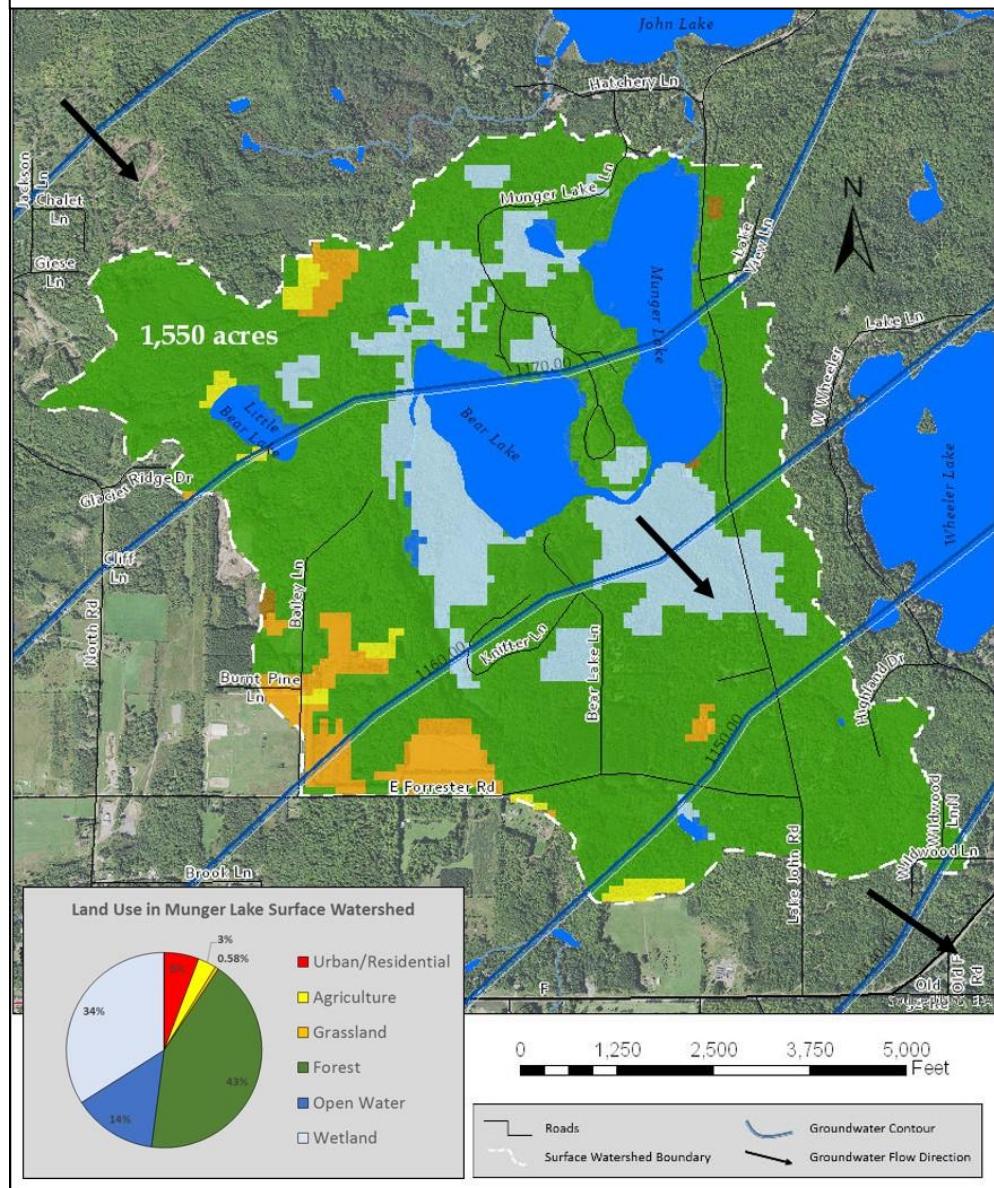
Less runoff is desirable because it allows more water to infiltrate the soils and recharge the groundwater. Groundwater then feeds the lake steadily, year-round (even during dry periods or when the lake is covered with ice). The capacity of the landscape to hold (or shed) water and filter (or contribute) particles determines the amount of erosion that may occur and the amount of groundwater feeding a lake, and, thus, the lake's water quality and quantity.

Munger/Bear Lakes' Watershed

The Munger and Bear Lake watershed is 1,550 acres. Primary land use is forest and wetland. The lakes' shoreland is surrounded primarily by developed residential lots and forest.



Munger/Bear 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 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.

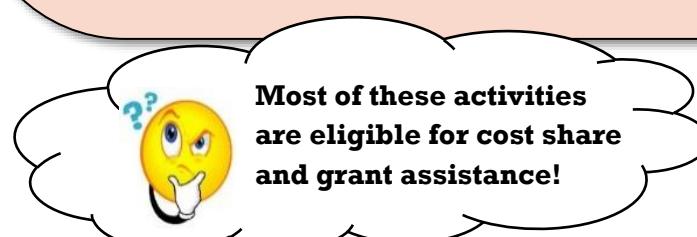
Be Part of the Solution!

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!

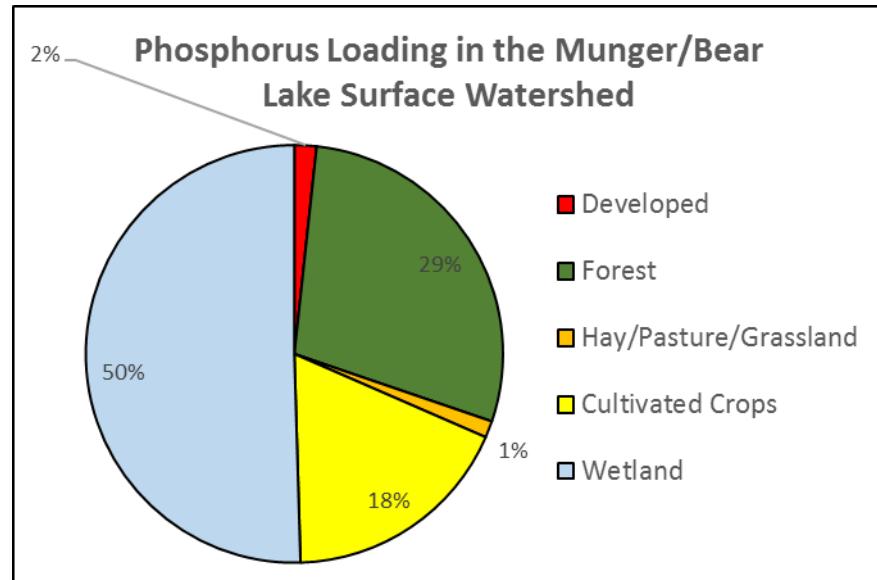
Watershed

Phosphorus Modeling

Estimates of phosphorus from the landscape can help to understand the phosphorus sources to Munger and Bear Lakes. 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).

Phosphorus Loading in Munger/Bear Lakes' Watershed

Based on modeling results, wetlands and forest had the greatest percentage of phosphorus contributions from the watershed. Though a smaller piece of the pie, efforts to reduce nutrient inputs to the lake must be focused on land uses that we have some control over such as agriculture and developed areas.



Watershed

Goal 4. Watershed and shoreland property owners will know about and utilize resources for healthy land management practices.

Objective 4.1 Support healthy land management activities in the Munger/Bear Lakes watershed to reduce sediment/nutrient loading.

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.	MBLD	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).	MBLD	WDNR Lake Protection Grants Knowles-Nelson Stewardship Fund NWLT	As needed
Encourage any new developments to manage runoff on site and consider ways to minimize impacts from septic systems on Munger and Bear Lakes.	MBLD	Town of Lakewood Developers/Builders	As needed
Protect wetlands to maintain the water budget of Munger and Bear Lakes. Any altered wetlands should be mitigated within the lake's watershed.	MBLD	WDNR	As needed
Encourage design of road and construction projects that will minimize impacts to the lakes.	MBLD	Town of Lakewood OC Highway Department/WDOT	As needed

Shorelands

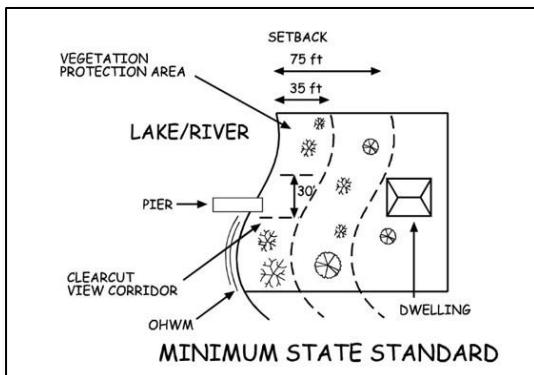
Shorelands

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 protect and improve lake water quality and habitat. To protect our lakes, county and state shoreland ordinances (NR 115) 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 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

Munger Lake 2017 Shoreland Survey Results

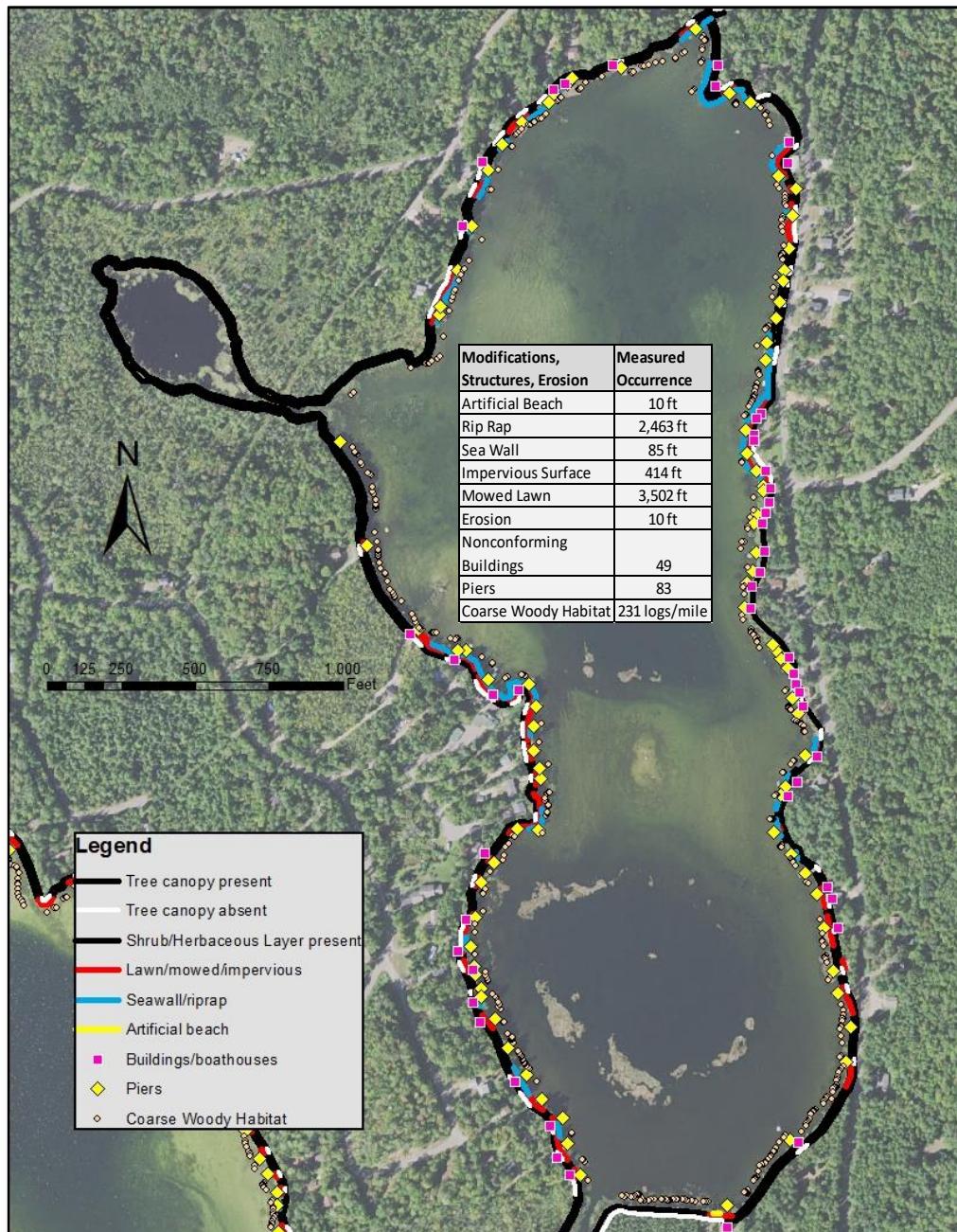
Total lakefront footage	# Riparian Lots	Total allowable (NR115) disturbed shoreline	Measured disturbed shoreline
11,188 ft	73	2,190 feet or 20%	3,916 feet or 35%

Munger Lake's Shorelands

To better understand the health of Munger Lake, shorelands were evaluated in July-August 2017. The survey inventoried shoreland vegetation, erosion, riprap, barren ground, seawalls, structures, and docks.

- With 73 lakefront lots, 2,190 feet (20%) of disturbed shoreline is permitted. Based on the 2017 shoreland inventory, 35% (3,916 feet) of Munger Lake's shoreland was mowed lawn.
- As a whole, Munger Lake had average shoreland health compared to other lakes in the study. Some stretches of Munger Lake's shorelands are in good shape, but many portions have challenges that should be addressed.

Areas that are healthy will need conservation strategies to keep them healthy. Potential problem areas where management may be warranted may need strategies for improvement.



Shorelands

Bear Lake 2017 Shoreland Survey Results

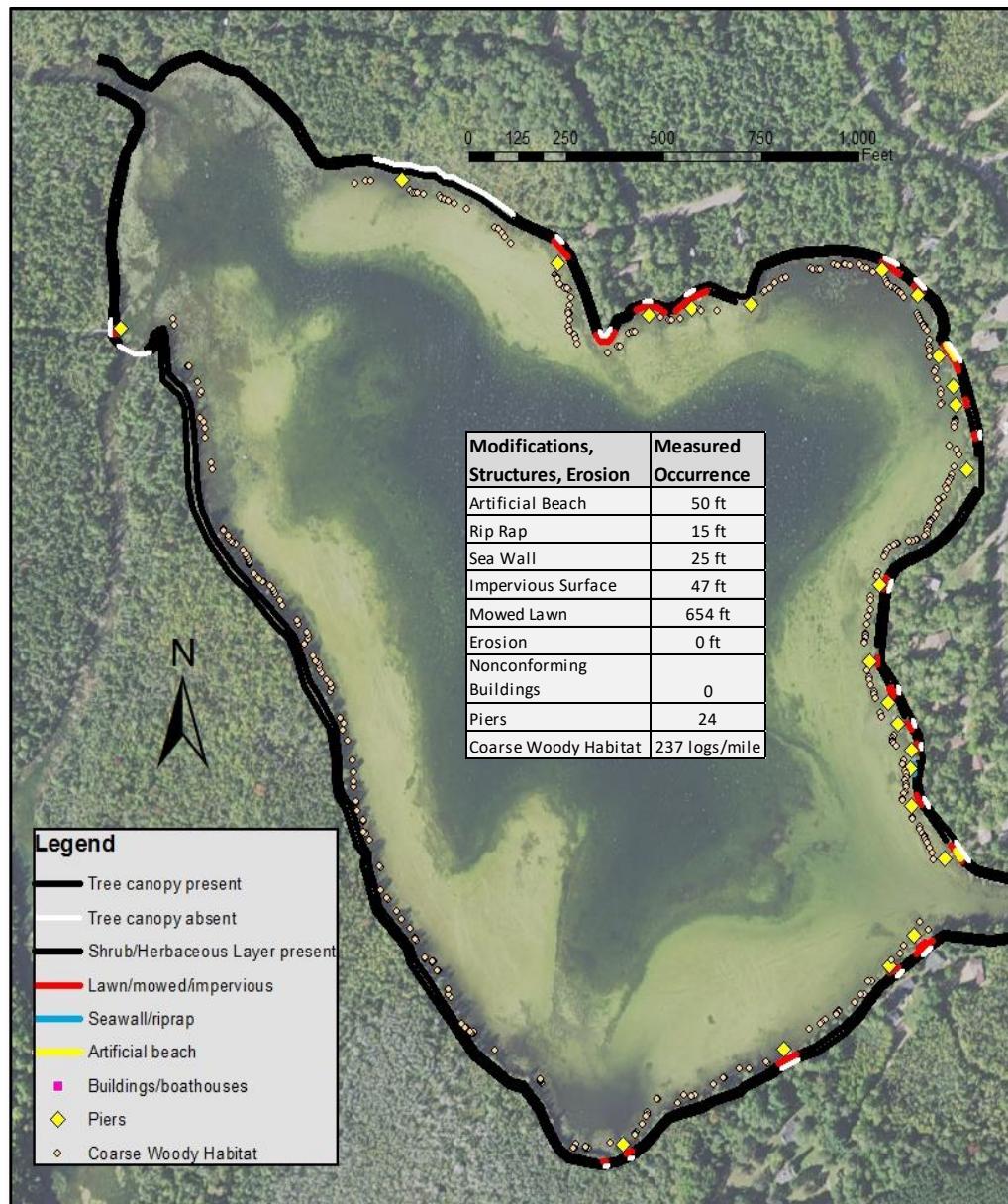
Total lakefront footage	# Riparian Lots	Total allowable (NR115) disturbed shoreline	Measured disturbed shoreline
7,786 feet	30	900 feet or 12%	1,141 feet or 15%

Bear Lake's Shorelands

To better understand the health of Bear Lake, shorelands were evaluated in July-August 2017. The survey inventoried shoreland vegetation, erosion, riprap, barren ground, seawalls, structures, and docks.

- With 30 lakefront lots, 900 feet (12%) of disturbed shoreline is permitted. Based on the 2017 shoreland inventory, 15% (1,141 feet) of Bear Lake's shoreland was disturbed.
- As a whole, Bear Lake had better shoreland health than the other lakes in the study. Most stretches of Bear Lake's shorelands are in good shape, but some portions have challenges that should be addressed. None of Bear Lake's shoreland was ranked as poor.

Areas that are healthy will need conservation strategies to keep them healthy. Potential problem areas where management may be warranted may need strategies for improvement.



Shorelands



Goal 5. Munger and Bear Lake's shorelands will become increasingly healthy over time. Over the next 5 years, 1,700 feet on Munger Lake and 240 feet on Bear Lake of mowed shoreland will be restored.

Objective 5.1 Shoreland property owners will be knowledgeable about and make good decisions regarding shoreland practices that result in good water quality and habitat.

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.	MBLD	OCLAWA UWEX Lakes Healthy Lakes grants	Ongoing
Encourage and support shoreland owners interested in shoreland restoration. Include information on how and why to create healthy shorelands in a welcome packet to new property owners.	MBLD	UWEX Lakes OCLCD WDNR Healthy Lakes Grants	Ongoing
Encourage those interested in shoreland restorations to contact the OCLCD for available resources.	MBLD	OCLCD WDNR Healthy Lakes Grants	Ongoing
Host a speaker/demonstration: "How to restore your shoreline."	MBLD	UWEX Lakes-Pat Goggin	2019
Consider restoring and showcasing a "demonstration site" with a sign at the water's edge about shoreland restoration and/or hosting a "shoreland tour".	MBLD	OCLCD UWEX Lakes-Pat Goggin WDNR Healthy Lakes Grants	2019
Explore purchase of undeveloped shoreland property.	MBLD	UWEX Lakes Knowles-Nelson Stewardship Fund	As available

Water Quality

Water Quality

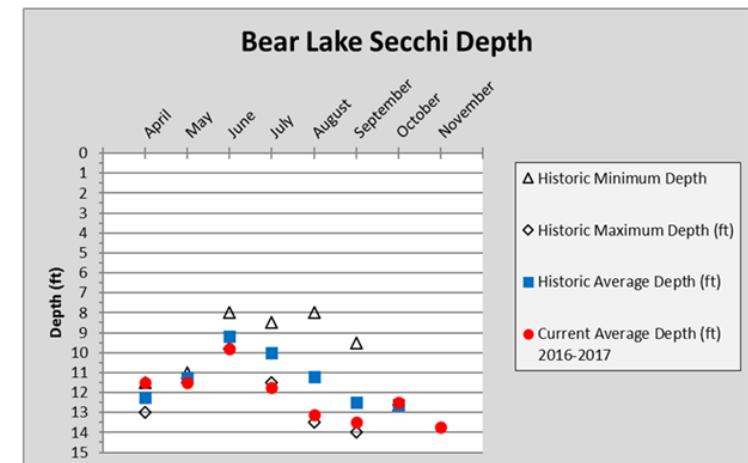
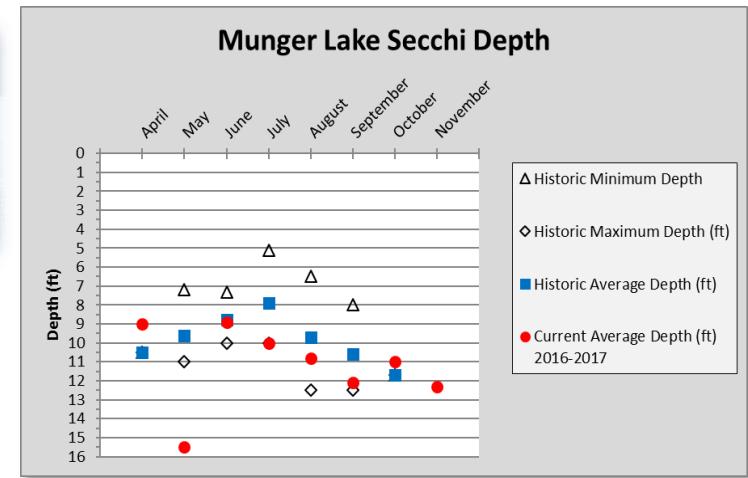
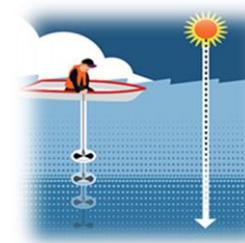
A variety of water chemistry measurements were used to characterize the water quality in Munger and Bear Lake. Water quality was assessed during the 2016-2017 lake study and involved a number of measures including temperature, dissolved oxygen, water chemistry, and nutrients (phosphorus and nitrogen). 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 Munger and Bear Lake's water quality.

Munger/Bear Lakes' Water Quality Summary

- ✓ Sufficient **dissolved oxygen** was present in at least the upper 5 feet of water at all times during the study.
- ✓ **Water clarity** ranged from 8.5-15.5 feet (considered very good) in Munger Lake and from 9-20 feet (considered very good) in Bear Lake, which is consistent with historic measurements.
- ✓ Low concentrations of **contaminants** were measured during the study. Atrazine was not detected.
- ✓ **Phosphorus** concentrations were mostly below the Wisconsin state standard of 40 ug/L for shallow drainage lakes throughout the study with one sample as high as 57 ug/L in Munger Lake in August 2017. Inorganic nitrogen remained well below concentrations that spur algal blooms.
- ✓ Water in the lake is calcium-rich (hard), which helps reduce the impacts of phosphorus.

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. Munger and Bear Lakes both see their highest water clarity at the beginning and end of the growing season with the lowest clarity measurements in June. Current data is consistent with historical observations indicating stable conditions with little change in either lake.



Water Quality

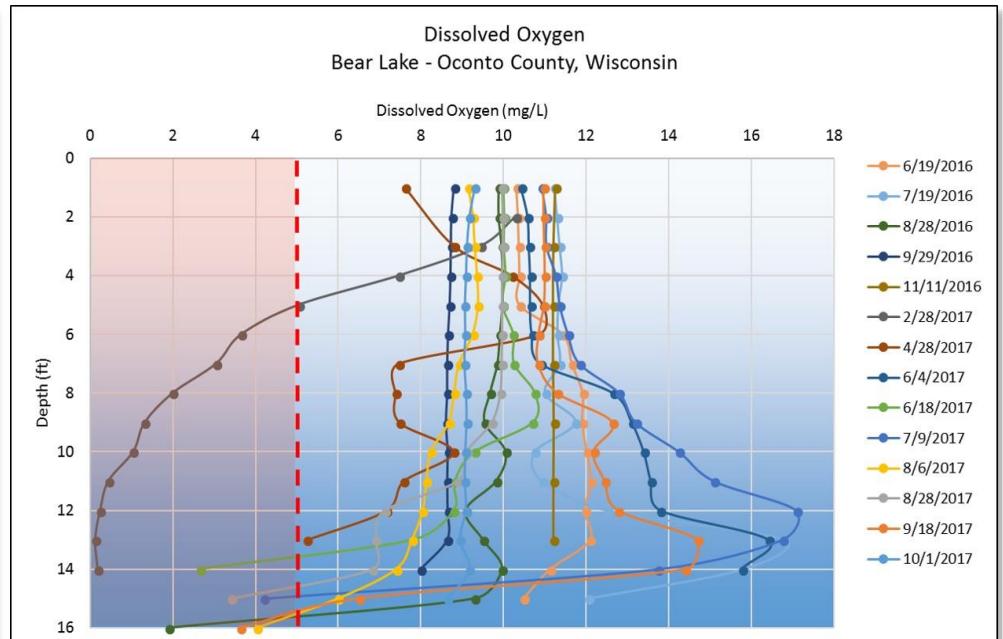
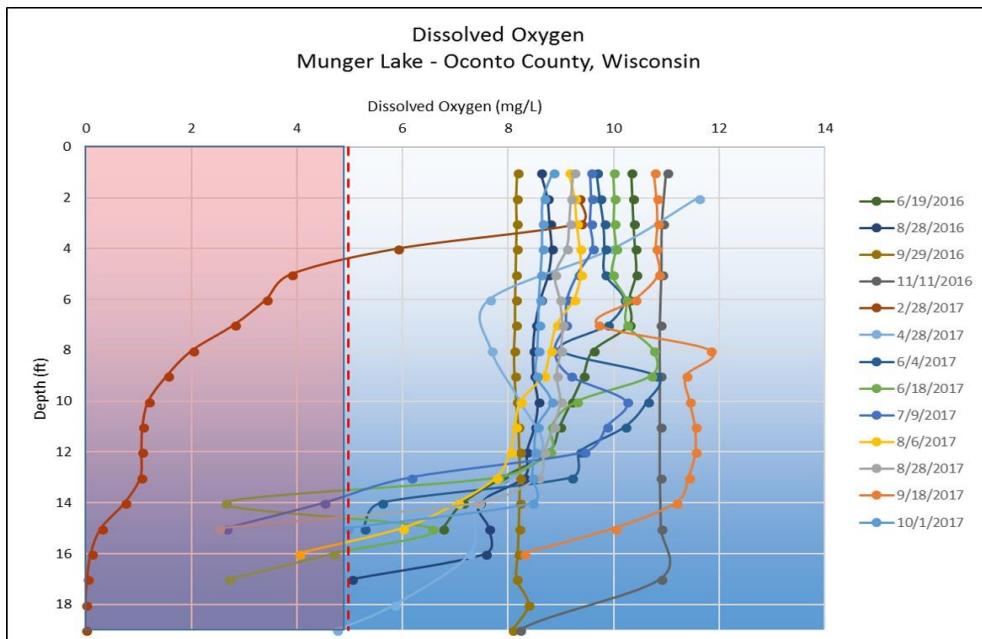
Dissolved Oxygen

Dissolved oxygen is an important measure because most 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, but the decomposition of excessive amounts of dead plants and algae reduces oxygen in the lake.

Munger and Bear Lakes both show sufficient oxygen throughout the water column most of the year, typical of shallow, mixed lakes. Oxygen levels are lowest in late winter (February profile) with as little as the top 5 feet containing sufficient oxygen for most fish.

Contaminants

Chloride, sodium, potassium and atrazine 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 usually not detrimental to the aquatic ecosystem, they indicate that sources of contaminants such as road salt, fertilizer, animal waste, septic system or pesticides effluent may be entering the lake from either surface runoff or via groundwater. Measurements of contaminants from both lakes were considered low or not detected.



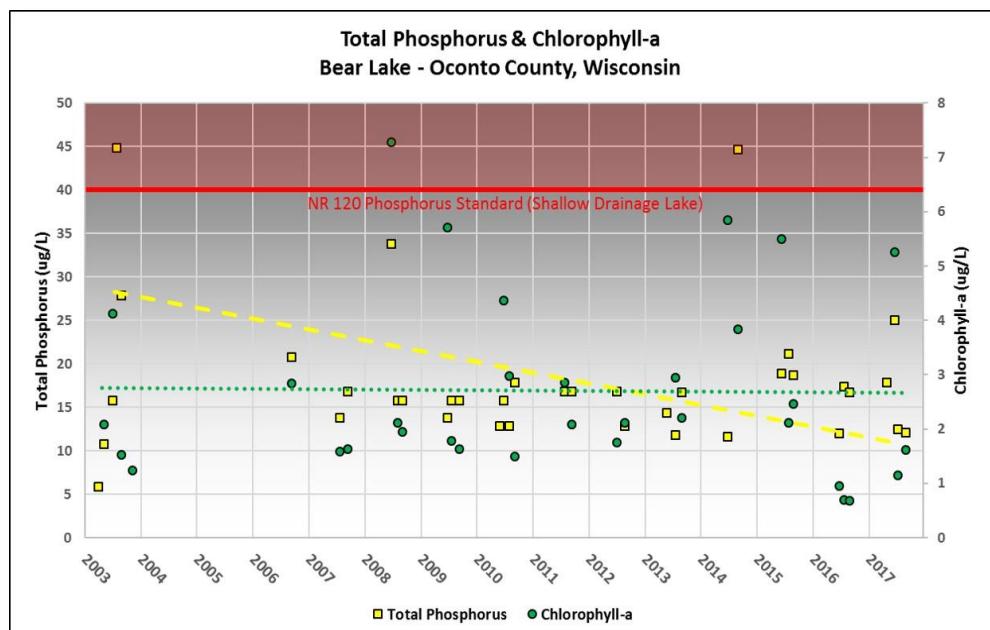
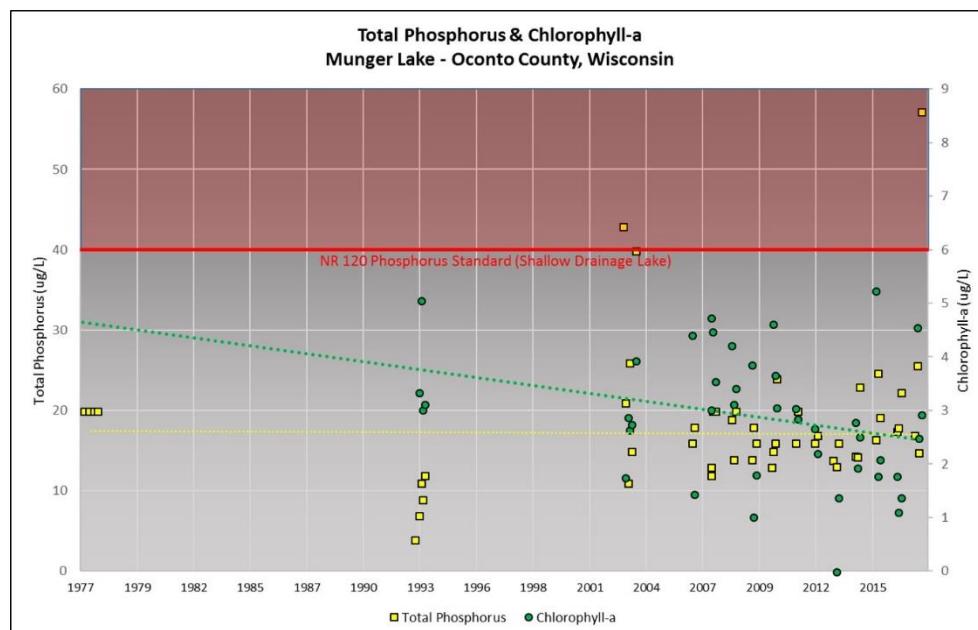
Water Quality

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. One pound of phosphorus can produce up to 500 pounds of algae. NR 120,

Wisconsin Administrative Code lists phosphorus limits for different lake types. Shallow drainage lakes such as Munger and Bear have a standard of 40 ug/L they must remain below to remain healthy. Historically, Munger and Bear Lakes have only occasionally recorded concentrations in excess of their standard. Current trends in phosphorus and chlorophyll-a are stable.

