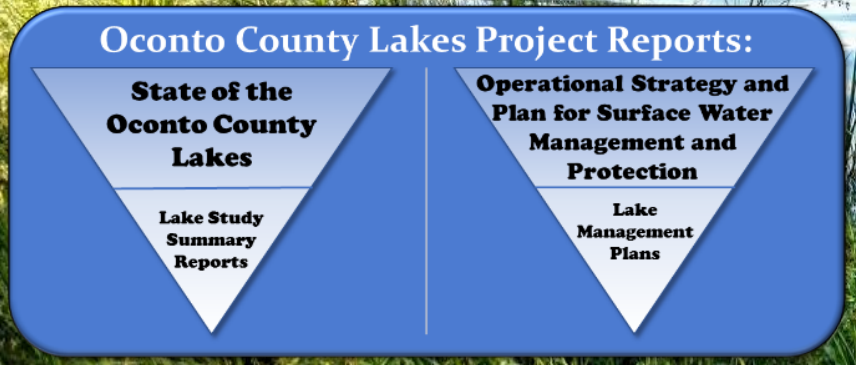
Oconto County Lakes Project

UNDERWOOD LAKE MANAGEMENT PLAN

2021



VISION

Underwood Lake will remain secluded, clean and healthy surrounded by respectful and informed lake stewards.

Underwood Lake Management Plan

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

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

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

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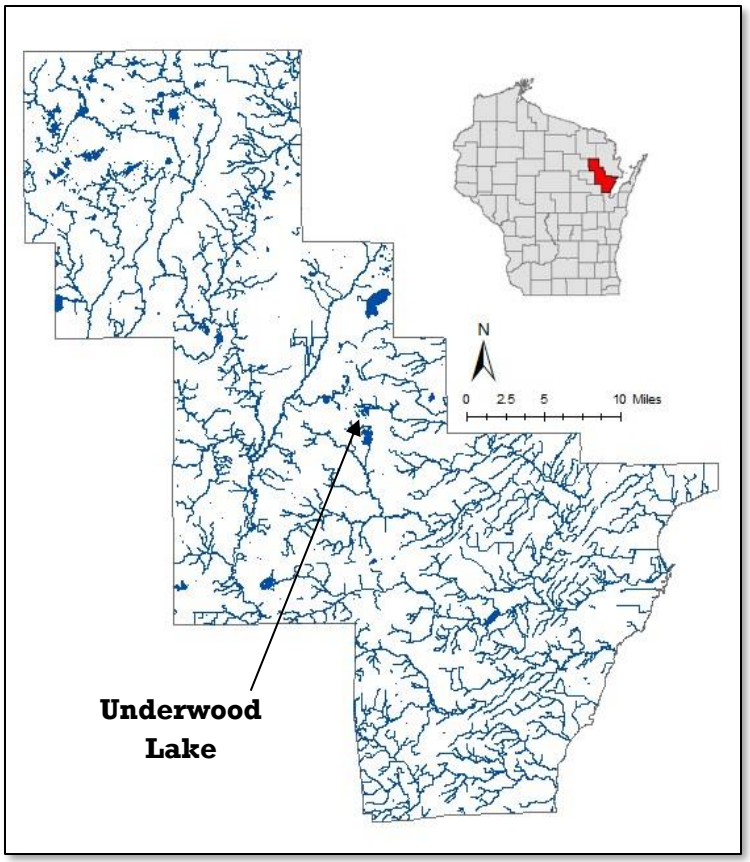
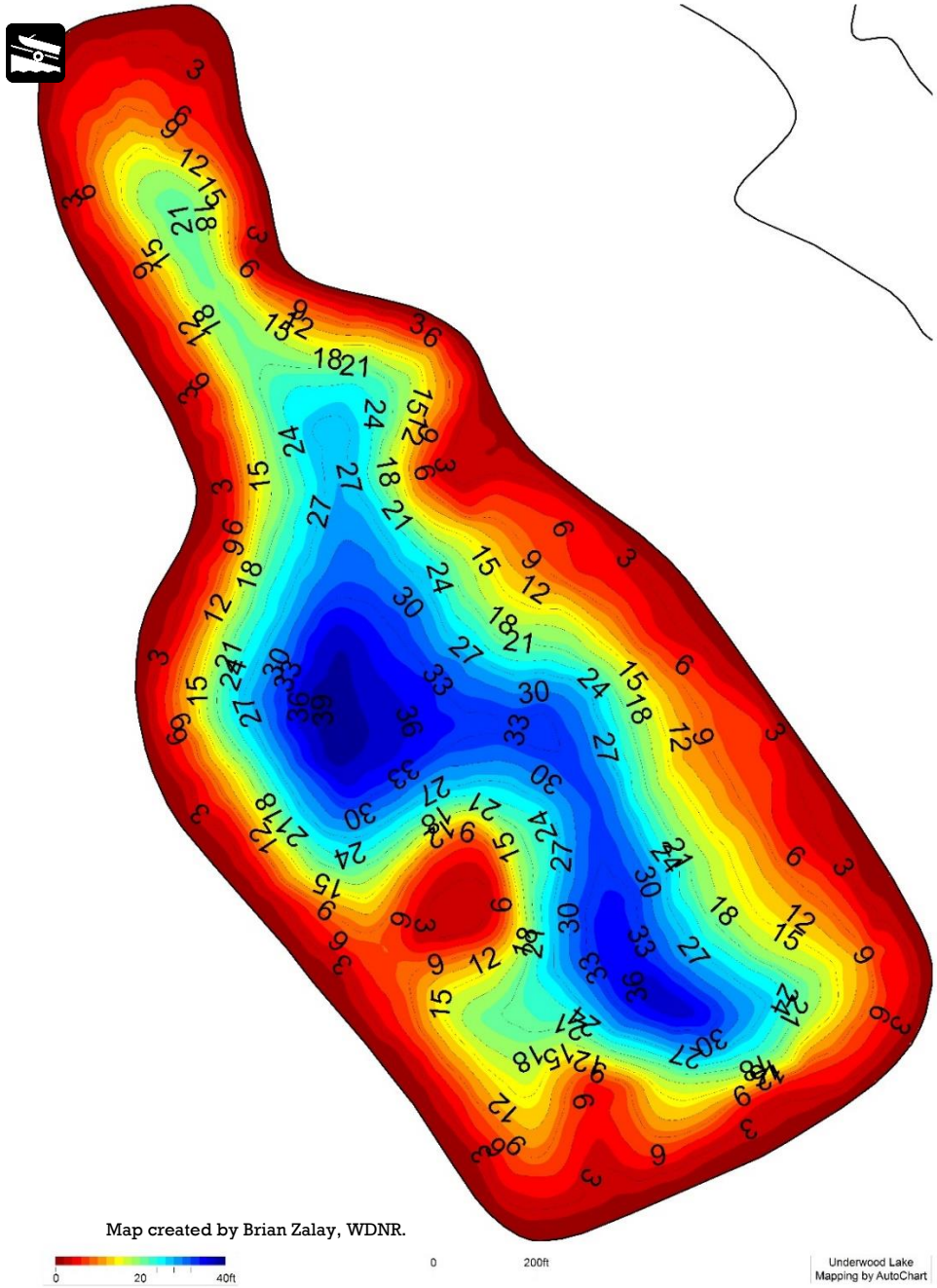
Resource	Acronym or Truncated Name
Citizen Lake Monitoring Network	CLMN
Clean Boats Clean Waters	CBCW
Lumberjack Resource Conservation & Development Council	LRCD
Oconto County Land & Water Conservation Dept.	OC LCD
Oconto County Board of Supervisors	OC Board
Oconto County Lakes and Waterways Association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

Background

ABOUT UNDERWOOD LAKE

Underwood Lake is located in the Town of Brazeau, in northeast Wisconsin. This 45-acre seepage lake has a maximum depth of 37 feet with clear water. Its bottom sediments are primarily sand with muck and some gravel. Visitors have access to the lake from one public boat landing on the lake's north end, which is owned and maintained by Oconto County. Water enters and leaves Underwood Lake primarily from groundwater. When water levels are high enough, there is a small drainage that leads to Lee Lake to the east.





What Is A Lake Management Plan?

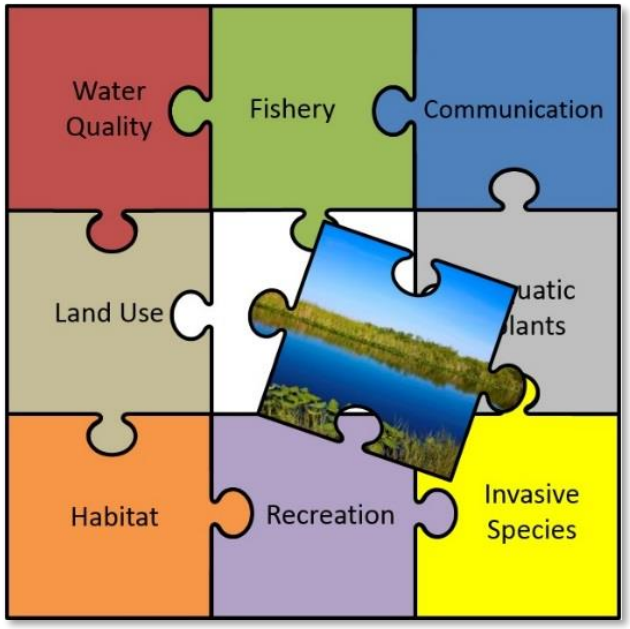
LAKE MANAGEMENT PLANS (LMP)

What is an LMP?

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

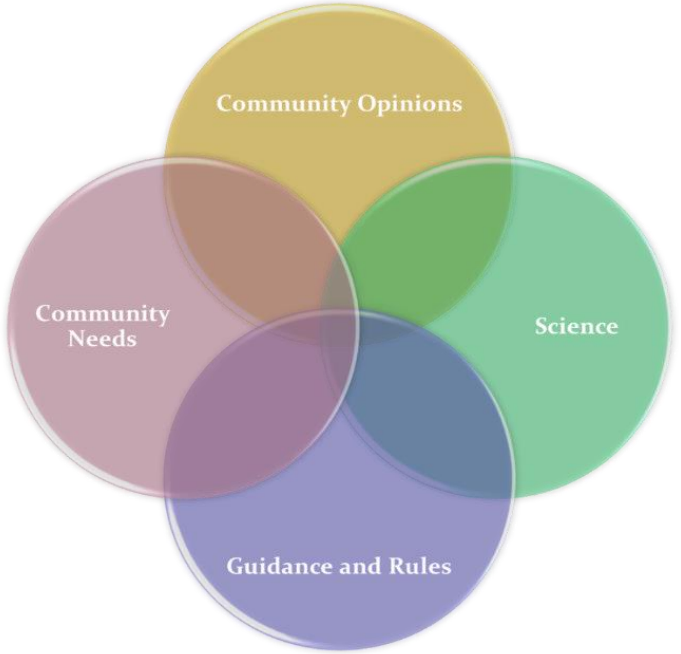
What is the purpose of this LMP?

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



Implementing the content of this LMP will enable citizens and others to work together to achieve the vision for Underwood Lake now and in the years to come. It is a dynamic document that identifies goals and action items for the purpose of maintaining, protecting and/or creating desired conditions in the lake and identifies steps to correct past problems, improve on current conditions, and provide guidance for future boards, lake users, and technical experts.

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



How Was This Plan Created?

ABOUT THIS PLAN

One of the first steps in creating this plan was to gather and compile data about the lake and its ecosystem to understand past and current conditions. This was done in 2018-2019 alongside 5 other lakes as part of the Oconto County Lakes Project. The project was initiated by citizens in the Oconto County Lakes and Waterways Association who encouraged Oconto County to prioritize lake interests. This effort led to funding from the WDNR Lake Protection Grant Program. There was insufficient data available for many of the lakes to evaluate current water quality, aquatic plant communities, invasive species, and shorelands. The data that were available had been collected at differing frequencies or periods of time, making it difficult to compare lake conditions. Professionals and students from UW-Stevens Point, Oconto County Land Conservation Department, UW Extension, Oconto County citizens and WDNR staff collected the data for use in the development of lake management plans. Sources of information used in the planning process are listed at the end of this document.

Reports from the Underwood 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. Area residents, lake users, and representatives of local municipalities gathered at a public meeting held on June 23, 2018 at the Bagley Town Hall and January 20, 2021 via an online platform to learn from one another and make decisions about the fishery, water quality, habitat, and land management in the Underwood Lake watershed. Technical assistance during the planning process was provided by staff from OCLCD, UWEX, WDNR, and the CWSE.

How were various opinions incorporated?

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

How Is This Management Plan Used?

Who will use this plan?

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

Who can help implement this plan?

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

Management Plan Structure

GOALS FOR UNDERWOOD LAKE

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

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

In-Lake Habitat and a Healthy Lake

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

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

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

Landscapes and the Lake

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

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

Watershed—land use, management practices, conservation programs

People and the Lake

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

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

Updates & Revisions—plan for maintaining a living document

Underwood Lake Management Plan Goals

Goals for Underwood Lake

The following goals and actions were derived from the values and concerns of citizens interested in Underwood Lake and members of the planning committee, as well as the known science about Underwood Lake, its ecosystem and the landscape within its watershed.

Implementing and regularly updating the goals and actions in this plan will ensure that the vision is supported and that changes are incorporated into the plan.

LIST OF GOALS

Goal 1	**Underwood Lake will maintain a healthy well-balanced fishery.**
Goal 2	**Underwood Lake will continue to have a healthy and diverse aquatic plant community that provides good habitat and water quality.**
Goal 3	**Sensitive areas in Underwood Lake, which provide essential habitat and/or water quality benefits, will be protected.**
Goal 4	**Property owners in the Underwood Lake watershed will know about and utilize resources for healthy land management practices.**
Goal 5	**Underwood Lake will have shorelands that are healthy and protective of water quality and habitat. Over the next 5 years, 300 feet (2-5 properties) of mowed shoreline will be restored and 10 fish sticks will be installed.**
Goal 6	**Maintain and/or improve water quality in Underwood Lake.**
Goal 7	**Lake users will be informed about and respectful of Underwood Lake.**
Goal 8	**Increase participation in lake stewardship.**
Goal 9	**Review plan regularly and update as needed.**

Fish Community

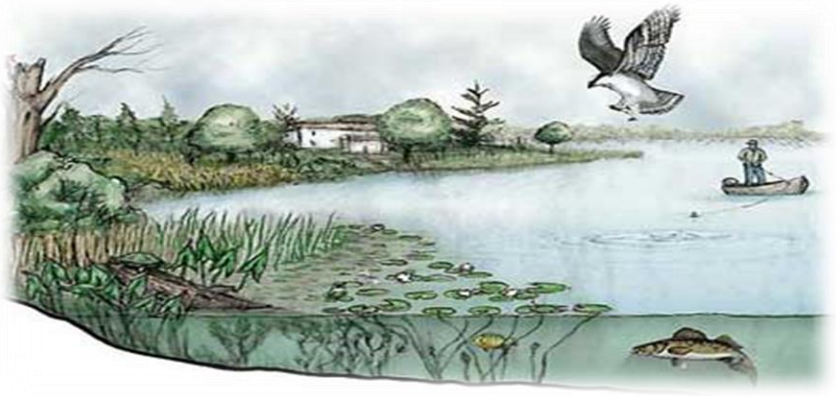
IN-LAKE HABITAT AND A HEALTHY LAKE

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 Underwood Lake includes native aquatic plants and shoreland vegetation, as well as tree branches/limbs above and below the water.

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



abundance of plants and animals that comprise the lake community also vary based on the water quality, and the health and characteristics of the shoreland and watershed.

The Fish Community

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

What can affect the fishery?

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

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

What People Value about Underwood Lake

No wake
Good swimming, few weeds, clear cool water
The quiet and beauty of nature. Clean water.
Relaxing, fishing, boating, floating, general environment
Peaceful getaway.

Habitat provides shelter and food for fish and wildlife.

Fish Community

Can the fishery be improved?

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

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

Stocking Date	Species	# Stocked	Age Class/Length	Source
1980	Northern Pike	150	-	Federal
2003	Walleye	295	6.8	Private
2005	Walleye	400	6.5	Private
2006	Walleye	255	6.5	Private
2007	Walleye	250	6.5	Private
2007	Yellow Perch	200	7.9	Private
2008	Walleye	250	7	Private
2009	Walleye	250	7	Private
2011	Walleye	250	7	Private
2011	Yellow Perch	250	7	Private
2012	Walleye	316	8	Private
2013	Walleye	325	7	Private
2014	Walleye	350	7	Private
2015	Walleye	312	7.5	Private

Underwood Lake 2015 Fish Survey Summary

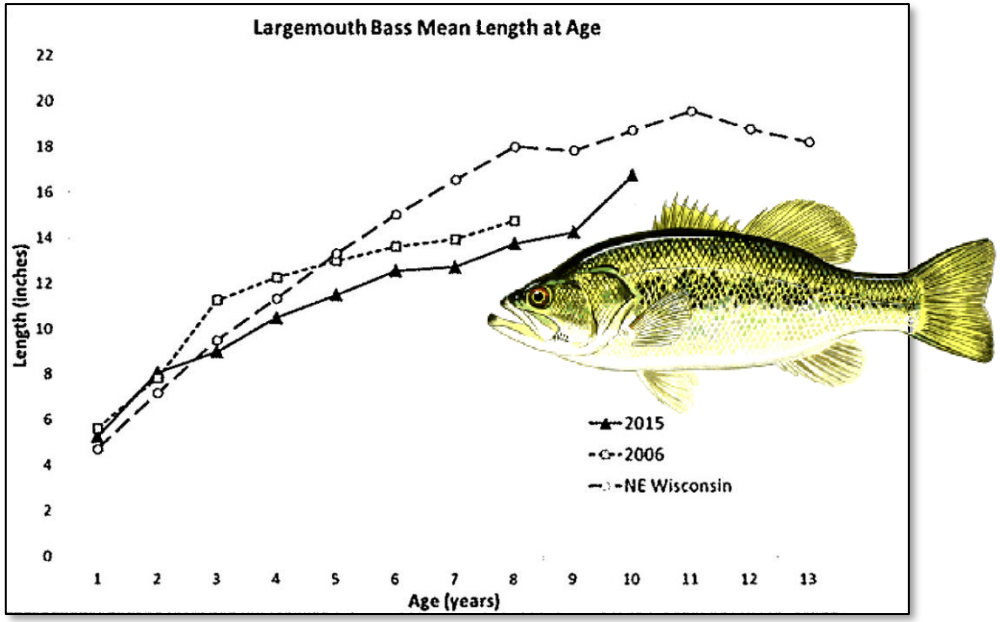
- ✓ Most recent previous survey conducted in 2006.
- ✓ Historically contained high density of stunted panfish.
- ✓ In 2015, 123 fish representing eight species were observed: Largemouth bass, bluegill, walleye, Rock bass, Yellow bullhead, Black crappie, Pumpkinseed, and Green sunfish.
- ✓ Underwood has a high density of largemouth bass (61/mile). Growth rates have slowed since 2006, taking an average of 9 years to reach 14 inches.
- ✓ Bluegill abundance is low (30/mile) with good growth rates.
- ✓ No signs of panfish stunting.
- ✓ Small lake lacks expansive habitat for predator fish, so it is good that LMB are doing well. Despite high density, a regulation change for bass is not recommended to keep bluegill population balanced.
- ✓ No evidence for natural walleye reproduction (no adults captured). Stocking of walleye should be discontinued.
- ✓ Next survey scheduled for 2025.

