ITASCA COUNTY NSBI
Social Research Report

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ACRONYMS

CATA	Check-all-that-apply
COOR	Check only one response
DNR	Minnesota Department of Natural Resources
GD	General Development (lake class)
ICC	Itasca Community College
ICOLA	Itasca Coalition of Lake Associations
KAP	Knowledge, attitudes and practices study
KAXE	Grand Rapids-based public radio station
LGU	Local government unit
MNENRTF	Minnesota Environment and Natural Resources Trust Fund
OHWL	Ordinary high water line
n	number
NE	Natural Environment (lake class)
NSBI	Native Shoreland Buffer Incentives Project
Q	Question
RD	Recreational Development (lake class)
SWCD	Soil and Water Conservation District
UM	University of Minnesota
WRC	University of Minnesota Water Resources Center

Introduction

The primary resource objective of the Native Shoreland Buffer Incentives project (NSBI) is to protect native vegetation buffers along Minnesota shorelines. The project goal is to develop, implement, and evaluate the efficacy of two substantially different models for incentivizing the maintenance of native shoreland buffers promoted by local government units (LGUs). The NSBI project was proposed by the Minnesota Department of Natural Resources (DNR) to the Minnesota Environment and Natural Resources Trust Fund (MNENRTF) in 2008. It was accepted by the Trust Fund Commission, which recommended the proposal to the Minnesota State Legislature, and eventually funded for $225,000.

The project scope combines both social science and natural resources activities. Through the NSBI, the DNR offered two competitive grants to LGUs to craft shoreland protection incentive programs that encourage maintaining and restoring native shoreland buffers in areas of existing or newly proposed development. Itasca County was one of the two LGUs to participate in the NSBI.

Intended outcomes of the NSBI program were:

1) A workshop and ongoing consultation services that educate prospective local governmental applicants about how to design incentive programs that elicit sustainable behavioral change;
2) Two trial buffer incentive programs models;
3) Interim and final reports on program efficacy;
4) DNR technical and assessment support on the effectiveness of trial program buffers.

Measures of success:
This project will be considered successful if:

- Two buffer incentive programs (chosen by competitive process) are developed, implemented, and evaluated by June, 2011.
- The MNENRTF is satisfied with the final efficacy reports, and the reports are helpful to others considering incentive-based approaches to shoreland stewardship.
- Involved stakeholders have increased their skills and knowledge as a result of the project.
- The DNR and other interested parties can readily benefit from the lessons learned from the trial programs.

The project was led by the DNR, and a subcontract was awarded to the University of Minnesota Water Resources Center for the social research component. The NSBI project commenced with a workshop in October 2008 called “Understanding your Target Audience,” which was attended by approximately forty staff of two dozen local governments, mainly counties and soil and water conservation districts (SWCDs). The LGUs were invited to submit proposals to the NSBI with innovative strategies intended to foster adoption and maintenance of shoreland buffers by shoreland property owners. The proposals were submitted and reviewed by a panel with members drawn from The Initiative Foundation, DNR, WRC and others. Two proposals from the East Otter Tail (EOT) County Soil and Water Conservation District, and a coalition of

partners from Itasca County (including University of Minnesota Extension, Itasca Water Legacy Partnership, the Itasca County Soil and Water Conservation District, and Action Media) were selected for funding ($75,000 each). Contracts were prepared for each county, and project activities commenced in late 2008.

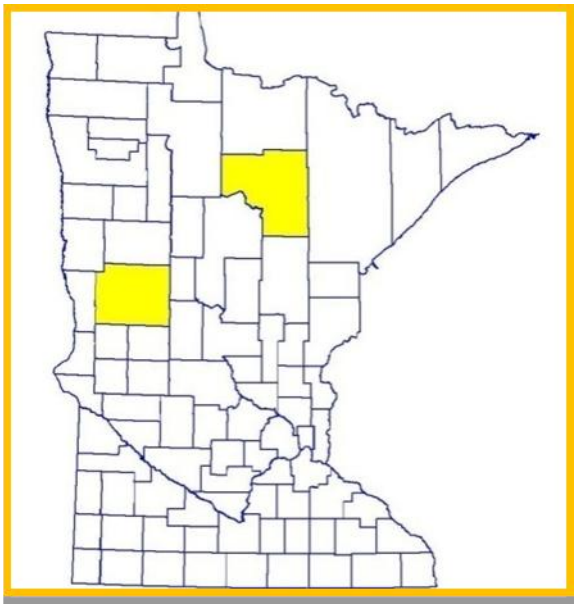


Figure 1: Location of Itasca and East Otter Tail Counties
(Itasca is in north central Minnesota; East Otter Tail is in west-central Minnesota)