Concentrations of 0.3 mg/L inorganic nitrogen in spring are sufficient to fuel algal blooms throughout the summer. Sources of inorganic nitrogen include animal waste, septic systems/waste treatment effluent, and fertilizers. Concentrations in Munger and Bear Lakes were 0.02 mg/L and 0.03 mg/L, respectively, in 2017.



Water Quality

Be part of the solution!

Managing nitrogen, phosphorus and soil erosion throughout the Munger/Bear Lakes watershed is one of the keys to protecting the lake itself. Near shore activities that may increase the input of phosphorus to the lake include applying fertilizer, removing native vegetation (trees, bushes and grasses), mowing vegetation, and increasing the amount of exposed soil. Nitrogen inputs to a lake can be controlled by using lake-friendly land management decisions, such as the restoration of shoreland vegetation, elimination/reduction of fertilizers, proper management of animal waste and septic systems, and the use of water quality-based management practices.

Goal 6. Maintain or improve water quality in Munger and Bear Lakes.

Objective 6.1 Maintain median summer phosphorus concentrations below 40 ug/L and spring inorganic nitrogen concentrations below 0.3 mg/L. District members will be knowledgeable about their role in the water quality of Munger and Bear Lakes.

Actions	Lead person/group	Resources	Timeline
Inform others around the lake about the impact of nutrients and land management on water quality through the distribution of a District newsletter and/or hosting a guest speaker at the annual meeting.	MBLD	OCLAWA WDNR UWEX Lakes	Ongoing, 2019
Refrain from the use of fertilizers. Encourage soil testing to determine if fertilizer is necessary.	MBLD	OC UWEX	Ongoing
Encourage the restoration of unmowed vegetation to slow and absorb runoff and pollutants.	MBLD	UWEX Lakes	Ongoing

Objective 6.1 Create a robust dataset for Munger and Bear Lakes to monitor trends, declines and improvements over time.

Actions	Lead person/group	Resources	Timeline
Continue to monitor water clarity and chemistry (TP & Chl-a).	Trained volunteer	CLMN	Ongoing-summer
Submit all collected data to WDNR for storage and use.	Trained volunteer	CLMN/WDNR	Ongoing

Recreation

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 lake district, 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.

Goal 7. Lake users will be informed and respectful of Munger and Bear Lakes.

Objective 7.1 Foster an environment of compliance amongst lake users.

Actions	Lead person/group	Resources	Timeline
Work with other lake groups and towns to support/establish a recreational officer and municipal court for enforcement of regulations, including 'No Wake' and safe boat operation.	MBLD	Town of Lakewood OCLWA OC UWEX	Ongoing
Create and install signage at boat landing regarding 'No Wake' zones (all of Bear Lake and within 100 feet of shore, including the island in Munger Lake). Landowners can install a swim dock up to 200 feet from shore to protect this zone.	MBLD	Town of Lakewood WDNR	2019
Ensure signage is up-to-date and clear. Consider updating sign board/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.	MBLD	Town of Lakewood UWEX Lakes	Ongoing



Recreation

According to survey responses, the lakes are enjoyed for their scenery, wildlife, boating and fishing. There is one public boat launch located on the southeastern side of Munger Lake. Wake hours for Munger Lake are between 11am and 4pm and at no time on Bear Lake. Planning participants felt that unsafe boat operation including wake speeds too close to shore are common.

Dam

The level of Munger Lake is raised approximately 2.5' by a small dam, owned by the Munger/Bear Lake District, located at the outlet on the north end. The dam was constructed by Alfred Hansen in 1945. He later relinquished operation of the dam and gifted the land where the dam is located to the District.

Recreation

Goal 8. Optimize conditions for safe and responsible recreational use.

Objective 8.1 Maintain structures that support lake access.

Actions	Lead person/group	Resources	Timeline
Work with landowners to clear obstacles in channel between Munger and Bear Lake or establish and post a recommended boat length limit.	MBLD	WDNR	2019
Work with Town to upkeep boat ramp including placement of gravel, repair to asphalt or concrete, as appropriate. Boat ramps in disrepair can be unhealthy to the lake if it results in spinning tires, power loading, loose sediment and debris, etc.	MBLD	Town of Lakewood	2019, as needed
Maintain dam in accordance with regulatory requirements and recommendations. Maintain current water levels.	MBLD	WDNR	Ongoing

Communication & Organization

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 District, the Town of Lakewood, 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.

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

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

Goal 9. Increase participation in lake stewardship.

Objective 9.1 Develop opportunities for education and outreach among full and part-time residents.

Actions	Lead person/group	Resources	Timeline
Maintain a MBLD website to provide a common source of communication.	MBLD	LakeKit.net OC UWEX	Ongoing
Maintain an email list of shoreland property owners and others interested in Munger and Bear Lakes.	MBLD	OC UWEX	Ongoing
Share minutes (or meeting notes) from annual meeting on website and/or newsletter.	MBLD		As needed
Distribute a welcome packet/mailing to all new shoreland property owners with basic lake stewardship information/brochures.	MBLD	OC UWEX UWEX Lakes OCLCD	Ongoing
Communicate updates to lake management plan and management activities to residents and users of the lake via email list and/or newsletter.	MBLD		Ongoing
Host an annual meeting to discuss lake management and opportunities for shoreland property owners.	MBLD		Annually
Host gatherings to learn about topics identified in this plan. Invite speakers or conduct demonstrations.	MBLD	UWEX Lakes WDNR OCLCD	As needed

Communication & Organization

Objective 9.2. Achieve good communication with clubs, municipalities, agency staff, elected officials, and organizations interested in Munger and Bear Lakes or lake health.

Actions	Lead person/group	Resources	Timeline
Network with other lake groups in Oconto County by having Munger and Bear Lakes represented at OCLWA.	MBLD	OC UWEX	Quarterly
Network with other lakes in the state to learn lake management strategies, etc. by having a representative attend the Wisconsin Lake Convention.	MBLD	UWEX Lakes	Annually
Consider nominating an individual from Munger or Bear Lakes for the Lake Leaders Institute.	MBLD	UWEX Lakes	

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 10. Review plan annually and update as needed.

Objective 10.1 Communicate updates with lake community, Oconto County and WDNR.

Actions	Lead person/group	Resources	Timeline
Review plan at annual meeting and discuss accomplishments and identification of goals/objectives/actions for coming year.	MBLD		Annually
Formally update this plan every 5 years.	MBLD	OC UWEX UWEX Lakes WDNR	2023

References

REFERENCES

Boat Ed, 2013. The Handbook of Wisconsin Boating Laws and Responsibilities. Approved by Wisconsin Department of Natural Resources. www.boat-ed.com

Borman, Susan, Robert Korth, and Jo Temte, 2001. Through the looking glass, a field guide to aquatic plants. Reindl Printing, Inc., Merrill, Wisconsin.

Dolata, Ken, Mohr, Dale and Turyk, Nancy, 2018. Operational Strategy and Plan for Surface Water Management and Protection in Oconto County.

Haney, Ryan, 2018. Munger Lake Study Summary Report. Center for Watershed Science and Education-University of Wisconsin-Stevens Point.

Haney, Ryan, 2018. Bear Lake Study Summary Report. Center for Watershed Science and Education-University of Wisconsin-Stevens Point.

Long, Christopher, 2009. Bear and Munger Lakes Fish Management Report. Wisconsin Department of Natural Resources.

Haney, Ryan, 2017. Aquatic Plant Survey of Munger Lake, Oconto County. Center for Watershed Science and Education-University of Wisconsin-Stevens Point.

Haney, Ryan, 2018. State of the Oconto County Lakes. Center for Watershed Science and Education-University of Wisconsin-Stevens Point.

Haney, Ryan, 2017. Aquatic Plant Survey of Bear Lake, Oconto County. Center for Watershed Science and Education-University of Wisconsin-Stevens Point.

Onterra, LLC. May 2005. Munger and Bear Lakes Comprehensive Lake Management Plans.

Panuska and Lillie, 1995. Phosphorus Loadings from Wisconsin Watershed: Recommended Phosphorus Export Coefficients for Agricultural and Forested Watersheds. Bulletin Number 38, Bureau of Research, Wisconsin Department of Natural Resources.

Public Service Commission of Wisconsin, 1948. Opinions and Decisions of the Public Service Commission of Wisconsin, Volume XXXII. 410 pp.

Shaw, B., C. Mechenich, and L. Klessig, 2000. Understanding Lake Data. University of Wisconsin-Extension, Stevens Point. 20 pp.

Appendices

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
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

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
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
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

Contact: Brenda Nordin
Wisconsin Department of Natural Resources
Phone: 920-360-3167
E-mail: 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
Website: <http://dnr.wi.gov/lakes/plants/>

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

Contact: Ken Dolata
Oconto County Land Conservation Department
410 ½ East Main Street, Lena, WI 54139
Phone: 920-834-7152
E-mail: 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
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
Website: <http://dnr.wi.gov/org/land/facilities/boataccess/>

Appendices-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
Website: <http://gatheringwaters.org/>

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

Contact: Patrick Sorge
Wisconsin Department of Natural Resources
PO Box 4001, Eau Claire, WI 54702
Phone: 715-839-3794
E-mail: Patrick.Sorge@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
Website: 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

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
Website: <http://dnr.wi.gov/org/water/wm/dsfn/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@co.oconto.wi.us
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
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
Website: WFTS@wisconsin.gov

Grants

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

Appendices-Appendix A

Contact: Ken Dolata
Oconto County Land Conservation Department
410 ½ East Main Street, Lena, WI 54139
Phone: 920-834-7152
E-mail: 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
Website: <http://www.uwsp.edu/cnr/watersheds/>

Groundwater Levels/Quantity

Contact: Ken Dolata
Oconto County Land Conservation Department
410 ½ East Main Street, Lena, WI 54139
Phone: 920-834-7152
E-mail: 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

Informational Packets

Contact: UW Extension - Lakes
TNR 224, 800 Reserve St. Stevens Point, WI 54481
Phone: 715-346-2116
E-mail: 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@co.oconto.wi.us
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
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
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
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/>

Appendices-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
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
Website: <http://www.uwsp.edu/cnr/landcenter/>

Nutrient Management Plans

Contact: Ken Dolata
Oconto County Land Conservation Department
410 ½ East Main Street, Lena, WI 54139
Phone: 920-834-7152
E-mail: 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
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

Website: www.newlt.org

Purchase of Land

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

Rain Gardens and Stormwater Runoff

Contact: Ken Dolata
Oconto County Land Conservation Department
410 ½ East Main Street, Lena, WI 54139
Phone: 920-834-7152
E-mail: 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
Website: <http://www.co.waushara.wi.us/zoning.htm>

Shoreland Management

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

Shoreland Vegetation

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

Appendices-Appendix A

Shoreland Zoning Ordinances

See: Land Use Plans and Zoning Ordinances

Soil Fertility Testing

Contact: Dale Mohr

Oconto County UW- Extension

301 Washington Street, Oconto, WI 54153

Phone: 920-835-6845

E-mail: dale.mohr@co.oconto.wi.us

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

Water Quality Problems

Contact: Brenda Nordin

Wisconsin Department of Natural Resources

Phone: 920-360-3167

E-mail: 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

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

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

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

Appendices-Appendix B

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)

Appendices-Appendix B

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

**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

Appendices-Appendix C

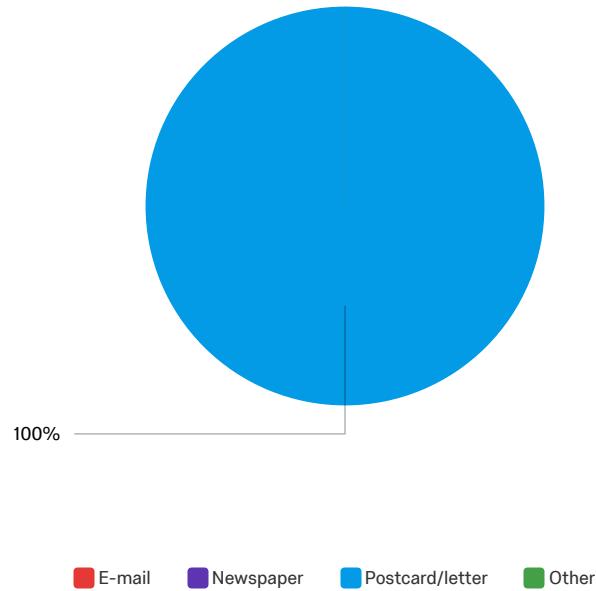
Appendix C. Lake User Survey Results

Default Report

Bear Lake Survey - Oconto County Lakes Project

June 19, 2018 10:11 AM MDT

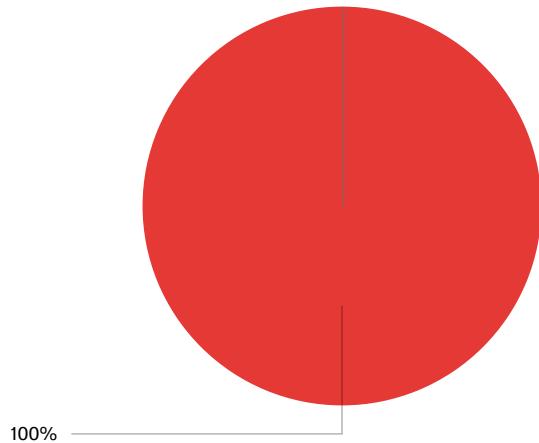
Q2 - How did you hear about this survey?



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

Showing Rows: 1 - 5 Of 5

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% 4
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
		4

Showing Rows: 1 - 5 Of 5

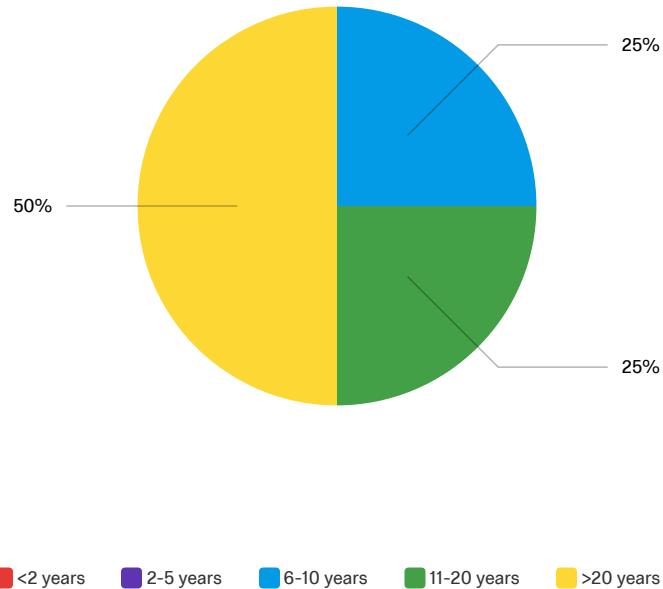
Q4 - If you own or rent property near the lake, is this property your...



#	Field	Choice Count
1	Permanent residence	0% 0
2	Part-time residence	100% 4
3	I do not own or rent property near the lake	0% 0
		4

Showing Rows: 1 - 4 Of 4

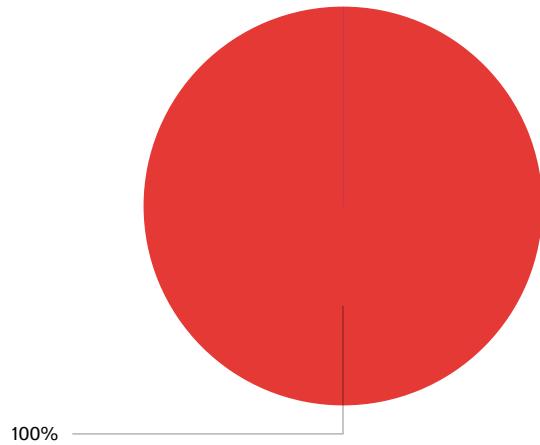
Q5 - How long have you lived on, visited or recreated on the lake?



#	Field	Choice	Count
1	<2 years	0%	0
2	2-5 years	0%	0
3	6-10 years	25%	1
4	11-20 years	25%	1
5	>20 years	50%	2
			4

Showing Rows: 1 - 6 Of 6

Q6 - Are you a member of the Bear/Munger Lake District?

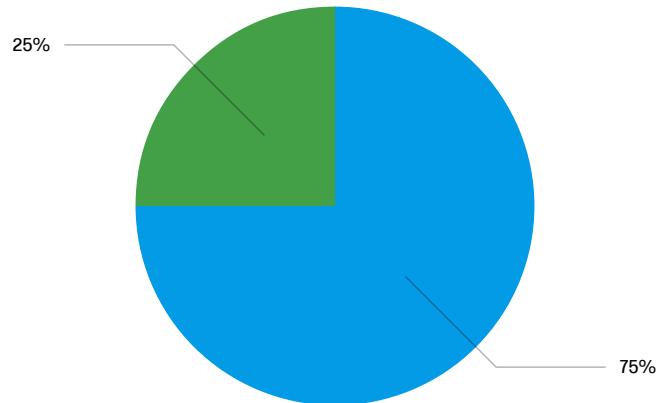


■ Yes ■ No

#	Field	Choice Count	
1	Yes	100%	4
2	No	0%	0

Showing Rows: 1 - 3 Of 3

Q8 - Which category below includes your age?

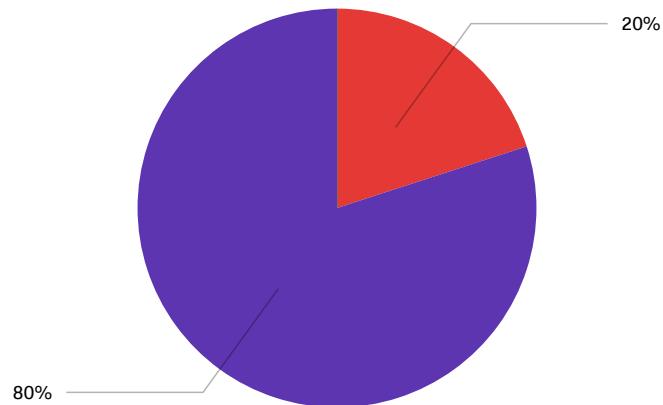


■ Under 18 ■ 18 - 40 ■ 41-65 ■ 65 or older

#	Field	Choice Count
1	Under 18	0% 0
2	18 - 40	0% 0
3	41-65	75% 3
4	65 or older	25% 1
		4

Showing Rows: 1 - 5 Of 5

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

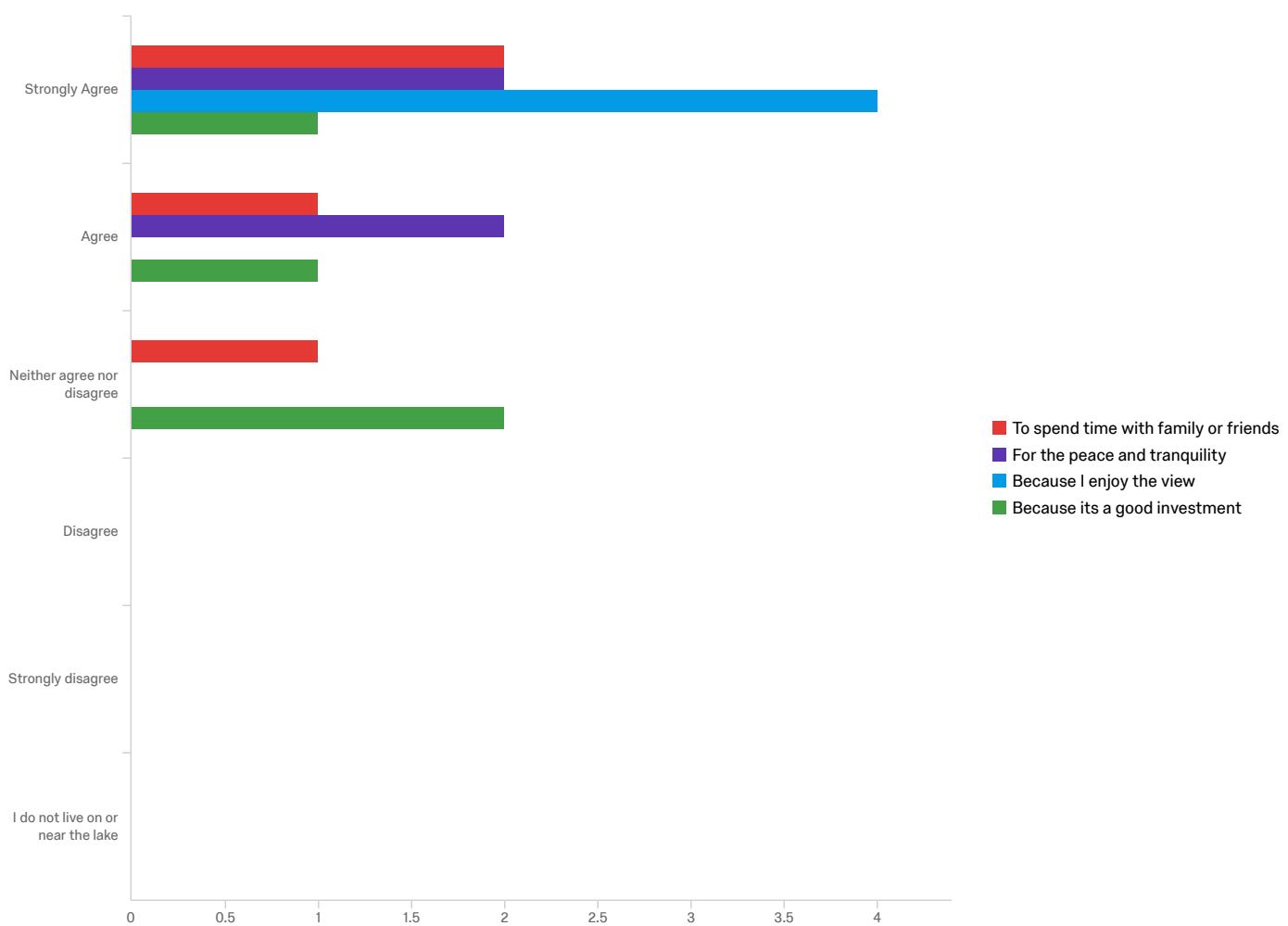


■ Alone ■ With family ■ With friends ■ With members of a club

#	Field	Choice	Count
1	Alone	20%	1
2	With family	80%	4
3	With friends	0%	0
4	With members of a club	0%	0
			5

Showing Rows: 1 - 5 Of 5

Q10 - I 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	50% 2	25% 1	25% 1	0% 0	0% 0	0% 0	4
2	For the peace and tranquility	50% 2	50% 2	0% 0	0% 0	0% 0	0% 0	4
3	Because I enjoy the view	100% 4	0% 0	0% 0	0% 0	0% 0	0% 0	4
4	Because its a good investment	25% 1	25% 1	50% 2	0% 0	0% 0	0% 0	4

Showing Rows: 1 - 4 Of 4

Q11 - What do you value most about Bear Lake?

What do you value most about Bear Lake?

Beauty and tranquility

Family time (4 kids are now grown), so now time with son and his family

Clean, Clear, no-wake, pan fish-not walleyes. **very few residences .

Showing Records: 1 - 3 Of 3

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 Bear Lake? *Not Present means that you believe the issue does not exist on Bear Lake**No Impact means that the issue may exist, but is not negatively impacting Bear Lake

#	Field	*Not Present	**No Impact	Slight negative impact	Moderate negative impact	Great negative impact	Unsure	Total
1	Water quality degradation	50% 2	25% 1	25% 1	0% 0	0% 0	0% 0	4
2	Loss of aquatic habitat	0% 0	50% 2	25% 1	25% 1	0% 0	0% 0	4
3	Shoreline erosion	25% 1	50% 2	0% 0	25% 1	0% 0	0% 0	4
4	Development	0% 0	25% 1	50% 2	25% 1	0% 0	0% 0	4
5	Aquatic invasive species	25% 1	25% 1	0% 0	0% 0	25% 1	25% 1	4
6	Excessive watercraft traffic	25% 1	0% 0	25% 1	50% 2	0% 0	0% 0	4
7	Unsafe watercraft operation	25% 1	25% 1	50% 2	0% 0	0% 0	0% 0	4
8	Excessive fishing pressure	0% 0	0% 0	75% 3	0% 0	25% 1	0% 0	4
9	Excessive aquatic plant growth	0% 0	50% 2	25% 1	0% 0	0% 0	25% 1	4
10	Algae blooms	0% 0	25% 1	75% 3	0% 0	0% 0	0% 0	4
11	Septic system discharge	0% 0	25% 1	50% 2	0% 0	0% 0	25% 1	4
12	Excessive noise/light pollution	50% 2	25% 1	0% 0	0% 0	25% 1	0% 0	4

Showing Rows: 1 - 12 Of 12

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

Major impact

Some impact

No impact

NO DATA

Unsure

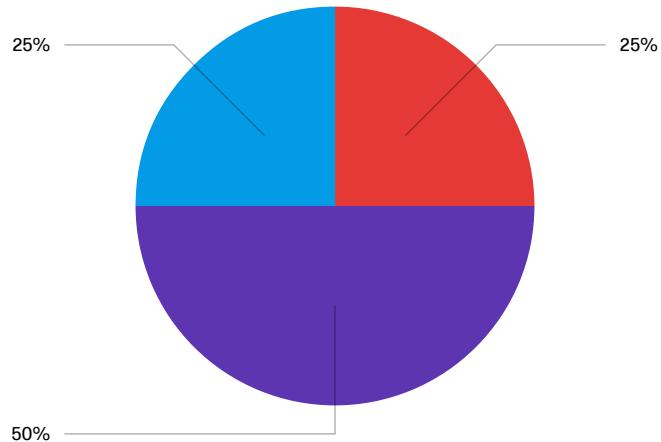
NO DATA

 Personal enjoyment value  Economic value

#	Field	Major impact	Some impact	No impact	Unsure	Total
1	Personal enjoyment value	100% 4	0% 0	0% 0	0% 0	4
2	Economic value	75% 3	25% 1	0% 0	0% 0	4

Showing Rows: 1 - 2 Of 2

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

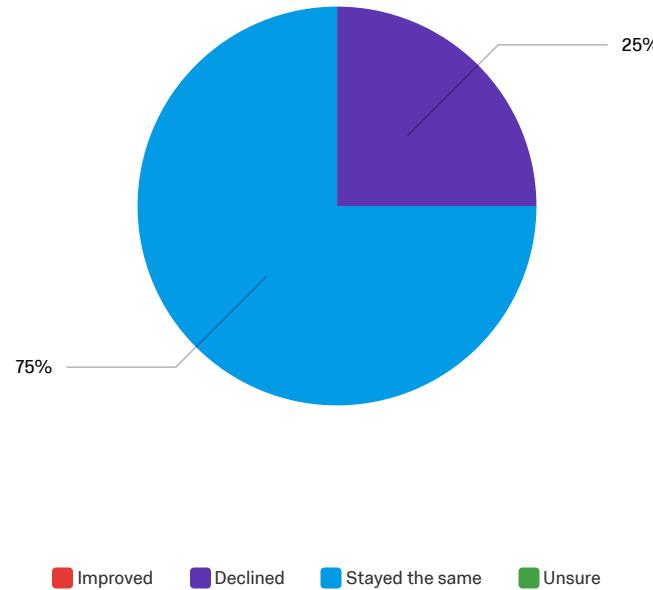


- █ Beautiful, could not be any nicer
- █ Very minor aesthetic problems; excellent for swimming and boating enjoyment
- █ Enjoyment of the lake is moderately impaired because of algae or other water quality problems
- █ Enjoyment of the lake is substantially impaired because of algae or other water quality problems

#	Field	Choice	Count
1	Beautiful, could not be any nicer	25%	1
2	Very minor aesthetic problems; excellent for swimming and boating enjoyment	50%	2
3	Enjoyment of the lake is moderately impaired because of algae or other water quality problems	25%	1
4	Enjoyment of the lake is substantially impaired because of algae or other water quality problems	0%	0
			4

Showing Rows: 1 - 5 Of 5

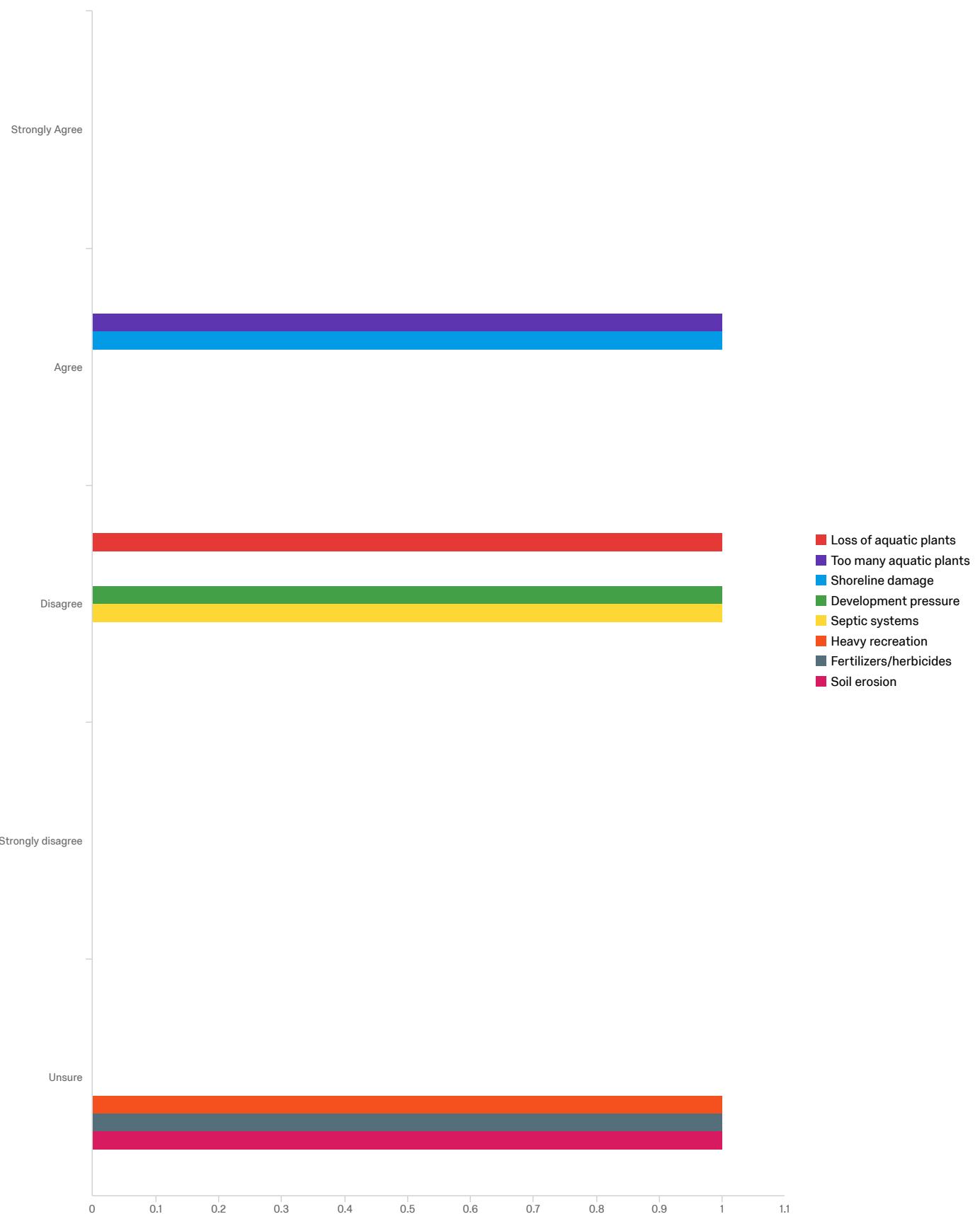
Q18 - During the time that you have lived on, visited or recreated on the lake, how would you say the water quality has changed?