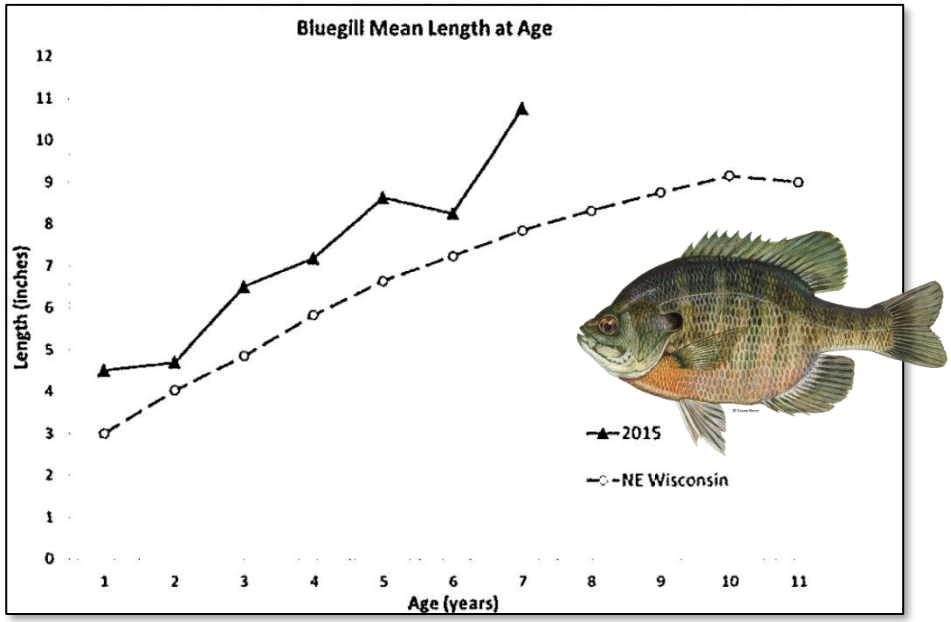
Fish Community

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

	October 2006				May 2015			
*COMMON NAME OF FISH	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)
Black Crappie	3	0.8%	9.1	7.8 - 10.4	2	1.6%	8.9	8.3 - 9.5
Bluegill	282	71.0%	4.2	2.0 - 8.7	36	29.3%	6.4	3.7 - 10.5
Largemouth Bass	67	16.9%	9.7	3.5 - 17.7	73	59.3%	10.8	5.4 - 16.5
Northern Pike	2	0.5%	21.1	19.7 - 22.5	0	0.0%		
Pumpkinseed	1	0.3%	6.3	6.3	1	0.8%	5.7	5.7
Rock Bass	3	0.8%	4.3	3.0 - 6.9	3	2.4%	7.5	7.0 - 8.1
Walleye	0	0.0%			4	3.3%	7.9	7.6 - 8.5
Yellow Perch	30	7.6%	4.5	3.6 - 5.7	0	0.0%		
Pumpkinseed X Bluegill	1	0.3%			0	0.0%		
Yellow Bullhead	1	0.3%			3	2.4%		
Bluntnose Minnow	5	1.3%			0	0.0%		
Green Sunfish	2	0.5%			1	0.8%		
Total	**397**	**100.0%**			**123**	**100.0%**		

Bluegill, Underwood Lake 2015, WDNR.





Fish Community

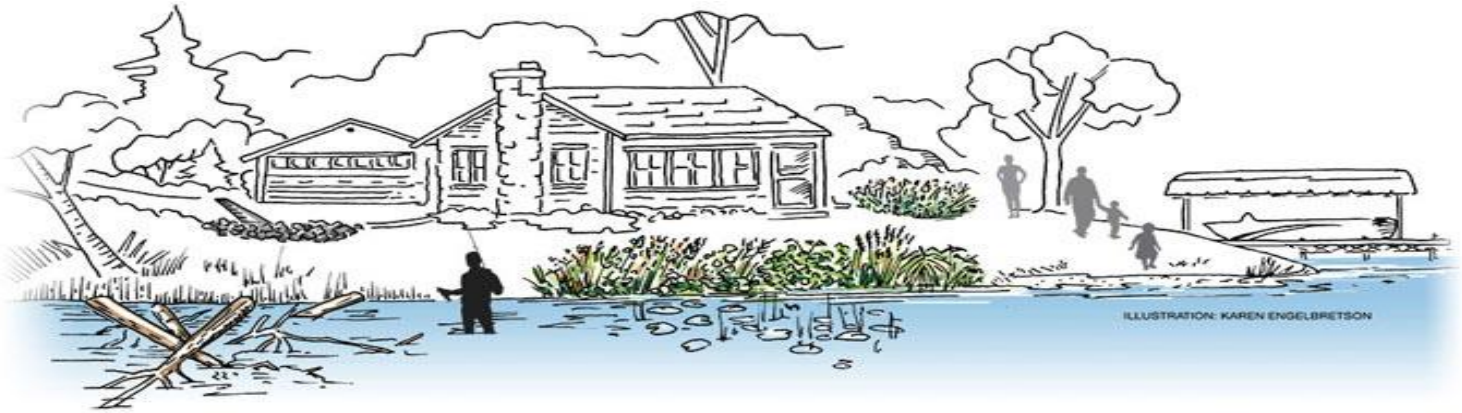
Goal 1. Underwood Lake will maintain a healthy well-balanced fishery.

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

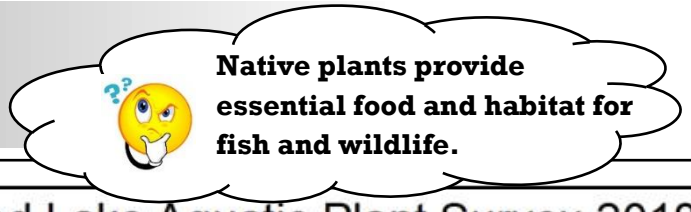
Actions	Lead person/group	Resources	Timeline
Maintain 14" minimum length for largemouth bass to manage the historically high bluegill population.		WDNR-Tammie Paoli	Ongoing
Stock panfish only as desired for angling. Lake will not likely sustain populations of large predators such as walleye naturally.		WDNR-Tammie Paoli	

Objective 1.2 Continue to enhance fish and wildlife habitat in and around the lake. At least 5 fish stick clusters will be installed over 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.		WDNR-Tammie Paoli	Ongoing
Educate and encourage landowners to leave logs, tree branches and limbs in place in the water, whenever possible.		WDNR-Tammie Paoli UWEX-Pat Goggin	Ongoing
Continue to protect and restore shoreland areas and avoid shoreland alterations to improve fish habitat.		Shoreland property owners	Ongoing



Aquatic Plant Community



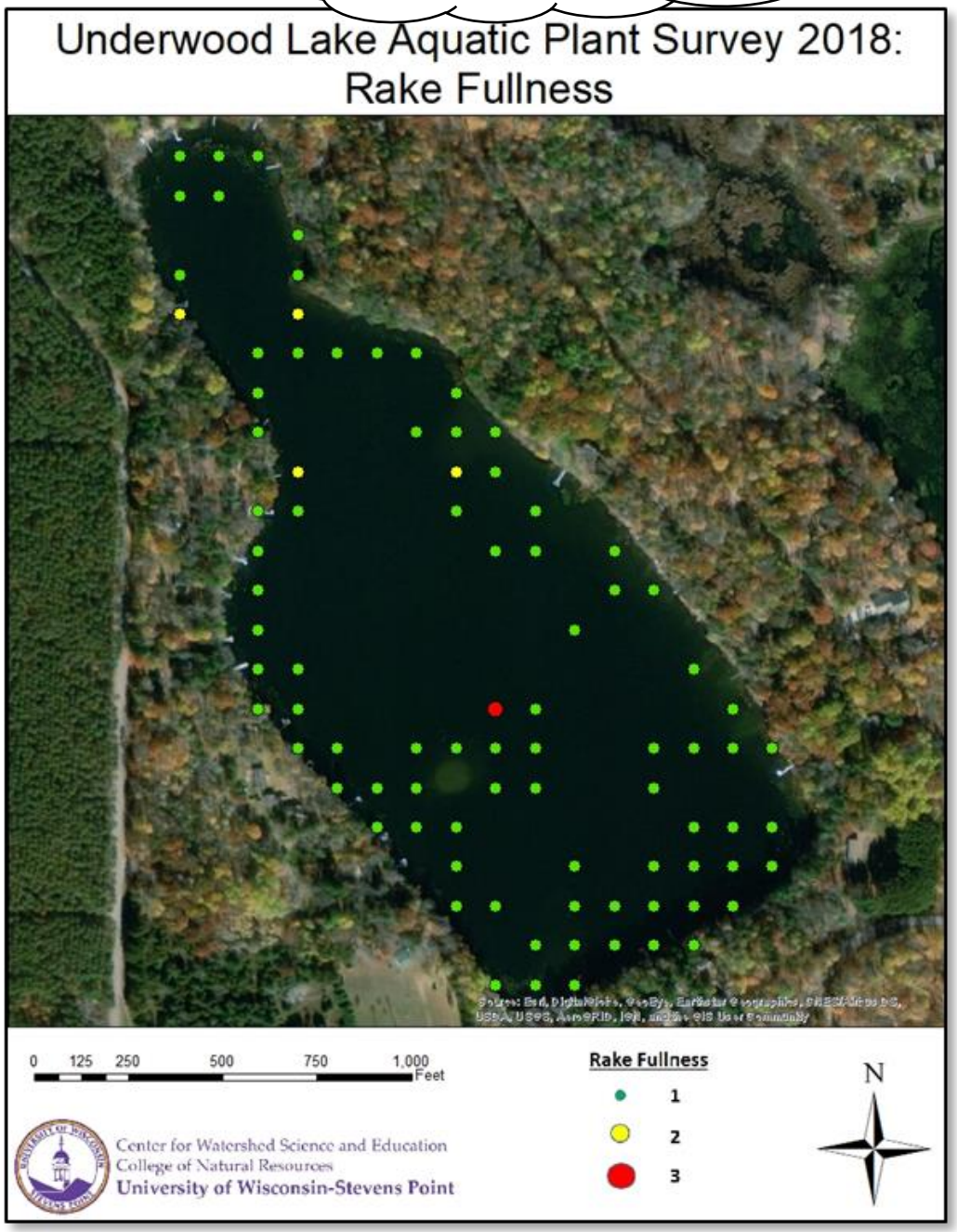
Aquatic Plants

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

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

Underwood Lake 2018 Aquatic Plant Survey Highlights

- ✓ 46% (81 of 175) of the sites visited had vegetative growth.
- ✓ The greatest depth aquatic plants were found was 28 feet.
- ✓ 15 species of aquatic plants were identified. This is just below the North Central Hardwood average of 16.2.
- ✓ The three most dominate species were southern naiad (36%), dwarf watermilfoil (25%) and variable pondweed (23%).
- ✓ The Floristic Quality Index (FQI) was 22.6. The northcentral hardwood average is 23.3.
- ✓ The invasive species Eurasian watermilfoil was observed at two locations.



Aquatic Plant Community

Slender naiad, also called nodding water-nymph, is a primary food source for waterfowl and provides habitat for many invertebrates.

Dwarf watermilfoil grows in dense clusters of thin, unbranched stems from rhizomes in sandy soil. The fruit is eaten by waterfowl that often rises above the water surface in shallow areas.

Variable pondweed has both floating and submersed leaves which provide food and habitat for fish.

Aquatic Invasive Species (AIS)

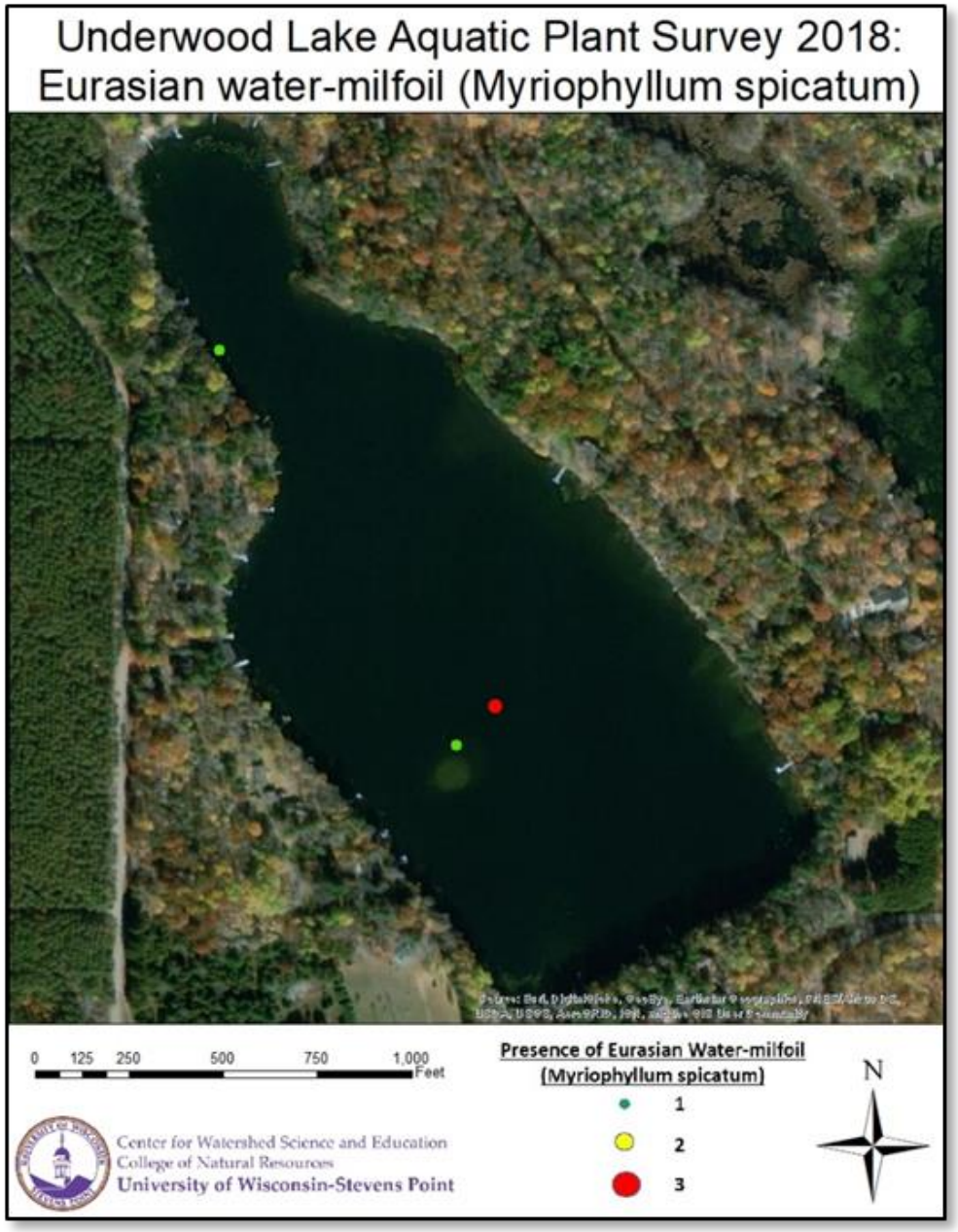
Aquatic invasive species are non-native aquatic plants and animals that are most often unintentionally introduced into lakes by lake users. This commonly occurs on trailers, boats, equipment, and from the release of bait. In some lakes, aquatic invasive plant species can exist as a part of the plant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

Chinese mystery snails were documented in Underwood Lake in 2011. Not a lot is known about the impacts of this species, but they have the potential to be a vector for the transmission of parasites and disease and have also been known to clog the screens of water intake pipes.

Purple loosestrife prefers moist areas where it crowds out native species and habitat.

Eurasian watermilfoil, documented in Underwood Lake in 2002, is one of the most common invasive aquatic plants in Wisconsin. It can from dense mats that choke out native plants and inhibit navigation. New plants can grow from stem fragments that root on contact with the substrate.

Aquatic Plant Community



A point-intercept survey per the DNR protocol is recommended every 5 years to detect changes in the plant community and detect any AIS.

Aquatic Plant Management in Underwood Lake

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

Management Options for Invasive Species or Nuisance Native Aquatic Plants

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

Hand-pulling. No permit required.

Hand-pulling is the preferred method for removing invasive species. Additionally, lakefront property owners are allowed to manually remove native aquatic plants from an area up to 30 feet wide without a permit for swimming and boat access (this does not include the excavation or removal of any bottom sediments). Any denuded lakebed is prime real estate for invasive species, however, and close monitoring is necessary to ensure no populations are established.

Aquatic Plant Management Plan Review

A good aquatic plant management plan strategy should reduce the amount of management activity needed as time goes on. In Underwood Lake, a series of successful strategies (integrated plant management) should lead to a balance between healthy aquatic habitat, water quality, and recreation with minimal annual management.

Aquatic Plant Community

Goal 2. Underwood Lake will continue to have a healthy and diverse aquatic plant community that provides good habitat and water quality.

Objective 2.1 Minimize disturbance to native aquatic plants.

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 as gatherings and/or a newsletter or mailing.		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 recreational access, consider hand-pulling small areas around private docks (within WDNR guidelines). Cleared lakebed is ideal habitat for AIS to become established, so be vigilant about watching for AIS in these areas.		WDNR-Brenda Nordin	Ongoing
Regularly monitor aquatic plant community to detect any changes in lake conditions and ensure stable populations. A point-intercept survey is recommended.		WDNR-Brenda Nordin Consultants	Before/after chemical applications Every 5 years
Reduce nutrient and sediment loading to the lake (to limit abundance of plants and algae) by improving shoreland buffers (see **Shorelands** section) and implementing BMPs in the watershed (see **Watershed** section).		WDNR-Brenda Nordin OCLCD	Ongoing

Objective 2.2 Control or eradicate existing aquatic invasive species and prevent establishment new populations.

Actions	Lead person/group	Resources	Timeline
Encourage or host training to identify and look for invasive species, particularly EWM.			
Identify Clean Boats Clean Waters volunteers or hire someone to staff boat launch on busy days. This can be paid for with a CBCW grant. OCLWA could sponsor a grant and share the inspectors amongst several lakes.			
Educate landowners on importance of native aquatic plants for preventing AIS. Bring in speaker for community gathering, mail literature to property owners, etc.			

Critical Habitat

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

Critical Habitat

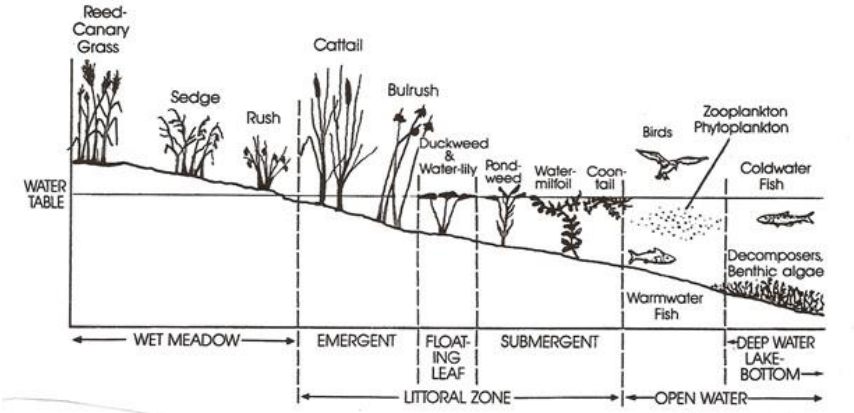
Special areas harbor habitat that is essential to the health of a lake and its inhabitants. In Wisconsin, critical habitat areas are identified by biologists and other lake professionals from the WDNR in order to protect features that are important to the overall health and integrity of the lake, including 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.

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

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

Objective 3.1 Identify and protect high quality areas in and around Underwood Lake.

Actions	Lead person/group	Resources	Timeline
Request a Critical Habitat Designation from WDNR.		WDNR-Brenda Nordin	2022
If critical habitat is identified, communicate to property owners, visitors, and Town Board as to why these areas are important.			TBD



Watershed

LANDSCAPES AND THE LAKE

Underwood Lake Watershed

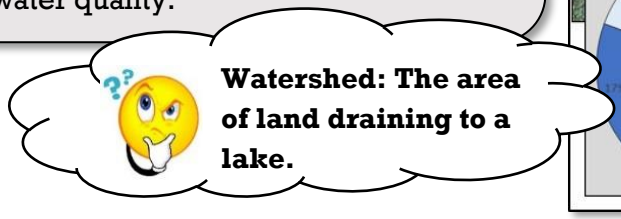
A Lake is a Reflection of its Watershed…

Understanding where Underwood 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 Underwood Lake; its land area may be slightly different than the surface watershed.