Both counties committed to a social research component that investigated the awareness and behaviors of shoreland property owners. Barriers and constraints to adoption of shoreland buffers were also explored. One social research tool employed in both Itasca and East Otter Tail counties is the *knowledge, attitudes and practices (KAP) study* described in Eckman (2010 and 2011*).*

This report concerns only the social research aspects and social outcomes of the Itasca County NSBI project. A similar KAP study report has been prepared for East Otter Tail County. Each county will also submit a final report detailing the deliverables in each case. In addition, the NSBI final report gives an overview of project accomplishments and lessons, and draws conclusions about the efficacy of the different strategies tested in each county.

It should be noted that unfortunate administrative delays in processing contracts in 2008, 2009 and 2010, combined with the 2011 state government shutdown, severely handicapped the social research elements of the NSBI. The administrative delays and work stoppages caused frequent interruptions in field work, leaving insufficient time for data analysis. There has been very limited time in which to prepare this report and the NSBI final/efficacy report. Nevertheless, valuable lessons and findings have been gained, and are summarized in this report and in the accompanying final/efficacy report.

The Itasca County NSBI

The purpose of the Itasca County NSBI was described in the proposal submitted to the DNR in late 2008:

> *This project will compare the effectiveness of both 1) standard strategies (local media/direct mailing) vs. trained peer-messengers and 2) lake association vs. non-lake association influence for recruiting property owners to install/maintain buffers on 4 lakes: Turtle (RD) and Johnson, Horseshoe and Mike (all NE). Owners will select from tiered buffer strategies (natural, no-mow, hybrid, planted) and incentive options. Train-the-trainer workshops for Master Gardeners and ICC students will increase local capacity to assist shoreland owners with buffer design, installation and maintenance. Buffer research will evaluate efficacy of county shoreland buffer standards to reduce run-off (and pollutants) and increase biodiversity of shorelines. Project effectiveness will be measured by pre-and post-project knowledge, attitudes and practices (KAP) surveys and whole-lake shoreline assessments.*

The Itasca partners, led by Dr. Mary Blickenderfer of Minnesota Extension, subcontracted with Action Media to design the social marketing component of the Itasca NSBI. The Itasca NSBI team took a step-wise process, building on the initial social research findings, experimenting with different strategies, starting with small steps that might be acceptable to lakeshore property owners and adding additional options over time that emerged out of expressions of interest voiced by participants.[1] Both the Itasca and East Otter Tail teams developed an education and outreach strategy with several options, which were tested and assessed. In Itasca County, the strategy can be summarized as:

"*High-touch*" (frequent and direct on-site contact by shoreland specialists, with multiple options for adoption including buffer installations with free labor; the Itasca Lakes Challenge; and other options);
"*Medium-touch*" (less frequent contact, but with some site visits; and
"*Low-touch*" (no direct contact with the property owner, who received a newsletter only).

The Itasca team selected Turtle Lake and South Johnson Lake as high-touch lakes. Medium-touch sites were limited to North Johnson Lake. The low-touch strategy was applied at smaller lakes (Mike Lake, Horseshoe Lake). These lakes varied considerably in terms of size, population density, and development patterns, from Turtle Lake (a large, developed lake with several resorts) to Mike Lake (a small lake with four cabins).

[1] A full description of the Itsaca NSBI strategy and approach is contained in the end-of-project report prepared by the Itasca County project lead (Mary Blickenderfer).

During the project period the Itasca team also designed several experimental civic engagement tools that were tested at various sites. These tools and activities were open to property owners on the five pilot lakes, as well as to the general public. These included:

1. The Itasca Lakes Challenge, whereby shoreland property owners scheduled a guided assessment with trained peers to assess the condition of their own shoreline, and to select options to improve shoreline condition;

2. Several civic engagement options accompany the Lakes Challenge, including:
    a. Citizen-based monitoring of runoff plots to compare native or new (installed) buffers with developed areas (lawns, paths, roads);
    b. Frog classes and frog monitoring;
    c. Fish identification/ecology classes; hands-on fish workshops (protocol and curriculum have recently been developed);
    d. Beachcomber program, with property owners looking for evidence of invasive plants.