#	Field	Choice	Count
1	Improved	0%	0
2	Declined	25%	1
3	Stayed the same	75%	3
4	Unsure	0%	0
			4

Showing Rows: 1 - 5 Of 5

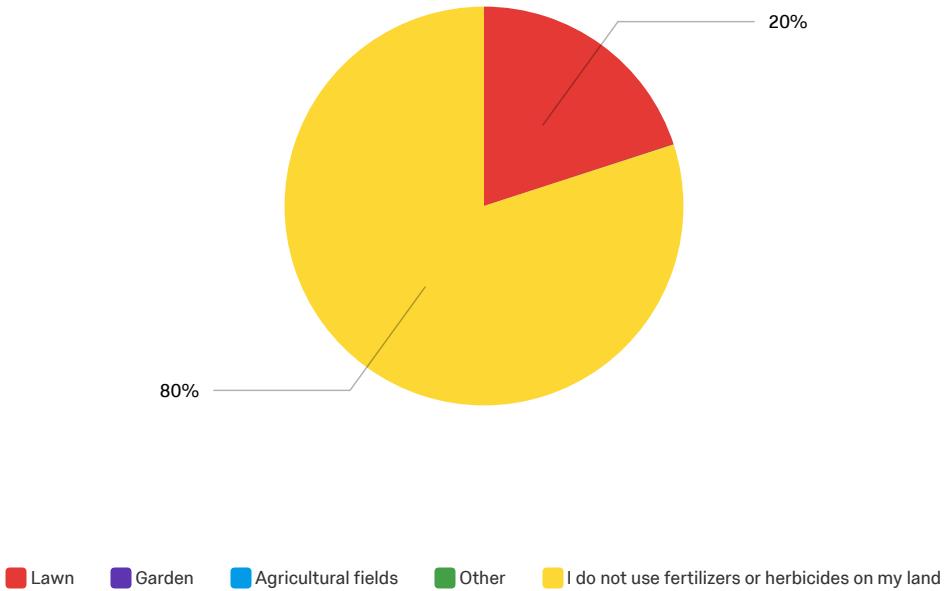
Q19 - If you think it has declined, what, in your opinion, are the primary causes?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Loss of aquatic plants	0% 0	0% 0	100% 1	0% 0	0% 0	1
2	Too many aquatic plants	0% 0	100% 1	0% 0	0% 0	0% 0	1
3	Shoreline damage	0% 0	100% 1	0% 0	0% 0	0% 0	1
4	Development pressure	0% 0	0% 0	100% 1	0% 0	0% 0	1
5	Septic systems	0% 0	0% 0	100% 1	0% 0	0% 0	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

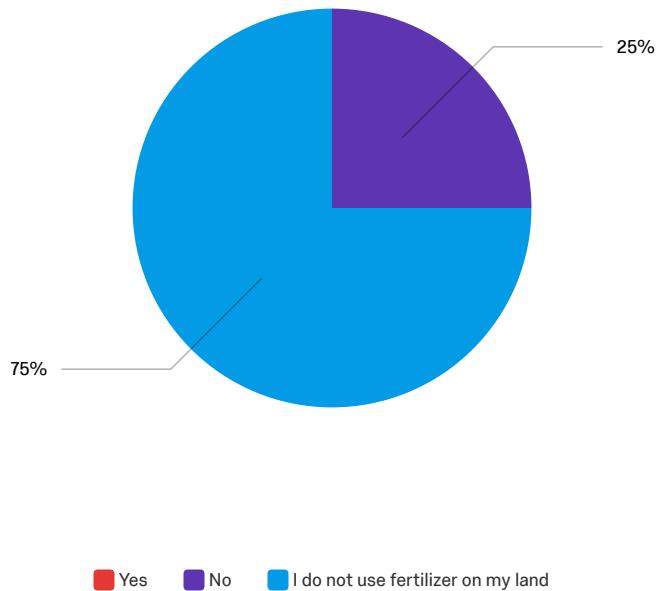
Q20 - If you use fertilizers or herbicides on your land, where are they applied?



#	Field	Choice	Count
1	Lawn	20%	1
2	Garden	0%	0
3	Agricultural fields	0%	0
4	Other	0%	0
5	I do not use fertilizers or herbicides on my land	80%	4
			5

Showing Rows: 1 - 6 Of 6

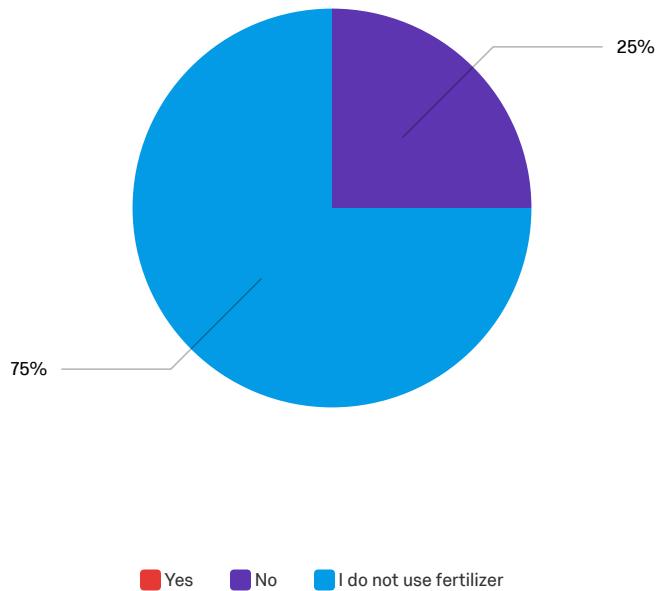
Q21 - Do you use fertilizer that contains phosphorus?



#	Field	Choice	Count
1	Yes	0%	0
2	No	25%	1
4	I do not use fertilizer on my land	75%	3

Showing Rows: 1 - 4 Of 4

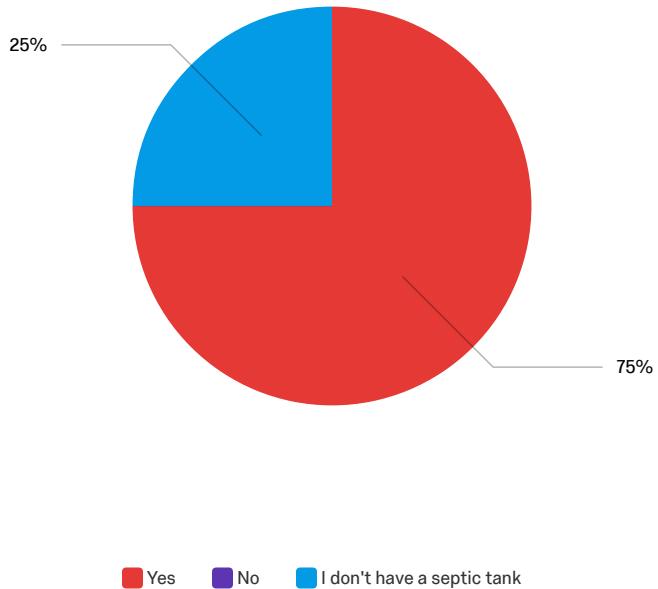
Q23 - Have you had your soil tested before using fertilizer?



#	Field	Choice	Count
1	Yes	0%	0
2	No	25%	1
3	I do not use fertilizer	75%	3

Showing Rows: 1 - 4 Of 4

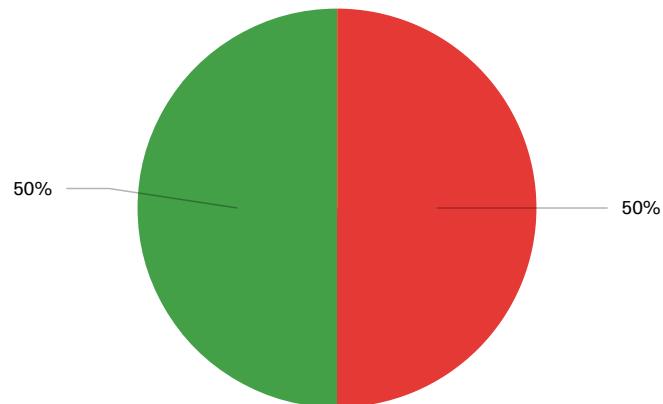
Q22 - Do you have your septic tank pumped regularly (at least every 3 years)?



#	Field	Choice Count
1	Yes	75% 3
2	No	0% 0
3	I don't have a septic tank	25% 1

Showing Rows: 1 - 4 Of 4

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

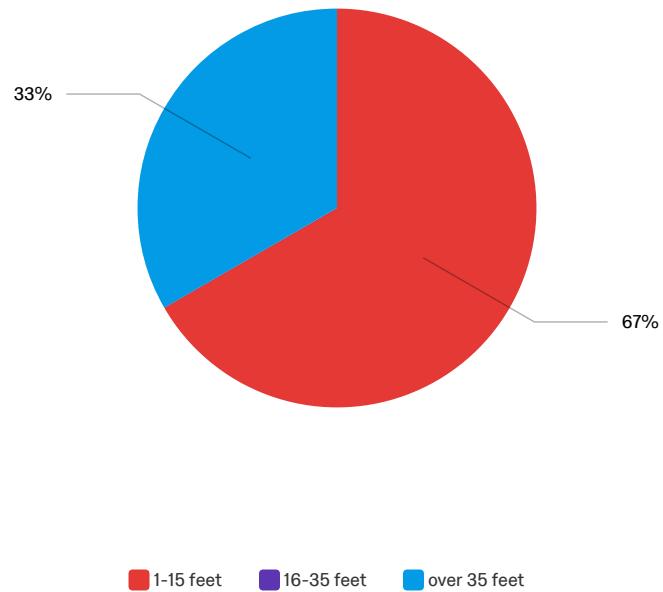


■ Mowed or weed-whacked ■ Natural except for access path ■ Restored shoreland/planted/landscaped

#	Field	Choice Count
1	Mowed or weed-whacked	50% 2
2	Natural except for access path	50% 2
3	Restored shoreland/planted/landscaped	0% 0
		4

Showing Rows: 1 - 4 Of 4

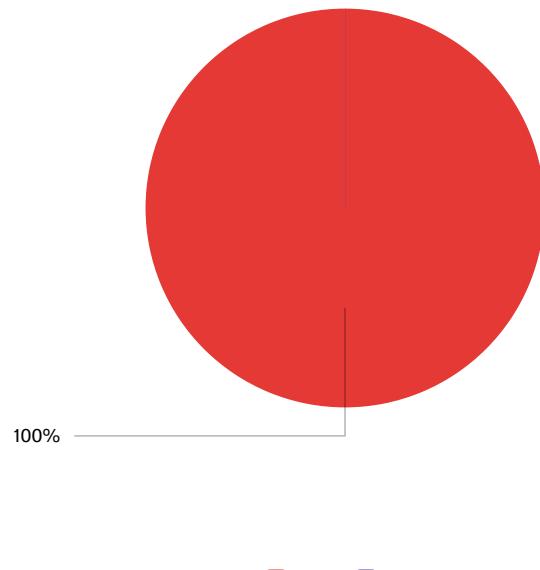
Q26 - If you have unmowed shoreland vegetation, how far inland from the water's edge does it extend?



#	Field	Choice	Count
1	1-15 feet	67%	2
2	16-35 feet	0%	0
3	over 35 feet	33%	1
			3

Showing Rows: 1 - 4 Of 4

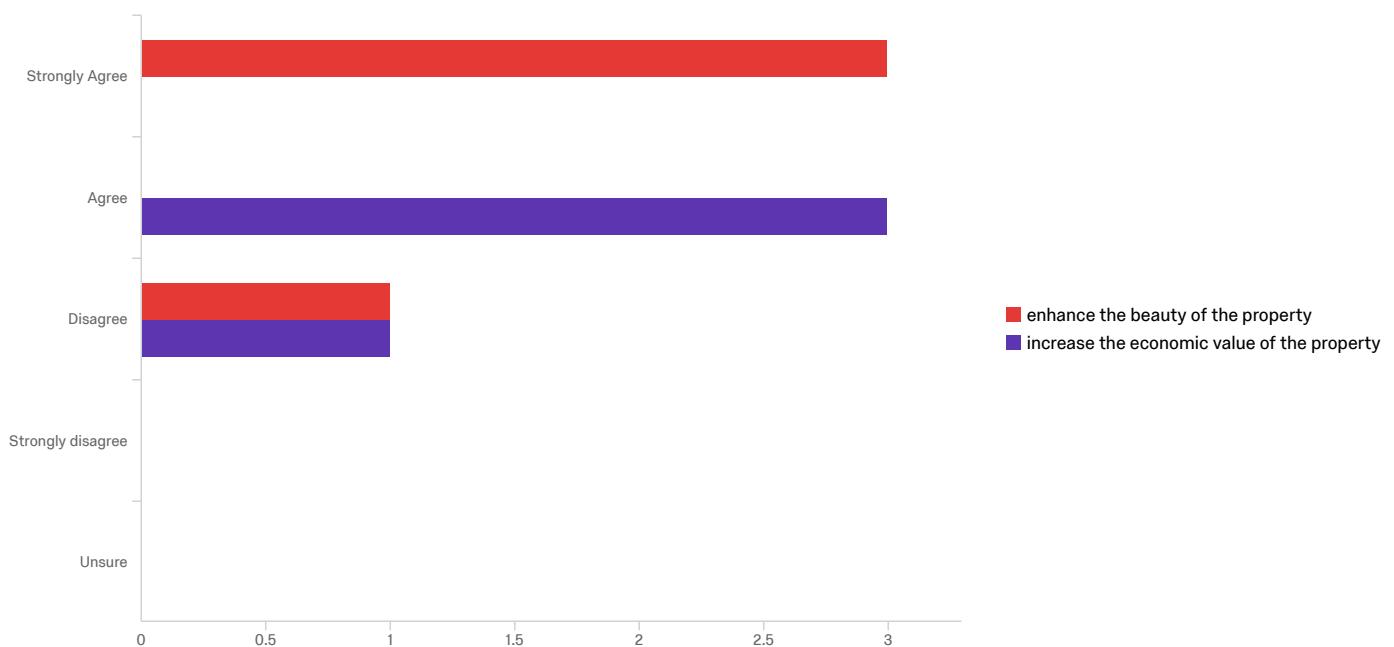
Q31 - Do you have woody structure such as fallen trees or large branches at the water's edge along your property?



#	Field	Choice Count
1	Yes	100% 4
2	No	0% 0

Showing Rows: 1 - 3 Of 3

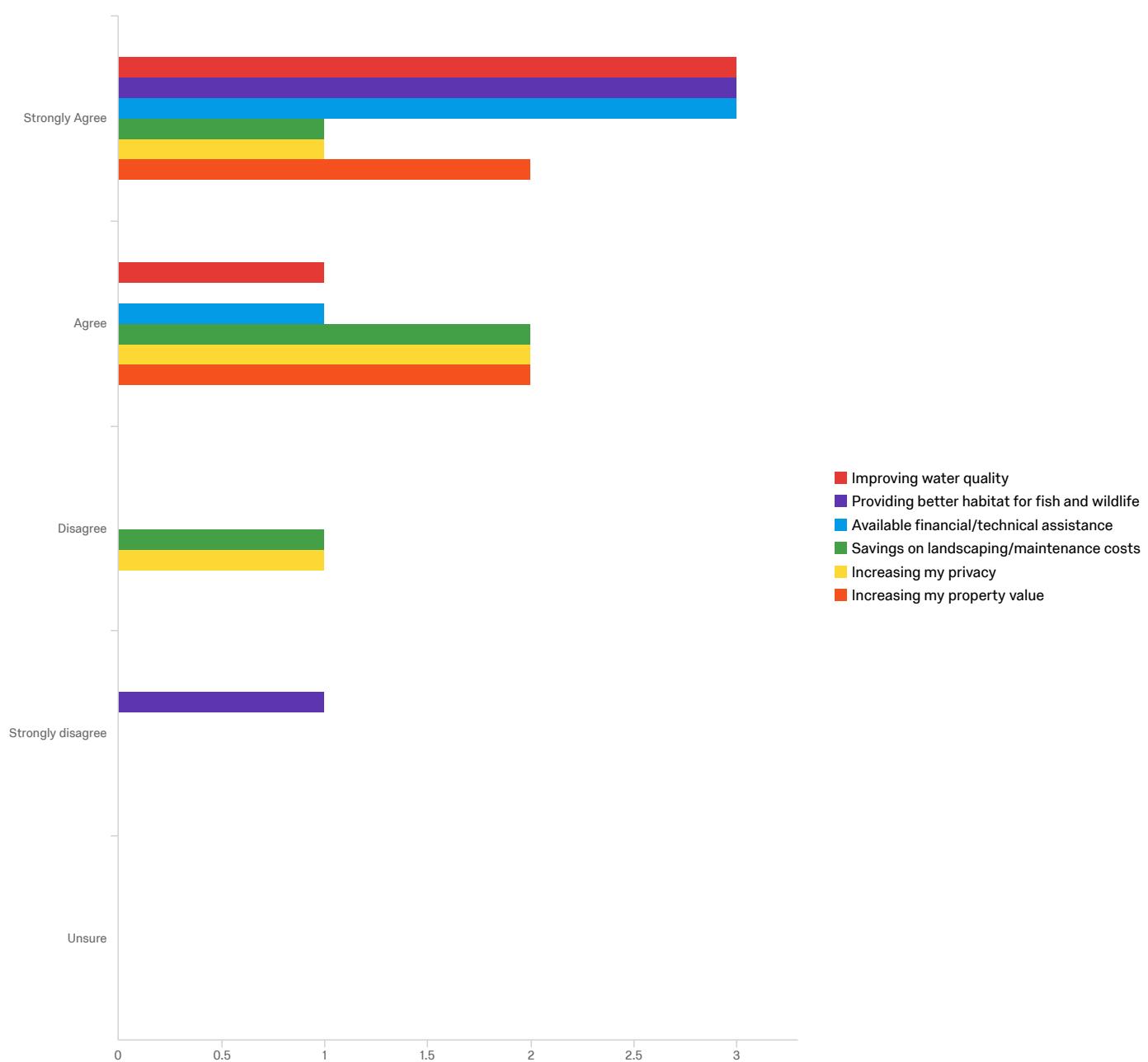
Q27 - In your opinion, does shoreland vegetation...



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	enhance the beauty of the property	75% 3	0% 0	25% 1	0% 0	0% 0	4
2	increase the economic value of the property	0% 0	75% 3	25% 1	0% 0	0% 0	4

Showing Rows: 1 - 2 Of 2

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

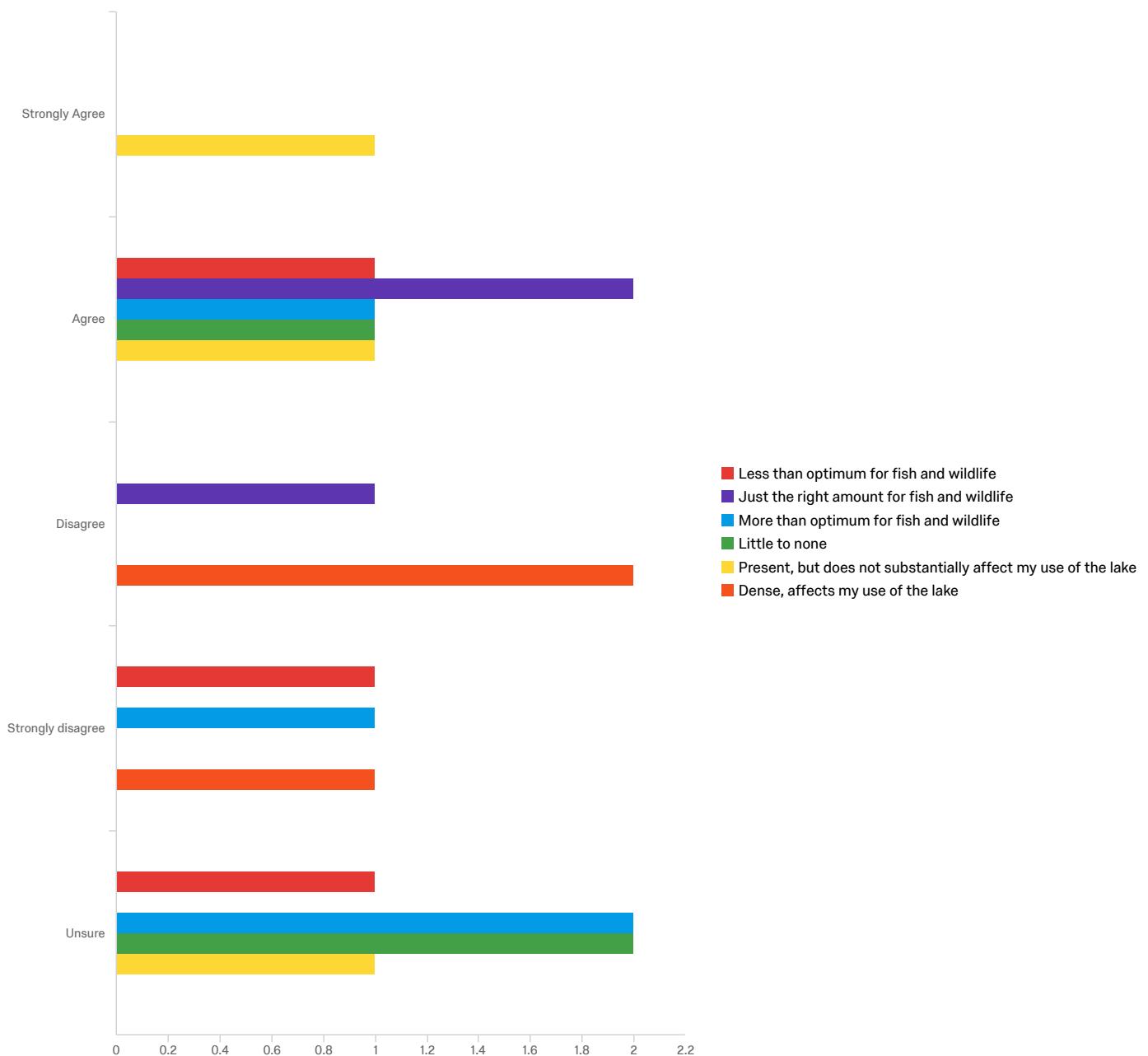


#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Improving water quality	75% 3	25% 1	0% 0	0% 0	0% 0	4
2	Providing better habitat for fish and wildlife	75% 3	0% 0	0% 0	25% 1	0% 0	4
3	Available financial/technical assistance	75% 3	25% 1	0% 0	0% 0	0% 0	4
4	Savings on landscaping/maintenance costs	25% 1	50% 2	25% 1	0% 0	0% 0	4

5	Increasing my privacy	25%	1	50%	2	25%	1	0%	0	0%	0	4
6	Increasing my property value	50%	2	50%	2	0%	0	0%	0	0%	0	4

Showing Rows: 1 - 6 Of 6

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



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Less than optimum for fish and wildlife	0% 0	33% 1	0% 0	33% 1	33% 1	3
2	Just the right amount for fish and wildlife	0% 0	67% 2	33% 1	0% 0	0% 0	3
3	More than optimum for fish and wildlife	0% 0	25% 1	0% 0	25% 1	50% 2	4

4	Little to none	0% 0	33% 1	0% 0	0% 0	67% 2	3
5	Present, but does not substantially affect my use of the lake	33% 1	33% 1	0% 0	0% 0	33% 1	3
6	Dense, affects my use of the lake	0% 0	0% 0	67% 2	33% 1	0% 0	3

Showing Rows: 1 - 6 Of 6

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

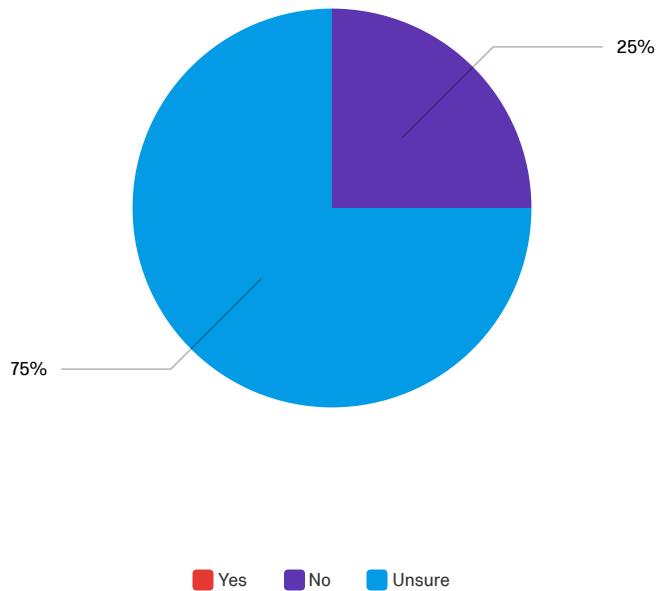
NO DATA

May June July August September

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

Showing Rows: 1 - 6 Of 6

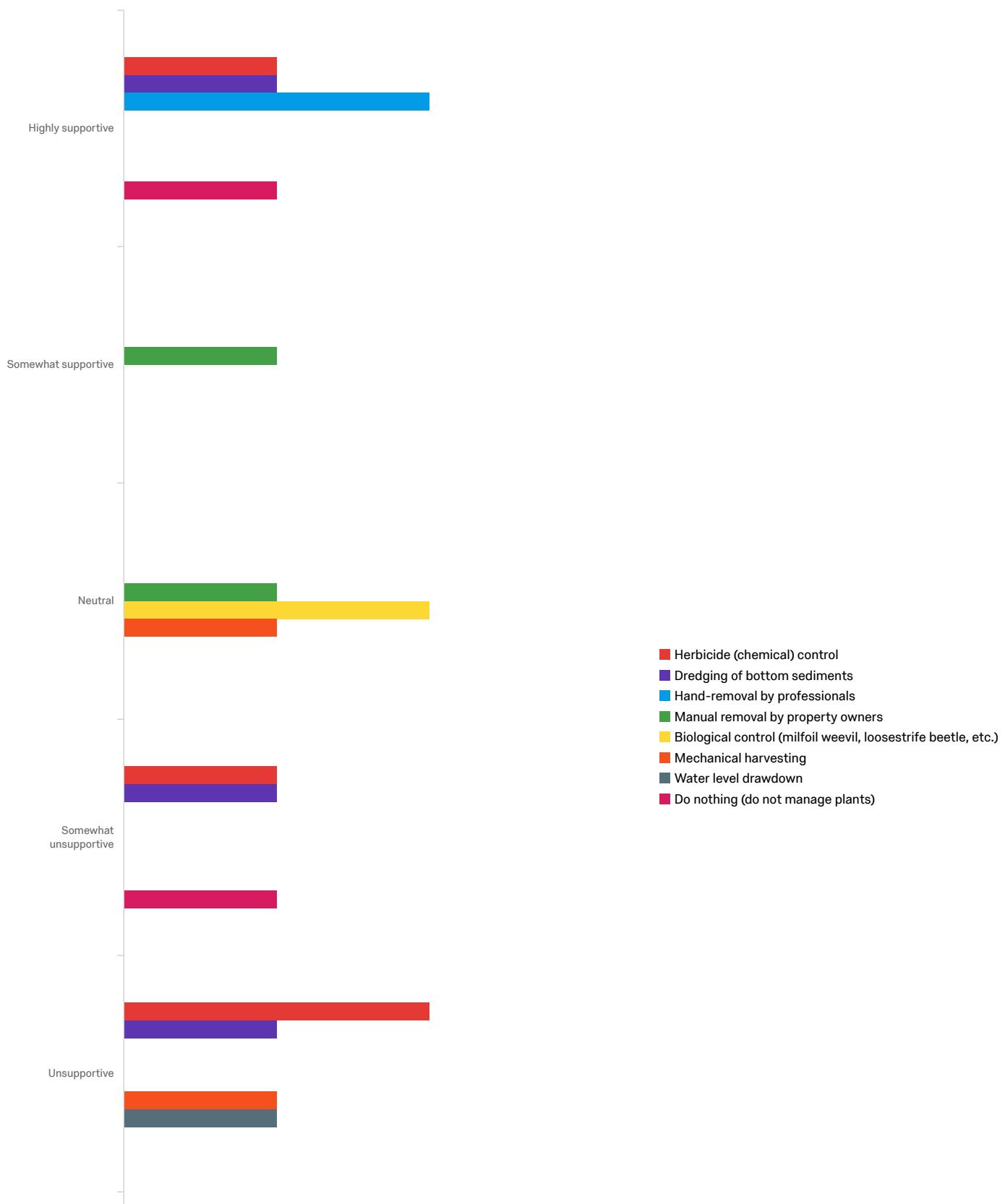
Q34 - Do you believe aquatic plant control is needed on Bear Lake?

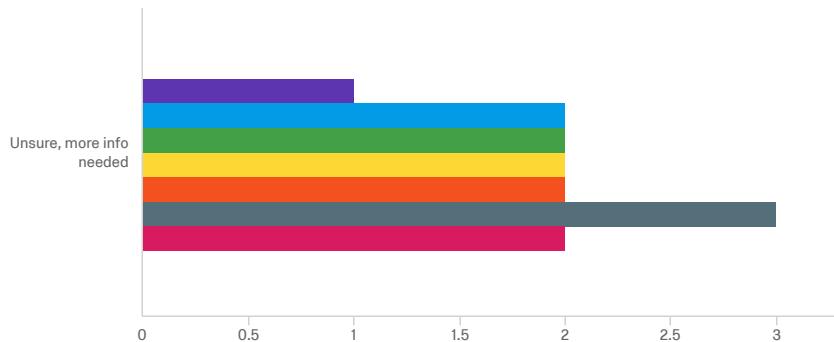


#	Field	Choice	Count
1	Yes	0%	0
2	No	25%	1
3	Unsure	75%	3

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 Bear Lake?