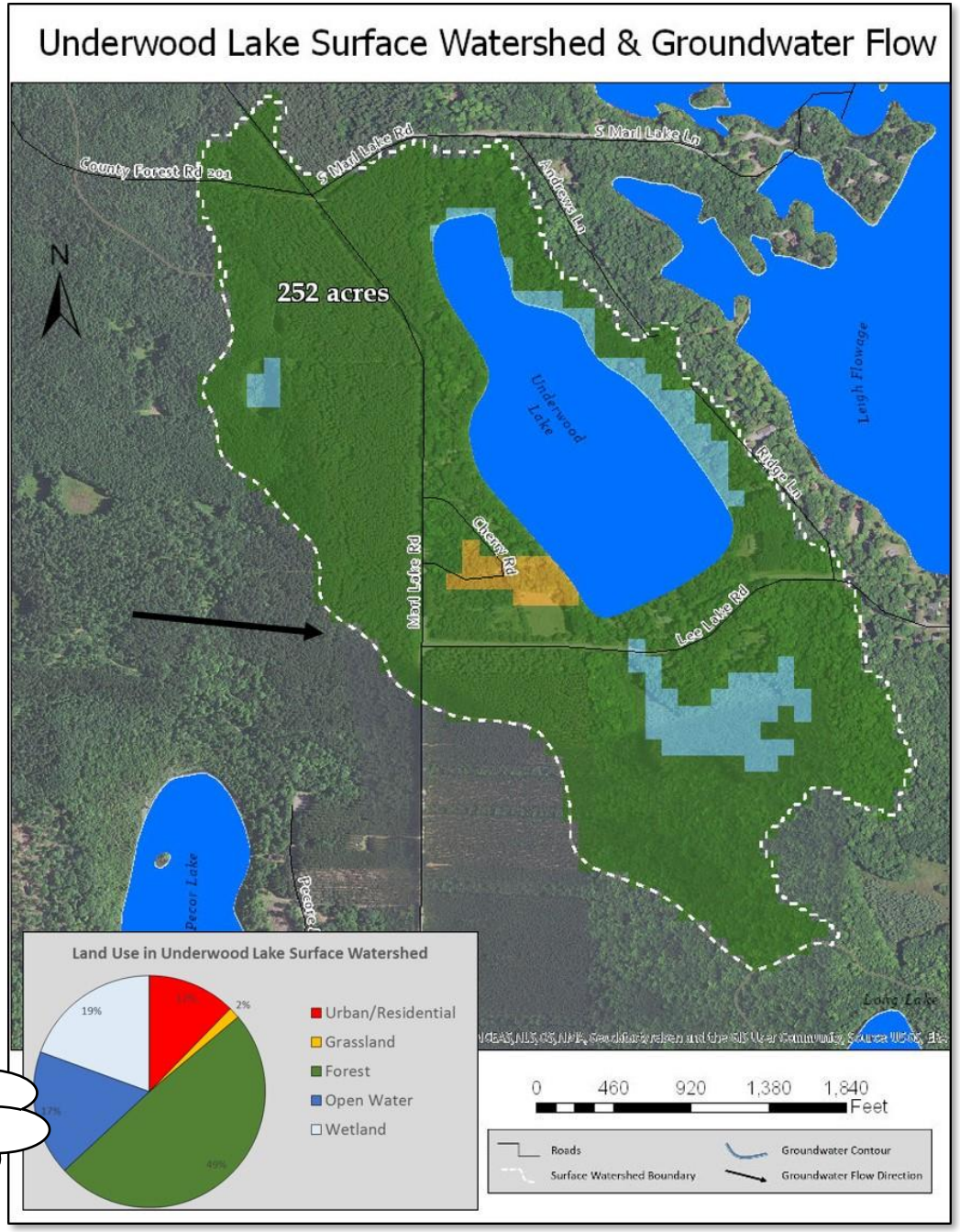
Less runoff is desirable because it allows more water to recharge the groundwater, which feeds the lake year-round - even during dry periods or when the lake is covered with ice. The capacity of the landscape to shed or hold water and contribute or filter particles determines the amount of erosion that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

Underwood Lake's Watershed

The Underwood Lake watershed is 252 acres. Primary land use is forested land. The lake's shoreland is surrounded primarily by developed residential lots and forest. In general, the land closest to the lake has the greatest immediate impact on water quality.



Watershed: The area of land draining to a lake.



Watershed

Why does land matter?

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

Soil and Erosion

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

Development

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

What can be done?

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

Be Part of the Solution!

Practices designed to reduce runoff include:

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

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

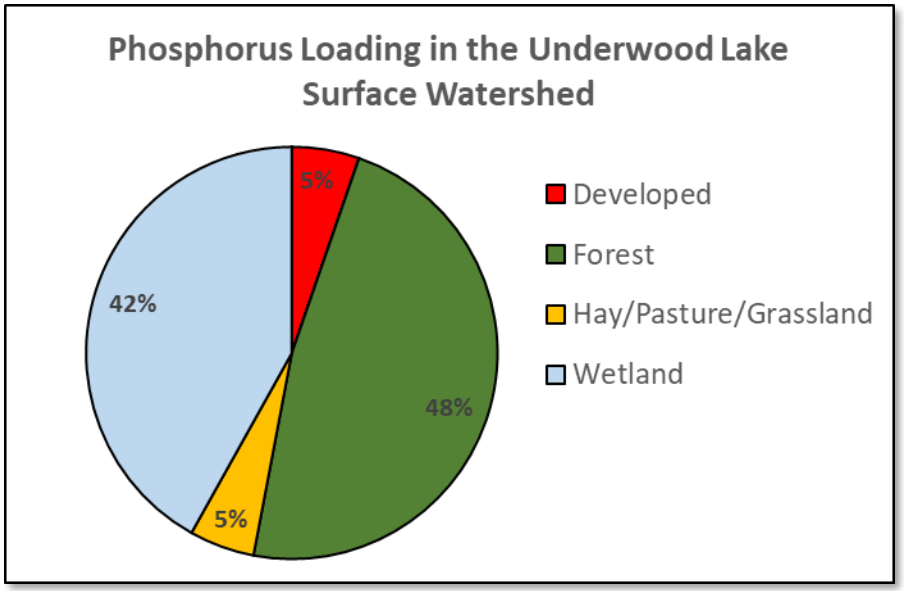
- eliminating/reducing the use of fertilizers,
- increasing the distance between the lake and a septic drainfield,
- protecting/restoring wetlands and native vegetation in the shoreland,
- controlling erosion,
- manure management and cropping practices.

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

Watershed

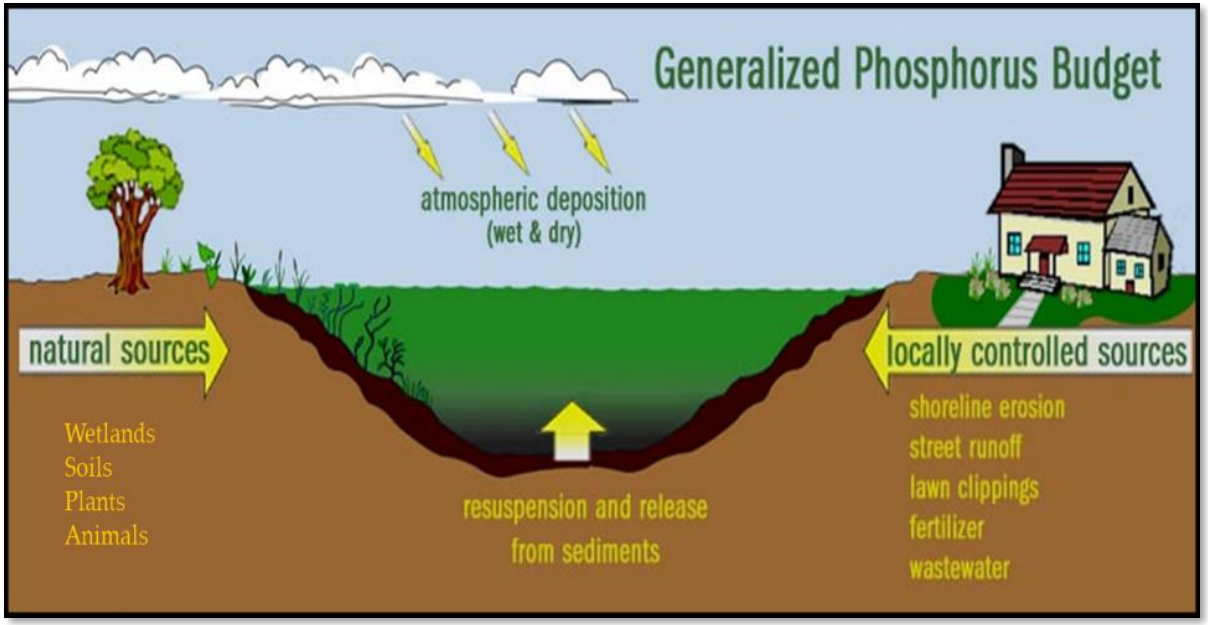
Phosphorus Modeling

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



Phosphorus Loading in Underwood Lake Watershed

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



Goal 4. Property owners in the Underwood Lake watershed will know about and utilize resources for healthy land management practices.

Objective 4.1 Support healthy land management activities in the Underwood Lake watershed to reduce sediment and 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 lakes watershed. Include BMPs that reduce application of excess nitrogen and pesticides that leach to groundwater.		NRCS DATCP County Board Supervisors	Ongoing
Support landowners interested in the protection of their land via a land conservation program (i.e. conservation easement, conservation reserve program, purchase of development rights, or sale of land for protection).		WDNR Lake Protection Grant Knowles-Nelson Stewardship Fund NWLT	As needed
Encourage any new development to manage runoff on site and consider ways to minimize impacts from septic systems on Underwood Lake		Town of Brazeau Developers/builders	As needed
Encourage design of road and construction projects that will minimize impact to lake.		Town of Brazeau OC Highway Dept/WDOT	As needed
Protect wetlands to maintain the water budget of Underwood Lake. Any altered wetlands should be mitigated within the lake's watershed.		WDNR	As needed
'Team Up' with other landowners (such as Lee Lake) to leverage efforts in your shared watershed.		Underwood Lake landowners UWEX Lakes	Ongoing
Work with Oconto County to maintain and make improvements to boat launch to reduce erosion and runoff.		Oconto County WDNR	As needed

Shorelands

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

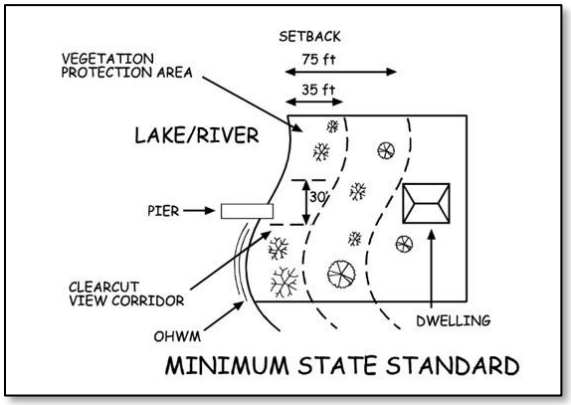
Shorelands

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

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

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

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



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:

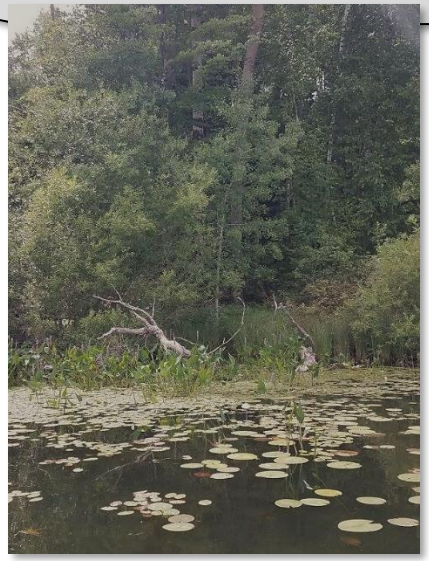
- Up to 30% of shoreline may be removed of shrubs and trees for a view corridor
- A mowed or constructed pedestrian path up to 5 feet wide to access lake

Shorelands

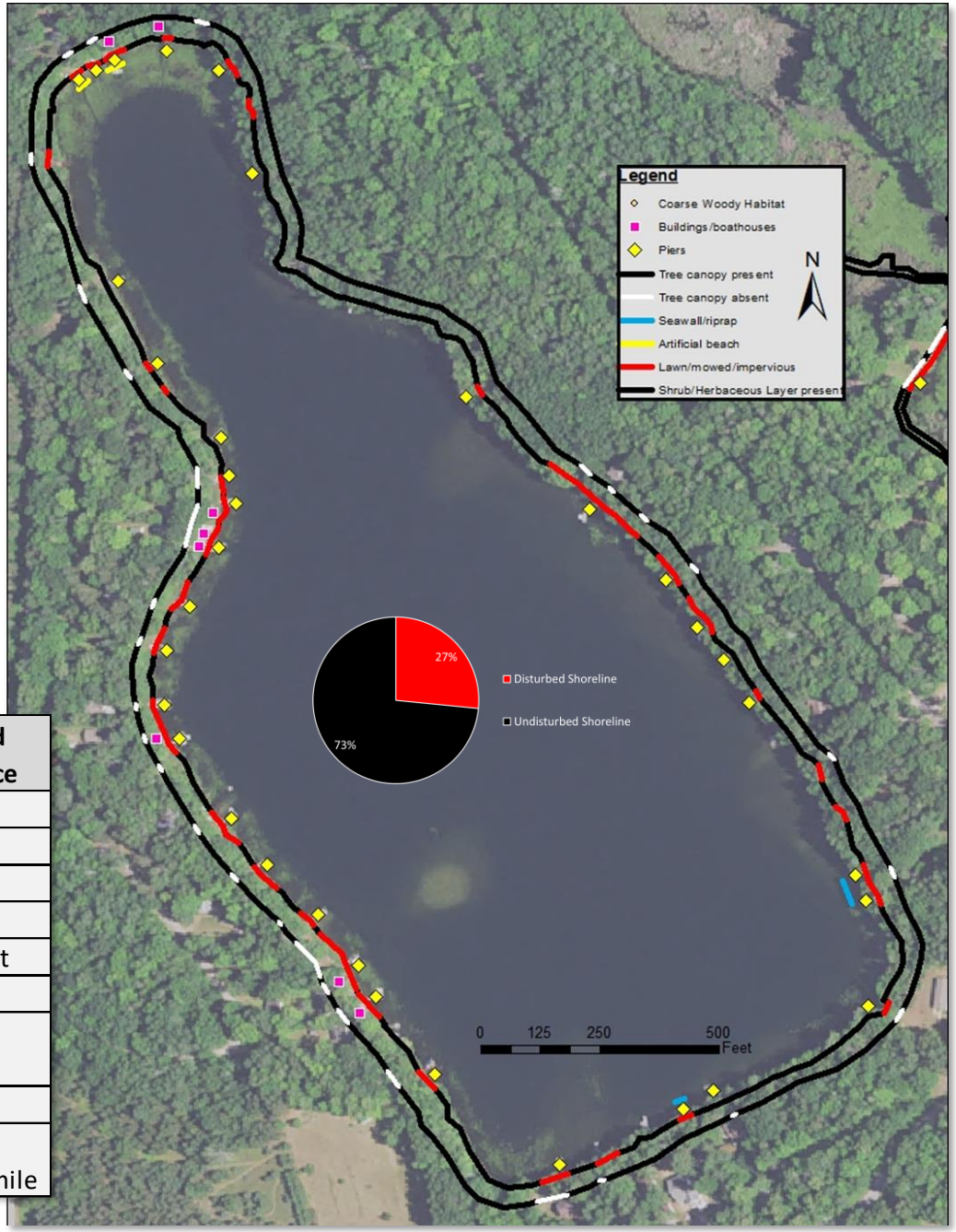
Underwood Lake's Shorelands

To better understand the health of Underwood Lake, shorelands were evaluated. The survey inventoried shoreland vegetation, erosion, riprap, barren ground, seawalls, structures, and docks. About 1/3 of the 1.3 miles of shoreline is developed as homes and seasonal cottages. A total of 34 piers were counted during the survey (1 pier/195 feet of shoreline).

- With 55 lakefront lots, 1,650 feet (25%) of disturbed shoreland is permitted under NR115. Based on the 2018 shoreland inventory, 27% (1,758 feet) of Underwood Lake's shoreland was disturbed. Coarse woody habitat was measured at 24 logs/mile (250 logs/mile recommended.)
- Underwood Lake had above average shoreland health compared to other lakes in the study. Many stretches are in good shape, but some portions have challenges that



Modifications, Structures, Erosion	Measured Occurrence
Artificial Beach	90 ft
Rip Rap	25 ft
Sea Wall	20 ft
Impervious Surface	0 ft
Mowed Lawn	1,613 ft
Erosion	10 ft
Nonconforming Buildings	0
Piers	34
Coarse Woody Habitat	24 logs/mile



Coarse Woody Habitat (CWH)

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

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

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

Shorelands

Underwood Lake 2018 Shoreland Survey Results			
Total lakefront footage	**# Riparian lots**	**Total allowable (NR115) disturbed shoreland**	**Measured disturbed shoreland**
6,620	55	1,650 feet (25%)	1,758 feet (27%)

Goal 5. Underwood Lake will have shorelands that are healthy and protective of water quality and habitat. Over the next 5 years, 300 feet (2-5 properties) of mowed shoreline will be restored and 10 fish sticks will be installed.

Objective 5.1 Shoreland property owners will be knowledgeable and make good decisions regarding shoreland practices.

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, native plants, coarse woody habitat). Include information on cost share programs.		OCLWA UWEX Lakes WDNR 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.		UWEX Lakes OCLCD WDNR Health Lakes Grants	Ongoing
Encourage those interested in shoreland restoration to contact OCLCD for available resources.		OCLCD WDNR Healthy Lakes Grants	Ongoing
Consider restoring and showcasing a 'demonstration site' with a sign about shoreland protection.		WDNR	2022
Identify property owners to install fish sticks to improve fish habitat (see **Fish Community** section).		WDNR-Tammie Paoli OCLCD	2022

Water Quality

Water Quality

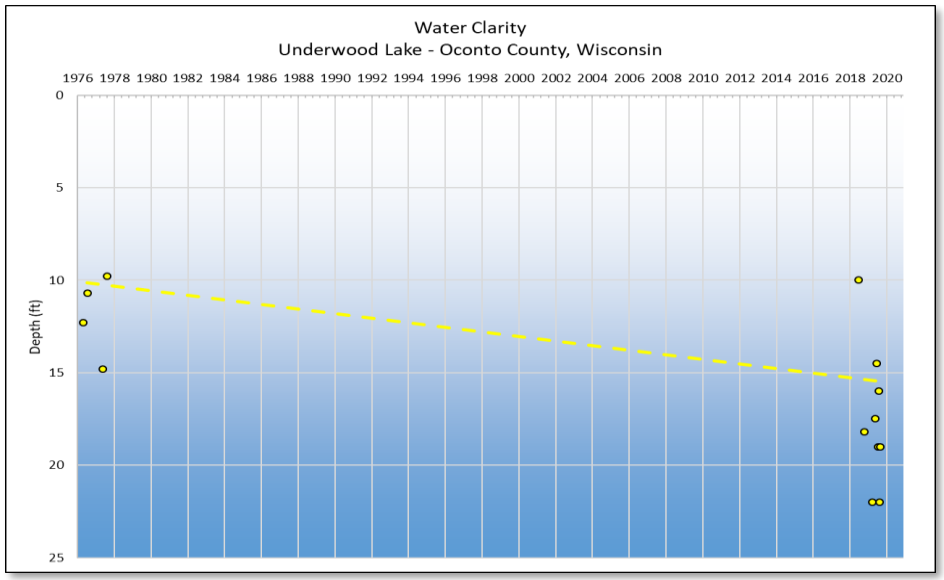
A variety of water chemistry measurements were used to characterize the water quality in Underwood Lake. Water quality was assessed during the 2018-2019 lake study and involved a number of measures including temperature, dissolved oxygen, water chemistry, and nutrients (phosphorus and nitrogen). Nutrients 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 Underwood Lake's water quality.