The Itasca NSBI also included biophysical research components including shoreland buffer trials (runoff plots), and detailed technical support and advice on buffer installation. Those activities are described in the Itasca NSBI final report.

Social Science Research Aspects of Itasca NSBI

The Itasca NSBI included a strong social research component, in contrast to most natural resources projects which omit such research. Team members wished to examine a number of questions that might assist them in designing effective civic engagement, education and outreach strategies, and to better evaluate project outcomes on intended audiences. The team had observed that many natural resources professionals are trained in the biophysical sciences and are sometimes unfamiliar with social research tools, which limits their use at the project level. In addition, it was known that few water quality projects in Minnesota conduct any form of project evaluation, and that the evaluation of social outcomes and impacts is rare (Eckman et al 2008).

Some of the underlying social research questions included:
- What motivates people to adopt and maintain a recommended practice? Why are some individuals inclined and others disinclined to adopt?
- Are the customary financial incentives offered by state and local agencies sustainable? Do people maintain the practice after the incentives end?
- How can education and outreach strategies be designed according to local needs for better impact?
- How can we, as natural resources professionals, foster civic engagement?
- How do we know what impact the NSBI project has on property owners? What are the social outcomes?

These "big picture" questions are currently being discussed by a number of natural resources professionals in Minnesota and elsewhere. While these questions may not be entirely answered by the social research in this particular project, our findings may contribute in a small way to this very active dialogue.

The social research methods selected in the Itasca project were chosen because of their relatively low cost, relatively rapid nature, and ease of application and interpretation. A mixed-methods approach was taken in order to triangulate and verify findings, and to obtain a richer understanding of attitudes and (especially) motivation of local property owners. The pre-implementation research methods included:

1. A baseline KAP study to assist in planning, the design of education and outreach methods, and to identify possible participants in the NSBI;
2. An experimental "boat-by" to visually confirm the condition of respondents' shorelines, when compared with their self-reported practices;
3. A focus group held with lake association members to understand social networks and diffusion of information between property owners;
4. Social marketing, consisting of the interpretation of KAP data by Action Media for the purpose of designing marketing messages to property owners.

The end-of project research methods included:

1. A second-round KAP study to evaluate changes in knowledge, attitudes and practices, and the acceptability of recommended practices and installations. This yielded two data sets enabling comparison of pre and post KAP values;
2. Key informant interviews to gain a richer understanding of participant motivation and to better understand local social networks.

The "boat-by," focus group and social marketing were conducted by Itasca County local partners and are not included in this report (see the Itasca NSBI Final Report for details). This report includes results of social science research conducted by the University of Minnesota Water Resources Center (*e.g.* the first and second-round KAP studies, as well as key informant interviews).

The Itasca NSBI KAP Study

As noted, a KAP study was prepared for property owners on five selected lakes to assess their views about shoreline buffers, as well to identify potential incentives that might help to overcome barriers to installing/maintaining buffers. The Itasca shoreline team decided to administer the survey at a sample of lakes representing various DNR-designated lake classes, of different sizes, and with varying degrees of development. Five lakes were selected in an area north of Grand Rapids that were in relatively close proximity in order to facilitate field work.

These respondents had properties with $10,000 or greater of structural improvements to their property on five Itasca County lakes. $10,000 of property improvements was suggested by the county as a reasonable minimum value for a "livable" structure. Using this value eliminated people with bare land or uninhabitable structures, leaving the survey sample of those with rustic cabins through “McMansions.”

The lakes included:

Johnson North (ID = 31068700, Natural Environment Classification)
Johnson South (ID=31058600, Natural Environment Classification)
Turtle (ID = 31072500, Recreational Development Classification)
Horseshoe (ID = 31069600, Natural Environment Classification)
Mike (ID = 31070600, Natural Environment Classification)

The questionnaire design was based upon a brainstorming “gap exercise” that identified gaps in the NSBI team’s understanding about the property owners on the five selected lakes. A list of gaps was prepared, and questions drafted accordingly. The preliminary list of questions was refined, critiqued by the team, refined again, and finally converted into a draft questionnaire. This was pretested and refined again. The first-round KAP questionnaire is attached as an appendix to this report.