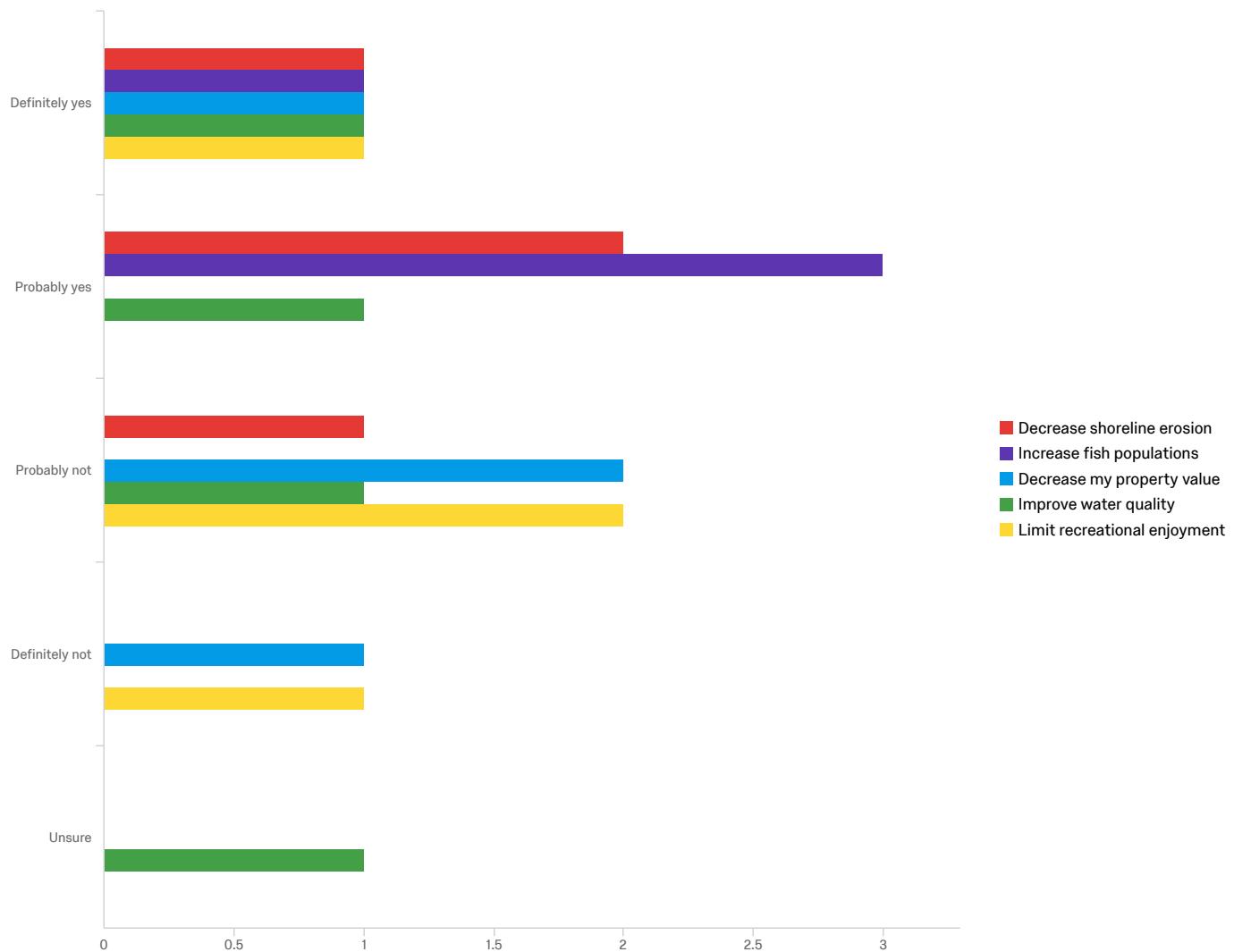




#	Field	Highly supportive	Somewhat supportive	Neutral	Somewhat unsupportive	Unsupportive	Unsure, more info needed	Total
1	Herbicide (chemical) control	25% 1	0% 0	0% 0	25% 1	50% 2	0% 0	4
2	Dredging of bottom sediments	25% 1	0% 0	0% 0	25% 1	25% 1	25% 1	4
3	Hand-removal by professionals	50% 2	0% 0	0% 0	0% 0	0% 0	50% 2	4
4	Manual removal by property owners	0% 0	25% 1	25% 1	0% 0	0% 0	50% 2	4
5	Biological control (milfoil weevil, loosestrife beetle, etc.)	0% 0	0% 0	50% 2	0% 0	0% 0	50% 2	4
6	Mechanical harvesting	0% 0	0% 0	25% 1	0% 0	25% 1	50% 2	4
7	Water level drawdown	0% 0	0% 0	0% 0	0% 0	25% 1	75% 3	4
8	Do nothing (do not manage plants)	25% 1	0% 0	0% 0	25% 1	0% 0	50% 2	4

Showing Rows: 1 - 8 Of 8

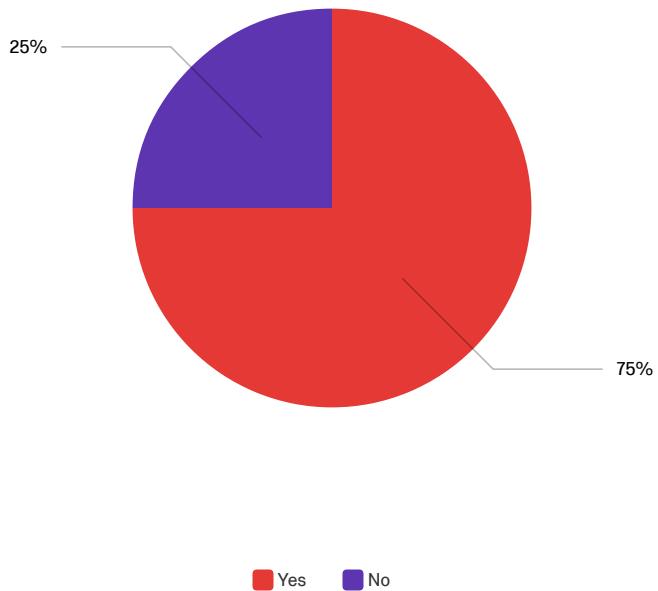
Q36 - In your opinion, does establishing or maintaining native vegetation in the water in the near-shore area...



#	Field	Definitely yes	Probably yes	Probably not	Definitely not	Unsure	Total
1	Decrease shoreline erosion	25% 1	50% 2	25% 1	0% 0	0% 0	4
2	Increase fish populations	25% 1	75% 3	0% 0	0% 0	0% 0	4
3	Decrease my property value	25% 1	0% 0	50% 2	25% 1	0% 0	4
4	Improve water quality	25% 1	25% 1	25% 1	0% 0	25% 1	4
5	Limit recreational enjoyment	25% 1	0% 0	50% 2	25% 1	0% 0	4

Showing Rows: 1 - 5 Of 5

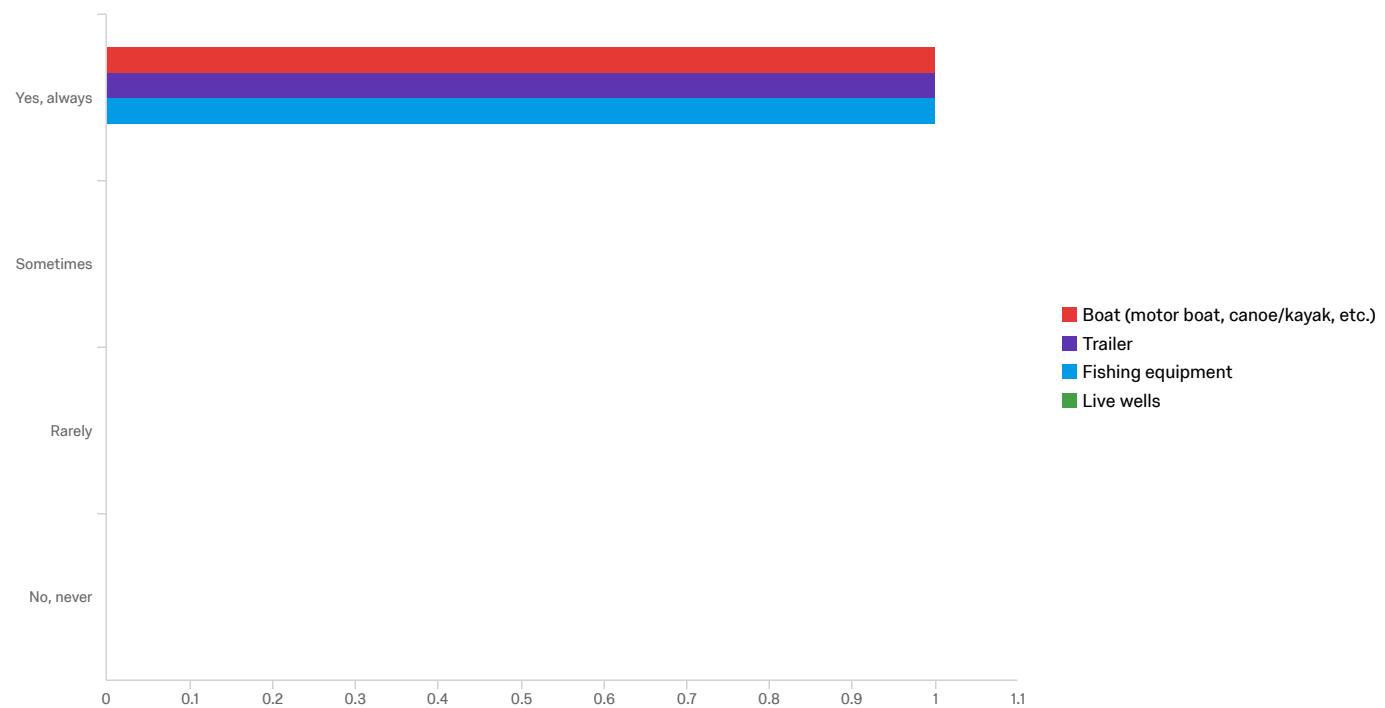
Q37 - Are you aware of invasive species (in general)?



#	Field	Choice Count
1	Yes	75% 3
2	No	25% 1

Showing Rows: 1 - 3 Of 3

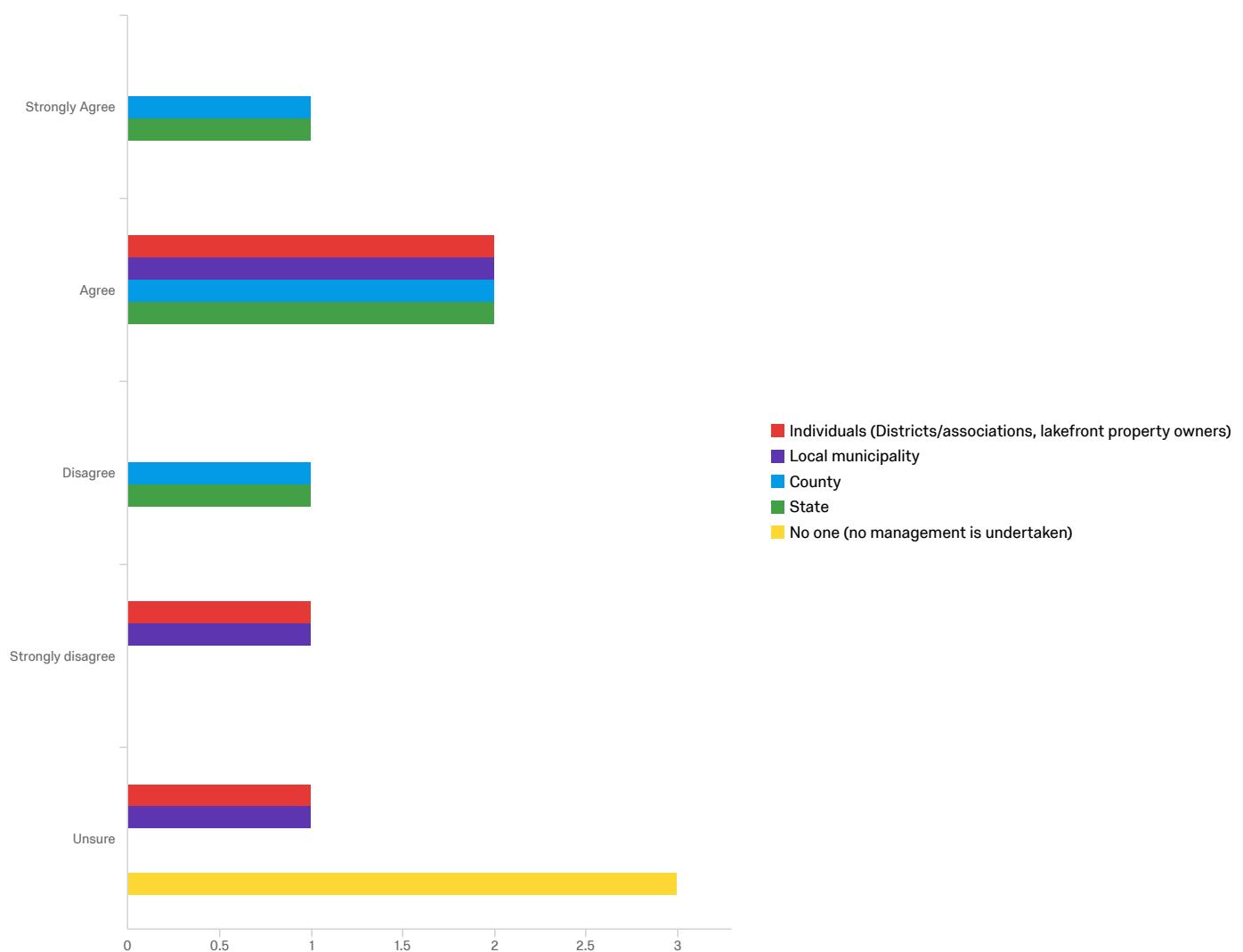
Q39 - After you have been to another lake (other than Munger), do you clean your....
before bringing it back to Bear Lake?



#	Field	Yes, always	Sometimes	Rarely	No, never	Total
1	Boat (motor boat, canoe/kayak, etc.)	100% 1	0% 0	0% 0	0% 0	1
2	Trailer	100% 1	0% 0	0% 0	0% 0	1
3	Fishing equipment	100% 1	0% 0	0% 0	0% 0	1
4	Live wells	0% 0	0% 0	0% 0	0% 0	0

Showing Rows: 1 - 4 Of 4

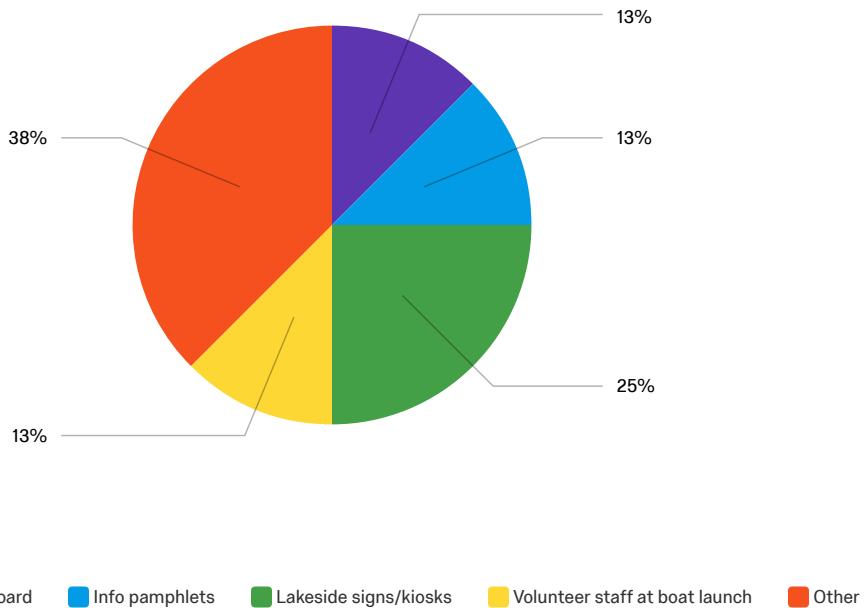
Q40 - Who should pay the cost of managing invasive aquatic plants?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Individuals (Districts/associations, lakefront property owners)	0% 0	50% 2	0% 0	25% 1	25% 1	4
2	Local municipality	0% 0	50% 2	0% 0	25% 1	25% 1	4
3	County	25% 1	50% 2	25% 1	0% 0	0% 0	4
4	State	25% 1	50% 2	25% 1	0% 0	0% 0	4
5	No one (no management is undertaken)	0% 0	0% 0	0% 0	0% 0	100% 3	3

Showing Rows: 1 - 5 Of 5

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



#	Field	Choice Count
1	Newspaper	0% 0
2	Billboard	13% 1
3	Info pamphlets	13% 1
4	Lakeside signs/kiosks	25% 2
5	Volunteer staff at boat launch	13% 1
6	Other	38% 3

Showing Rows: 1 - 7 Of 7

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

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

There is a lot of muck. I am not sure if this is good or bad for the lake but to me the removal would be an improvement to enjoy lake

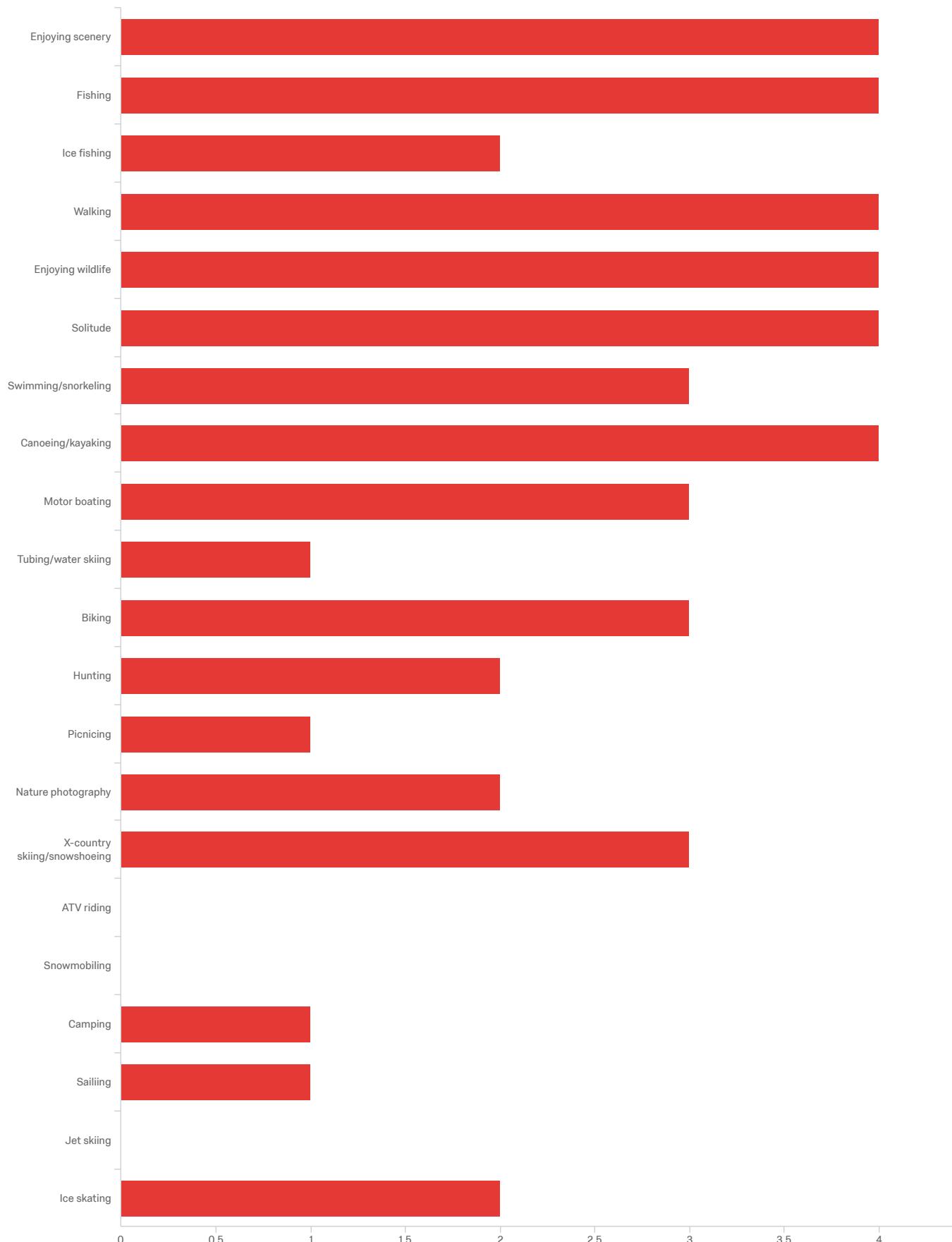
Eliminate non-native species (e.g. snails)

communicate the results of your survey (we need to understand the problem(s) before we can offer solutions

As a lake association we did the bill board, pamphlets, etc. My son was hired one summer to be at various boat ramps handing out pamphlets. Many boaters were rude. The public launch on Munger should be shut down to the public and any land owners who do not pay their Association dues. The erosion is coming from people bringing in too large of boats with deep hulls and inboard motors.

Showing Records: 1 - 4 Of 4

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



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

48

Showing Rows: 1 - 22 Of 22

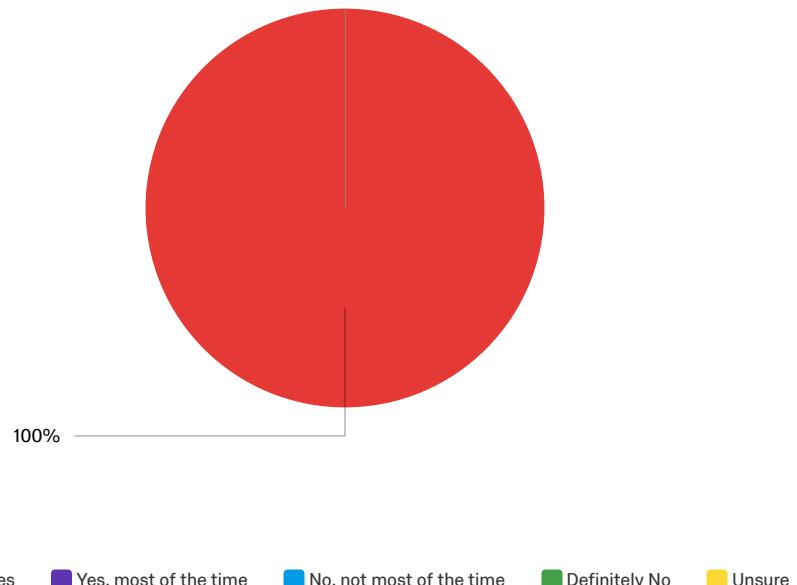
Q46 - Other recreational activities not included above:

Other recreational activities not included above:

pontoon rides

Showing Records: 1 - 1 Of 1

Q47 - "No Wake" is allowed on Bear Lake at any time. Do you like the current "No Wake" rules as they are?



#	Field	Choice Count
1	Definitely Yes	100% 4
2	Yes, most of the time	0% 0
3	No, not most of the time	0% 0
4	Definitely No	0% 0
5	Unsure	0% 0

Showing Rows: 1 - 6 Of 6

Q48 - If you think the "No Wake" rules should be adjusted...in what way?

If you think the "No Wake" rules should be adjusted...in what way?

Add more. NO WAKE signs. Prohibit any boats with inboard motors or boats over 18 feet unless a pontoon boat.

Showing Records: 1 - 1 Of 1

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

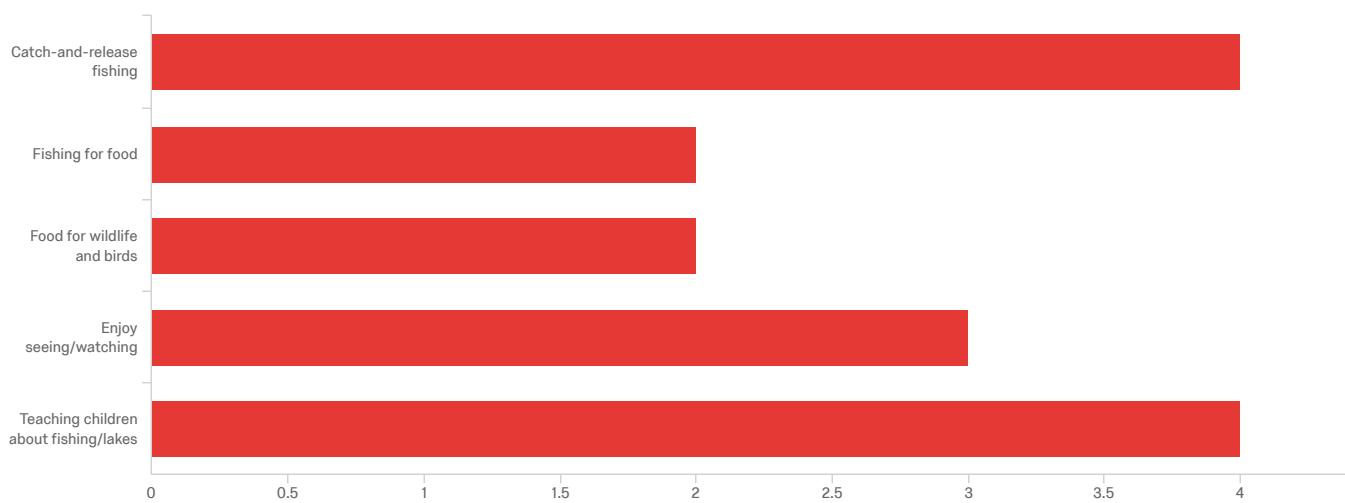
What could be done to improve your recreation experience on Bear Lake?

get rid of the muck...make it more swimming friendly

Again-large , deep hulled, inboard motors should not be allowed to enter the channel to come to Bear Lake. They are ruining the channel. There used to be islands in the channel and birds, loons would nest there.

Showing Records: 1 - 2 Of 2

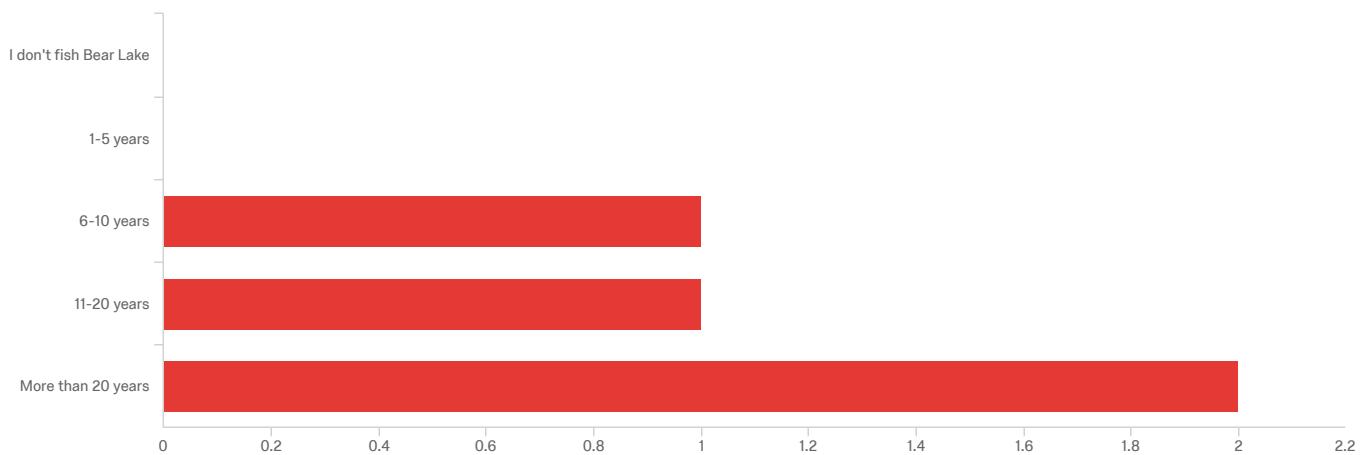
Q51 - For what purposes do you value the fishery in Bear Lake? (Check all that apply)



#	Field	Choice Count
1	Catch-and-release fishing	27% 4
2	Fishing for food	13% 2
3	Food for wildlife and birds	13% 2
4	Enjoy seeing/watching	20% 3
5	Teaching children about fishing/lakes	27% 4
		15

Showing Rows: 1 - 6 Of 6

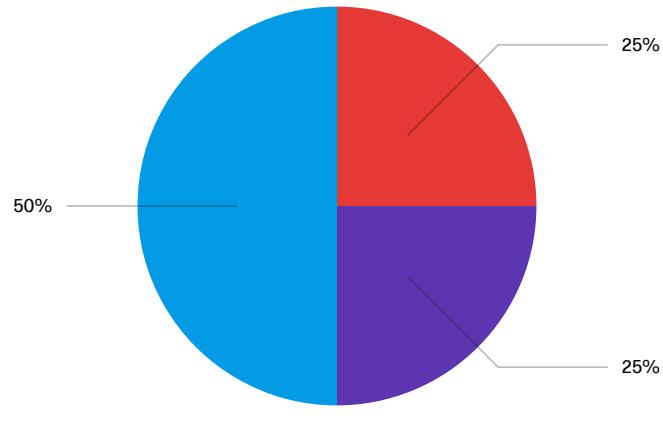
Q52 - How many years experience do you have fishing Bear Lake?



#	Field	Choice	Count
1	I don't fish Bear Lake	0%	0
2	1-5 years	0%	0
3	6-10 years	25%	1
4	11-20 years	25%	1
5	More than 20 years	50%	2
			4

Showing Rows: 1 - 6 Of 6

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



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

#	Field	Choice	Count
1	Improved	25%	1
2	Stayed the same	25%	1
3	Declined	50%	2
4	Not sure/don't fish	0%	0
			4

Showing Rows: 1 - 5 Of 5

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

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

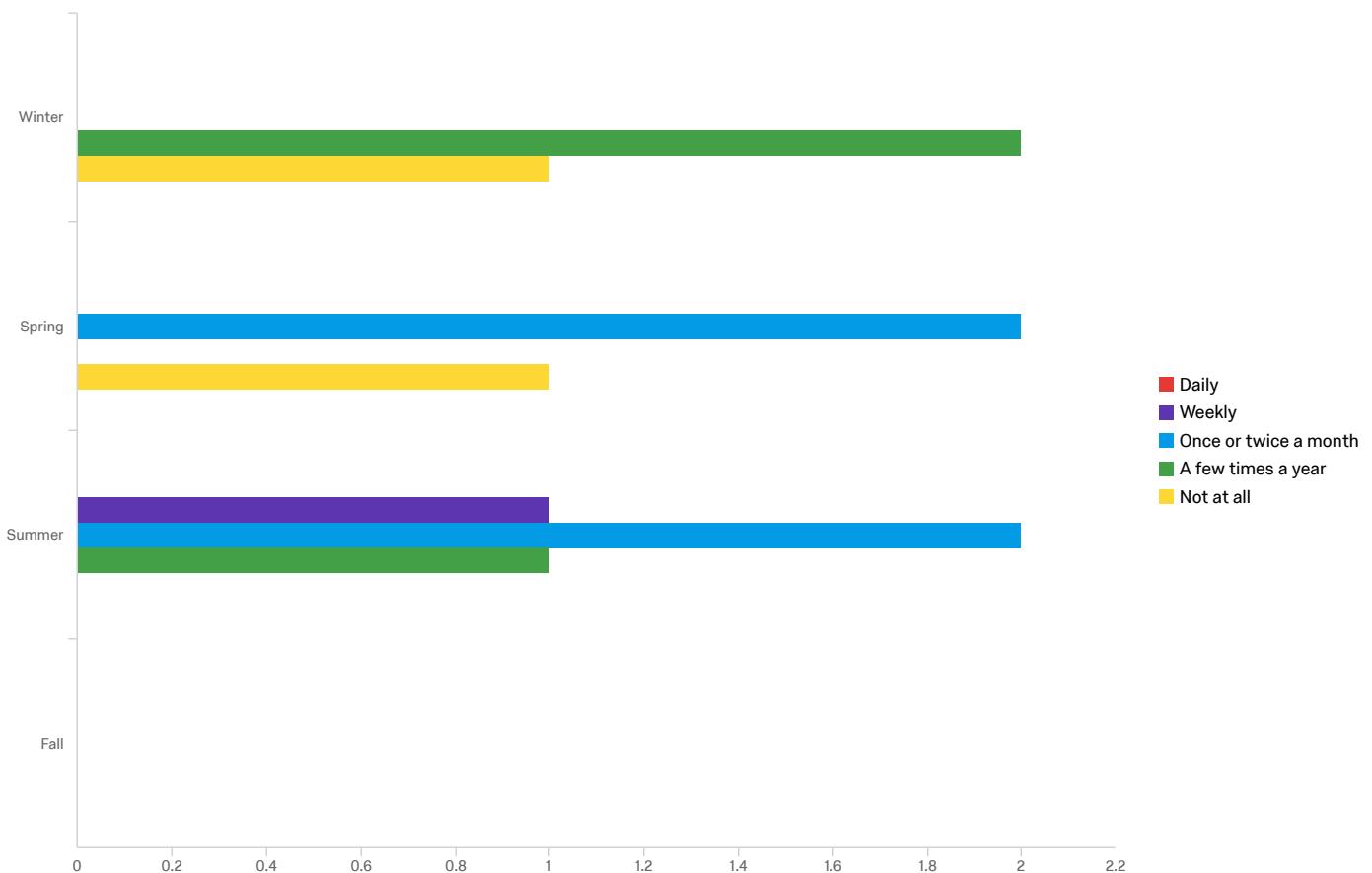
stocking the lake

DNR has changed the rules on stocking Pike. It seems it was a "Class A" muskie lake in the early 1970's

Planting too many walleye

Showing Records: 1 - 3 Of 3

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



#	Field	Winter	Spring	Summer	Fall	Total
1	Daily	0% 0	0% 0	0% 0	0% 0	0
2	Weekly	0% 0	0% 0	100% 1	0% 0	1
3	Once or twice a month	0% 0	50% 2	50% 2	0% 0	4
4	A few times a year	67% 2	0% 0	33% 1	0% 0	3
5	Not at all	50% 1	50% 1	0% 0	0% 0	2

Showing Rows: 1 - 5 Of 5

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

What type of fish do you catch on Bear Lake?

bass, blue gill, croppies

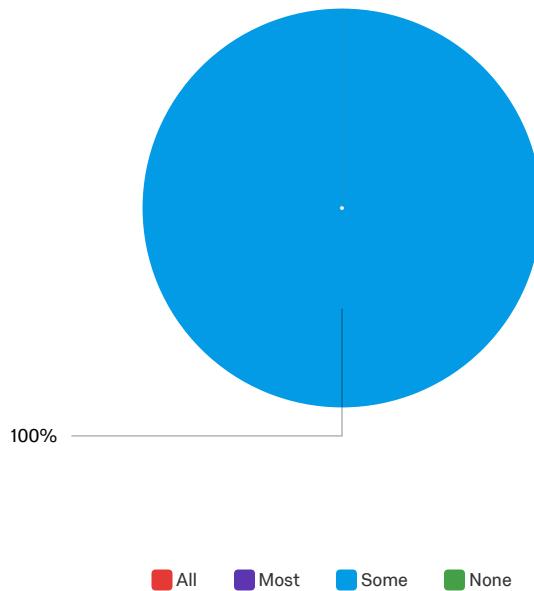
Large mouth pass, pike, perch, pan-fish

Bass, pan fish

I like to catch pan fish.