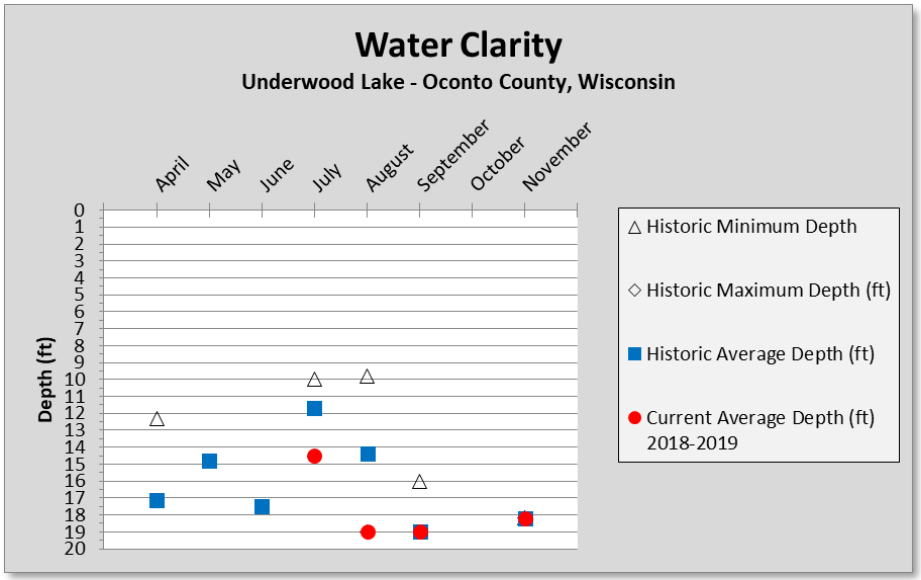
Water Clarity

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

Underwood Lake's Water Quality Summary

- ✓ **Water clarity** ranged from 10 to 22 feet during the study (considered very good), which suggests an increasing trend (based on very limited data).
- ✓ Sufficient **dissolved oxygen** was present in at least the upper 18 feet of water at all times during the study.
- ✓ Concentrations of **contaminants** were all low during the study. Atrazine was not detected.
- ✓ **Phosphorus** concentrations remained well below the standard of 20 ug/L throughout the study. Inorganic nitrogen remained below concentrations that spur algal blooms.
- ✓ Water in Underwood Lake is **soft** (46 mg/L CaCO3), having a relatively low level of dissolved minerals and little 'buffering' ability for phosphorus.

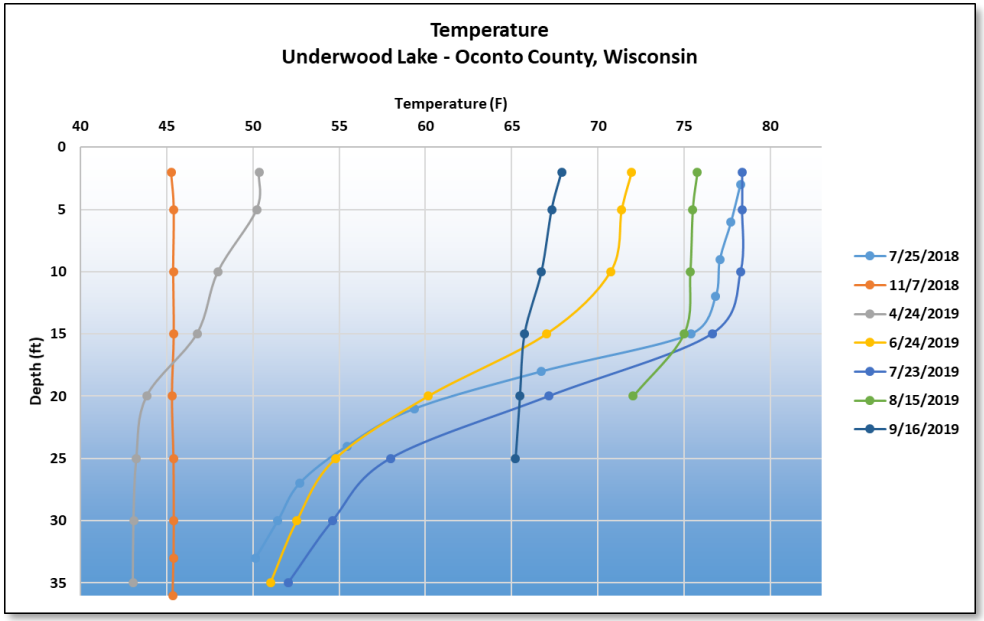




Water Quality

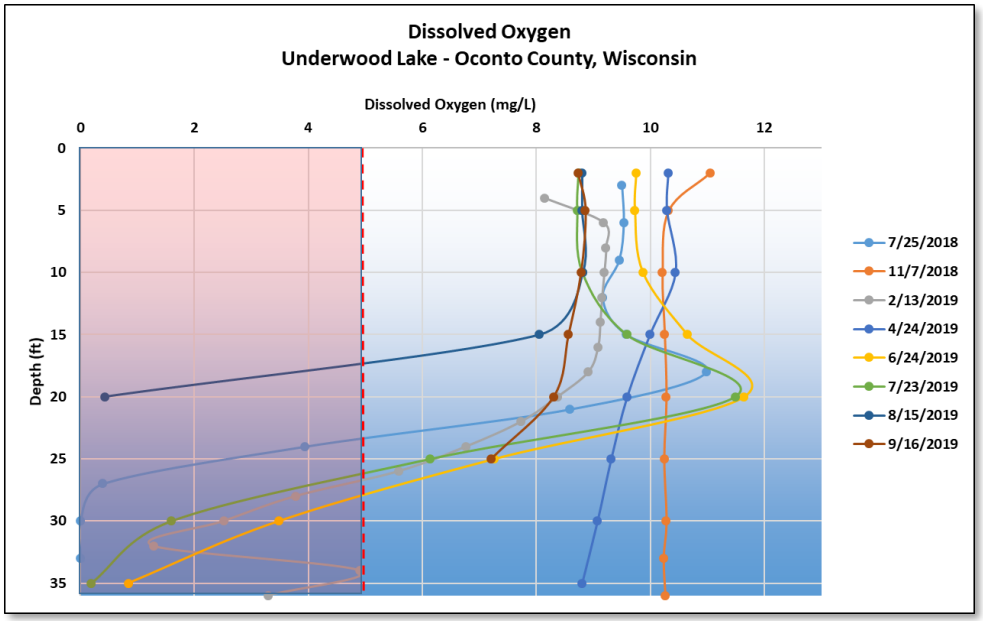
Temperature and Dissolved oxygen

Temperature profiles for Underwood Lake show a clear thermocline at depth between 15 and 20 feet in mid-summer. This phenomenon separates warmer water nearer the surface from colder, groundwater-fed water at depth. In the spring and fall, temperatures at depth and near the surface become similar, allowing all the water within the lake to mix.



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

Dissolved oxygen concentrations generally decline with depth as access to sources such as the atmosphere and growing plants is decreased. Oxygen profiles in Underwood Lake generally mimic temperature profiles as oxygen drops off significantly at the thermocline. Bumps in oxygen concentrations near the thermocline are indicative of algae blooms at depth.



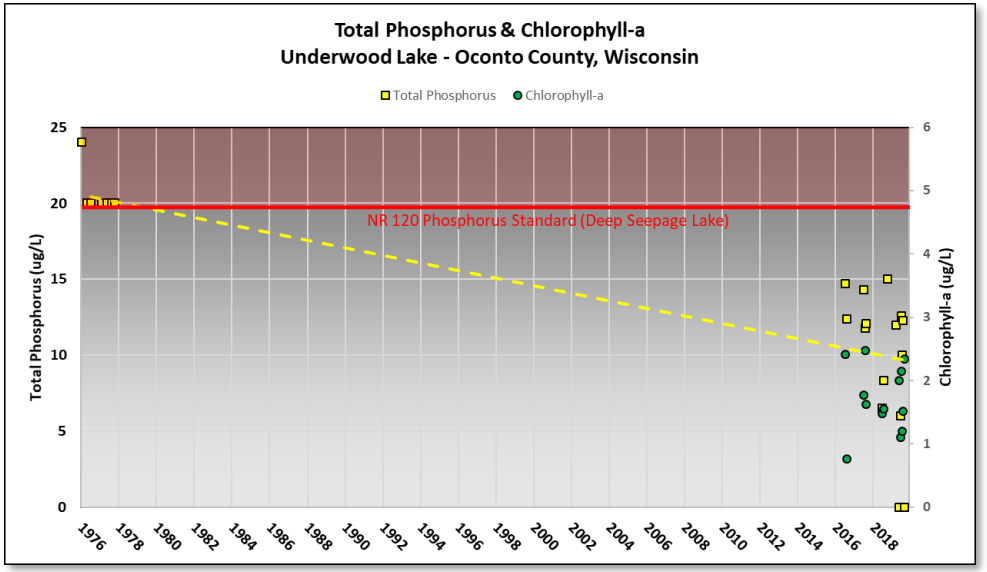
Contaminants

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

Water Quality

Nutrients

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



In Underwood Lake, phosphorus concentrations remained well below the threshold of 40 ug/L and chlorophyll-a well below its threshold of 6 ug/L throughout the study. Based on limited data collected during the two-year study, a decreasing trend in concentrations is suggested. Continued monitoring is recommended.

Be part of the solution!

Managing nitrogen, phosphorus and soil erosion throughout the Underwood Lake 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.

Water Quality

Goal 6. Maintain and/or improve water quality in Underwood Lake.

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

Actions	Lead person/group	Resources	Timeline
Inform others around the lake about the impact of nutrients and land management on water quality through the distribution of a newsletter and/or hosting a guest speaker.		OCLWA WDNR UWEX Lakes	Ongoing, 2022
Refrain from the use of fertilizers. Encourage soil testing to determine if amendments are necessary.		OC UWEX	Ongoing
Encourage the restoration of unmowed vegetation to slow and absorb runoff and pollutants (see **Shorelands** section).		UWEX Lakes	Ongoing

Objective 6.2 Continue to develop an ongoing, robust water quality dataset for Underwood Lake to monitor trends or changes over time.

Actions	Lead person/group	Resources	Timeline
Support volunteers collecting water quality data. Encourage new volunteers to work with current volunteers in the Citizen Lake Monitoring Network.		CLMN WDNR-Brenda Nordin	3+ times annually in summer
Submit all data to WDNR for archival and use by scientists and resource managers.		WDNR	Ongoing

PEOPLE AND THE LAKE

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

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

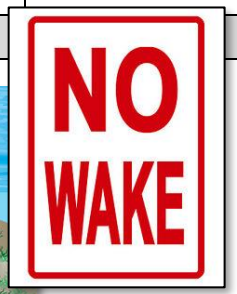
Recreation

According to survey responses, the lake is enjoyed for its scenery, wildlife, and fishing. There is one public boat launch located on Underwood Lake on the north end which is owned and maintained by Oconto County. No Wake is allowed at any time.

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

Objective 7.1 Cultivate an environment of compliance amongst lake users.

Actions	Lead person/group	Resources	Timeline
Work with other lake groups and towns to support a recreational officer and municipal court for enforcement of regulations, including 'No Wake' and safe boat operation.		Town of Brazeau OCLWA OC UWEX	Ongoing
Work with County to upkeep/repair boat ramp, as appropriate. Boat ramps in disrepair can be unhealthy to the lake if it results in spinning tires, power loading, etc. A well-kept boat launch also sends a message to visitors about the attention and care a lake is receiving.		Oconto County WDNR	Ongoing
Update signage at boat launch with an interpretive kiosk.		UWEX Lakes	2022



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

Communication and Organization

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

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

Goal 8. Increase participation in lake stewardship.

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

Actions	Lead person/group	Resources	Timeline
Maintain a website or Facebook page to provide a commons source of communication.		LakeKit.net OC UWEX	Ongoing
Maintain an email list of shoreland property owners and others interested in Underwood Lake.		OC UWEX	Ongoing
Distribute welcome packet/mailing to all new shoreland property owners with basic lake stewardship information.		OCLWA UWEX Lakes	As needed
Communicate updates to lake management plan and management activities to residents and users of the lake via email list and/or newsletter.			As needed
Host gatherings to learn about topics identified in this plan. Invite speakers or conduct demonstrations.		UWEX Lakes WDNR	Ongoing

Objective 8.2. Organize stewards of Underwood Lake to maximize and access resources. Communicate with municipalities, agencies and organizations to leverage resources and opportunities.

Actions	Lead person/group	Resources	Timeline
Develop membership in Lee and Underwood Lake Conservation Club.	Interested citizens	UWEX Lakes	Ongoing
Network with other lake groups by having Underwood Lake represented at OCLWA.		OCLWA	
Attend Wisconsin Lakes Convention or Lake Leaders Institute.		UWEX Lakes	April

Updates and Revisions

Updates and Revisions

A management plan is a living document that changes over time to meet the current needs, challenges and desires of the lake and its community. The goals, objectives and actions listed in this plan should be reviewed annually and updated with any necessary changes. Partners listed in the plan should be contacted annually, and updated information complied. A list of changes/updates to the plan should be documented. To ensure that everyone is informed about changes, appropriate approval for changes should be acquired by all partners signing on to this plan.

Goal 9. Review plan regularly and update as needed.

Objective 9.1 Communicate updates with lake community, Oconto County and WDNR.

Actions	Lead person/group	Resources	Timeline
Review plan regularly (annually) and discuss/document accomplishments and identification of goals/objectives for coming year.			Annually
Formally update this plan every 5 years.		OC UWEX UWEX Lakes WDNR	2026

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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: Tammie Paoli
Wisconsin Department of Natural Resources
101 N. Ogden Road, Peshtigo, WI 54157
Phone: 715-582-5052
E-mail: Tammie.Paoli@wisconsin.gov
Website: http://dnr.wi.gov/org/land/facilities/boataccess/

Appendix A

Boat Landings (Town)

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

Conservation Easements

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

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

Contact: Northeast Wisconsin Land Trust
14 Tri-Park Way, Suite 1, Appleton, WI 54914
Phone: 920-738-7265
E-mail: newlt@newlt.org
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
Website: http://dnr.wi.gov/lakes/criticalhabitat/

Dams

Contact: Meg Galloway
Wisconsin Department of Natural Resources
PO Box 7921, Madison, WI 53707
Phone: 608-266-7014
E-mail: meg.galloway@wisconsin.gov
Website: http://dnr.wi.gov/org/water/wm/dsfm/dams/

Fertilizers/Soil Testing

Contact: Dale Mohr
Oconto County UW- Extension
301 Washington Street, Oconto, WI 54153
Phone: 920-835-6845
E-mail: dale.mohr@co.oconto.wi.us
Website: http://oconto.uwex.edu

Fisheries Biologist (management, habitat)

Contact: Tammie Paoli
Wisconsin Department of Natural Resources
101 N. Ogden Road, Peshtigo, WI 54157
Phone: 715-582-5052
E-mail: Tammie.Paoli@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

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/

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/

Shoreland Zoning Ordinances

See: Land Use Plans and Zoning Ordinances

Appendix A

Soil Fertility Testing
Contact: Dale Mohr
Oconto County UW- Extension
301 Washington Street, Oconto, WI 54153
Phone: 920-835-6845
E-mail: dale.mohr@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: Tammie Paoli
Wisconsin Department of Natural Resources
101 N. Ogden Road, Peshtigo, WI 54157
Phone: 715-582-5052
E-mail: Tammie.Paoli@wisconsin.gov
Website: http://dnr.wi.gov/fish/

Appendix B. Rapid Response Plan

REPORTING A SUSPECTED INVASIVE SPECIES

1. Collect specimens or take photos.

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

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

-OR-

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

-OR-

Take detailed photos (digital or film).

2. Note the location where the specimen was found.

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

Provide one or more of the following:

- Latitude & Longitude
- UTM (Universal Transverse Mercator) coordinates
- County, Township, Range, Section, Part-section
- Precise written site description, noting nearest city & road names, landmarks, local topography

3. Gather information to aid in positive species identification.

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

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

Wisconsin Dept. Natural Resources
2984 Shawano Avenue,
Green Bay, WI 54313
Phone: (920) 662-5100

UW-Stevens Point Herbarium
301 Trainer Natural Resources Building
800 Reserve Street
Stevens Point, WI 54481
Phone: 715-346-4248
E-Mail: ejudziew@uwsp.edu

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

Appendix C

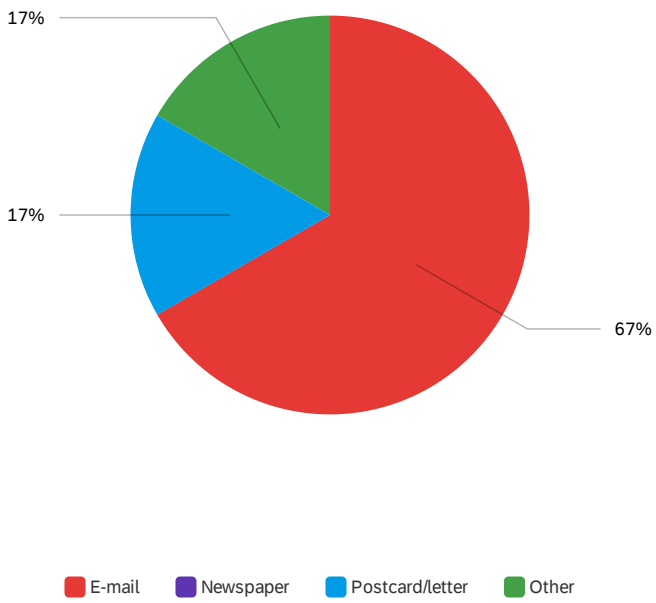
Appendix C. Lake User Survey Results

Default Report

Underwood Lake Survey - Oconto County Lakes Project

November 12, 2021 8:21 AM MST

Q2 - How did you hear about this survey?



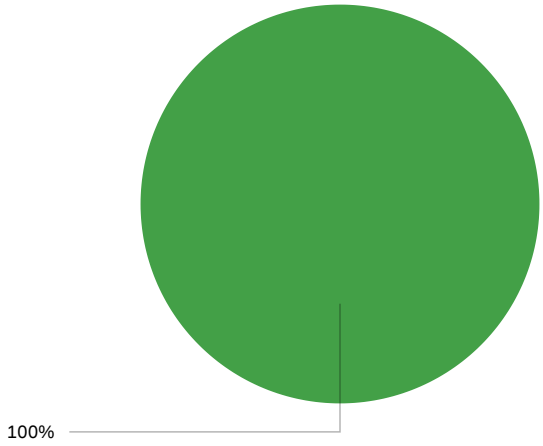
Showing sample data...

#	Field		Choice Count
1	E-mail	67%	4
2	Newspaper	0%	0
3	Postcard/letter	17%	1
4	Other	17%	1
			6

Showing rows 1 - 5 of 5

Showing sample data...

Q3 - Do you own or rent property...

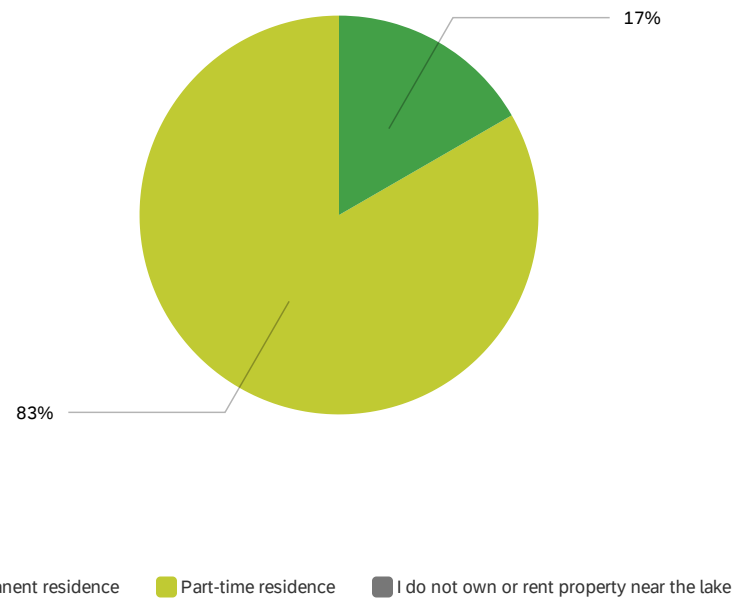


Around the lake | Less than 1/2 mile from the lake | Near the lake, but more than 1/2 mile away | I do not own or rent property near the lake

#	Field		Choice Count
1	Around the lake	100%	6
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
			6

Showing rows 1 - 5 of 5

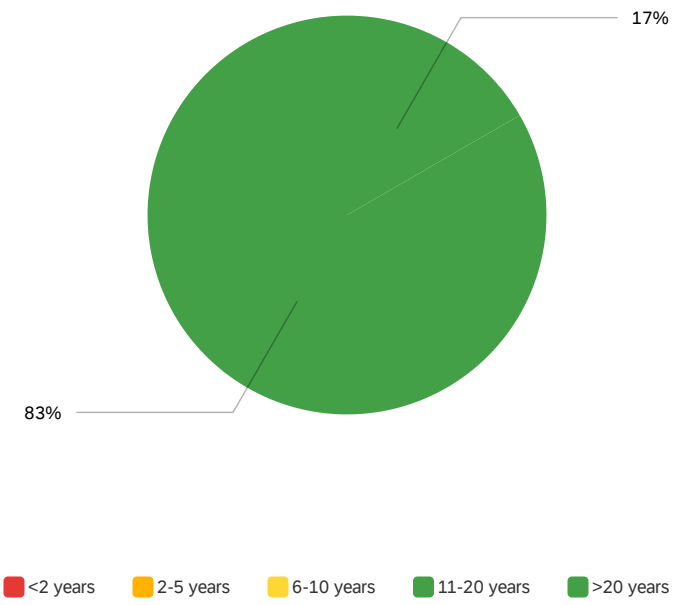
Q4 - If you own or rent property near the lake, is this property your...