The KAP study was administered twice: first as a baseline survey at the project onset (June 2009); and again at the end of the project during the summer of 2011. The first-round baseline study data was used to inform the education and outreach aspects of the Itasca NSBI, and to identify property owners expressing an interest in participating. The second-round study repeated many (but not all) of the questions in order to gauge changes in key KAP values. Several new questions were posed in 2011 to assess the efficacy of the strategies and interventions that were introduced in the interim period.

The first-round survey was administered to property owners by trained college students and/or ICOLA members in person or by mail for those not present during the in-person survey. A WRC researcher (Eckman) trained the survey enumerators, and guided the field portions of the study. Care was taken to reconcile the property lists provided by the county with aerial photos, so that the survey sample was as accurate as possible.

Photo 1: Comparing aerial photos with county property lists to correct the sampling frame (2009).

Photo 2: Data entry during the first-round KAP study (2009)

First-Round Survey (2009)

Questionnaires were completed by roughly two-thirds (*n* = 224) of 331 shoreland property owners in 2009. The questionnaires were completed either during a door-to-door field survey during the week of June 22-29 2009 (*n* = 109), or later during a mailed survey to tax record addresses in July and October 2009 (*n* = 115). Of the total population of $10,000 parcels, some were eliminated from the study due to impending sales, duplicate ownership (one person owning multiple parcels on the lake) or tax forfeiture. The total of shoreline property owners by lake were:

Mike Lake total property owners: 5
Horseshoe Lake: 26
Johnson (north): 33
Johnson (south): 63
Turtle Lake: 204

Thus, the effective population size of the 2009 five-lake study was 331. To facilitate analysis and ensure accuracy, surveys were entered into Survey Monkey software by a paired data entry method or by a single person entry method with an accuracy check.

Sampling

The main difference between the pre and post KAP surveys was the sample size. The corresponding population for the five lakes was large, but many properties were owned by seasonal residents and a large number of property owners were not present during the field survey. Moreover, the sample was restricted to property owners with $10,000 or more of structural improvements.

The second-round sample was less than half of the first round, down from 225 to 104. This was attributable to the manner by which the two surveys were administered. In 2009, considerable effort was spent in a week-long door-knocking survey, which yielded 109 respondents. The 2009 door-to-door effort found that a large number of property owners were not present on their properties. It was followed by a mailed survey (particularly to seasonal owners), resulting in additional questionnaires returned for a total of 225.

The Itasca KAP study surveyed property owners on five lakes with $10,000 or more of improvements. It was not a county-wide sample.

For the second-round survey, conducted during the summer of 2011, it was decided to conduct only a mailed survey (although a few respondents were contacted directly).

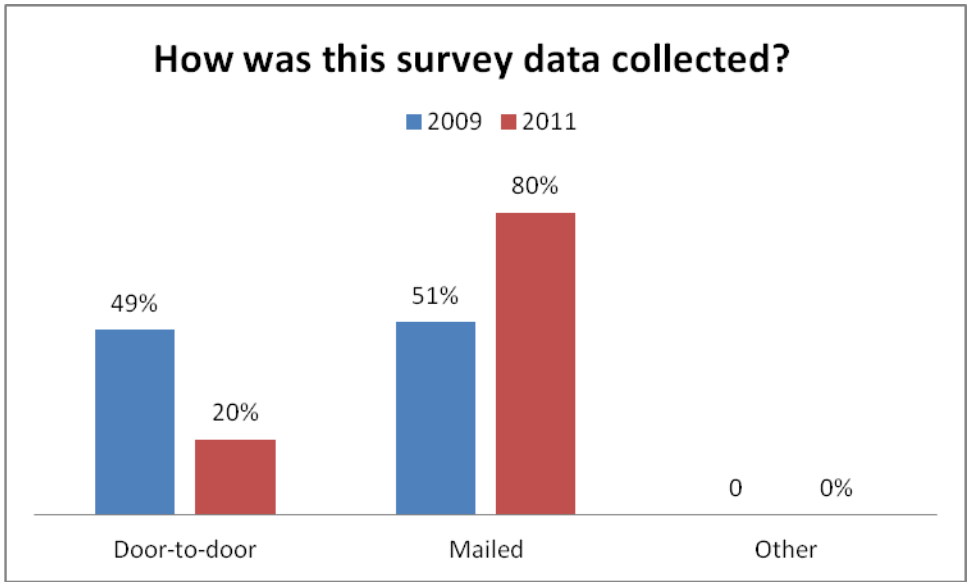
Table 1: Comparison of First and Second Round EOT KAP Studies