Showing Records: 1 - 4 Of 4

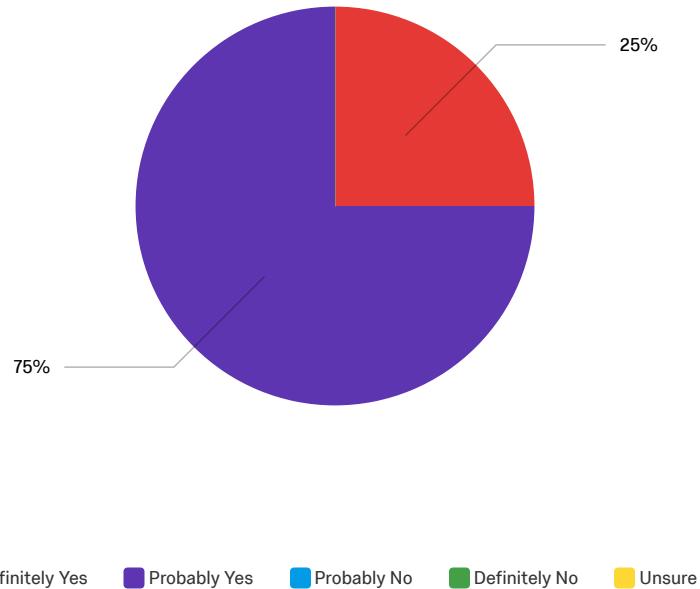
Q57 - In general, how many of the fish you catch are big enough to keep?



#	Field	Choice Count
1	All	0% 0
2	Most	0% 0
3	Some	100% 4
4	None	0% 0
		4

Showing Rows: 1 - 5 Of 5

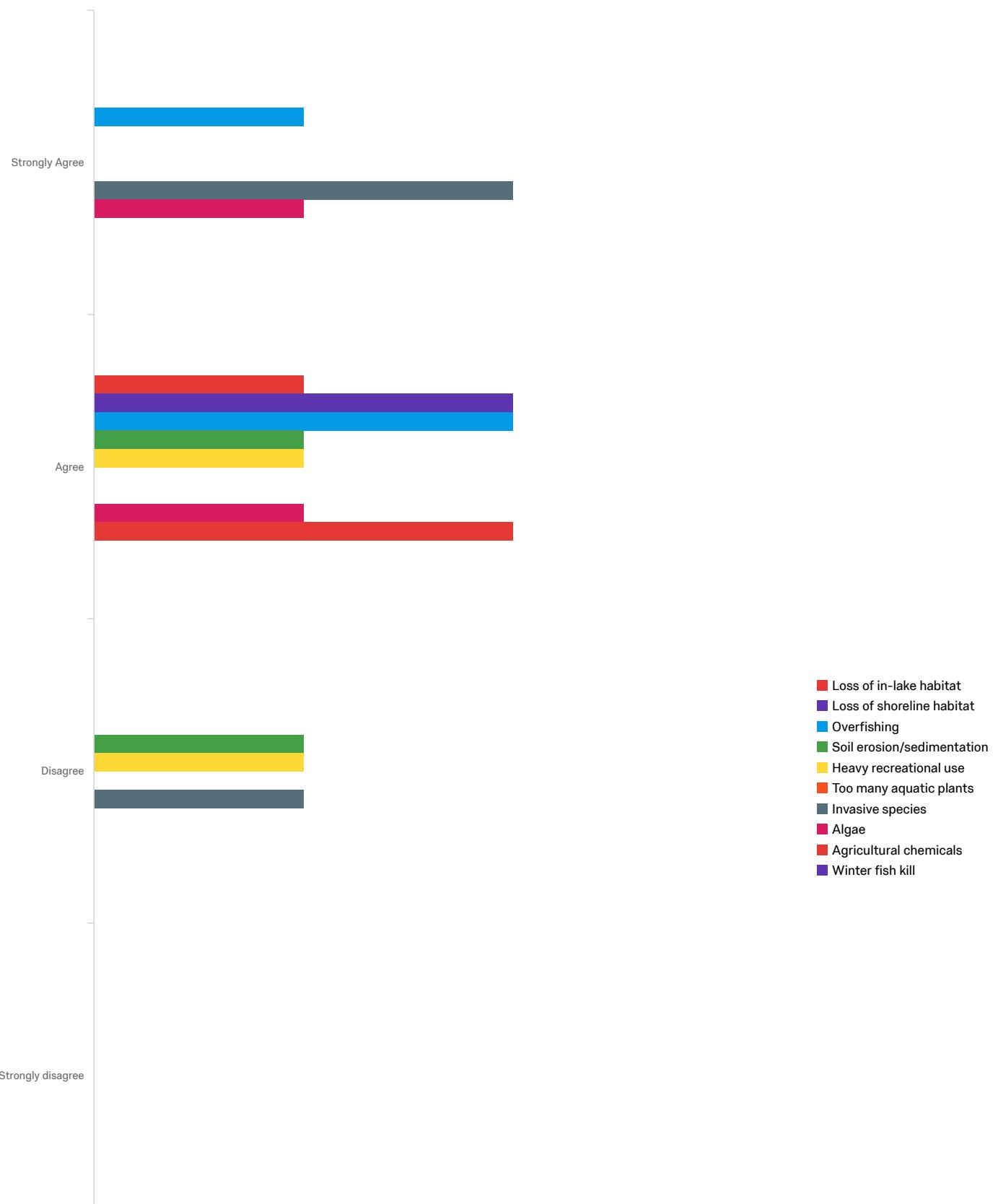
Q58 - Do you believe fish from Bear Lake are safe to eat?

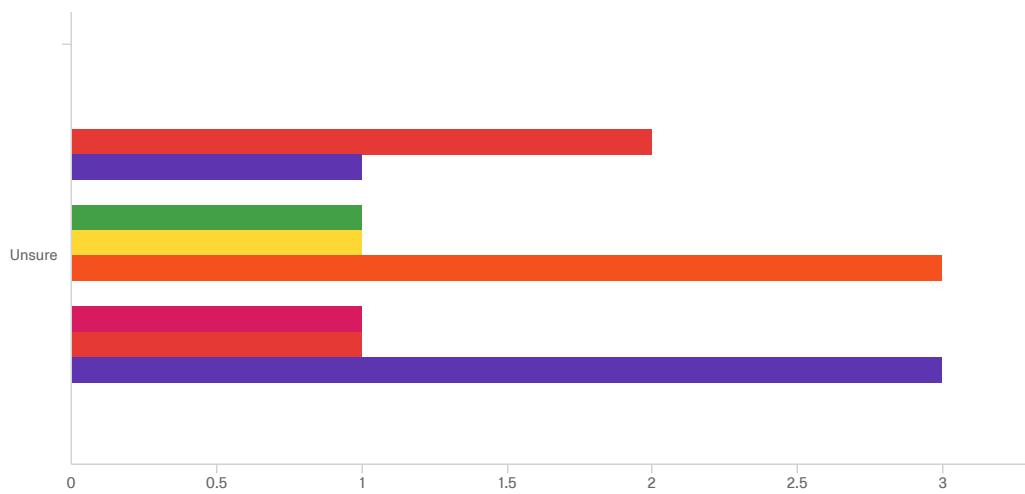


#	Field	Choice Count
1	Definitely Yes	25% 1
2	Probably Yes	75% 3
3	Probably No	0% 0
4	Definitely No	0% 0
5	Unsure	0% 0
		4

Showing Rows: 1 - 6 Of 6

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





#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total					
1	Loss of in-lake habitat	0%	0	33%	1	0%	0	67%	2	3		
2	Loss of shoreline habitat	0%	0	67%	2	0%	0	0%	0	33%	1	3
3	Overfishing	33%	1	67%	2	0%	0	0%	0	0%	0	3
4	Soil erosion/sedimentation	0%	0	33%	1	33%	1	0%	0	33%	1	3
5	Heavy recreational use	0%	0	33%	1	33%	1	0%	0	33%	1	3
6	Too many aquatic plants	0%	0	0%	0	0%	0	0%	0	100%	3	3
7	Invasive species	67%	2	0%	0	33%	1	0%	0	0%	0	3
8	Algae	33%	1	33%	1	0%	0	0%	0	33%	1	3
9	Agricultural chemicals	0%	0	67%	2	0%	0	0%	0	33%	1	3
10	Winter fish kill	0%	0	0%	0	0%	0	0%	0	100%	3	3

Showing Rows: 1 - 10 Of 10

Q61 - Do you have any additional comments regarding Bear Lake?

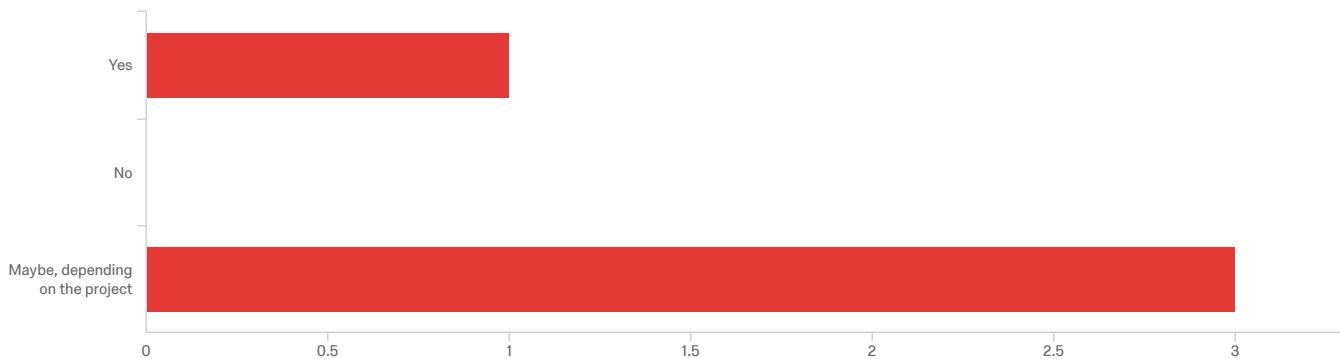
Do you have any additional comments regarding Bear Lake?

We love Bear Lake but have always wondered if we can do anything about the muck

I have been on bear lake for over 35 years. We are blessed to have 1/2 the lake natural shoreline. I do not want ducks and geese nesting on my lawn as we are very active outside. I swim from my side of the lake to the other daily, weather permitting. The worst weeds are in late August and early Sept. I really do not think that these two small lakes should be open to the public.

Showing Records: 1 - 2 Of 2

Q63 - Would you be interested in volunteering on a project at 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 at your lake (such as shoreland restoration planting, invasive species monitoring/removal, water quality monitoring, highway cleanup, etc.)?	1	3	3	1	1	4

#	Field	Choice Count
1	Yes	25% 1
2	No	0% 0
3	Maybe, depending on the project	75% 3

Showing Rows: 1 - 4 Of 4

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

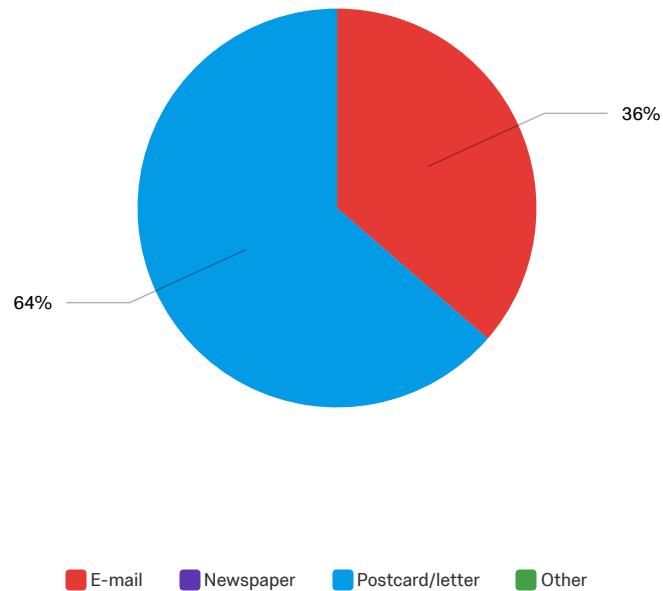
End of Report

Default Report

Munger Lake Survey - Oconto County Lakes Project

July 20, 2018 11:05 AM MDT

Q2 - How did you hear about this survey?

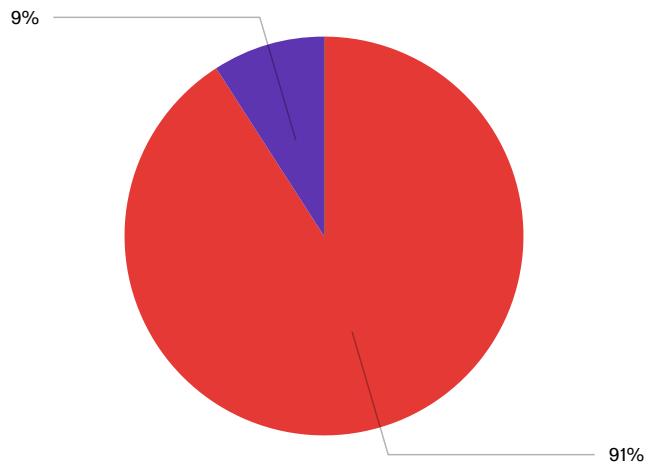


#	Field	Choice Count
1	E-mail	36% 4
2	Newspaper	0% 0
3	Postcard/letter	64% 7
4	Other	0% 0

11

Showing Rows: 1 - 5 Of 5

Q3 - Do you own or rent property...



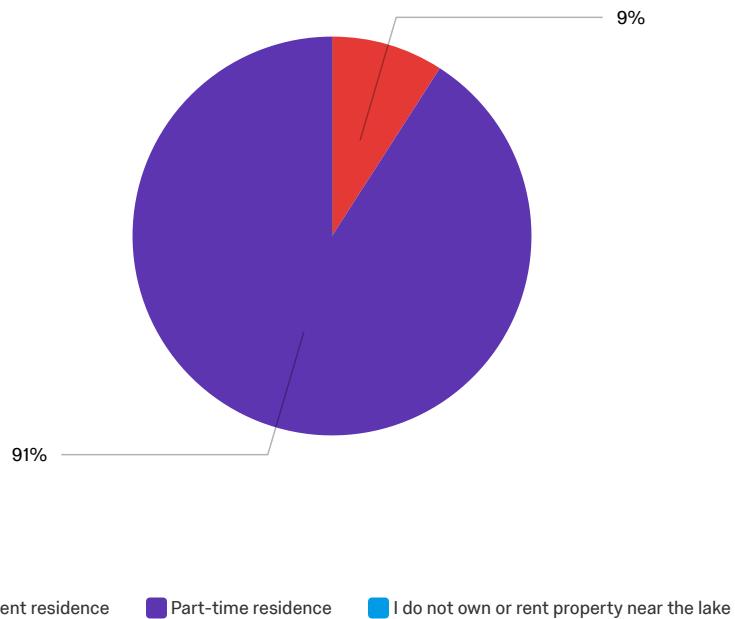
■ Around the lake ■ Less than 1/2 mile from the lake ■ Near the lake, but more than 1/2 mile away ■ I do not own or rent property near the lake

#	Field	Choice Count
1	Around the lake	91% 10
2	Less than 1/2 mile from the lake	9% 1
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

11

Showing Rows: 1 - 5 Of 5

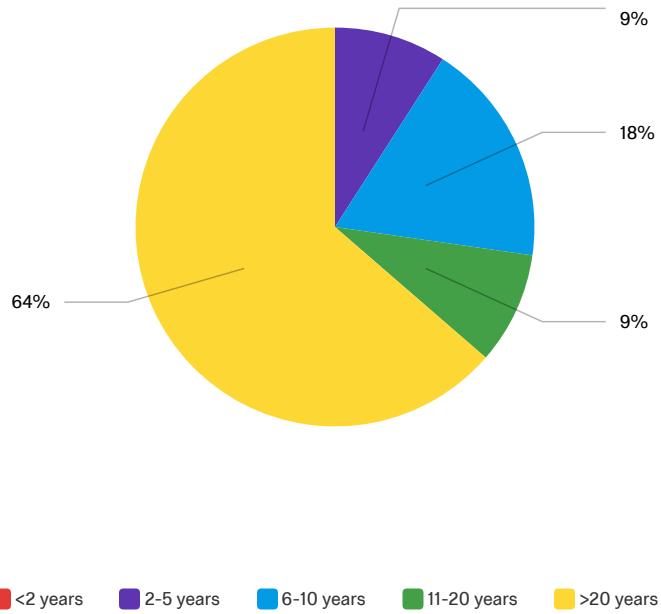
Q4 - If you own or rent property near the lake, is this property your...



#	Field	Choice	Count
1	Permanent residence	9%	1
2	Part-time residence	91%	10
3	I do not own or rent property near the lake	0%	0

Showing Rows: 1 - 4 Of 4

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

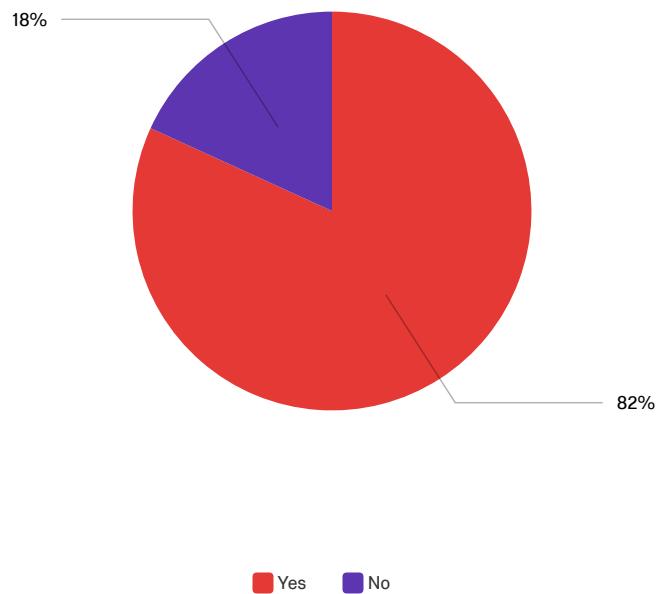


#	Field	Choice	Count
1	<2 years	0%	0
2	2-5 years	9%	1
3	6-10 years	18%	2
4	11-20 years	9%	1
5	>20 years	64%	7

11

Showing Rows: 1 - 6 Of 6

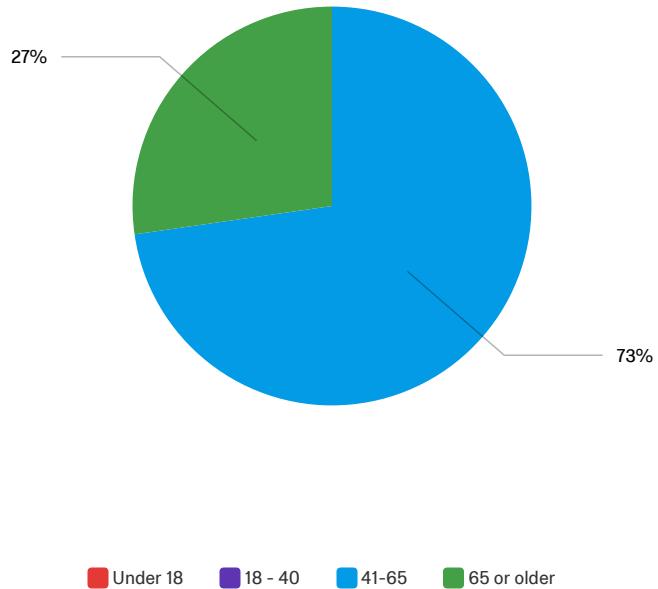
Q6 - Are you a member of the Bear/Munger Lake District?



#	Field	Choice Count
1	Yes	82% 9
2	No	18% 2
11		

Showing Rows: 1 - 3 Of 3

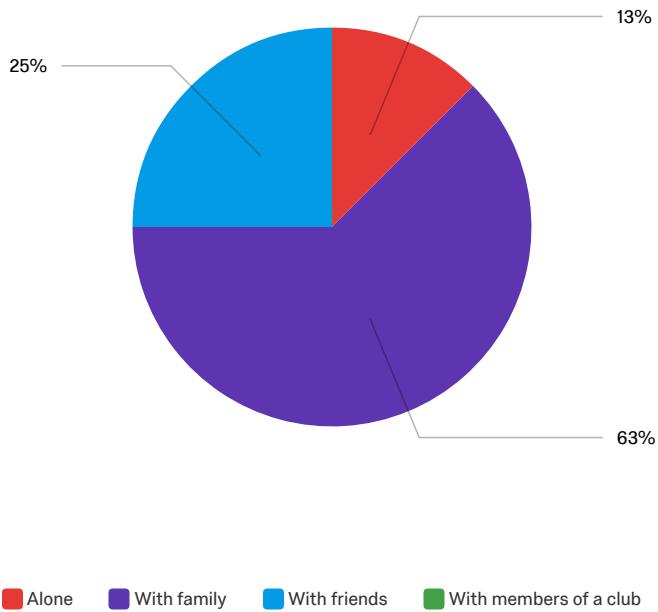
Q8 - Which category below includes your age?



#	Field	Choice	Count
1	Under 18	0%	0
2	18 - 40	0%	0
3	41-65	73%	8
4	65 or older	27%	3
			11

Showing Rows: 1 - 5 Of 5

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

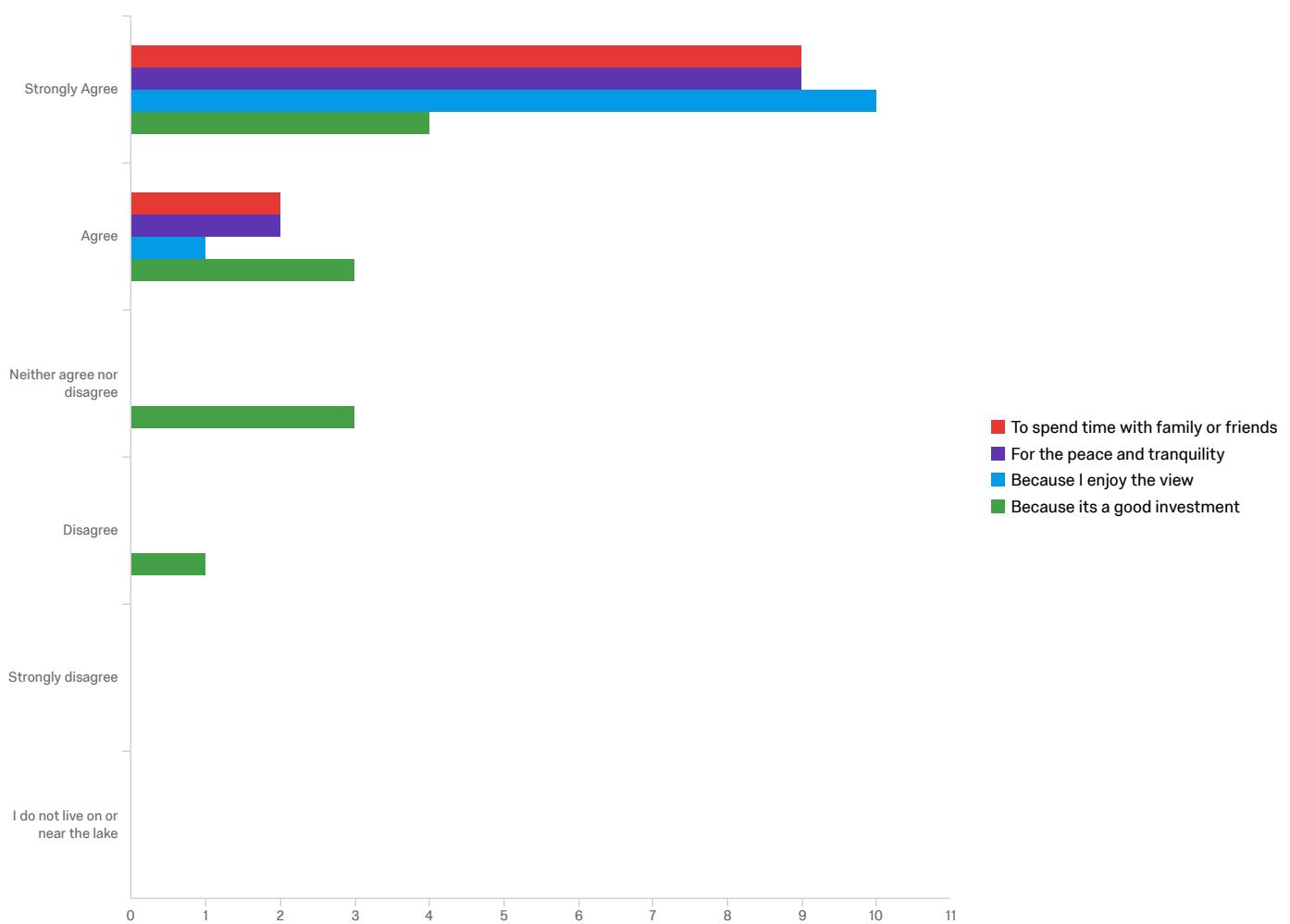


■ Alone ■ With family ■ With friends ■ With members of a club

#	Field	Choice Count
1	Alone	13% 2
2	With family	63% 10
3	With friends	25% 4
4	With members of a club	0% 0
		16

Showing Rows: 1 - 5 Of 5

Q10 - I 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	82% 9	18% 2	0% 0	0% 0	0% 0	0% 0	11
2	For the peace and tranquility	82% 9	18% 2	0% 0	0% 0	0% 0	0% 0	11
3	Because I enjoy the view	91% 10	9% 1	0% 0	0% 0	0% 0	0% 0	11
4	Because its a good investment	36% 4	27% 3	27% 3	9% 1	0% 0	0% 0	11

Showing Rows: 1 - 4 Of 4

Q11 - What do you value most about Munger Lake?

What do you value most about Bear Lake?

Ability to fish, recreate and relax all in the same day

Full recreation option. I wish the waterski hours would be EXPANDED.

Mixed use. Can fish, kayak, ski, tube, hunt.

The peace and quiet it provides and the surrounding

When peaceful and quiet and wildlife. Especially and also fishing.

It's versatility

All of the nature that lives in and around the lake.

Being attached to bear lake, consistent water level and proximity to green bay

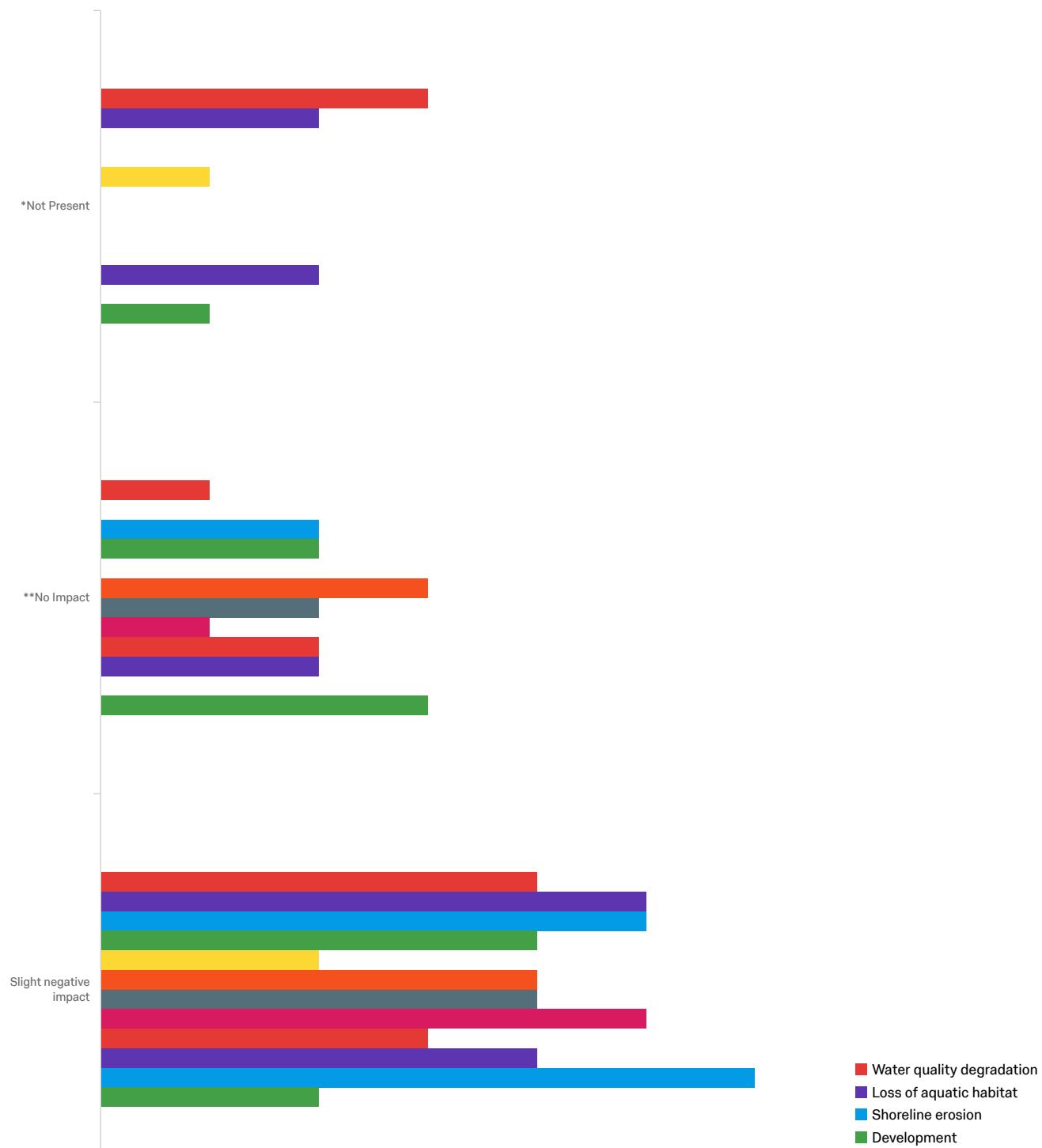
Beauty, nice people

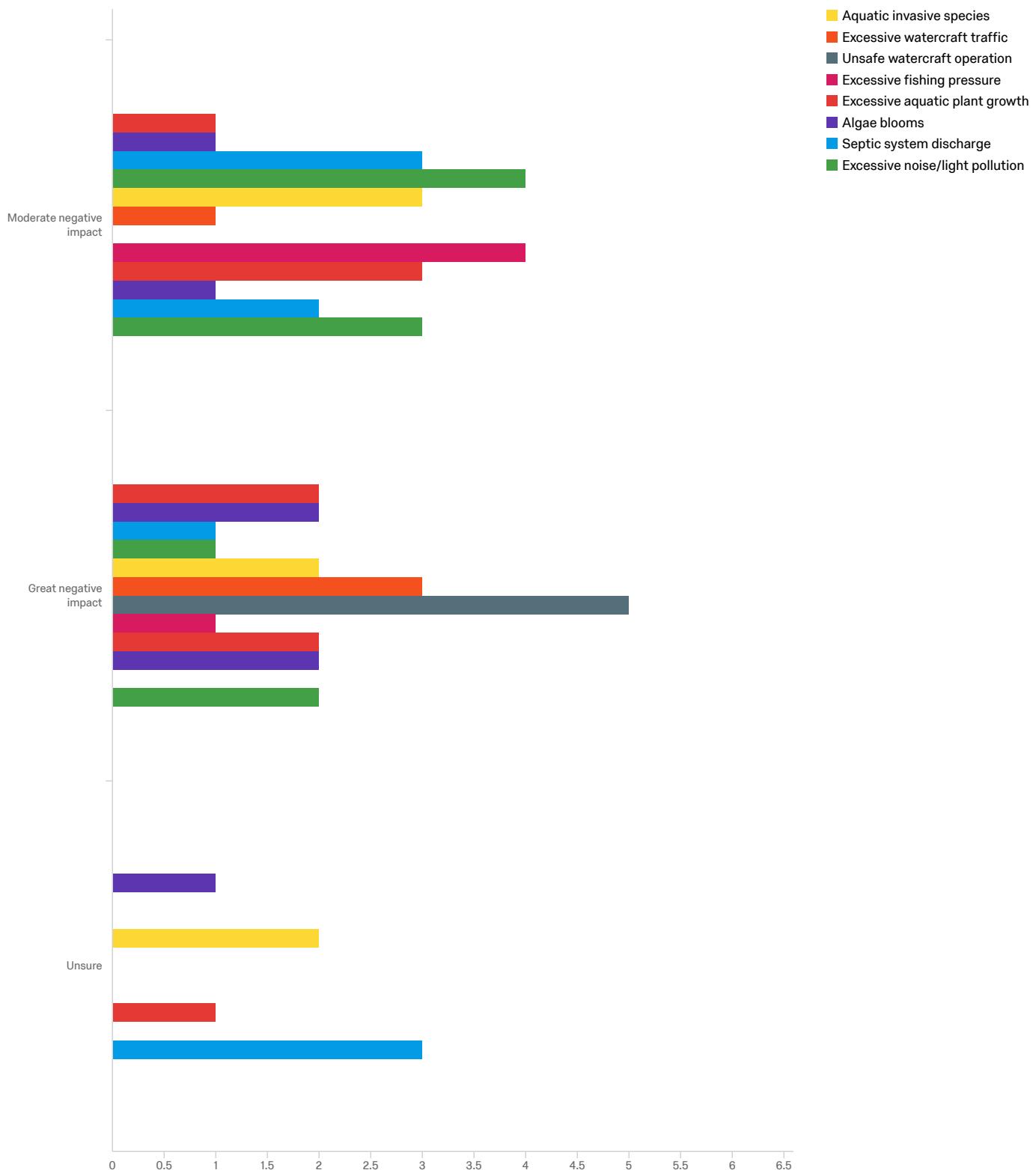
Great weekend getaway

It used to be the peace and quiet!