#	Field		Choice Count
1	Permanent residence	17%	1
2	Part-time residence	83%	5
3	I do not own or rent property near the lake	0%	0
			6

Showing rows 1 - 4 of 4

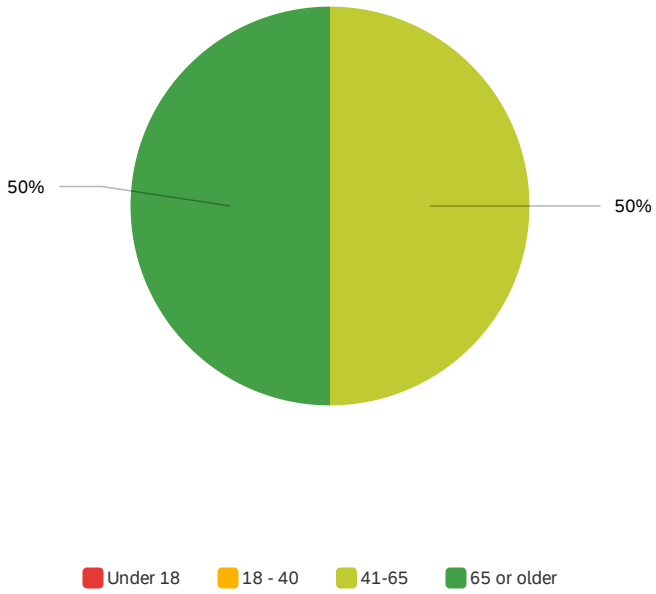
Q5 - How long have you lived on, visited or recreated on the lake?



#	Field	Choice Count
1	<2 years	0% 0
2	2-5 years	0% 0
3	6-10 years	0% 0
4	11-20 years	17% 1
5	>20 years	83% 5
		6

Showing rows 1 - 6 of 6

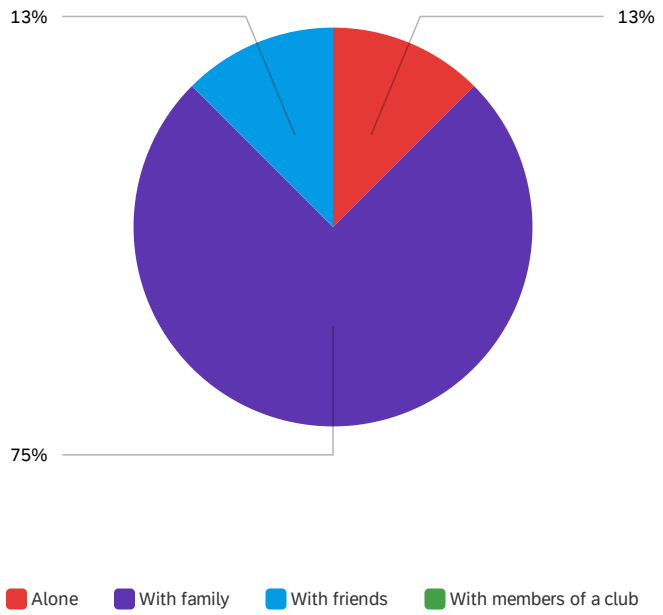
Q8 - Which category below includes your age?



#	Field	Choice Count
1	Under 18	0% 0
2	18 - 40	0% 0
3	41-65	50% 3
4	65 or older	50% 3
		6

Showing rows 1 - 5 of 5

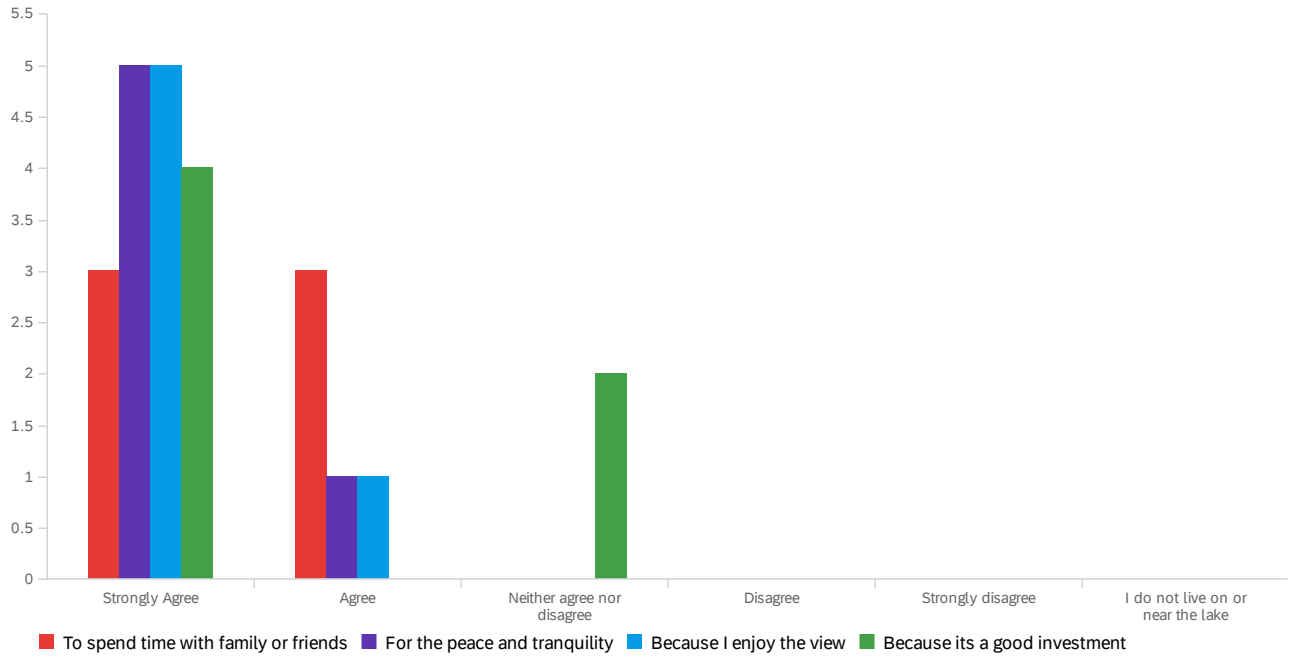
Q9 - When you visit Underwood Lake, are you typically ...(check all that apply)



#	Field	Choice Count
1	Alone	13% 1
2	With family	75% 6
3	With friends	13% 1
4	With members of a club	0% 0
		8

Showing rows 1 - 5 of 5

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



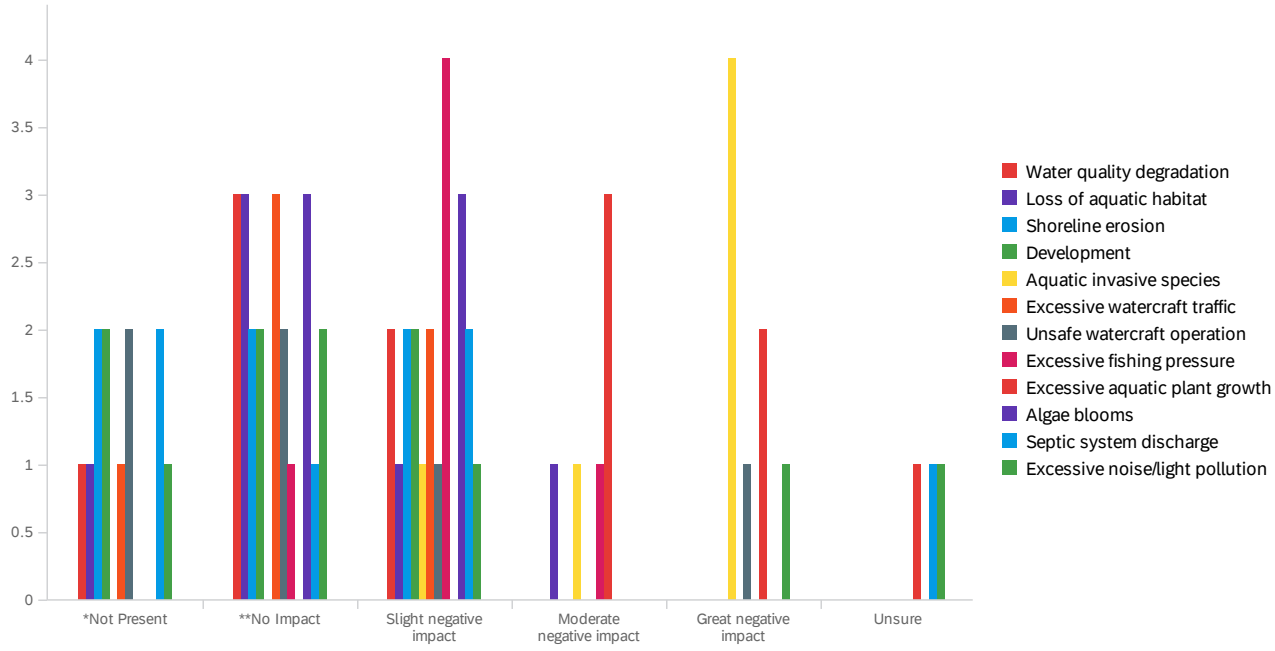
#	Field	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	I do not live on or near the lake	Total
1	To spend time with family or friends	50% 3	50% 3	0% 0	0% 0	0% 0	0% 0	6
2	For the peace and tranquility	83% 5	17% 1	0% 0	0% 0	0% 0	0% 0	6
3	Because I enjoy the view	83% 5	17% 1	0% 0	0% 0	0% 0	0% 0	6
4	Because its a good investment	67% 4	0% 0	33% 2	0% 0	0% 0	0% 0	6

Showing rows 1 - 4 of 4

Q11 - What do you value most about Underwood Lake?

What do you value most about Underwood Lake?
Pristine no wake lake
no wake
Good swimming, very few weeds, clear cool water.
The quiet and beauty of nature. Clean water.
Relaxing, fishing, boating, floating, general environment
Peaceful getaway.

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

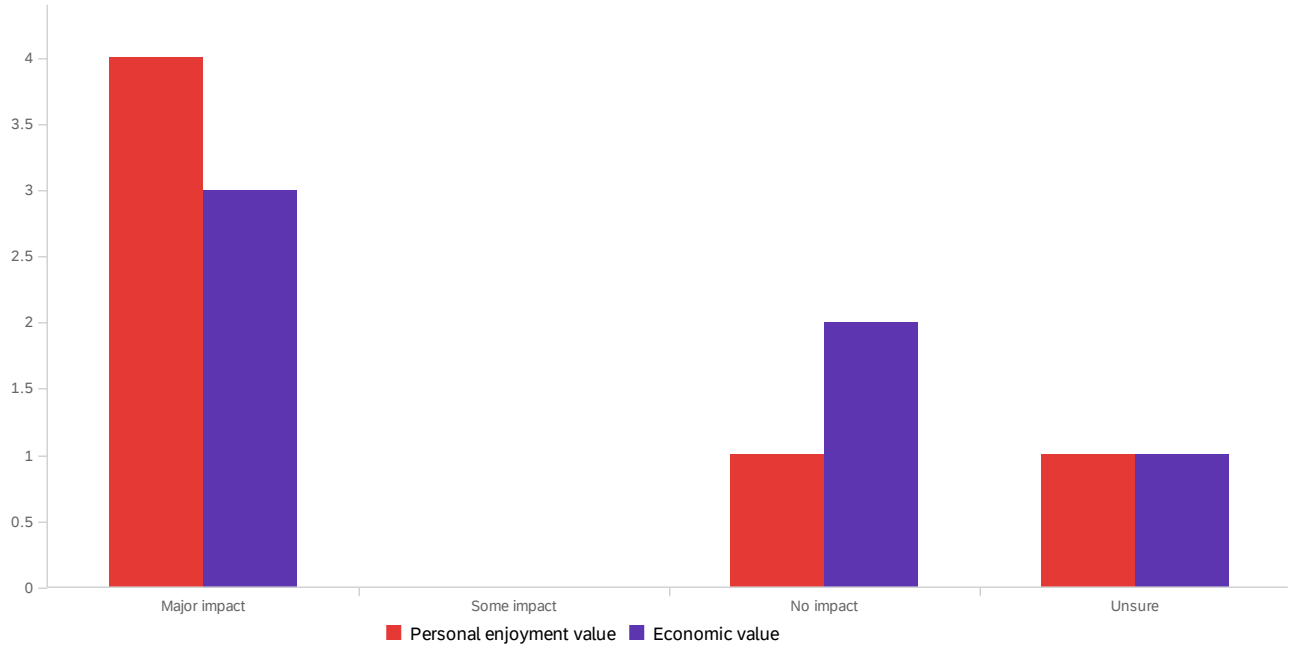


#	Field	*Not Present	**No Impact	Slight negative impact	Moderate negative impact	Great negative impact	Unsure	Total
1	Water quality degradation	17% 1	50% 3	33% 2	0% 0	0% 0	0% 0	6
2	Loss of aquatic habitat	17% 1	50% 3	17% 1	17% 1	0% 0	0% 0	6
3	Shoreline erosion	33% 2	33% 2	33% 2	0% 0	0% 0	0% 0	6
4	Development	33% 2	33% 2	33% 2	0% 0	0% 0	0% 0	6
5	Aquatic invasive species	0% 0	0% 0	17% 1	17% 1	67% 4	0% 0	6
6	Excessive watercraft traffic	17% 1	50% 3	33% 2	0% 0	0% 0	0% 0	6
7	Unsafe watercraft operation	33% 2	33% 2	17% 1	0% 0	17% 1	0% 0	6
8	Excessive fishing pressure	0% 0	17% 1	67% 4	17% 1	0% 0	0% 0	6

#	Field	*Not Present	**No Impact	Slight negative impact	Moderate negative impact	Great negative impact	Unsure	Total
9	Excessive aquatic plant growth	0% 0	0% 0	0% 0	50% 3	33% 2	17% 1	6
10	Algae blooms	0% 0	50% 3	50% 3	0% 0	0% 0	0% 0	6
11	Septic system discharge	33% 2	17% 1	33% 2	0% 0	0% 0	17% 1	6
12	Excessive noise/light pollution	17% 1	33% 2	17% 1	0% 0	17% 1	17% 1	6

Showing rows 1 - 12 of 12

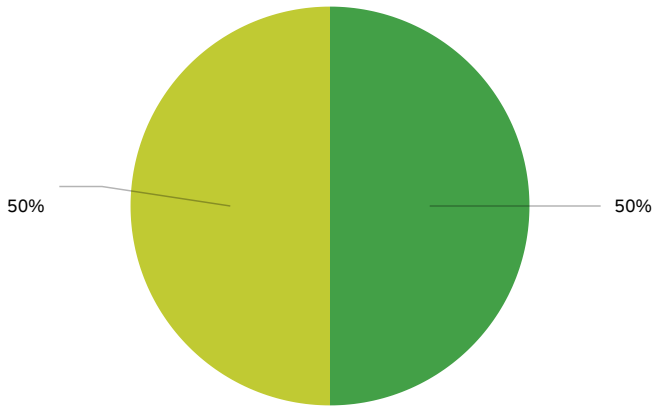
Q16 - How much impact does the water quality of Underwood Lake have on the following?



#	Field	Major impact	Some impact	No impact	Unsure	Total
1	Personal enjoyment value	67% 4	0% 0	17% 1	17% 1	6
2	Economic value	50% 3	0% 0	33% 2	17% 1	6

Showing rows 1 - 2 of 2

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

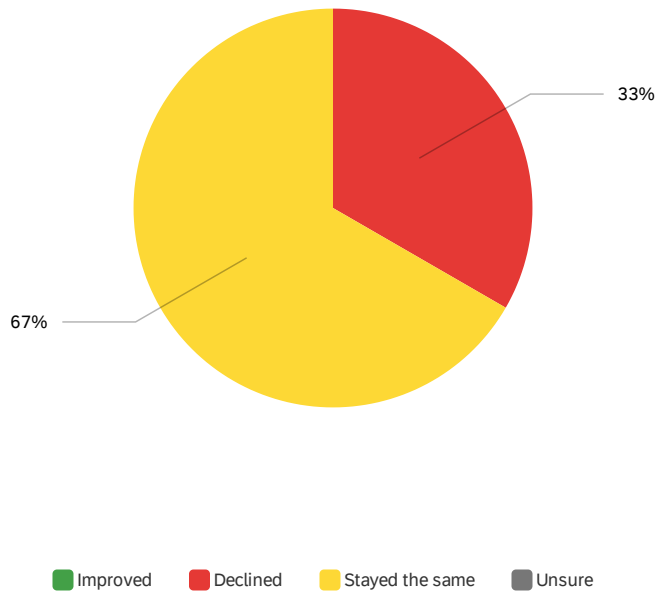


Beautiful, could not be any nicer
Very minor aesthetic problems; excellent for swimming and boating enjoyment
Enjoyment of the lake is moderately impaired because of algae or other water quality problems
Enjoyment of the lake is substantially impaired because of algae or other water quality problems

#	Field	Choice Count	
1	Beautiful, could not be any nicer	50%	3
2	Very minor aesthetic problems; excellent for swimming and boating enjoyment	50%	3
3	Enjoyment of the lake is moderately impaired because of algae or other water quality problems	0%	0
4	Enjoyment of the lake is substantially impaired because of algae or other water quality problems	0%	0
			6

Showing rows 1 - 5 of 5

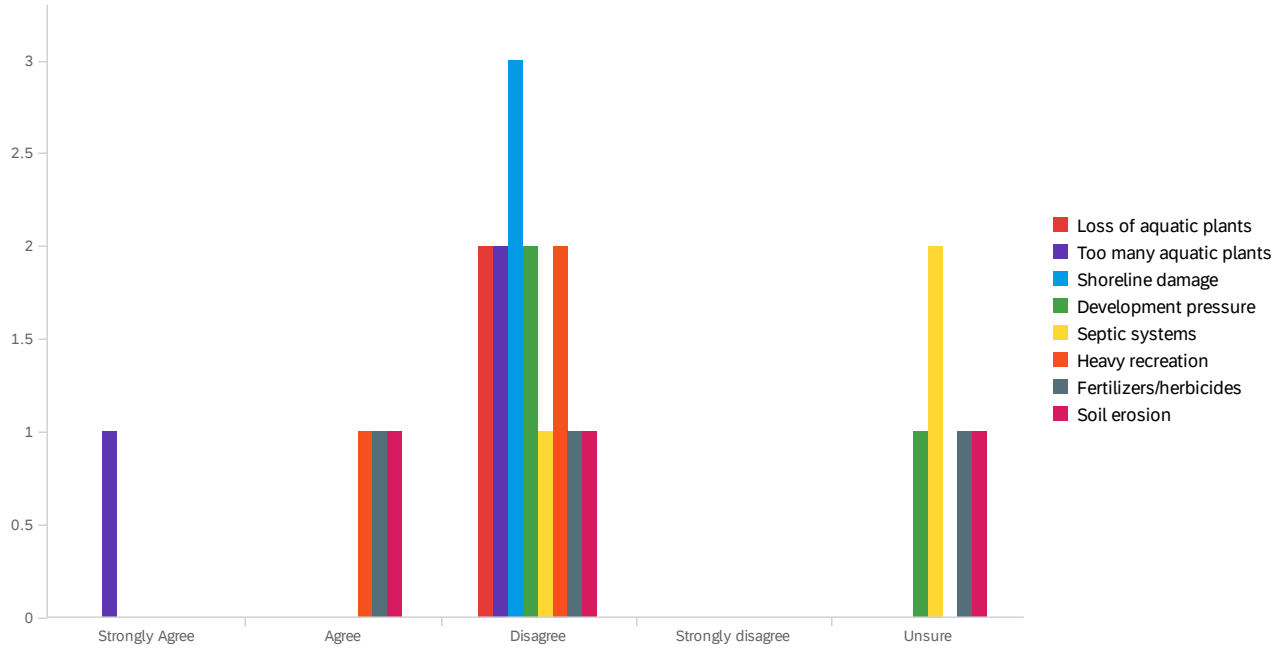
Q18 - During the time that you have lived on, visited or recreated on the lake, how would you say the water quality has changed?