	Dates	Sample Population	Sample Size	Response Rate	Margin of Error
KAP 1	June 2009	340	225	66%	3.73
KAP 2	Summer 2011	331	104	31%	7.97

Given the small sample sizes this survey cannot be considered a representative sample. Rather, this survey should be considered to be purposive and exploratory in nature.

A summary of pre/post survey administration is found in Table 2 below:

Table 2: Survey Administration



Second-Round (2011) Survey

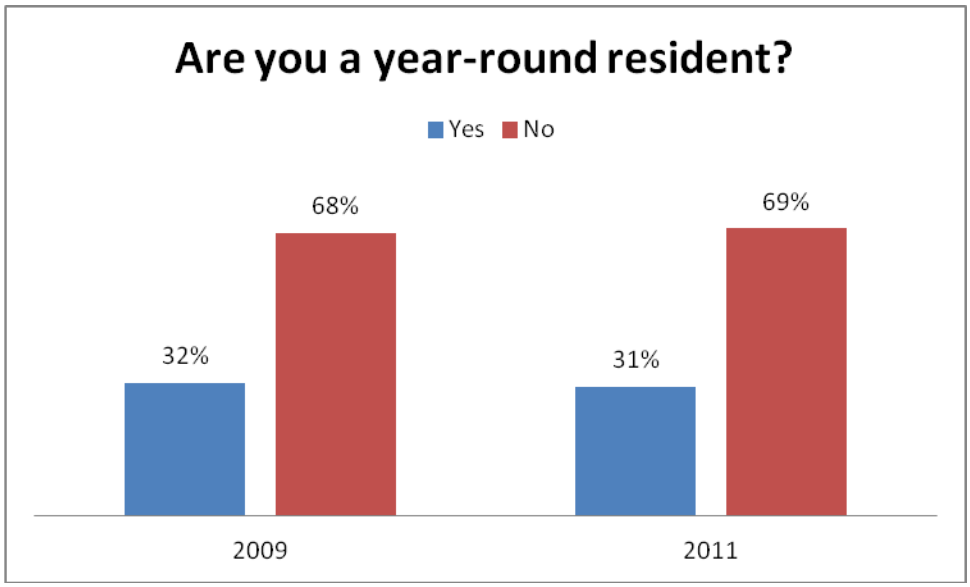
The Itasca KAP study featured two separate surveys: a first-round (baseline) survey, and a second-round follow-up survey two years later.

Questionnaire content

In the second-round survey, some questions were eliminated because they were originally intended for planning purposes. Other questions were added in order to assess impact and efficacy following the two-year project implementation period. The second-round mail-in only survey was conducted two years later and the data compared.

Two general demographic questions were included in both surveys. The first demographic question asked whether respondents were year-round residents. Results of both surveys are summarized below:

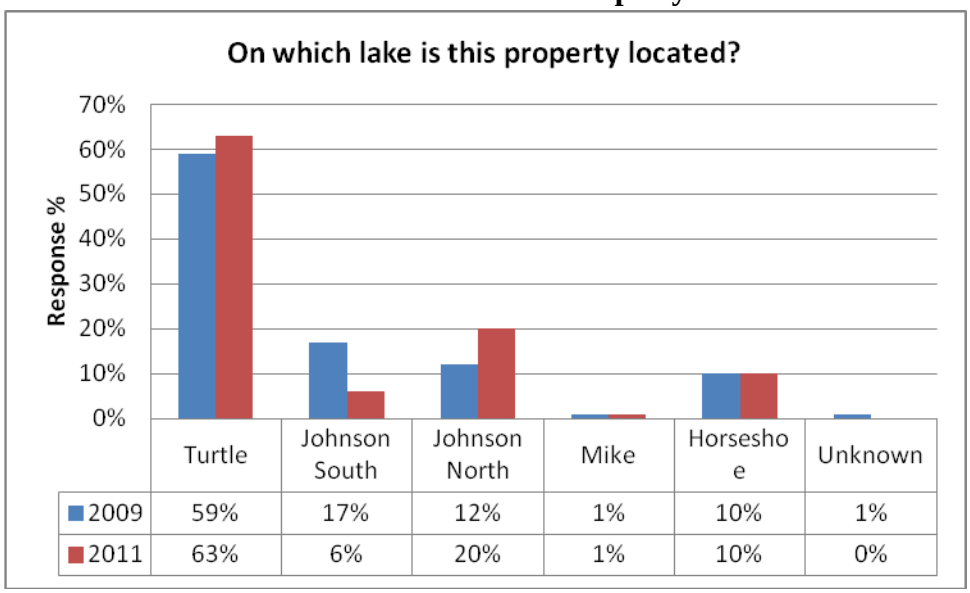
Table 3: Seasonal v. Full-time Respondents



The proportion of seasonal and full-time respondents in the two surveys was nearly identical.

The second demographic question concerned where the respondent's property is located. Results from both surveys are summarized in the table below:

Table 4: Location of Property



	Turtle	Johnson South	Johnson North	Mike	Horseshoe	Unknown
2009	59%	17%	12%	1%	10%	1%
2011	63%	6%	20%	1%	10%	0%

The great majority of properties were located on Turtle Lake, a large RD lake with numerous cabins and two resorts. The remaining lakes were smaller and were classified as NE lakes.

Interim Implementation Activities

In the interim period between the two KAP studies, a large number of project implementation activities took place, including buffer installations, civic engagement activities, training and education/outreach. These are described in more detail in the Itasca County NSBI final report. Only the audience-oriented activities are summarized here (this list is a partial summary of project activities derived from annual NSBI reports):

- Delivered Master Gardener training. Training efforts were redirected to prepare to conduct "Lake Challenge" site visits.
- Run-off research was tested with shoreland property owners. Final protocol revisions were made.
- Student/landscaper was selected and prepared site plans for five property owners requesting buffers.
- Master Gardener Shoreland Design Training was developed.
- Peer-to-peer training was developed and delivered to college students, ICOLA members and Master Gardeners.
- Lake Challenge shoreland assessment tool/incentive options was developed. Site visit workbook to assist peers during site visits was created.
- The tiered incentive Lake Challenge worksheet was field tested for use as a more detailed on-land and boat-by assessment tool.
- Implemented the Itasca Lake Challenge resulting in 16 site assessments and 14 project participants on three research lakes.
- New rapid boat-by shore assessment was field tested.
- Survey Review and Communications Plan developed by Action Media.
- Collaboration with MN DNR on Citizen Shoreline Assessment protocol and field testing.
- Follow-up community meeting in Marcell on 12-2-09.
- Assessment tool was revised (shortened) and field tested. Further revisions based upon individual lake buffer incentives/goals will be necessary to create a more efficient and effective, citizen-friendly tool.
- Hybrid MN DNR/Itasca Co shoreline assessment tool developed and field tested
- Six trained peers contacted 59 shoreland residents inquiring about the Lake Challenge site visits. Fourteen of these contacts and two resident responses to newsletter announcement resulted in 16 site visits. Fourteen of the residents agreed to participate in one or more (up to 14) of the Lake Challenges, including buffers, program promotion and/or shoreland scientist Challenges.
- One peer developed a web forum to facilitate peer communication and entry of Lake Challenge site visit data.
- A graphic designer created a unique design and presentation options (other than the standard sign) for project participant incentive.

Photo 3: Dock sign given to NSBI participants that had installed or enhanced a native shoreland buffer, and to promote the Itasca County Lake Challenge.

• The NSBI team indicated that an online version of the Lake Challenge should be developed for a broader audience (i.e. outside the two research counties) – to include tracking options.
A field book of relevant images and information was created to assist peers during their site visits.
• Action Media reviewed survey results for marketing plan development
• Conducted Part 1 of Master Gardener training.
• A Bemidji State University student (formerly a local landscaper with shoreland restoration education and experience) agreed to design and install the shoreland projects identified in 2010.
• Master Gardener training developed (for June 7 2010 training); Master gardeners recruited.