Showing Records: 1 - 11 Of 11

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 Munger Lake? *Not Present means that you believe the issue does not exist on Munger Lake**No Impact means that the issue may exist, but is not negatively impacting Munger Lake



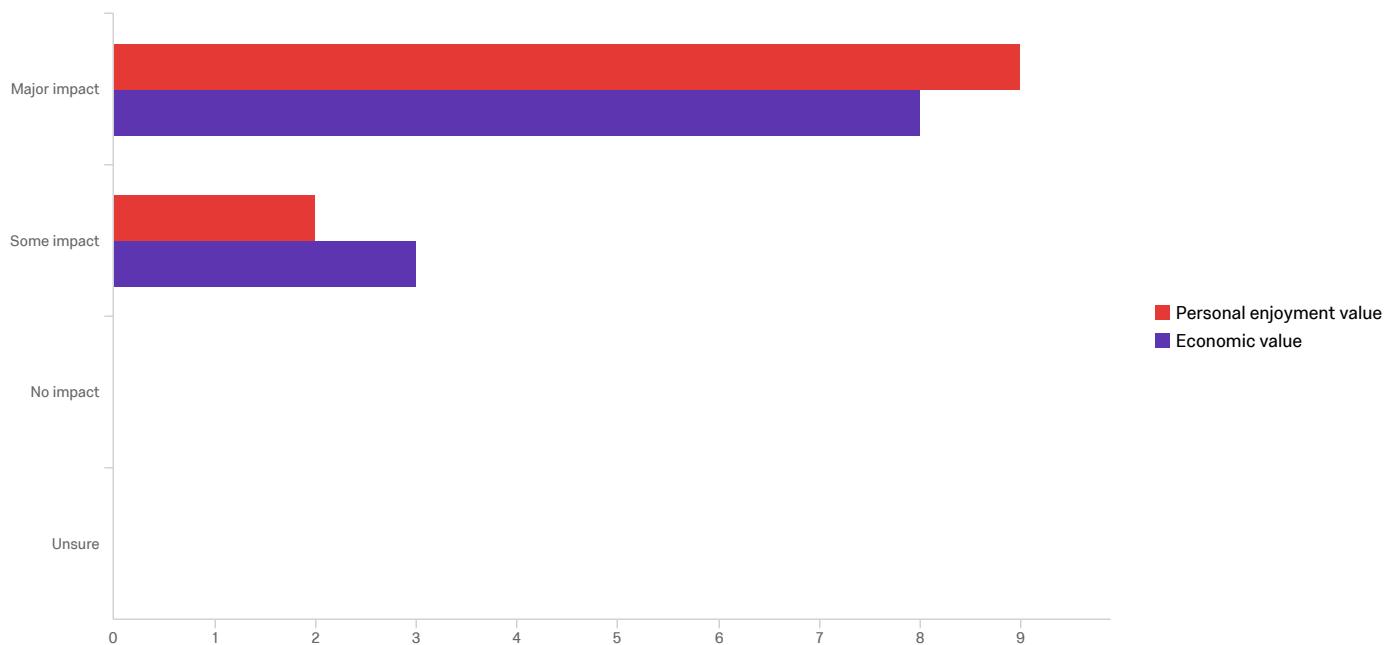


#	Field	*Not Present	**No Impact	Slight negative impact	Moderate negative impact	Great negative impact	Unsure	Total
1	Water quality degradation	27% 3	9% 1	36% 4	9% 1	18% 2	0% 0	11
2	Loss of aquatic habitat	18% 2	0% 0	45% 5	9% 1	18% 2	9% 1	11

3	Shoreline erosion	0% 0	18% 2	45% 5	27% 3	9% 1	0% 0	11
4	Development	0% 0	18% 2	36% 4	36% 4	9% 1	0% 0	11
5	Aquatic invasive species	10% 1	0% 0	20% 2	30% 3	20% 2	20% 2	10
6	Excessive watercraft traffic	0% 0	27% 3	36% 4	9% 1	27% 3	0% 0	11
7	Unsafe watercraft operation	0% 0	18% 2	36% 4	0% 0	45% 5	0% 0	11
8	Excessive fishing pressure	0% 0	9% 1	45% 5	36% 4	9% 1	0% 0	11
9	Excessive aquatic plant growth	0% 0	18% 2	27% 3	27% 3	18% 2	9% 1	11
10	Algae blooms	18% 2	18% 2	36% 4	9% 1	18% 2	0% 0	11
11	Septic system discharge	0% 0	0% 0	55% 6	18% 2	0% 0	27% 3	11
12	Excessive noise/light pollution	9% 1	27% 3	18% 2	27% 3	18% 2	0% 0	11

Showing Rows: 1 - 12 Of 12

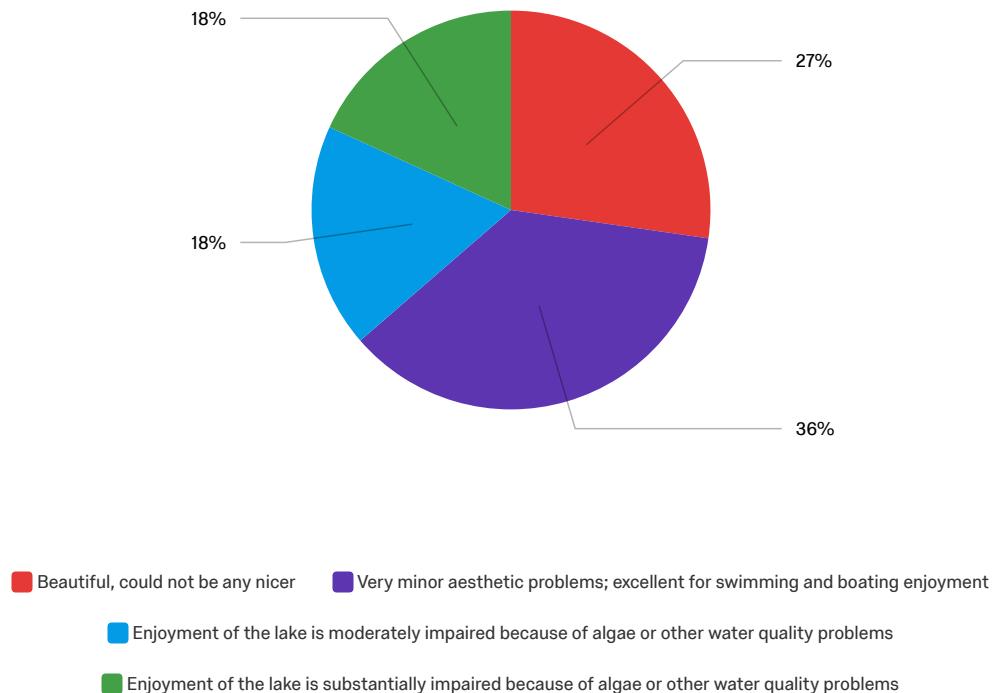
Q16 - How much impact does the water quality of Munger Lake have on the following?



#	Field	Major impact	Some impact	No impact	Unsure	Total
1	Personal enjoyment value	82% 9	18% 2	0% 0	0% 0	11
2	Economic value	73% 8	27% 3	0% 0	0% 0	11

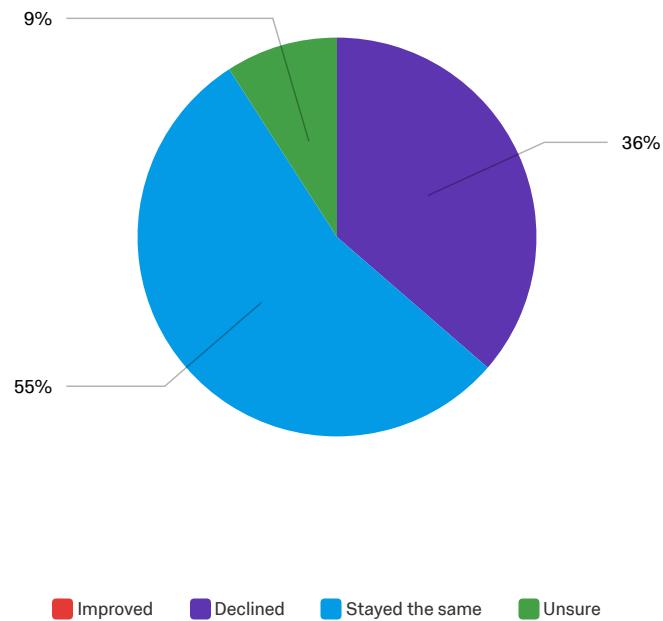
Showing Rows: 1 - 2 Of 2

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	27%	3
2	Very minor aesthetic problems; excellent for swimming and boating enjoyment	36%	4
3	Enjoyment of the lake is moderately impaired because of algae or other water quality problems	18%	2
4	Enjoyment of the lake is substantially impaired because of algae or other water quality problems	18%	2

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

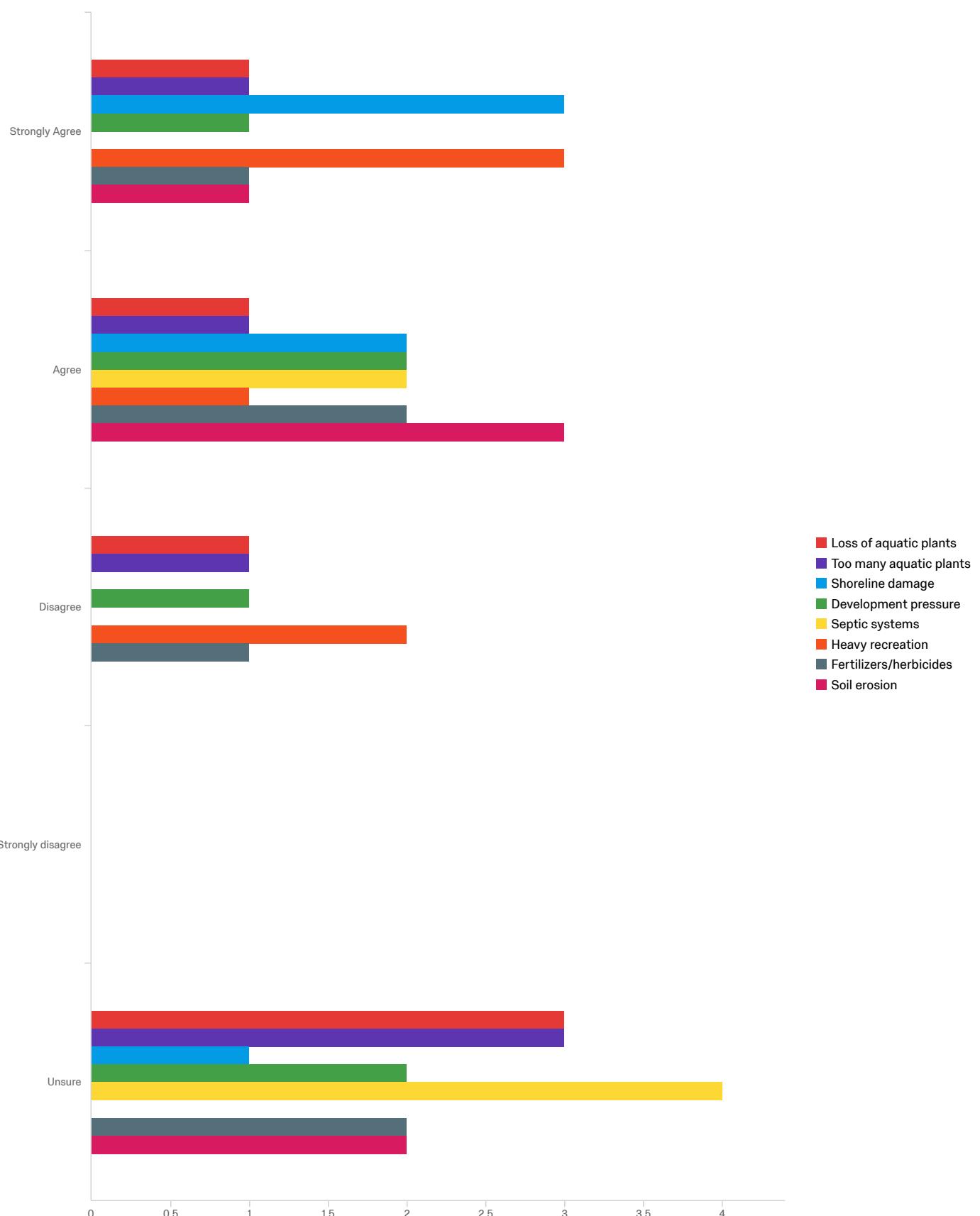


#	Field	Choice Count
1	Improved	0% 0
2	Declined	36% 4
3	Stayed the same	55% 6
4	Unsure	9% 1

11

Showing Rows: 1 - 5 Of 5

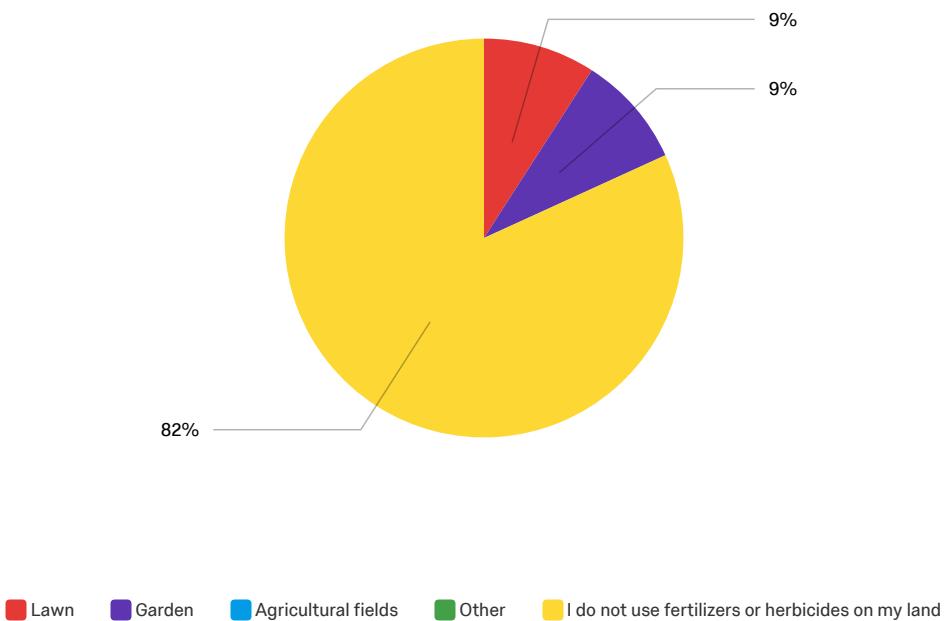
Q19 - If you think it has declined, what, in your opinion, are the primary causes?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Loss of aquatic plants	17% 1	17% 1	17% 1	0% 0	50% 3	6
2	Too many aquatic plants	17% 1	17% 1	17% 1	0% 0	50% 3	6
3	Shoreline damage	50% 3	33% 2	0% 0	0% 0	17% 1	6
4	Development pressure	17% 1	33% 2	17% 1	0% 0	33% 2	6
5	Septic systems	0% 0	33% 2	0% 0	0% 0	67% 4	6
6	Heavy recreation	50% 3	17% 1	33% 2	0% 0	0% 0	6
7	Fertilizers/herbicides	17% 1	33% 2	17% 1	0% 0	33% 2	6
8	Soil erosion	17% 1	50% 3	0% 0	0% 0	33% 2	6

Showing Rows: 1 - 8 Of 8

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

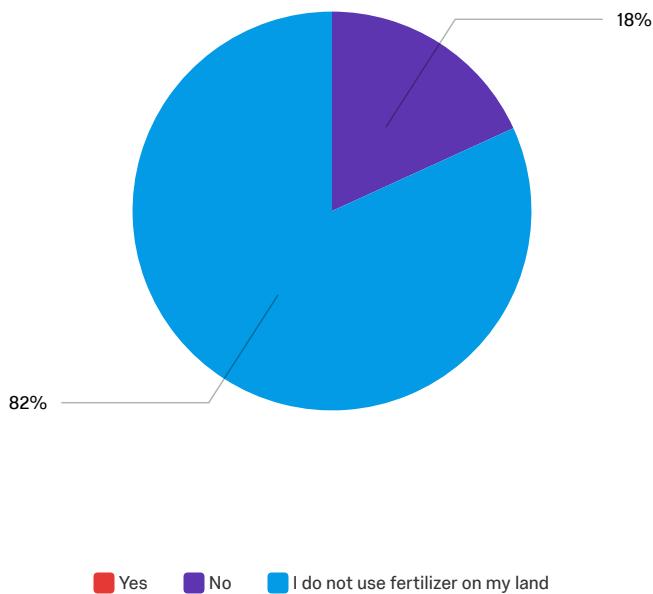


#	Field	Choice Count
1	Lawn	9% 1
2	Garden	9% 1
3	Agricultural fields	0% 0
4	Other	0% 0
5	I do not use fertilizers or herbicides on my land	82% 9

11

Showing Rows: 1 - 6 Of 6

Q21 - Do you use fertilizer that contains phosphorus?



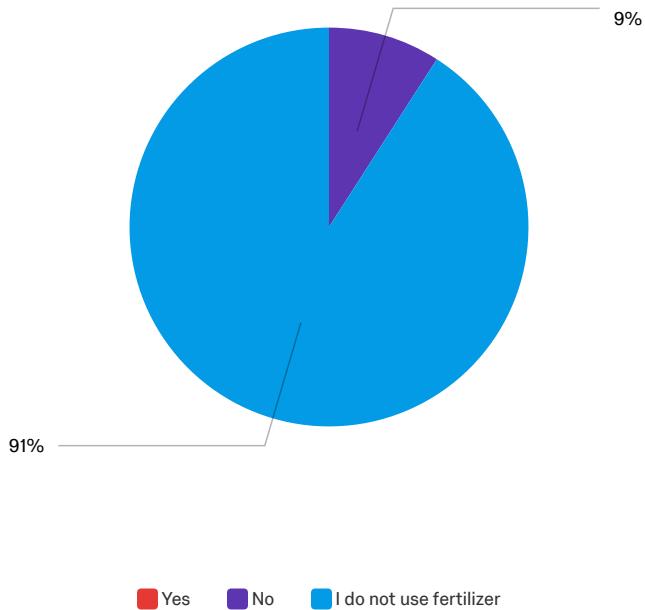
■ Yes ■ No ■ I do not use fertilizer on my land

#	Field	Choice	Count
1	Yes	0%	0
2	No	18%	2
4	I do not use fertilizer on my land	82%	9

11

Showing Rows: 1 - 4 Of 4

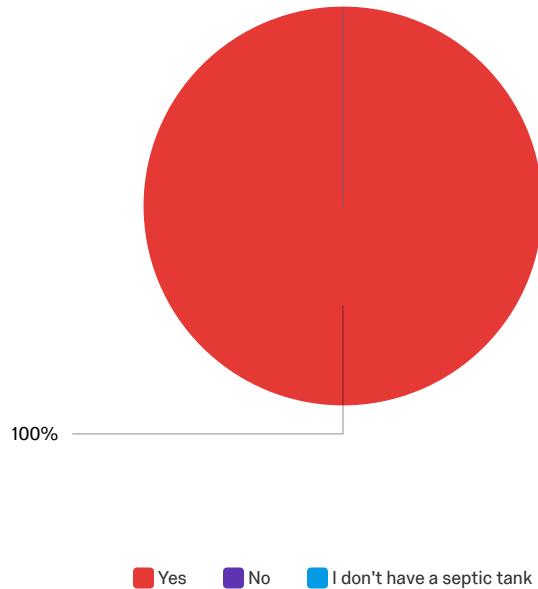
Q23 - Have you had your soil tested before using fertilizer?



#	Field	Choice	Count
1	Yes	0%	0
2	No	9%	1
3	I do not use fertilizer	91%	10

Showing Rows: 1 - 4 Of 4

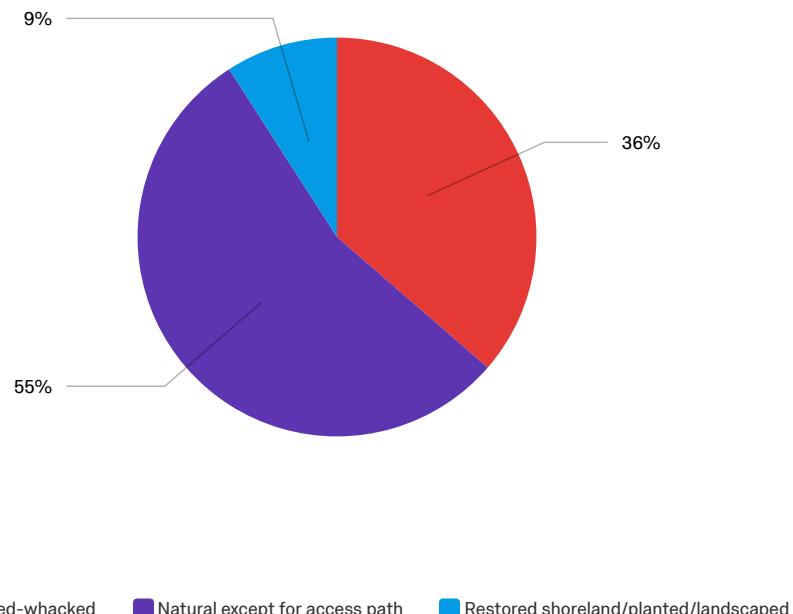
Q22 - Do you have your septic tank pumped regularly (at least every 3 years)?



#	Field	Choice Count
1	Yes	100% 11
2	No	0% 0
3	I don't have a septic tank	0% 0
		11

Showing Rows: 1 - 4 Of 4

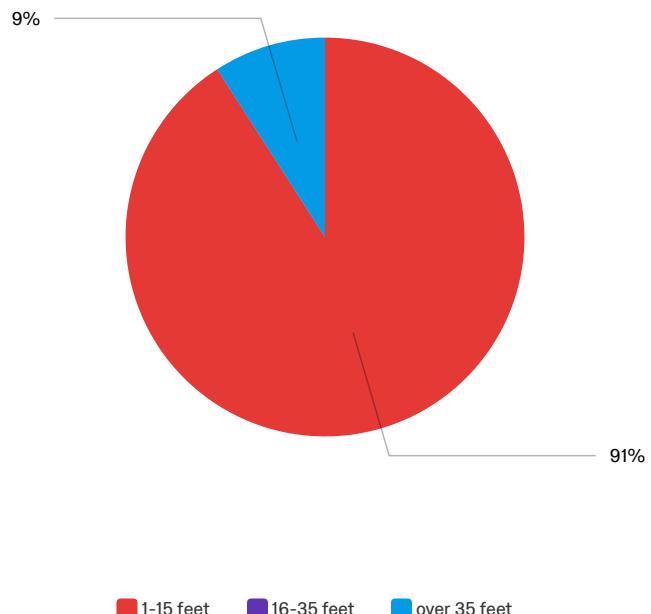
Q25 - How do you currently manage the majority of your property within 35 feet of the lake?



#	Field	Choice Count
1	Mowed or weed-whacked	36% 4
2	Natural except for access path	55% 6
3	Restored shoreland/planted/landscaped	9% 1
11		

Showing Rows: 1 - 4 Of 4

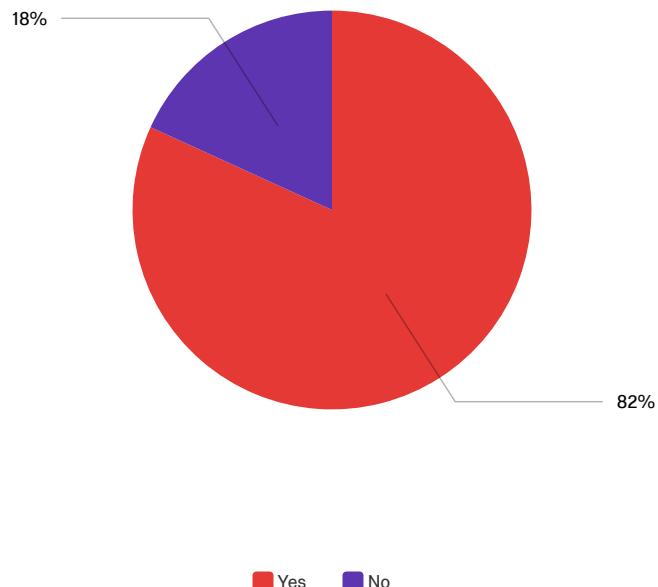
Q26 - If you have unmowed shoreland vegetation, how far inland from the water's edge does it extend?



#	Field	Choice	Count
1	1-15 feet	91%	10
2	16-35 feet	0%	0
3	over 35 feet	9%	1

Showing Rows: 1 - 4 Of 4

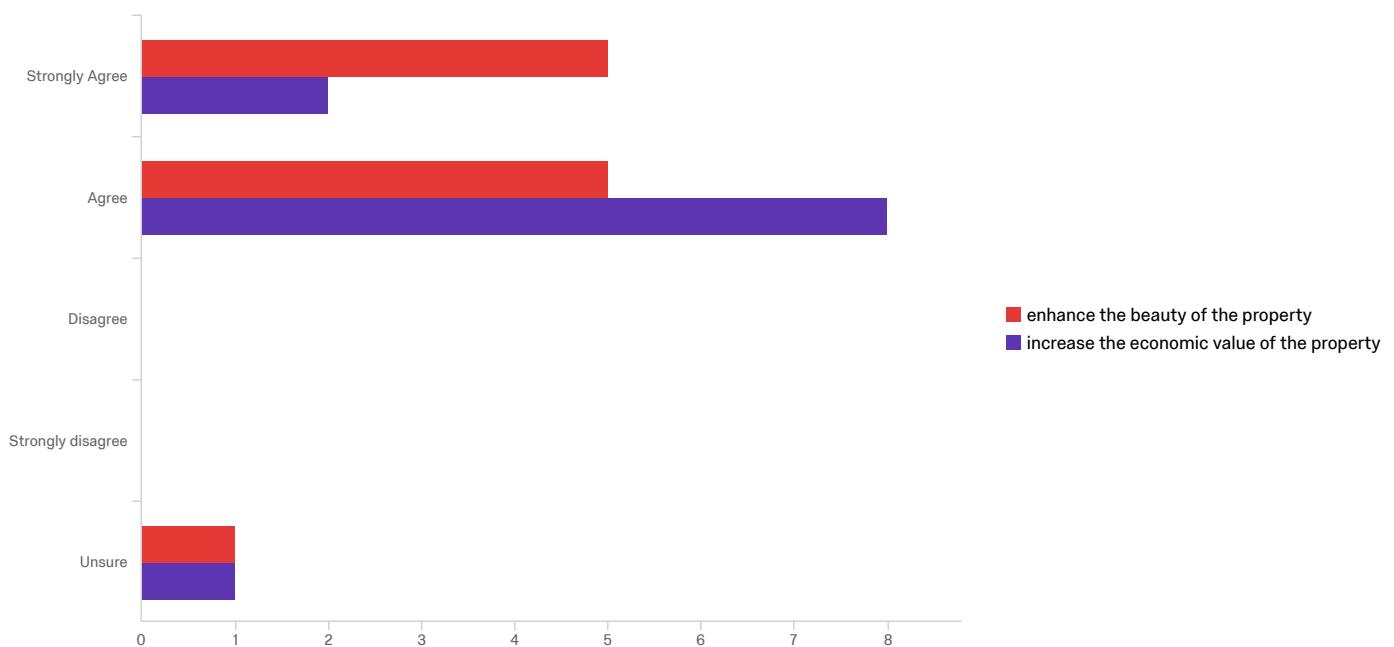
Q31 - Do you have woody structure such as fallen trees or large branches at the water's edge along your property?