#	Field	Choice Count
1	Improved	0% 0
2	Declined	33% 2
3	Stayed the same	67% 4
4	Unsure	0% 0
		6

Showing rows 1 - 5 of 5

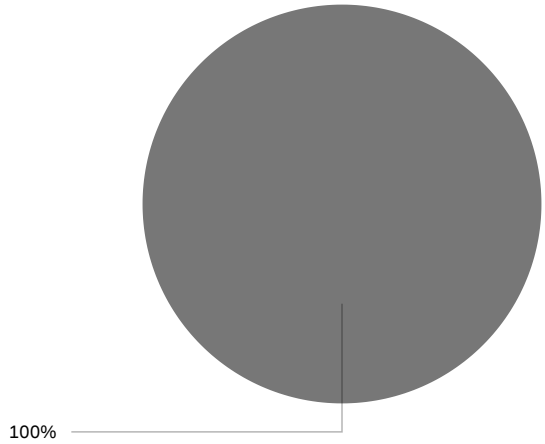
Q19 - If you think it has declined, what, in your opinion, are the primary causes?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Loss of aquatic plants	0% 0	0% 0	100% 2	0% 0	0% 0	2
2	Too many aquatic plants	33% 1	0% 0	67% 2	0% 0	0% 0	3
3	Shoreline damage	0% 0	0% 0	100% 3	0% 0	0% 0	3
4	Development pressure	0% 0	0% 0	67% 2	0% 0	33% 1	3
5	Septic systems	0% 0	0% 0	33% 1	0% 0	67% 2	3
6	Heavy recreation	0% 0	33% 1	67% 2	0% 0	0% 0	3
7	Fertilizers/herbicides	0% 0	33% 1	33% 1	0% 0	33% 1	3
8	Soil erosion	0% 0	33% 1	33% 1	0% 0	33% 1	3

Showing rows 1 - 8 of 8

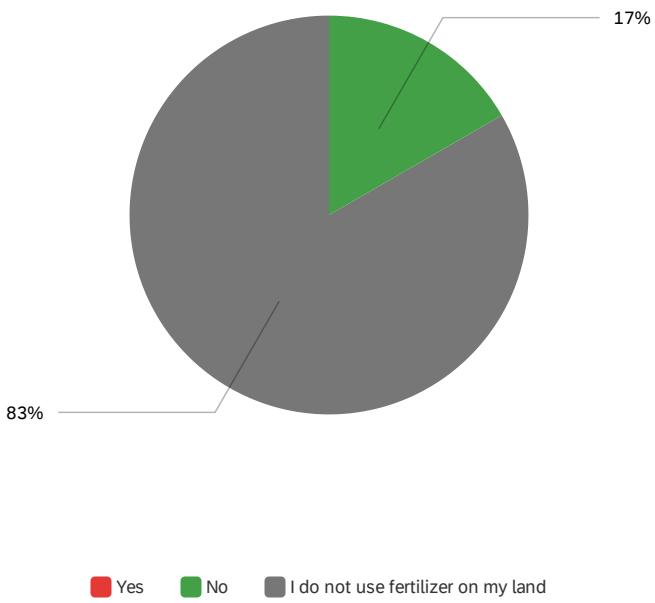
Q20 - If you use fertilizers or herbicides on your land, where are they applied?



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

Showing rows 1 - 6 of 6

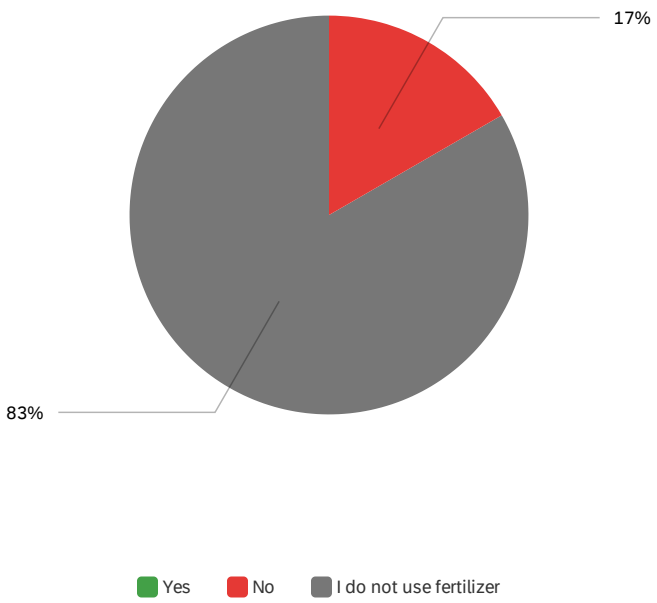
Q21 - Do you use fertilizer that contains phosphorus?



#	Field	Choice Count
1	Yes	0% 0
2	No	17% 1
4	I do not use fertilizer on my land	83% 5
		6

Showing rows 1 - 4 of 4

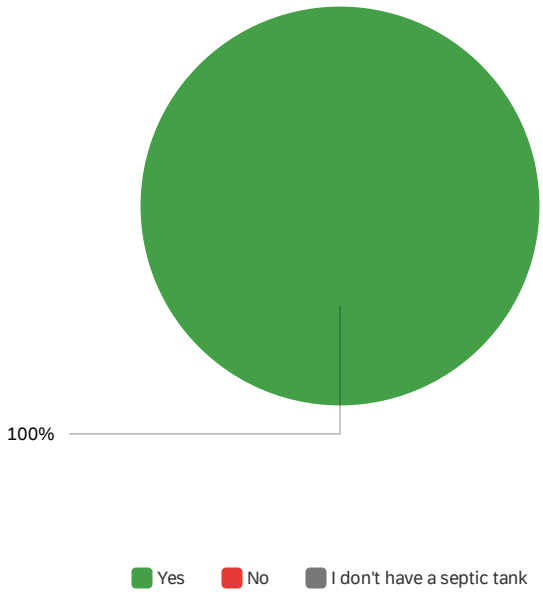
Q23 - Have you had your soil tested before using fertilizer?



#	Field	Choice Count
1	Yes	0% 0
2	No	17% 1
3	I do not use fertilizer	83% 5
		6

Showing rows 1 - 4 of 4

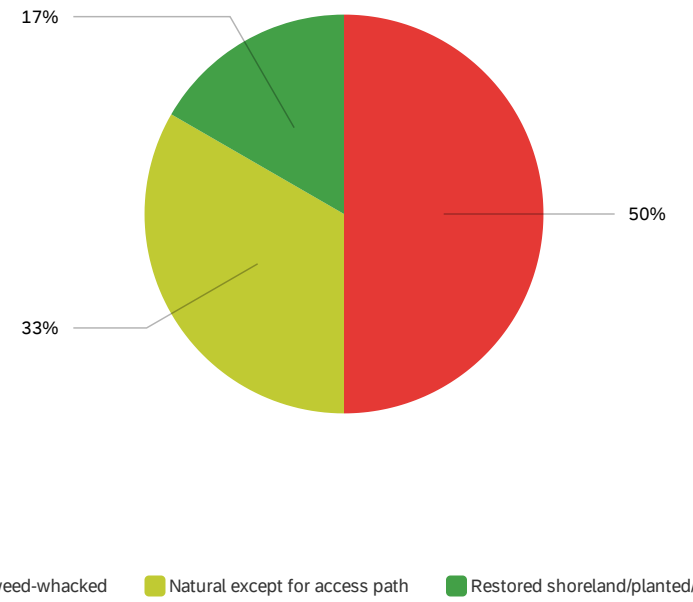
Q22 - Do you have your septic tank pumped regularly (at least every 3 years)?



#	Field	Choice Count
1	Yes	100% 6
2	No	0% 0
3	I don't have a septic tank	0% 0
		6

Showing rows 1 - 4 of 4

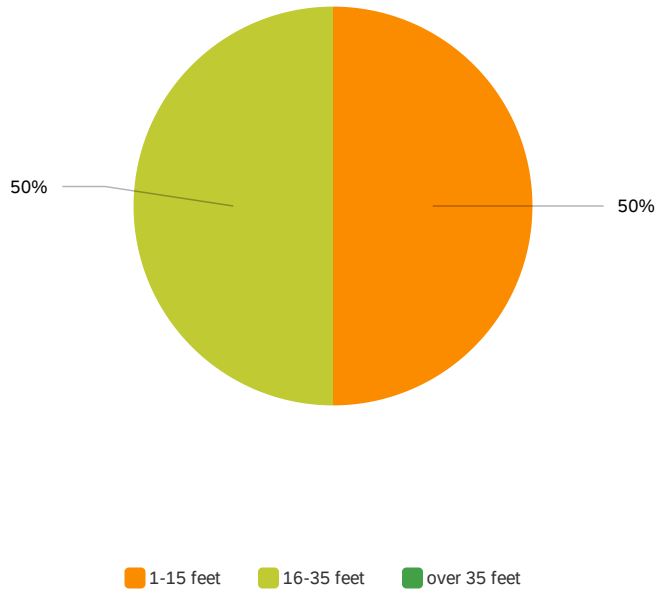
Q25 - How do you currently manage the majority of your property within 35 feet of the lake?



#	Field	Choice Count	
1	Mowed or weed-whacked	50%	3
2	Natural except for access path	33%	2
3	Restored shoreland/planted/landscaped	17%	1
			6

Showing rows 1 - 4 of 4

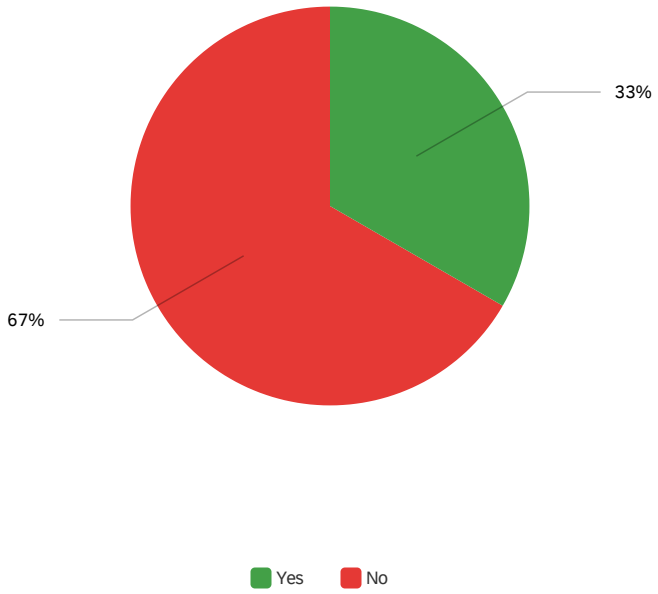
Q26 - If you have unmowed shoreland vegetation, how far inland from the water's edge does it extend?



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

Showing rows 1 - 4 of 4

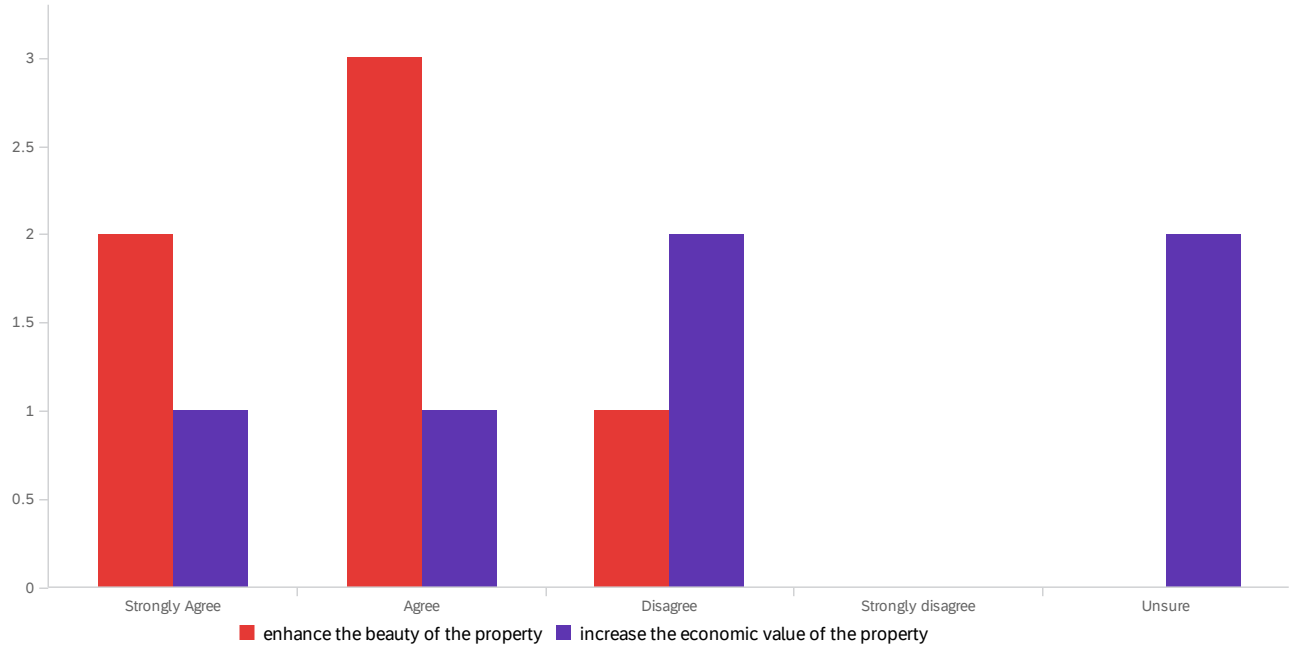
Q31 - Do you have woody structure such as fallen trees or large branches in the shallow water along your property?



#	Field		Choice Count
1	Yes	33%	2
2	No	67%	4
			6

Showing rows 1 - 3 of 3

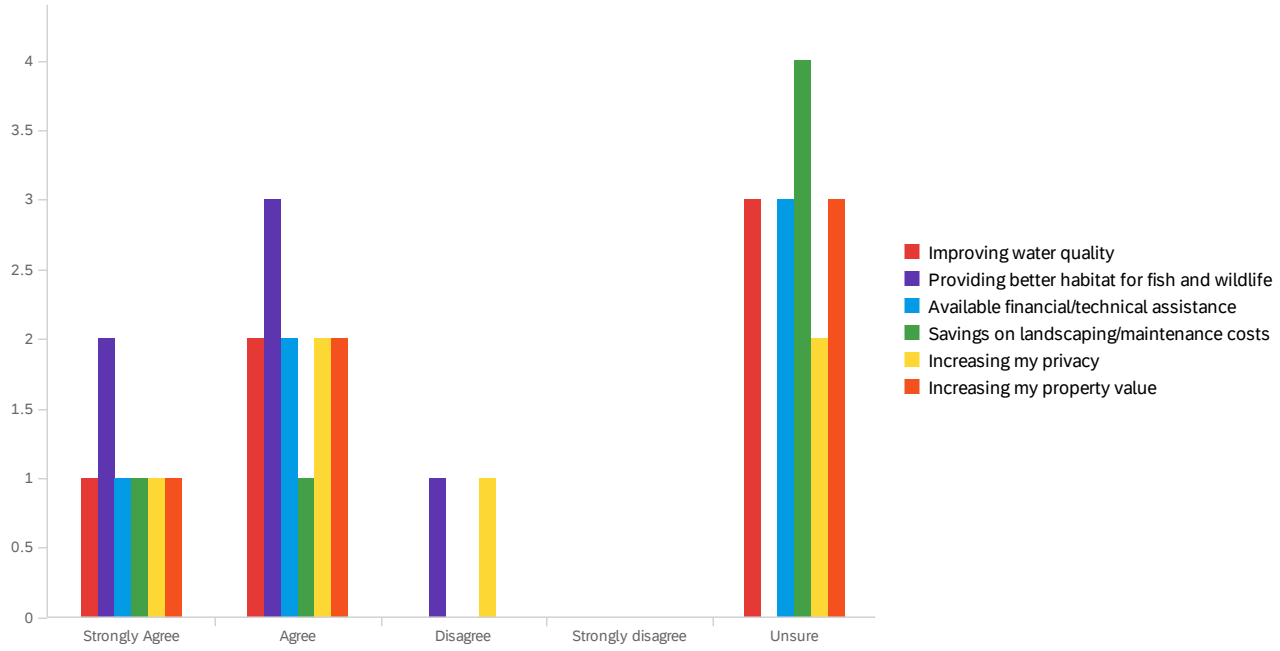
Q27 - In your opinion, does shoreland vegetation...



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	enhance the beauty of the property	33% 2	50% 3	17% 1	0% 0	0% 0	6
2	increase the economic value of the property	17% 1	17% 1	33% 2	0% 0	33% 2	6

Showing rows 1 - 2 of 2

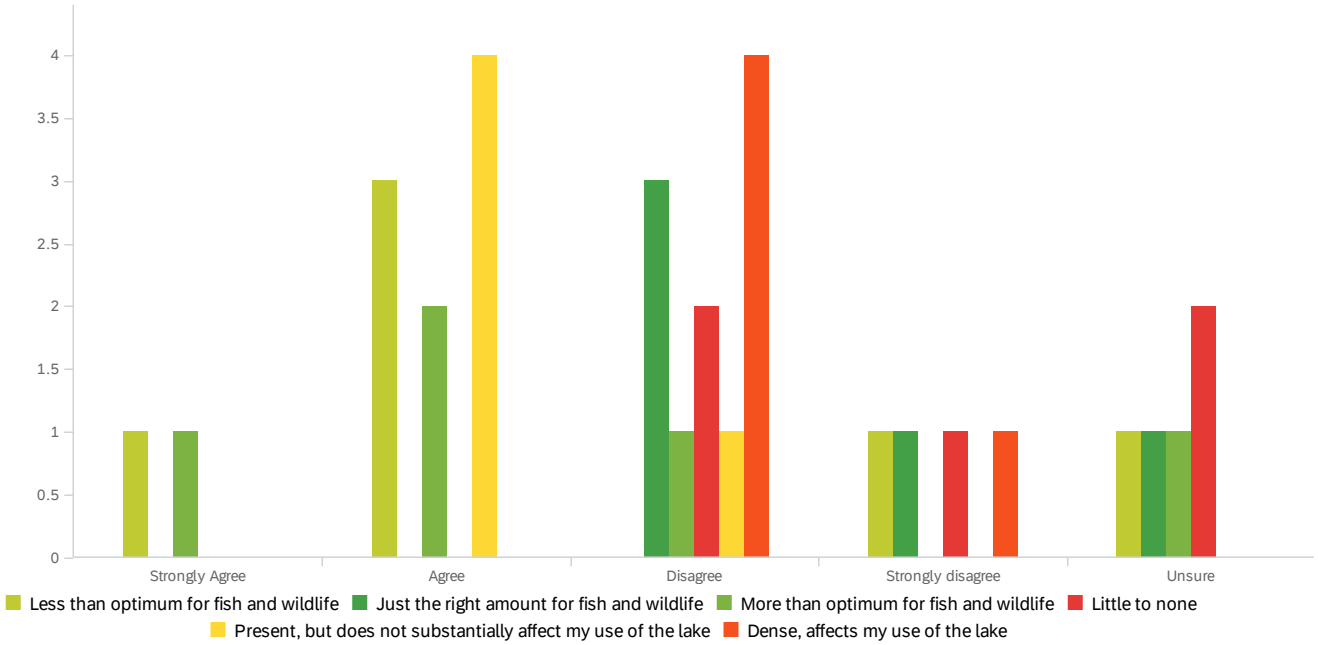
Q28 - What might motivate you to change how you manage your shoreland?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Improving water quality	17% 1	33% 2	0% 0	0% 0	50% 3	6
2	Providing better habitat for fish and wildlife	33% 2	50% 3	17% 1	0% 0	0% 0	6
3	Available financial/technical assistance	17% 1	33% 2	0% 0	0% 0	50% 3	6
4	Savings on landscaping/maintenance costs	17% 1	17% 1	0% 0	0% 0	67% 4	6
5	Increasing my privacy	17% 1	33% 2	17% 1	0% 0	33% 2	6
6	Increasing my property value	17% 1	33% 2	0% 0	0% 0	50% 3	6

Showing rows 1 - 6 of 6

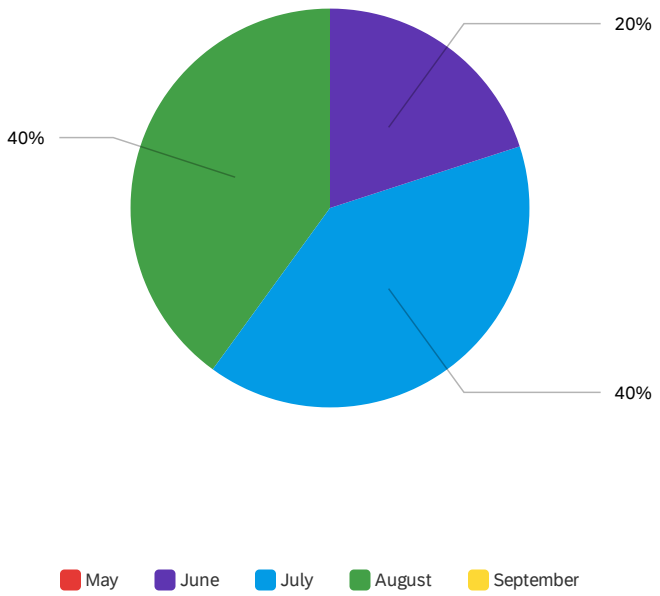
Q32 - In your opinion, which statement best describes the amount of aquatic plant growth in Underwood Lake?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Less than optimum for fish and wildlife	17% 1	50% 3	0% 0	17% 1	17% 1	6
2	Just the right amount for fish and wildlife	0% 0	0% 0	60% 3	20% 1	20% 1	5
3	More than optimum for fish and wildlife	20% 1	40% 2	20% 1	0% 0	20% 1	5
4	Little to none	0% 0	0% 0	40% 2	20% 1	40% 2	5
5	Present, but does not substantially affect my use of the lake	0% 0	80% 4	20% 1	0% 0	0% 0	5
6	Dense, affects my use of the lake	0% 0	0% 0	80% 4	20% 1	0% 0	5

Showing rows 1 - 6 of 6

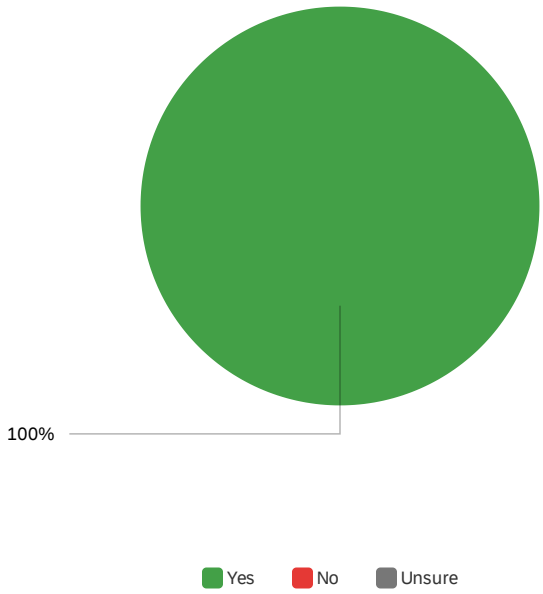
Q33 - If you think the plant growth in Underwood Lake is dense, what month(s) do the problems occur? Check all that apply.



#	Field	Choice Count
1	May	0% 0
2	June	20% 1
3	July	40% 2
4	August	40% 2
5	September	0% 0
		5

Showing rows 1 - 6 of 6

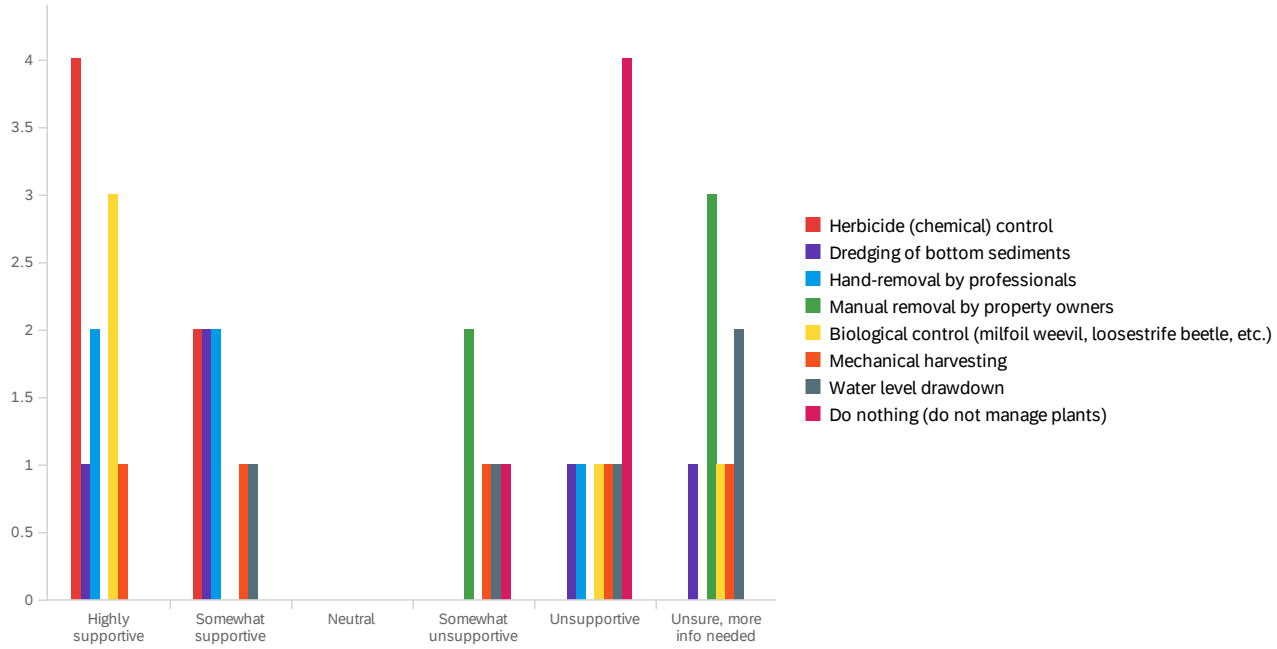
Q34 - Do you believe aquatic plant control is needed on Underwood Lake?



#	Field	Choice Count
1	Yes	100% 6
2	No	0% 0
3	Unsure	0% 0
		6

Showing rows 1 - 4 of 4

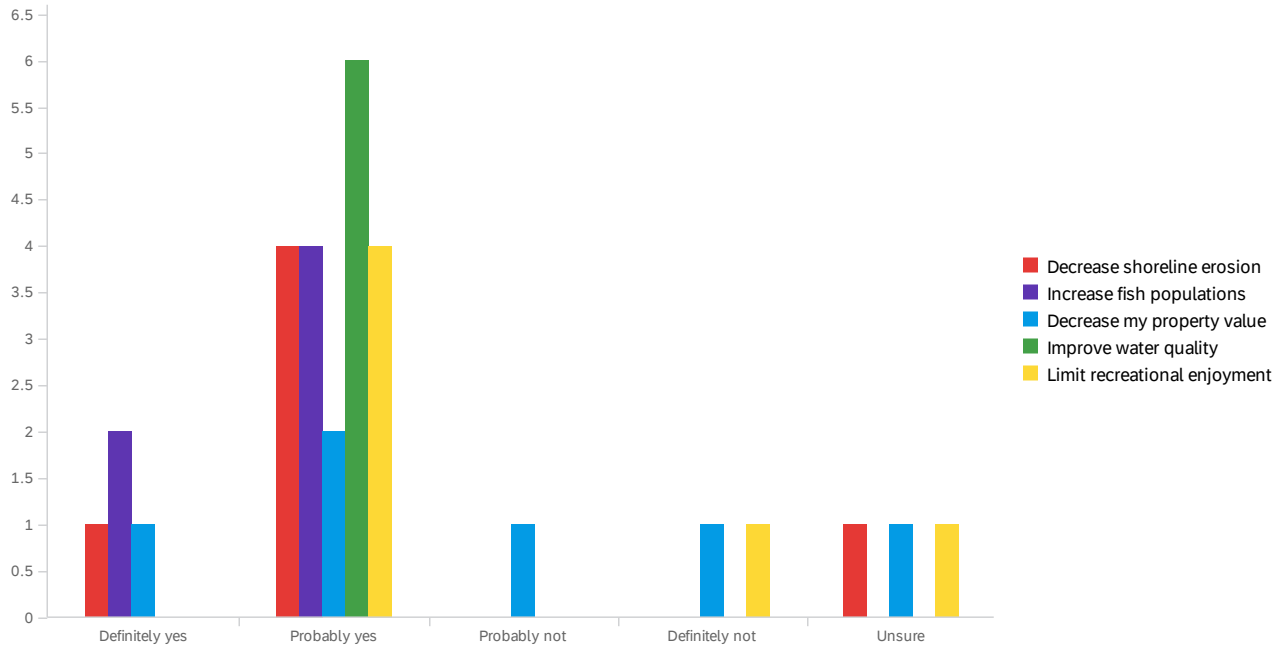
Q35 - What is your level of support for the responsible use of the following techniques to manage aquatic plants on Underwood Lake?



#	Field	Highly supportive	Somewhat supportive	Neutral	Somewhat unsupportive	Unsupportive	Unsure, more info needed	Total
1	Herbicide (chemical) control	67% 4	33% 2	0% 0	0% 0	0% 0	0% 0	6
2	Dredging of bottom sediments	20% 1	40% 2	0% 0	0% 0	20% 1	20% 1	5
3	Hand-removal by professionals	40% 2	40% 2	0% 0	0% 0	20% 1	0% 0	5
4	Manual removal by property owners	0% 0	0% 0	0% 0	40% 2	0% 0	60% 3	5
5	Biological control (milfoil weevil, loosestrife beetle, etc.)	60% 3	0% 0	0% 0	0% 0	20% 1	20% 1	5
6	Mechanical harvesting	20% 1	20% 1	0% 0	20% 1	20% 1	20% 1	5
7	Water level drawdown	0% 0	20% 1	0% 0	20% 1	20% 1	40% 2	5
8	Do nothing (do not manage plants)	0% 0	0% 0	0% 0	20% 1	80% 4	0% 0	5

Showing rows 1 - 8 of 8

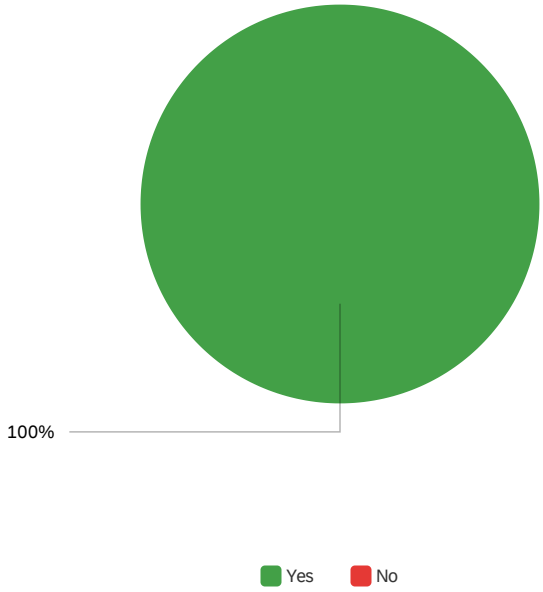
Q36 - In your opinion, does establishing or maintaining native vegetation in the water in the near-shore area...



#	Field	Definitely yes	Probably yes	Probably not	Definitely not	Unsure	Total
1	Decrease shoreline erosion	17% 1	67% 4	0% 0	0% 0	17% 1	6
2	Increase fish populations	33% 2	67% 4	0% 0	0% 0	0% 0	6
3	Decrease my property value	17% 1	33% 2	17% 1	17% 1	17% 1	6
4	Improve water quality	0% 0	100% 6	0% 0	0% 0	0% 0	6
5	Limit recreational enjoyment	0% 0	67% 4	0% 0	17% 1	17% 1	6

Showing rows 1 - 5 of 5

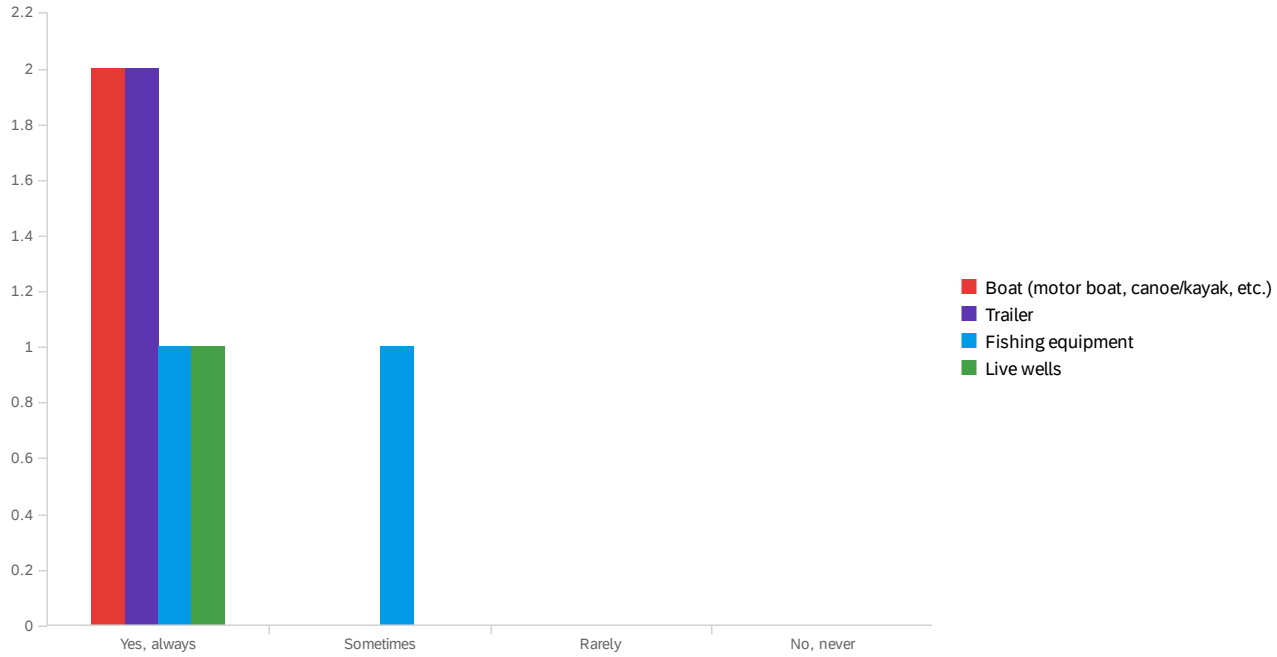
Q37 - Are you aware of invasive species (in general)?



#	Field	Choice Count
1	Yes	100% 5
2	No	0% 0
		5

Showing rows 1 - 3 of 3

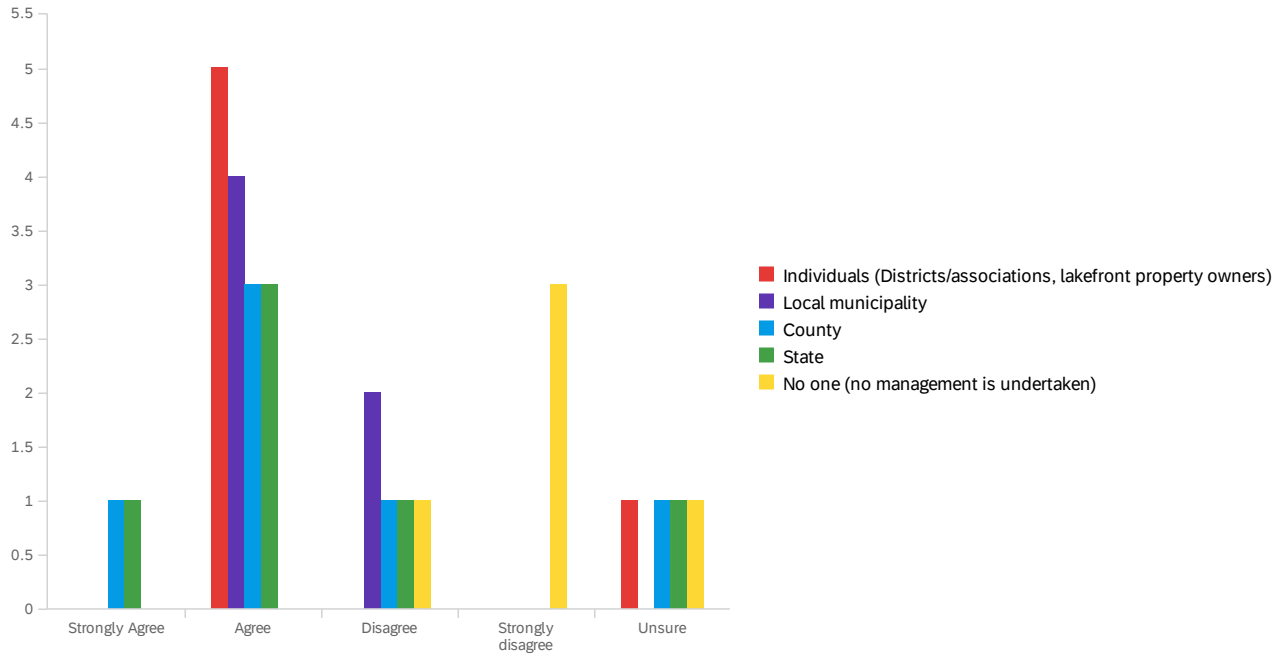
Q39 - After you have been to another lake, do you clean your.... before bringing it back to Underwood Lake?



#	Field	Yes, always	Sometimes	Rarely	No, never	Total
1	Boat (motor boat, canoe/kayak, etc.)	100% 2	0% 0	0% 0	0% 0	2
2	Trailer	100% 2	0% 0	0% 0	0% 0	2
3	Fishing equipment	50% 1	50% 1	0% 0	0% 0	2
4	Live wells	100% 1	0% 0	0% 0	0% 0	1

Showing rows 1 - 4 of 4

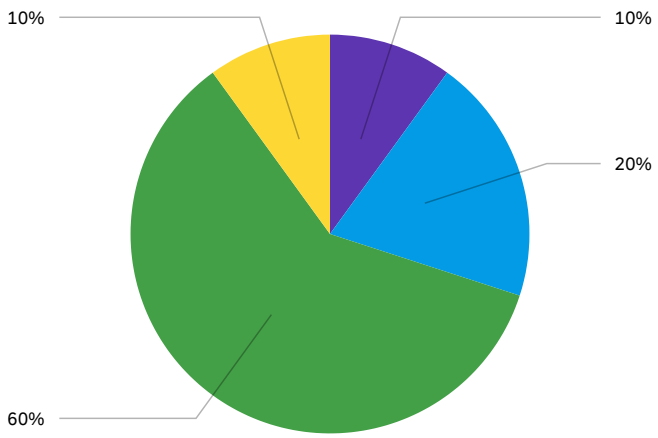
Q40 - Who should pay the cost of managing invasive aquatic plants?