#	Field	Choice Count	
1	Yes	82%	9
2	No	18%	2
			11

Showing Rows: 1 - 3 Of 3

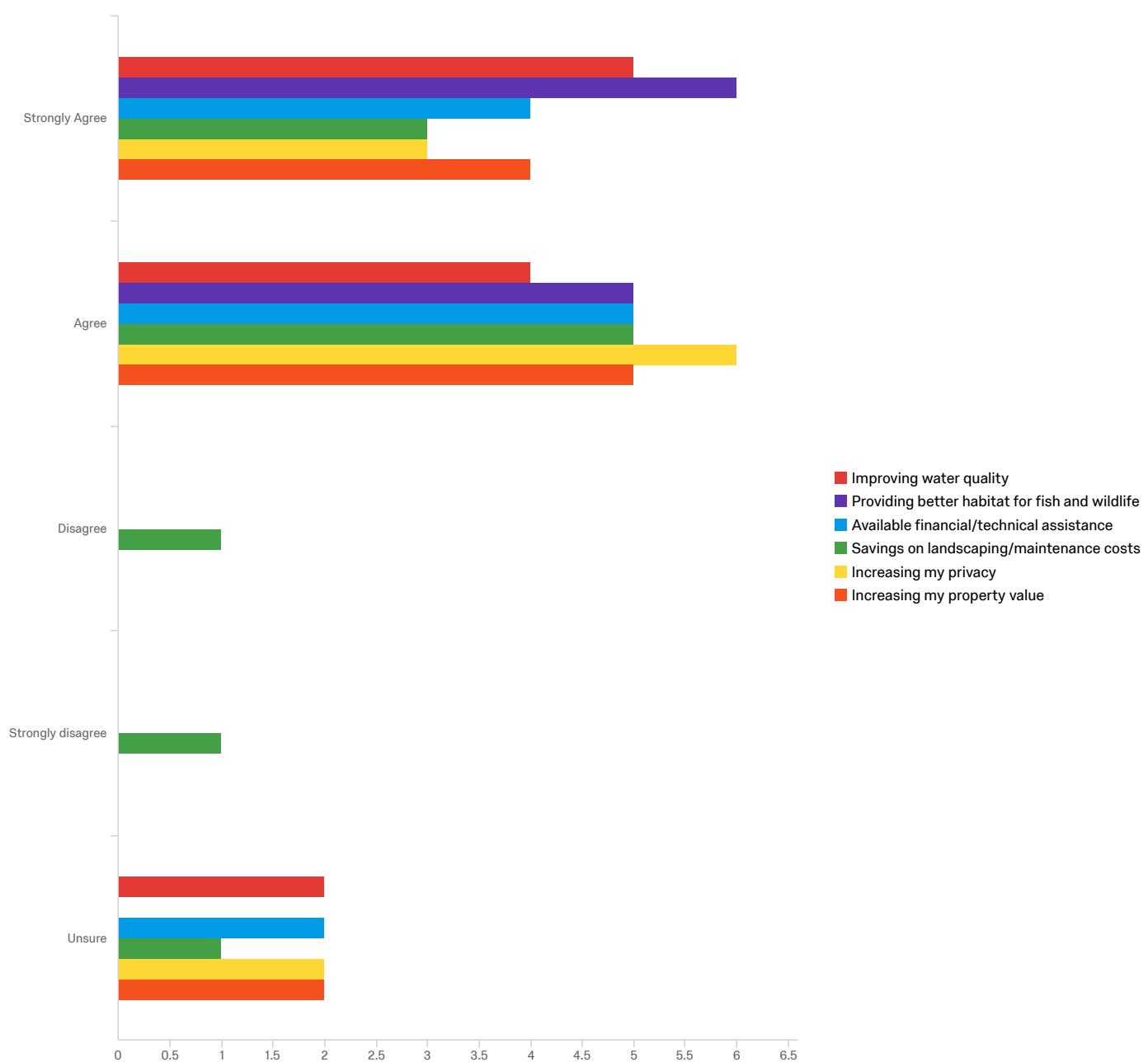
Q27 - In your opinion, does shoreland vegetation...



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	enhance the beauty of the property	45% 5	45% 5	0% 0	0% 0	9% 1	11
2	increase the economic value of the property	18% 2	73% 8	0% 0	0% 0	9% 1	11

Showing Rows: 1 - 2 Of 2

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

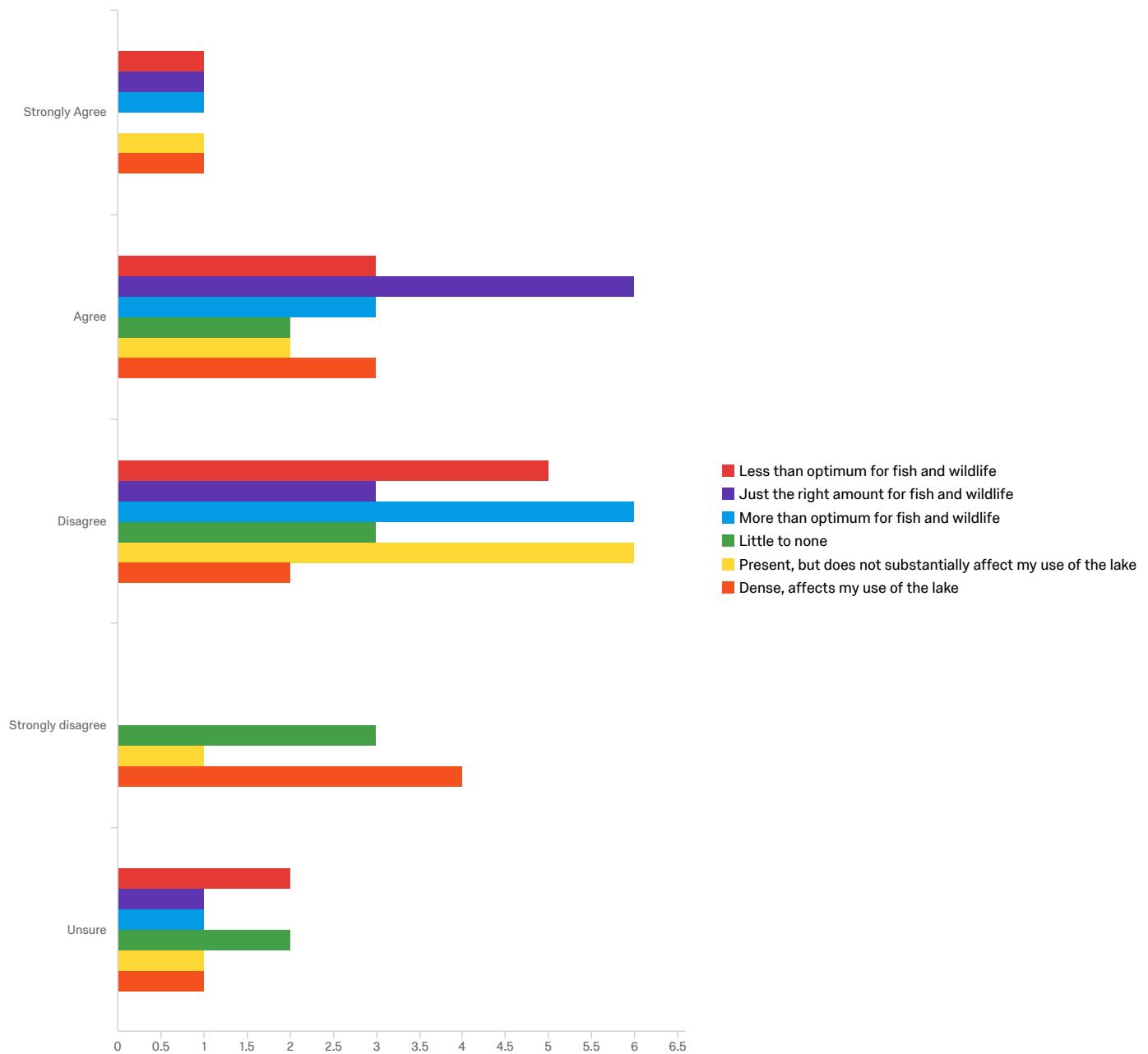


#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Improving water quality	45% 5	36% 4	0% 0	0% 0	18% 2	11
2	Providing better habitat for fish and wildlife	55% 6	45% 5	0% 0	0% 0	0% 0	11
3	Available financial/technical assistance	36% 4	45% 5	0% 0	0% 0	18% 2	11
4	Savings on landscaping/maintenance costs	27% 3	45% 5	9% 1	9% 1	9% 1	11

5	Increasing my privacy	27%	3	55%	6	0%	0	0%	0	18%	2	11
6	Increasing my property value	36%	4	45%	5	0%	0	0%	0	18%	2	11

Showing Rows: 1 - 6 Of 6

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

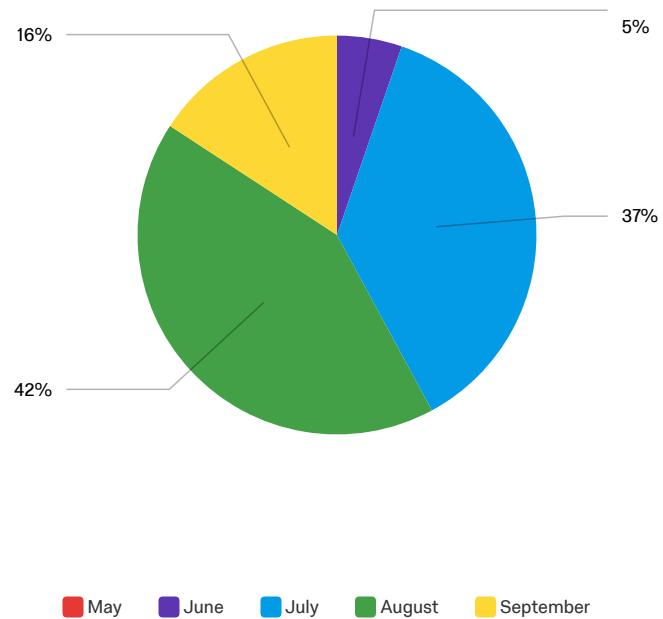


#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Less than optimum for fish and wildlife	9% 1	27% 3	45% 5	0% 0	18% 2	11
2	Just the right amount for fish and wildlife	9% 1	55% 6	27% 3	0% 0	9% 1	11
3	More than optimum for fish and wildlife	9% 1	27% 3	55% 6	0% 0	9% 1	11

4	Little to none	0% 0	20% 2	30% 3	30% 3	20% 2	10
5	Present, but does not substantially affect my use of the lake	9% 1	18% 2	55% 6	9% 1	9% 1	11
6	Dense, affects my use of the lake	9% 1	27% 3	18% 2	36% 4	9% 1	11

Showing Rows: 1 - 6 Of 6

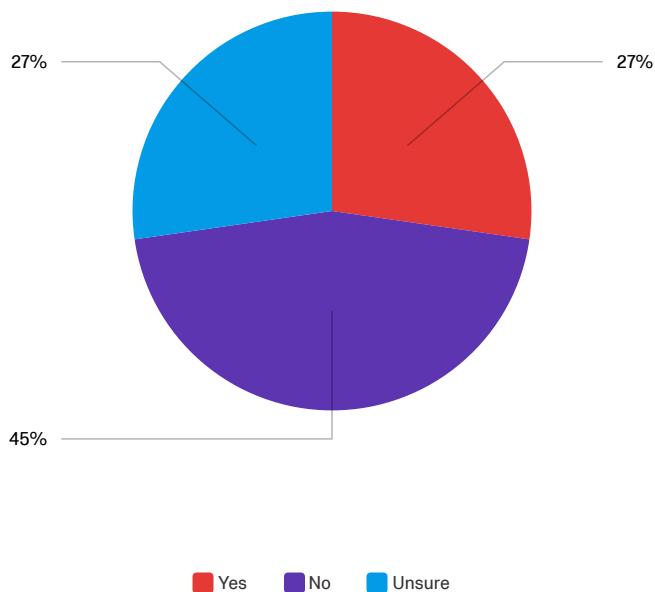
Q33 - If you think the plant growth in Munger Lake is dense, what month(s) do the problems occur? Check all that apply.



#	Field	Choice Count
1	May	0% 0
2	June	5% 1
3	July	37% 7
4	August	42% 8
5	September	16% 3
		19

Showing Rows: 1 - 6 Of 6

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

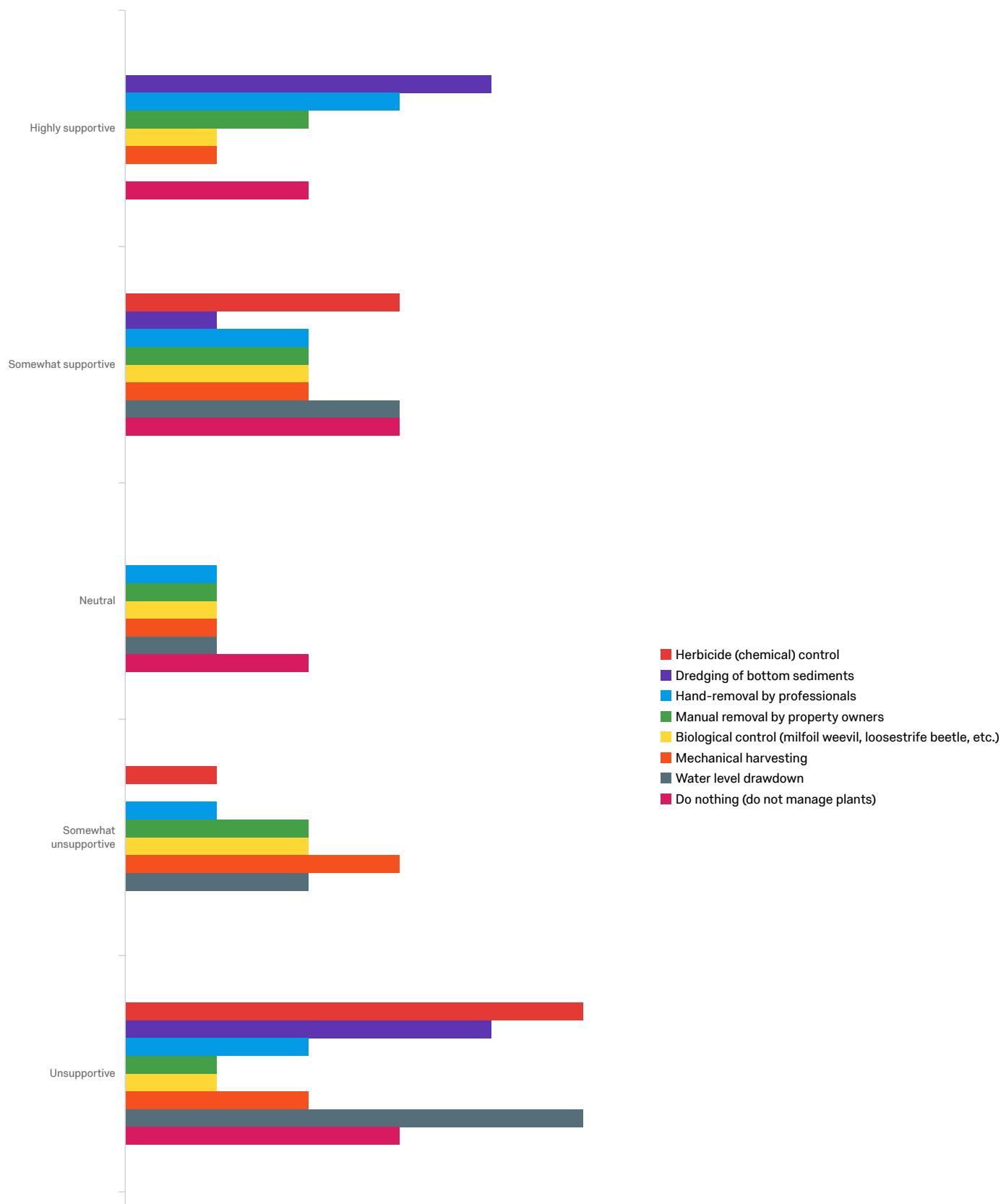


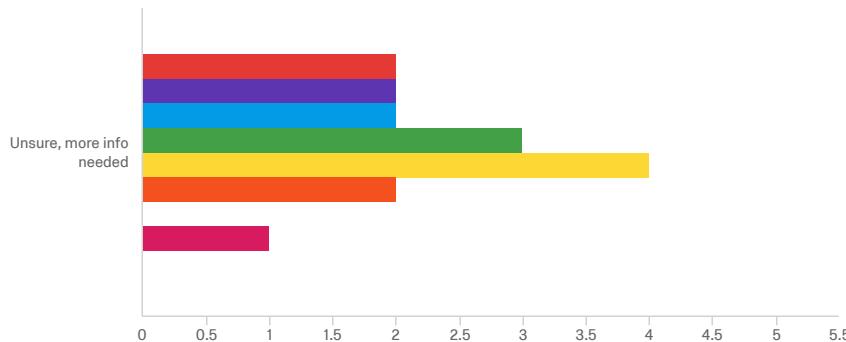
#	Field	Choice	Count
1	Yes	27%	3
2	No	45%	5
3	Unsure	27%	3

11

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 Munger Lake?

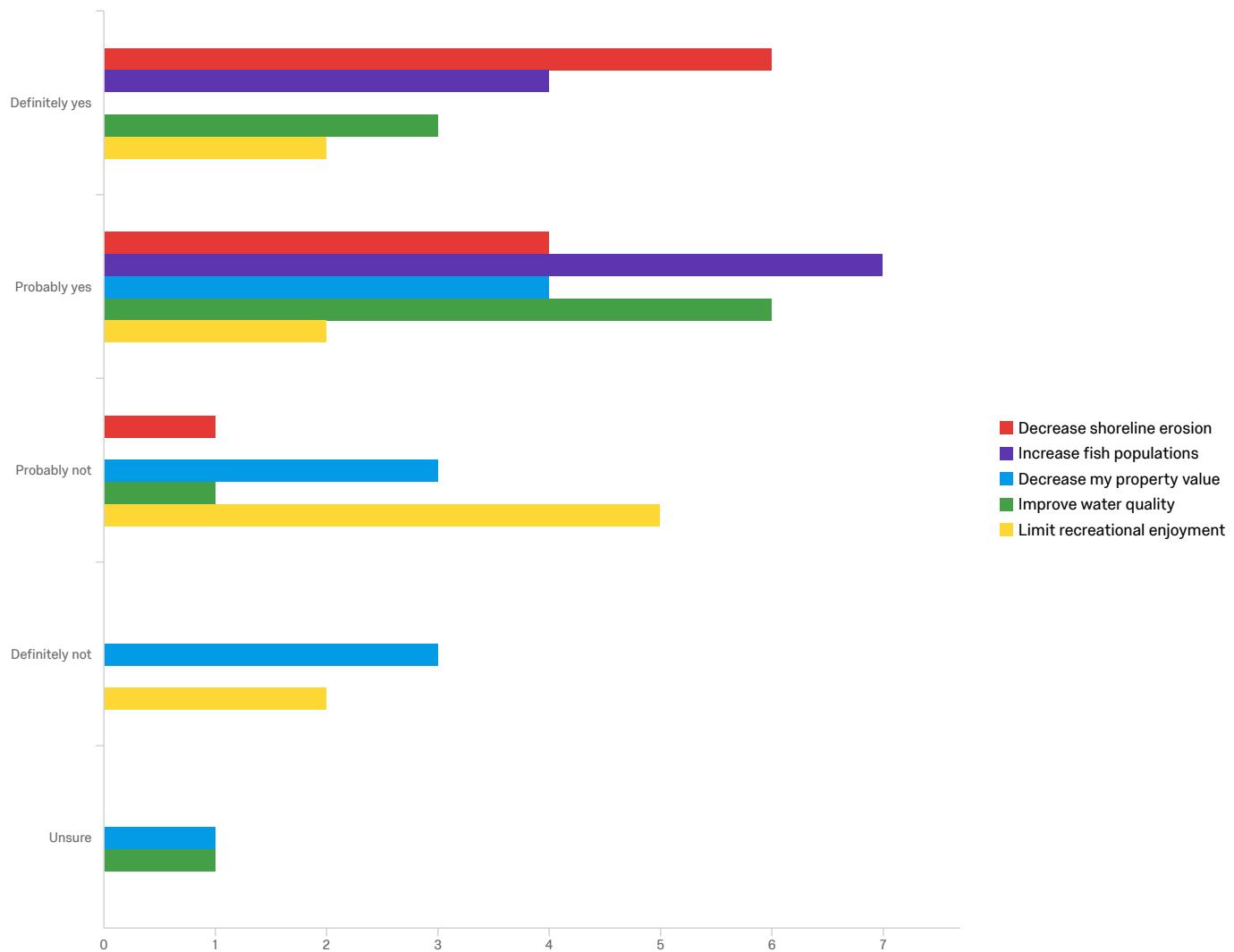




#	Field	Highly supportive	Somewhat supportive	Neutral	Somewhat unsupportive	Unsupportive	Unsure, more info needed	Total
1	Herbicide (chemical) control	0% 0	27% 3	0% 0	9% 1	45% 5	18% 2	11
2	Dredging of bottom sediments	36% 4	9% 1	0% 0	0% 0	36% 4	18% 2	11
3	Hand-removal by professionals	27% 3	18% 2	9% 1	9% 1	18% 2	18% 2	11
4	Manual removal by property owners	18% 2	18% 2	9% 1	18% 2	9% 1	27% 3	11
5	Biological control (milfoil weevil, loosestrife beetle, etc.)	9% 1	18% 2	9% 1	18% 2	9% 1	36% 4	11
6	Mechanical harvesting	9% 1	18% 2	9% 1	27% 3	18% 2	18% 2	11
7	Water level drawdown	0% 0	27% 3	9% 1	18% 2	45% 5	0% 0	11
8	Do nothing (do not manage plants)	18% 2	27% 3	18% 2	0% 0	27% 3	9% 1	11

Showing Rows: 1 - 8 Of 8

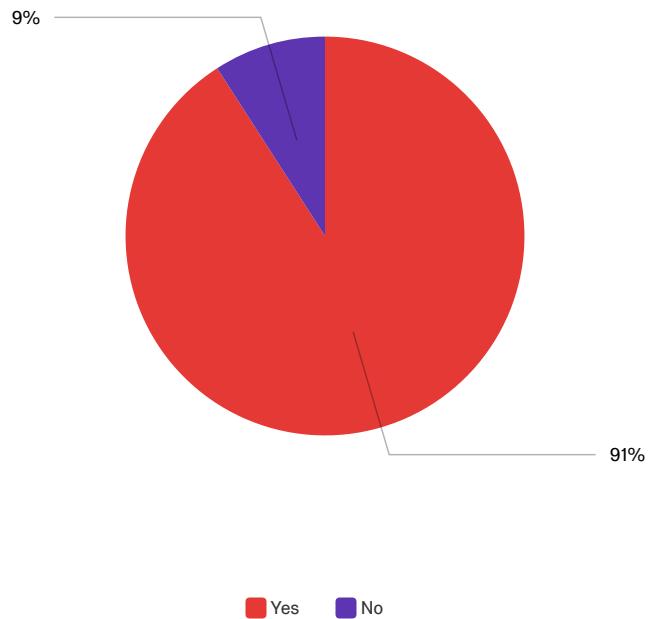
Q36 - In your opinion, does establishing or maintaining native vegetation in the water in the near-shore area...



#	Field	Definitely yes	Probably yes	Probably not	Definitely not	Unsure	Total
1	Decrease shoreline erosion	55% 6	36% 4	9% 1	0% 0	0% 0	11
2	Increase fish populations	36% 4	64% 7	0% 0	0% 0	0% 0	11
3	Decrease my property value	0% 0	36% 4	27% 3	27% 3	9% 1	11
4	Improve water quality	27% 3	55% 6	9% 1	0% 0	9% 1	11
5	Limit recreational enjoyment	18% 2	18% 2	45% 5	18% 2	0% 0	11

Showing Rows: 1 - 5 Of 5

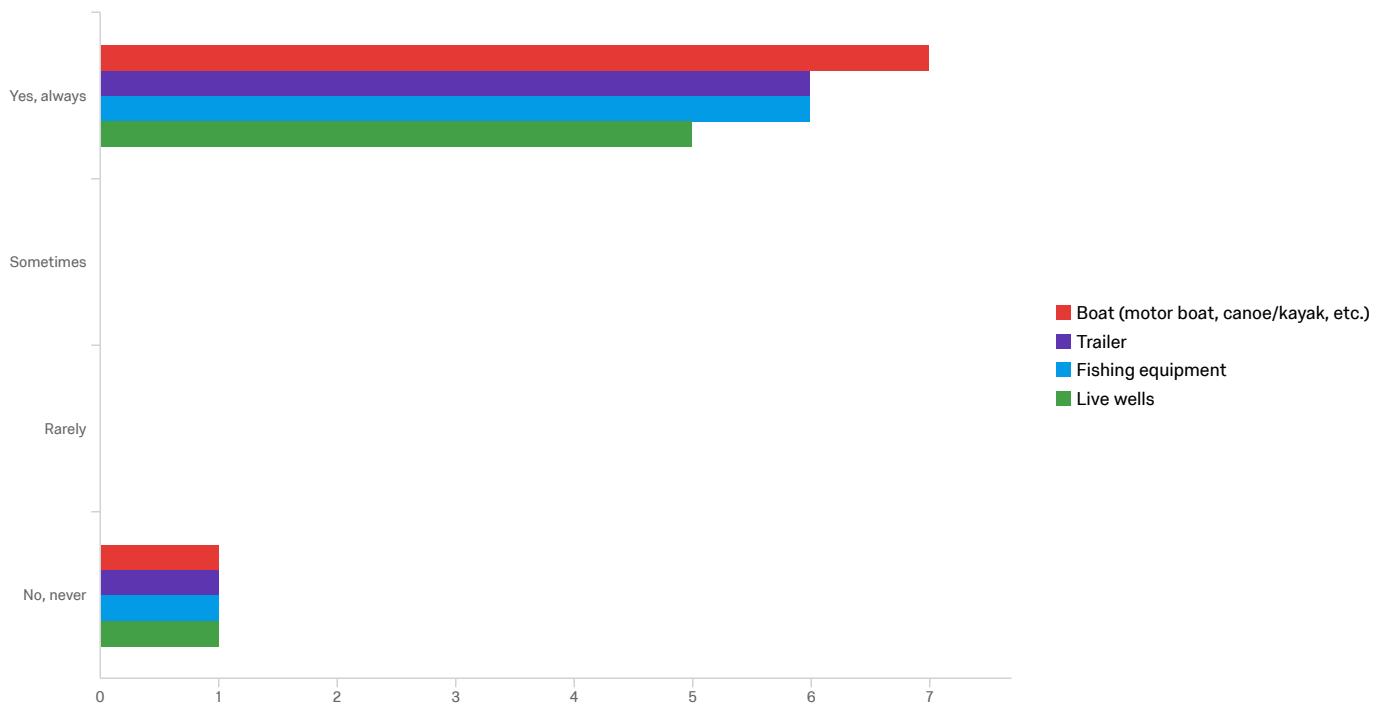
Q37 - Are you aware of invasive species (in general)?



#	Field	Choice Count
1	Yes	91% 10
2	No	9% 1

Showing Rows: 1 - 3 Of 3

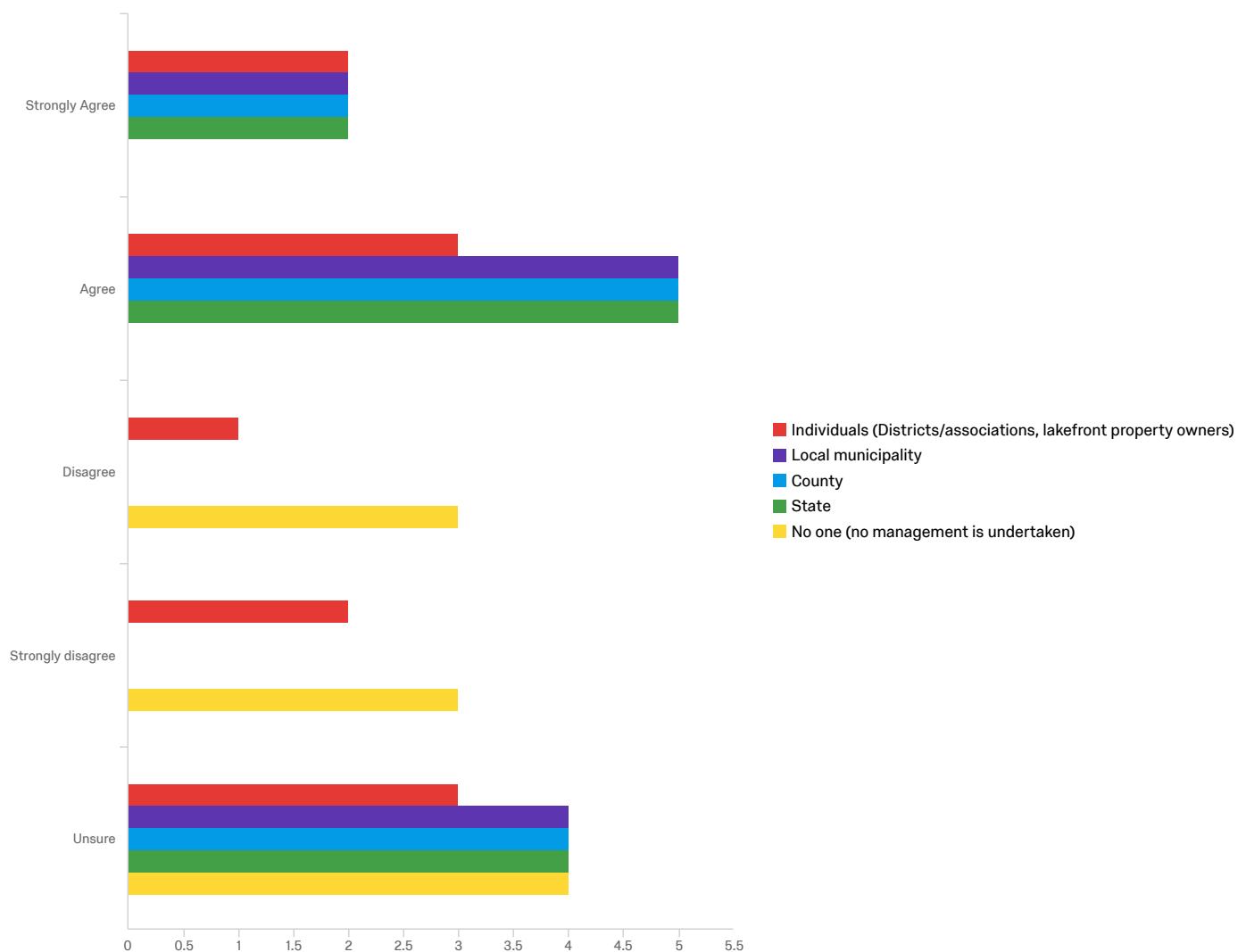
Q39 - After you have been to another lake (other than Bear), do you clean your.... before bringing it back to Munger Lake?



#	Field	Yes, always	Sometimes	Rarely	No, never	Total
1	Boat (motor boat, canoe/kayak, etc.)	88% 7	0% 0	0% 0	13% 1	8
2	Trailer	86% 6	0% 0	0% 0	14% 1	7
3	Fishing equipment	86% 6	0% 0	0% 0	14% 1	7
4	Live wells	83% 5	0% 0	0% 0	17% 1	6

Showing Rows: 1 - 4 Of 4

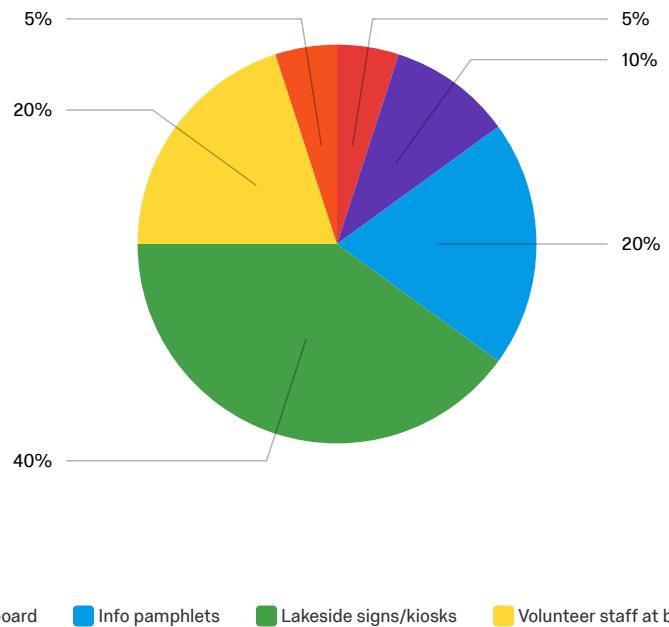
Q40 - Who should pay the cost of managing invasive aquatic plants?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Individuals (Districts/associations, lakefront property owners)	18% 2	27% 3	9% 1	18% 2	27% 3	11
2	Local municipality	18% 2	45% 5	0% 0	0% 0	36% 4	11
3	County	18% 2	45% 5	0% 0	0% 0	36% 4	11
4	State	18% 2	45% 5	0% 0	0% 0	36% 4	11
5	No one (no management is undertaken)	0% 0	0% 0	30% 3	30% 3	40% 4	10

Showing Rows: 1 - 5 Of 5

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



#	Field	Choice Count
1	Newspaper	5% 1
2	Billboard	10% 2
3	Info pamphlets	20% 4
4	Lakeside signs/kiosks	40% 8
5	Volunteer staff at boat launch	20% 4
6	Other	5% 1
		20

Showing Rows: 1 - 7 Of 7

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

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

Dredge

Love fishing the lake. The fish population, especially crappie, seems to be decreasing. Is the addition of walleye affecting this?

control weeds when they cause a year problem

Control jets and limit the high speed boats.