#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Individuals (Districts/associations, lakefront property owners)	0% 0	83% 5	0% 0	0% 0	17% 1	6
2	Local municipality	0% 0	67% 4	33% 2	0% 0	0% 0	6
3	County	17% 1	50% 3	17% 1	0% 0	17% 1	6
4	State	17% 1	50% 3	17% 1	0% 0	17% 1	6
5	No one (no management is undertaken)	0% 0	0% 0	20% 1	60% 3	20% 1	5

Showing rows 1 - 5 of 5

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



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

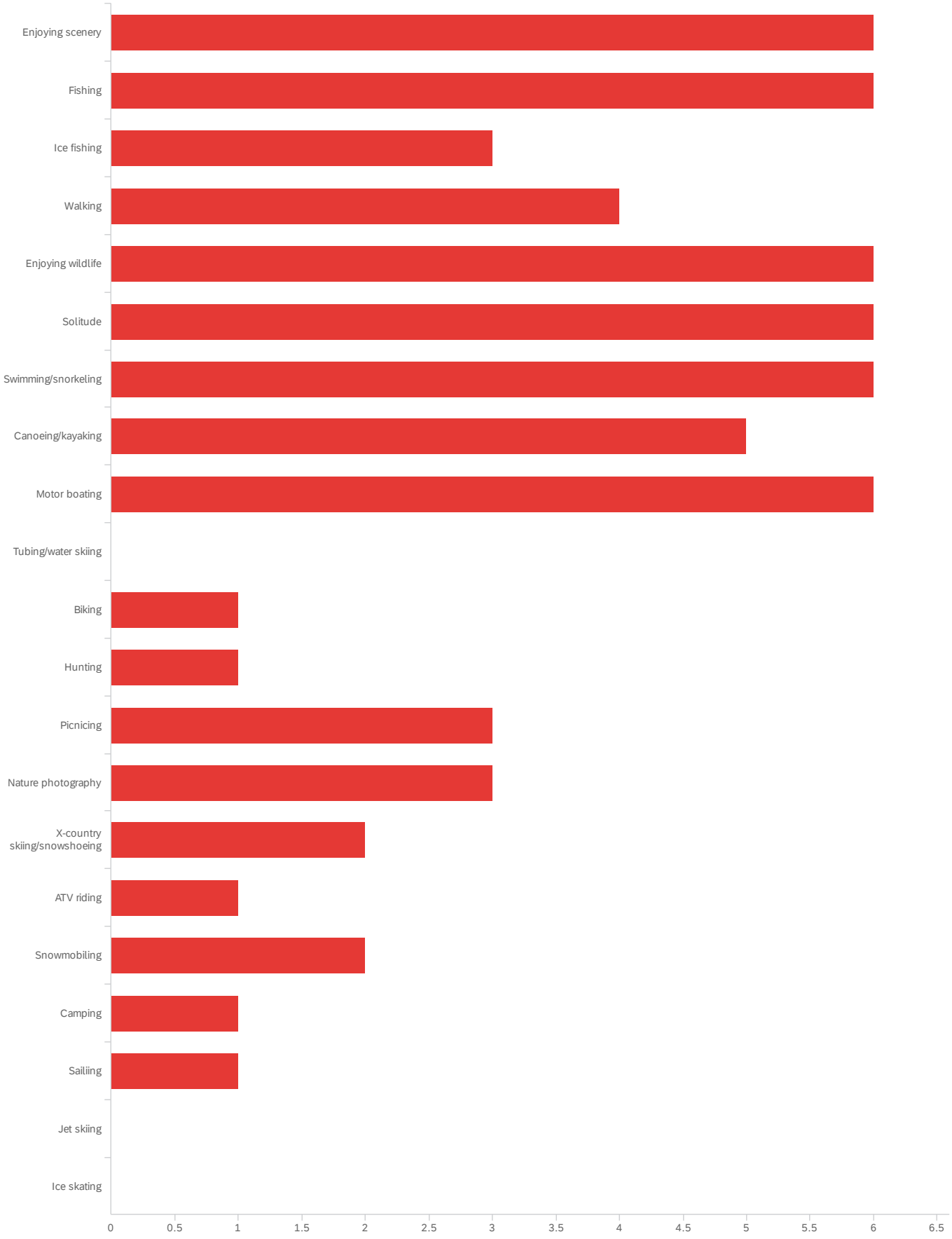
#	Field		Choice Count
1	Newspaper	0%	0
2	Billboard	10%	1
3	Info pamphlets	20%	2
4	Lakeside signs/kiosks	60%	6
5	Volunteer staff at boat launch	10%	1
6	Other	0%	0
			10

Showing rows 1 - 7 of 7

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

In your opinion, what should be done to restore, maintain or improve Underw...
TOTALLY eliminate Eurasion milfoil
keep milfoil in check
Try to deter folks from using fertilizers and reducing light pollution. Some folks have extremely bright lights and for those of us that enjoy the night sky and astrophotography, it's frustrating.
Property owners have paid to remove Eurasian milfoil.
We have to knock down the milfoil to keep it from consuming the lake.
Control milfoil

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



#	Field	Choice Count

#	Field		Choice Count
1	Enjoying scenery	10%	6
2	Fishing	10%	6
3	Ice fishing	5%	3
4	Walking	6%	4
5	Enjoying wildlife	10%	6
6	Solitude	10%	6
7	Swimming/snorkeling	10%	6
8	Canoeing/kayaking	8%	5
9	Motor boating	10%	6
10	Tubing/water skiing	0%	0
11	Biking	2%	1
12	Hunting	2%	1
13	Picnicing	5%	3
14	Nature photography	5%	3
15	X-country skiing/snowshoeing	3%	2
16	ATV riding	2%	1
17	Snowmobiling	3%	2
18	Camping	2%	1
19	Sailiing	2%	1
20	Jet skiing	0%	0
21	Ice skating	0%	0
			63

Showing rows 1 - 22 of 22

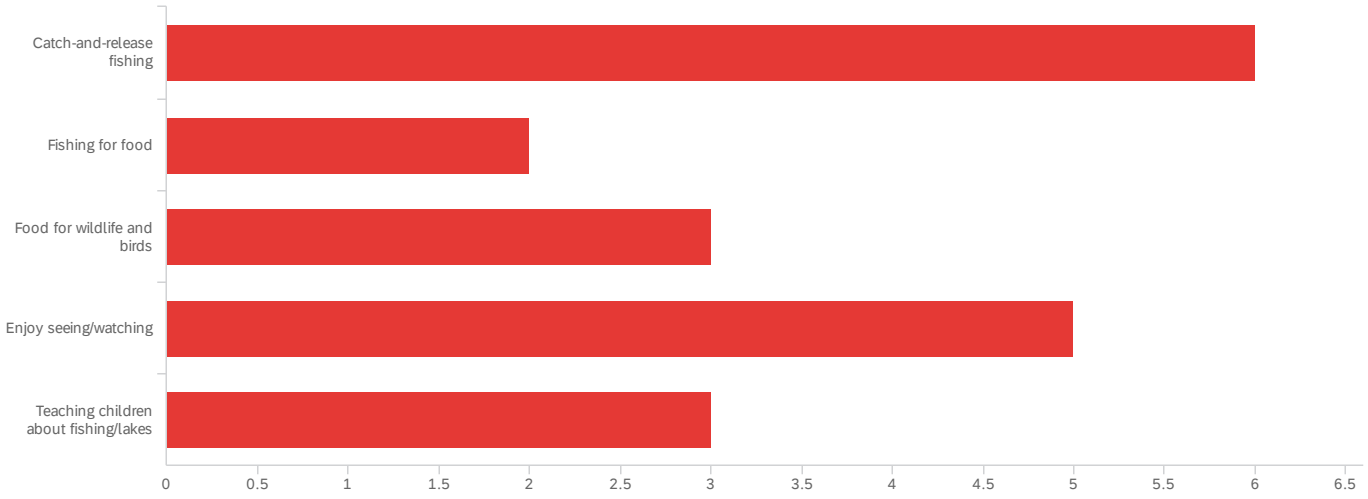
Q46 - Other recreational activities not included above:

Other recreational activities not included above:
none
Star gazing and astrophotography.
Scuba diving

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

What could be done to improve your recreation experience on Underwood Lake?
Ask neighbors to reduce light pollution.
Eradicate the Eurasian milfoil
Maintain as a no wake lake and control milfoil.

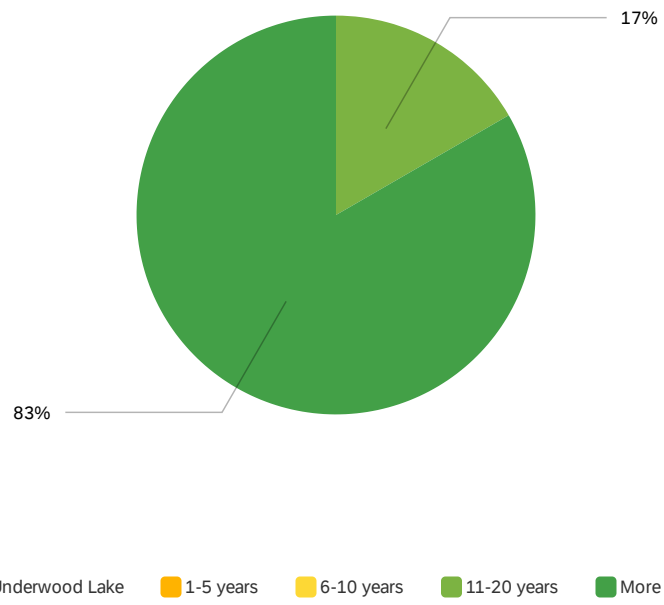
Q51 - For what purposes do you value the fishery in Underwood Lake? (Check all that apply)



#	Field		Choice Count
1	Catch-and-release fishing	32%	6
2	Fishing for food	11%	2
3	Food for wildlife and birds	16%	3
4	Enjoy seeing/watching	26%	5
5	Teaching children about fishing/lakes	16%	3
			19

Showing rows 1 - 6 of 6

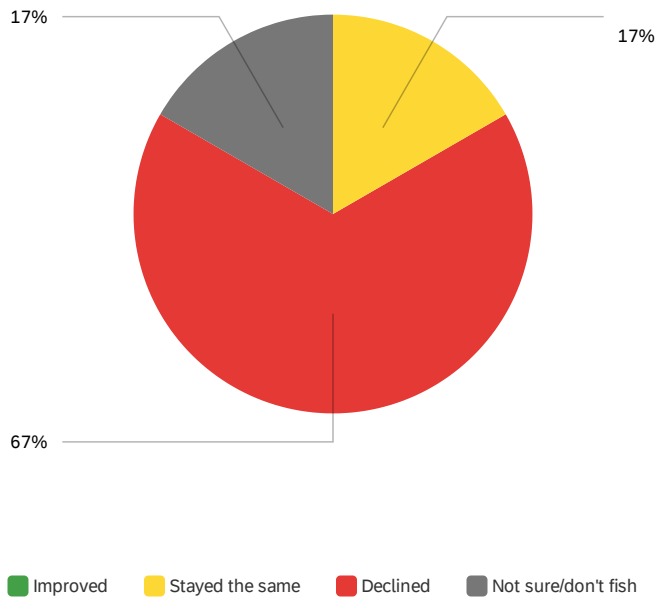
Q52 - How many years experience do you have fishing Underwood Lake?



#	Field	Choice Count
1	I don't fish Underwood Lake	0% 0
2	1-5 years	0% 0
3	6-10 years	0% 0
4	11-20 years	17% 1
5	More than 20 years	83% 5
		6

Showing rows 1 - 6 of 6

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



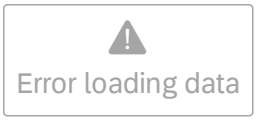
#	Field	Choice Count
1	Improved	0% 0
2	Stayed the same	17% 1
3	Declined	67% 4
4	Not sure/don't fish	17% 1
		6

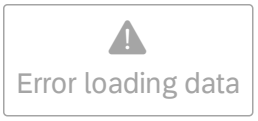
Showing rows 1 - 5 of 5

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

What do you think has contributed to the change in fishing?
Limit 10 fish per species . Have later opening on panfish to allow sponning to be completed. July 1st
milfoil
Not sure
Introduction of walleye and northern

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

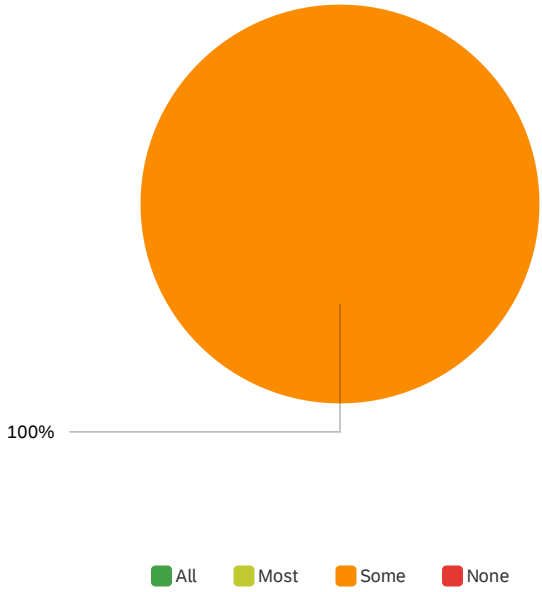




Q56 - What type of fish do you catch on Underwood Lake?

What type of fish do you catch on Underwood Lake?
Panfish and bass. All catch and release
bass, bluegill, crappie, northern
Mostly large mouth bass and northern. Sometimes blue gill. Rarely perch, crappie, bullhead.
Large mouth bass, rock bass, very few sunfish or blue gills, occasionally northern pike.
Large mouth bass. Crappie.

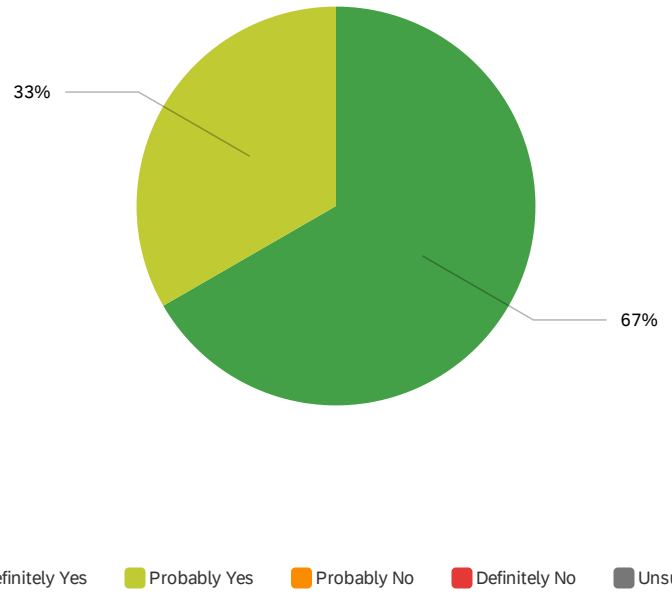
Q57 - In general, how many of the fish you catch are big enough to keep?



#	Field	Choice Count
1	All	0% 0
2	Most	0% 0
3	Some	100% 5
4	None	0% 0
		5

Showing rows 1 - 5 of 5

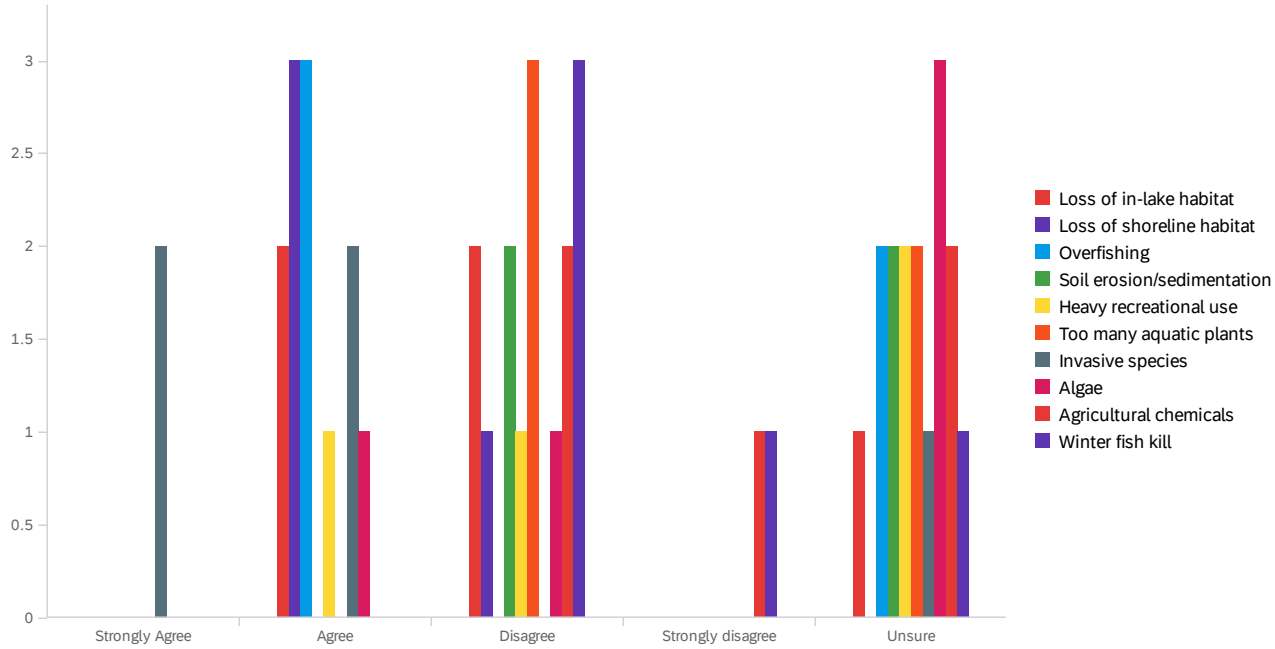
Q58 - Do you believe fish from Underwood Lake are safe to eat?



#	Field	Choice Count
1	Definitely Yes	67% 4
2	Probably Yes	33% 2
3	Probably No	0% 0
4	Definitely No	0% 0
5	Unsure	0% 0
		6

Showing rows 1 - 6 of 6

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



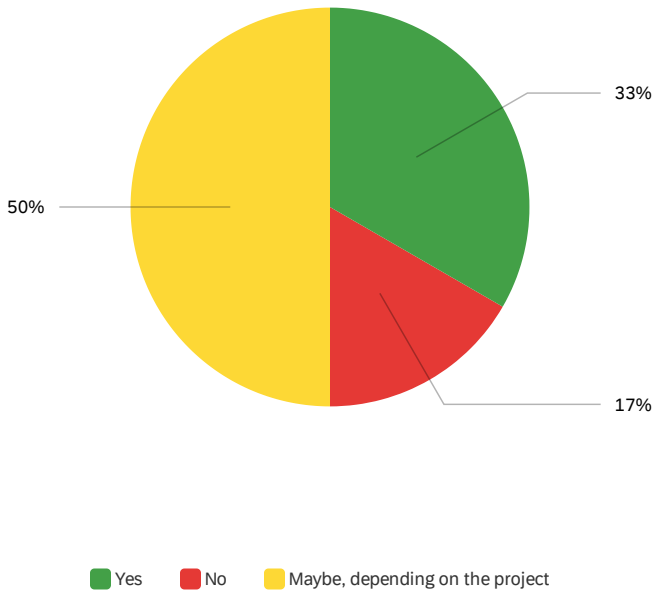
#	Field	Strongly Agree	Agree	Disagree	Strongly disagree	Unsure	Total
1	Loss of in-lake habitat	0% 0	40% 2	40% 2	0% 0	20% 1	5
2	Loss of shoreline habitat	0% 0	75% 3	25% 1	0% 0	0% 0	4
3	Overfishing	0% 0	60% 3	0% 0	0% 0	40% 2	5
4	Soil erosion/sedimentation	0% 0	0% 0	50% 2	0% 0	50% 2	4
5	Heavy recreational use	0% 0	25% 1	25% 1	0% 0	50% 2	4
6	Too many aquatic plants	0% 0	0% 0	60% 3	0% 0	40% 2	5
7	Invasive species	40% 2	40% 2	0% 0	0% 0	20% 1	5
8	Algae	0% 0	20% 1	20% 1	0% 0	60% 3	5
9	Agricultural chemicals	0% 0	0% 0	40% 2	20% 1	40% 2	5
10	Winter fish kill	0% 0	0% 0	60% 3	20% 1	20% 1	5

Showing rows 1 - 10 of 10

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

Do you have any additional comments regarding Underwood Lake?
none

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



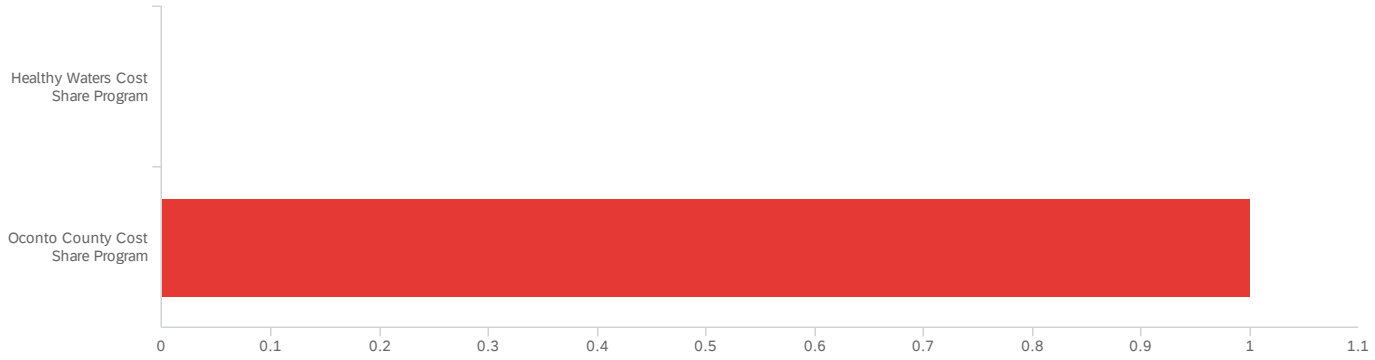
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you be interested in volunteering on a project on your lake (such as shoreland restoration planting, invasive species monitoring/removal, water quality monitoring, highway cleanup, etc.)?	1	3	2	1	1	6

#	Field		Choice Count
1	Yes	33%	2
2	No	17%	1
3	Maybe, depending on the project	50%	3
			6

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	100%	1
			1

Showing rows 1 - 3 of 3

End of Report