Adding less walleye and more perch. Establish a launch fee at landing.

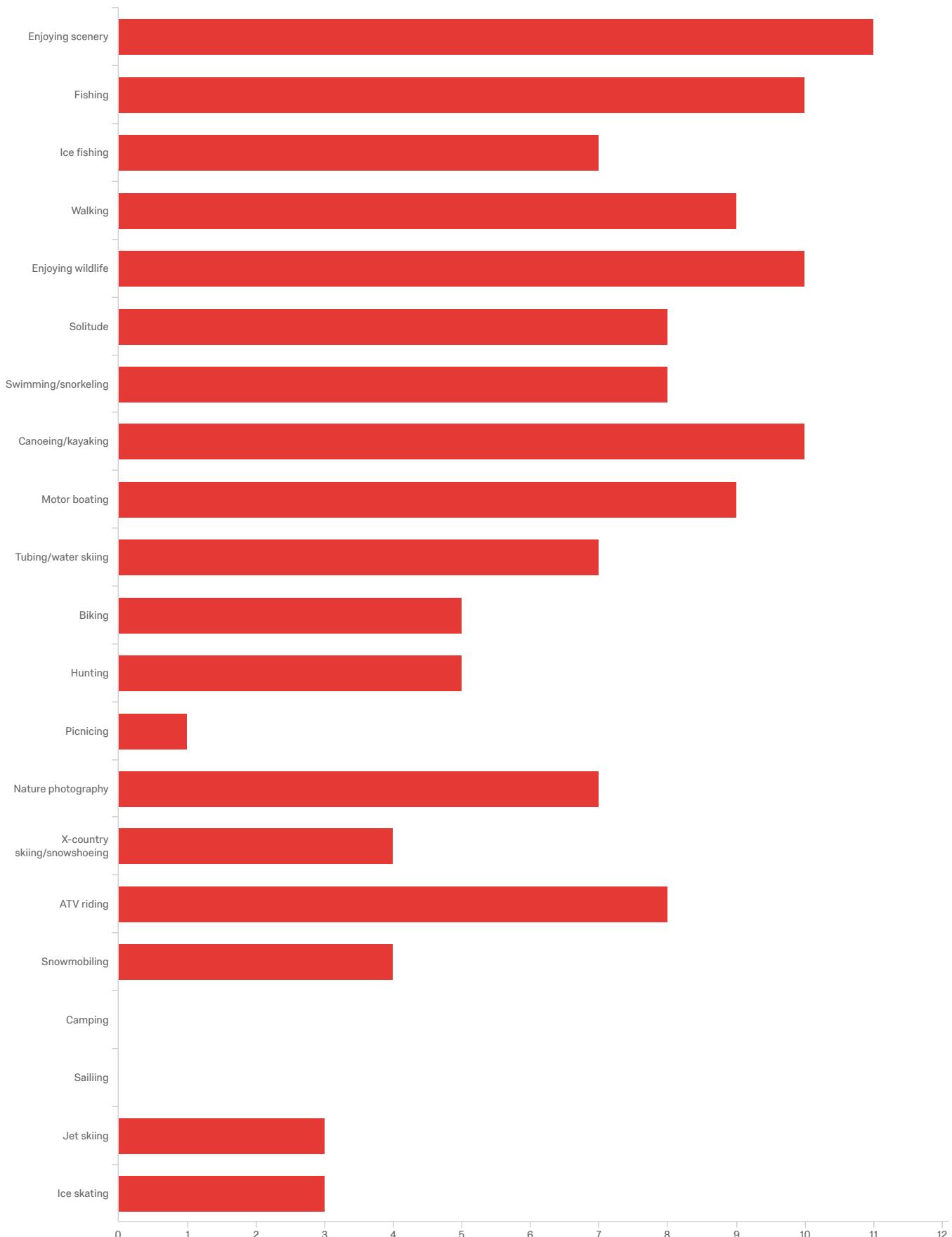
Effectively manage the fish populations, keep the boat landing in good repair, continue monitoring water quality and invasive species.

Determine true cause of problem and present options to homeowners to fix.

High speed inboard and motors should be regulated. You take your life into your hands if you try to be on the lake between 10 and 5. Being a shallow lake of 93 acres, these boats create huge floating weed masses that clog the shoreline and cover spawning beds that fish have been using for years. Many of these areas are gone I believe the powers that be will be will never let these improvements to happen.

Showing Records: 1 - 8 Of 8

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



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

129

Showing Rows: 1 - 22 Of 22

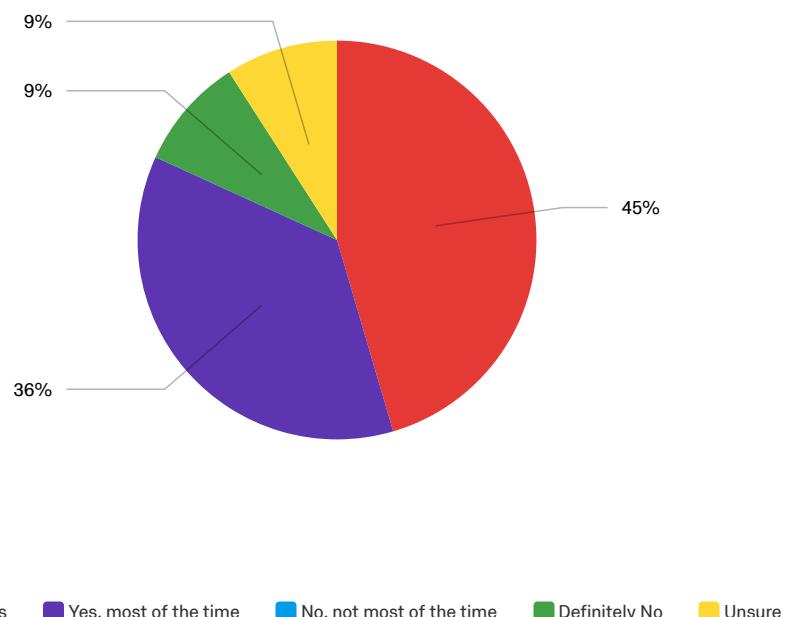
Q46 - Other recreational activities not included above:

Other recreational activities not included above:

none

Showing Records: 1 - 1 Of 1

Q47 - "No Wake" is allowed on Munger Lake between 5pm and 11am. Do you like the current "No Wake" rules as they are?



#	Field	Choice Count
1	Definitely Yes	45% 5
2	Yes, most of the time	36% 4
3	No, not most of the time	0% 0
4	Definitely No	9% 1
5	Unsure	9% 1
		11

Showing Rows: 1 - 6 Of 6

Q48 - If you think the "No Wake" rules should be adjusted...in what way?

If you think the "No Wake" rules should be adjusted...in what way?

10:00 to 5:00

The should be increased. 10 a.m. to 6 p.m. on Sat and Sunday would be better.

Good the way they are.

5 o'clock is way too late.motor

Showing Records: 1 - 4 Of 4

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

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

nothing

Increase the no wake times

advise lake residents whats available to do at time of need

Limit the use of jet skies

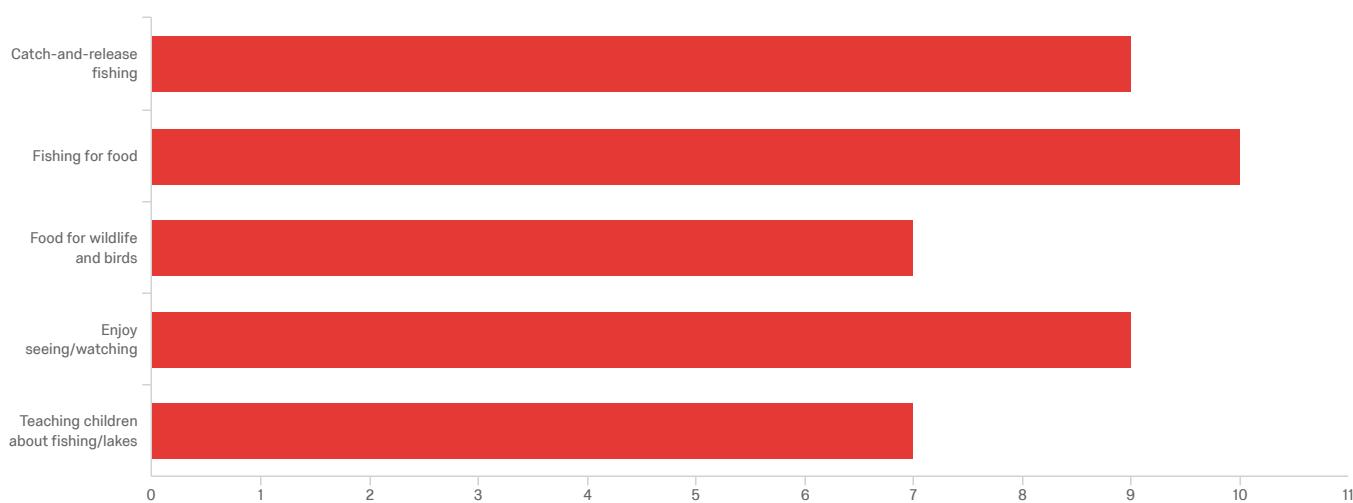
Keep boat landing in good repair and enforce rules about keeping boats so many feet from shore.

Boaters need to know the rules such as direction and keeping distance between boats. Jet skis are out of control, no power loading. How to enforce the above????

Motor size limits should be created for such a small lake.

Showing Records: 1 - 7 Of 7

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

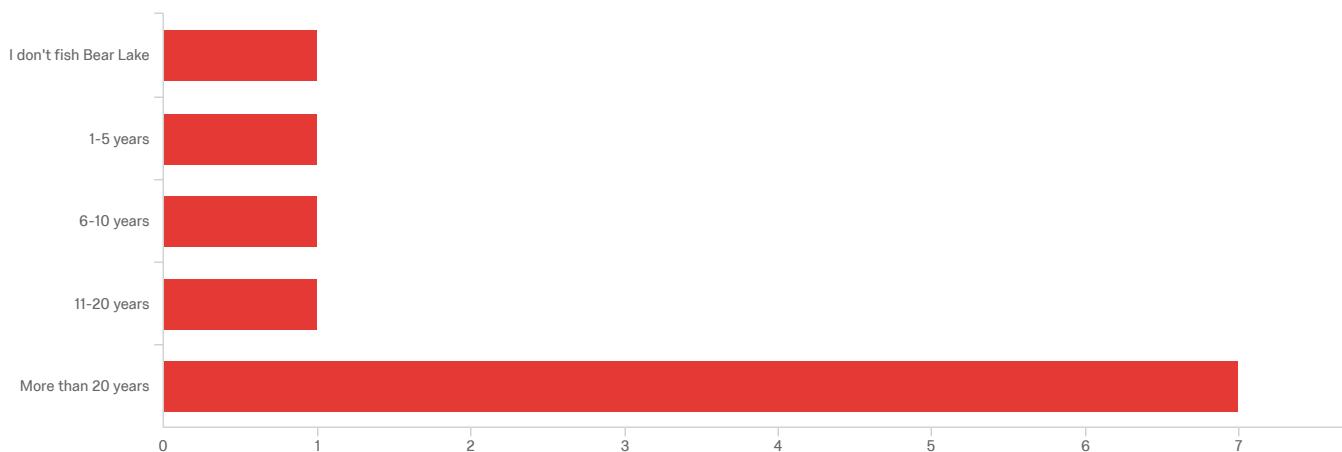


#	Field	Choice Count
1	Catch-and-release fishing	21% 9
2	Fishing for food	24% 10
3	Food for wildlife and birds	17% 7
4	Enjoy seeing/watching	21% 9
5	Teaching children about fishing/lakes	17% 7

42

Showing Rows: 1 - 6 Of 6

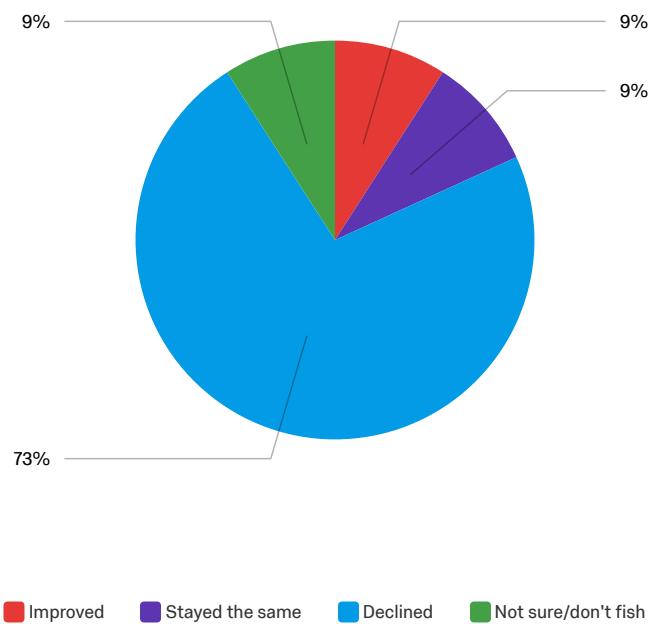
Q52 - How many years experience do you have fishing Munger Lake?



#	Field	Choice Count
1	I don't fish Bear Lake	9% 1
2	1-5 years	9% 1
3	6-10 years	9% 1
4	11-20 years	9% 1
5	More than 20 years	64% 7

Showing Rows: 1 - 6 Of 6

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



#	Field	Choice	Count
1	Improved	9%	1
2	Stayed the same	9%	1
3	Declined	73%	8
4	Not sure/don't fish	9%	1
			11

Showing Rows: 1 - 5 Of 5

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

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

Over-fished. Not enough people are catch and release fishing.

Not sure

fish cant reproduce need more breeding structure

Introducing walleye which has increased fishing pressure tremendously

stocking inequites and choices

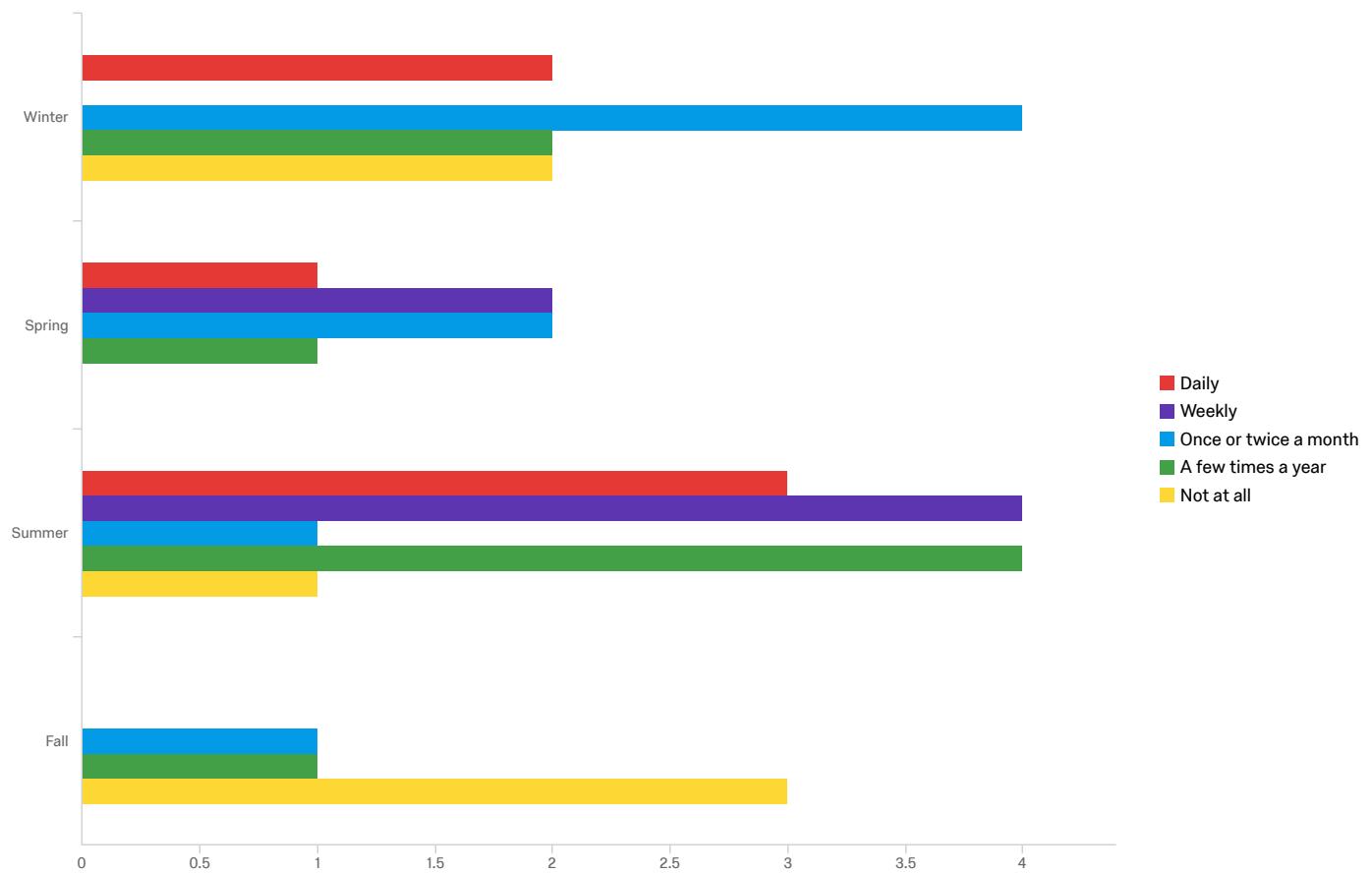
Shoreline development, watercrft usage and fishing pressure

Huge growth of weeds, suffocating water

Increase in fishing pressure, introduction of non native species

Showing Records: 1 - 8 Of 8

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



#	Field	Winter	Spring	Summer	Fall	Total
1	Daily	33% 2	17% 1	50% 3	0% 0	6
2	Weekly	0% 0	33% 2	67% 4	0% 0	6
3	Once or twice a month	50% 4	25% 2	13% 1	13% 1	8
4	A few times a year	25% 2	13% 1	50% 4	13% 1	8
5	Not at all	33% 2	0% 0	17% 1	50% 3	6

Showing Rows: 1 - 5 Of 5

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

What type of fish do you catch on Bear Lake?

perch, blue gills

Bluegill, Crappie, Bass, Northern, Walleye (few) and a few Perch

Crappie bluegill sunfish largemouth northern rock bass occasional walleye

perch bluegill walleye

Bass

Pan fish. Bass

bass, bluegill, crappie

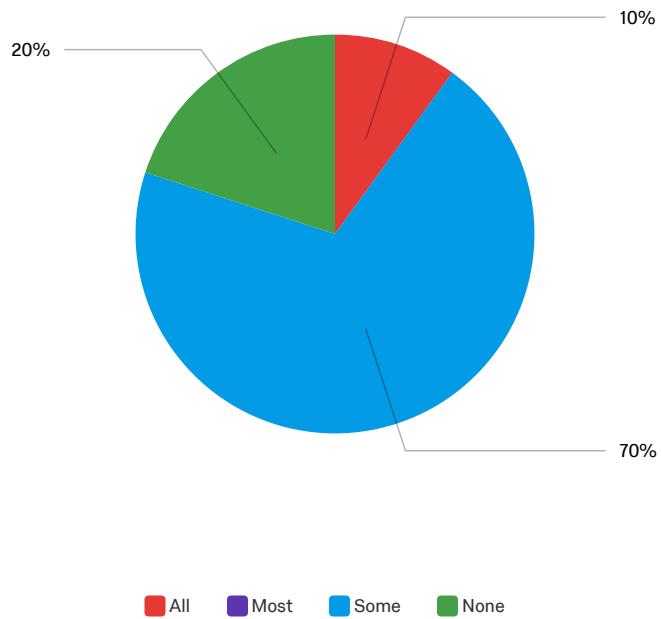
Bass,panfish,northern

None anymore, used to catch tons of pan fish crappies, perchh

Mostly panfish now

Showing Records: 1 - 10 Of 10

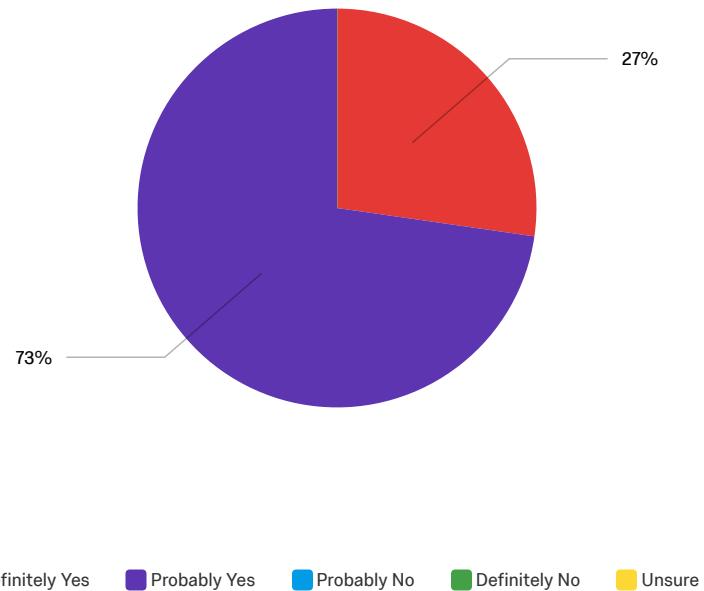
Q57 - In general, how many of the fish you catch are big enough to keep?



#	Field	Choice Count
1	All	10% 1
2	Most	0% 0
3	Some	70% 7
4	None	20% 2
		10

Showing Rows: 1 - 5 Of 5

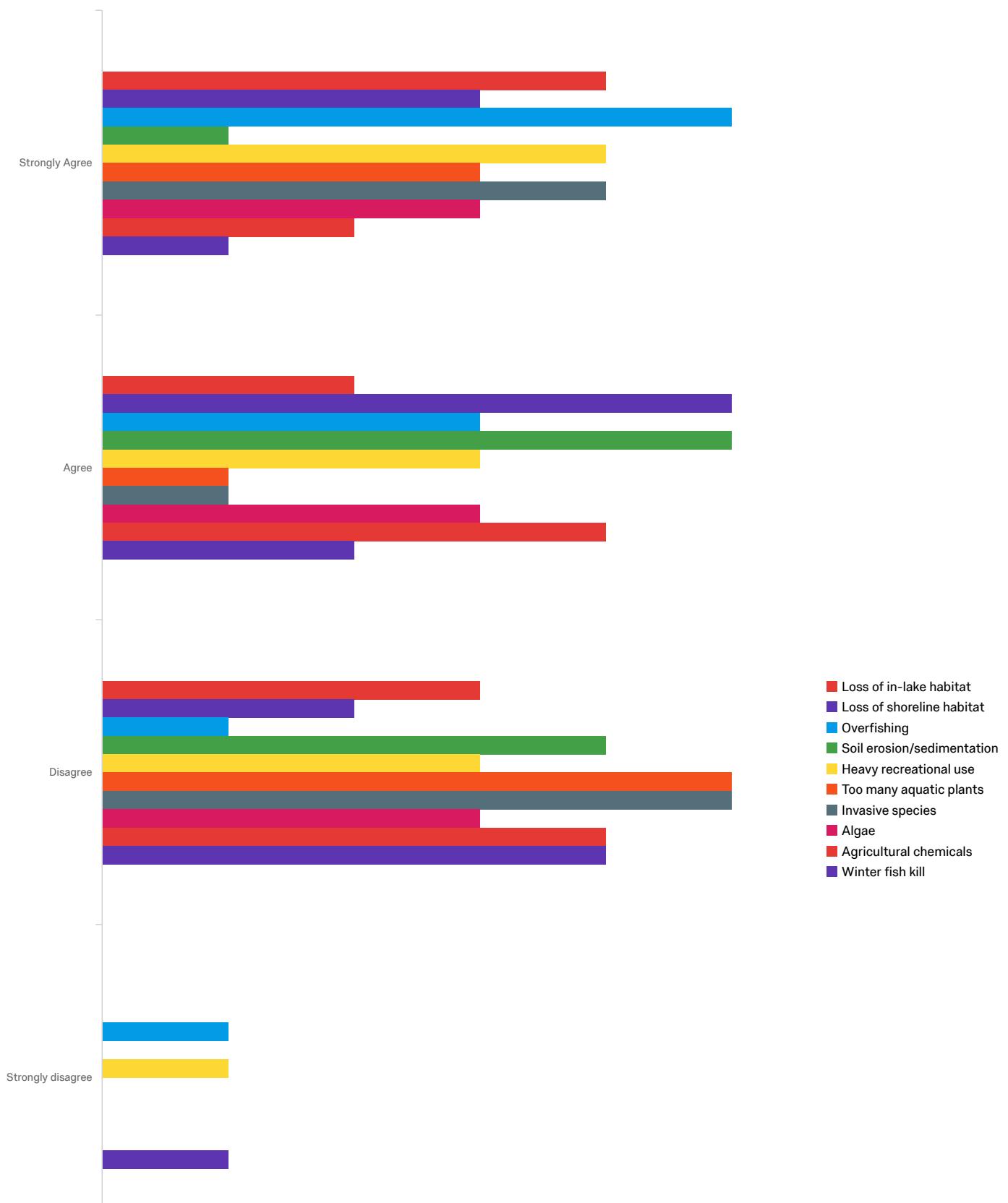
Q58 - Do you believe fish from Munger Lake are safe to eat?

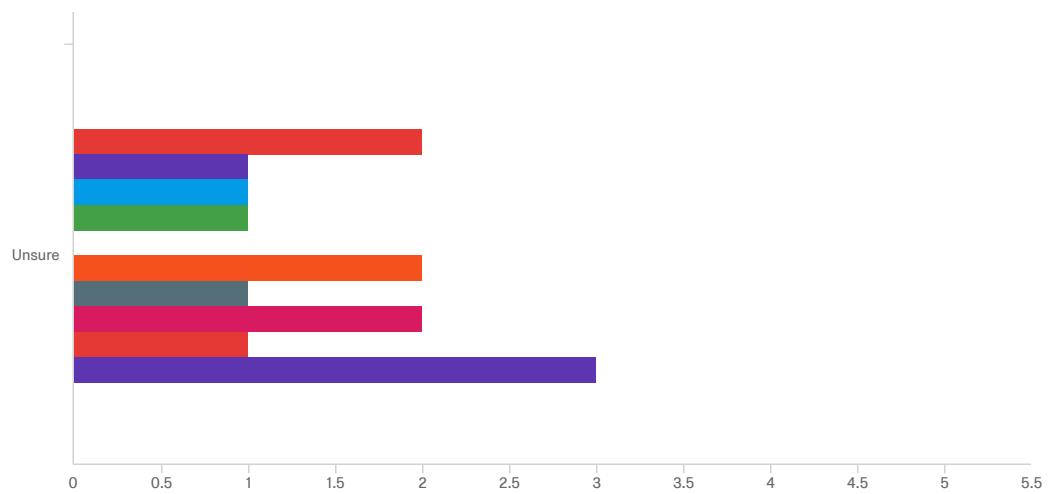


#	Field	Choice	Count
1	Definitely Yes	27%	3
2	Probably Yes	73%	8
3	Probably No	0%	0
4	Definitely No	0%	0
5	Unsure	0%	0
			11

Showing Rows: 1 - 6 Of 6

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





#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Loss of in-lake habitat	36% 4	18% 2	27% 3	0% 0	18% 2	11
2	Loss of shoreline habitat	27% 3	45% 5	18% 2	0% 0	9% 1	11
3	Overfishing	45% 5	27% 3	9% 1	9% 1	9% 1	11
4	Soil erosion/sedimentation	9% 1	45% 5	36% 4	0% 0	9% 1	11
5	Heavy recreational use	36% 4	27% 3	27% 3	9% 1	0% 0	11
6	Too many aquatic plants	27% 3	9% 1	45% 5	0% 0	18% 2	11
7	Invasive species	36% 4	9% 1	45% 5	0% 0	9% 1	11
8	Algae	27% 3	27% 3	27% 3	0% 0	18% 2	11
9	Agricultural chemicals	18% 2	36% 4	36% 4	0% 0	9% 1	11
10	Winter fish kill	9% 1	18% 2	36% 4	9% 1	27% 3	11

Showing Rows: 1 - 10 Of 10

Q61 - Do you have any additional comments regarding Munger Lake?

Do you have any additional comments regarding Bear Lake?

I can't stress enough that I love the mixed use. I personally do not like jet skis but would never want to limit their use just as I don't want anyone limiting the ways I use the lake. I am interested in anything we can do to improve the fishing.

the lake is spring fed which helps with clarity weed problems come into play some years the problem is high speed boat traffic on a less than 100 acre lake cut vegetation

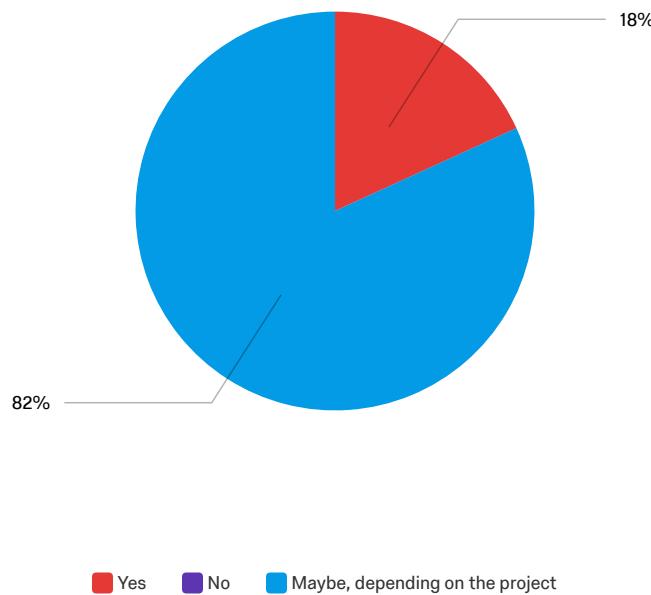
no

To much fishing pressure from non lake residents

It is no longer the lake it was 80 years ago. I think respect for our natural resources is no longer appreciated. Today it's, "Take what you can and get out"!

Showing Records: 1 - 5 Of 5

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

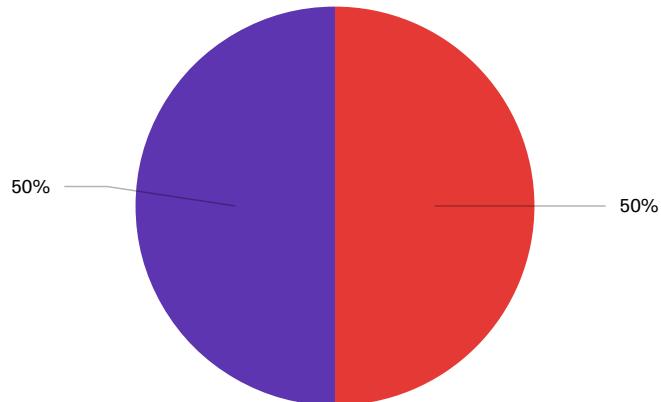


#	Field	Choice Count
1	Yes	18% 2
2	No	0% 0
3	Maybe, depending on the project	82% 9

Showing Rows: 1 - 4 Of 4

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

(Check all that apply)



■ Healthy Waters Cost Share Program ■ Oconto County Cost Share Program

#	Field	Choice Count
1	Healthy Waters Cost Share Program	50% 1
2	Oconto County Cost Share Program	50% 1
		2

Showing Rows: 1 - 3 Of 3

End of Report