These many public activities were expected to impact the KAP values in the second round. However, ***because knowledge and attitudes values were so high in the first-round KAP study, we did not expect to see a major increase in these values in KAP #2. In fact, these values did not change significantly in the interim two-year period.*** Assessing the second-round KAP values is based, therefore, on a more nuanced interpretation.

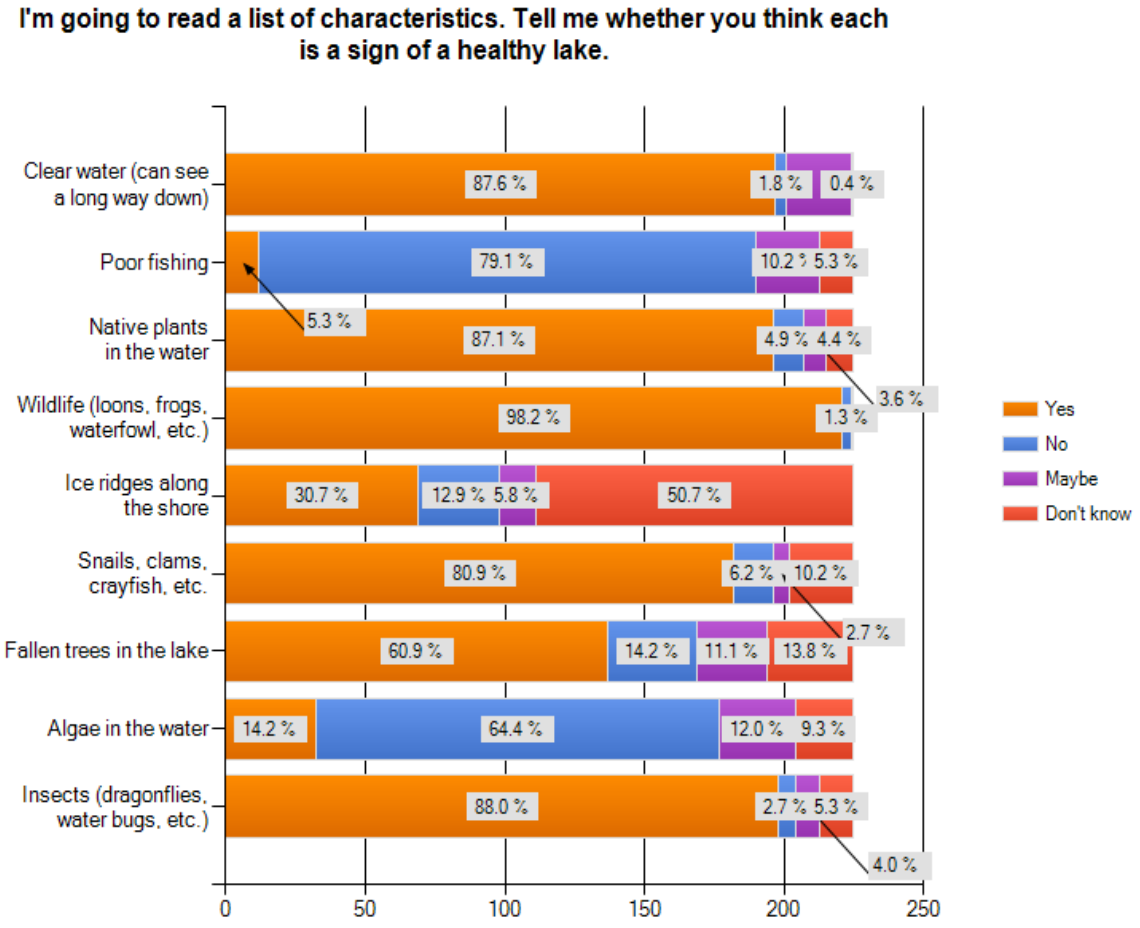
KAP Study Results

The following sections present and compare the pre and post KAP study findings. Knowledge questions are presented first, followed by attitudes and practices questions. In the ranked scale data tables (for example, Tables 5-8), the values with highest frequencies are highlighted in bold font. Where appropriate, the symbol 💧 is used to signify an interpretive comment or note significant results for specific survey questions.

Knowledge findings

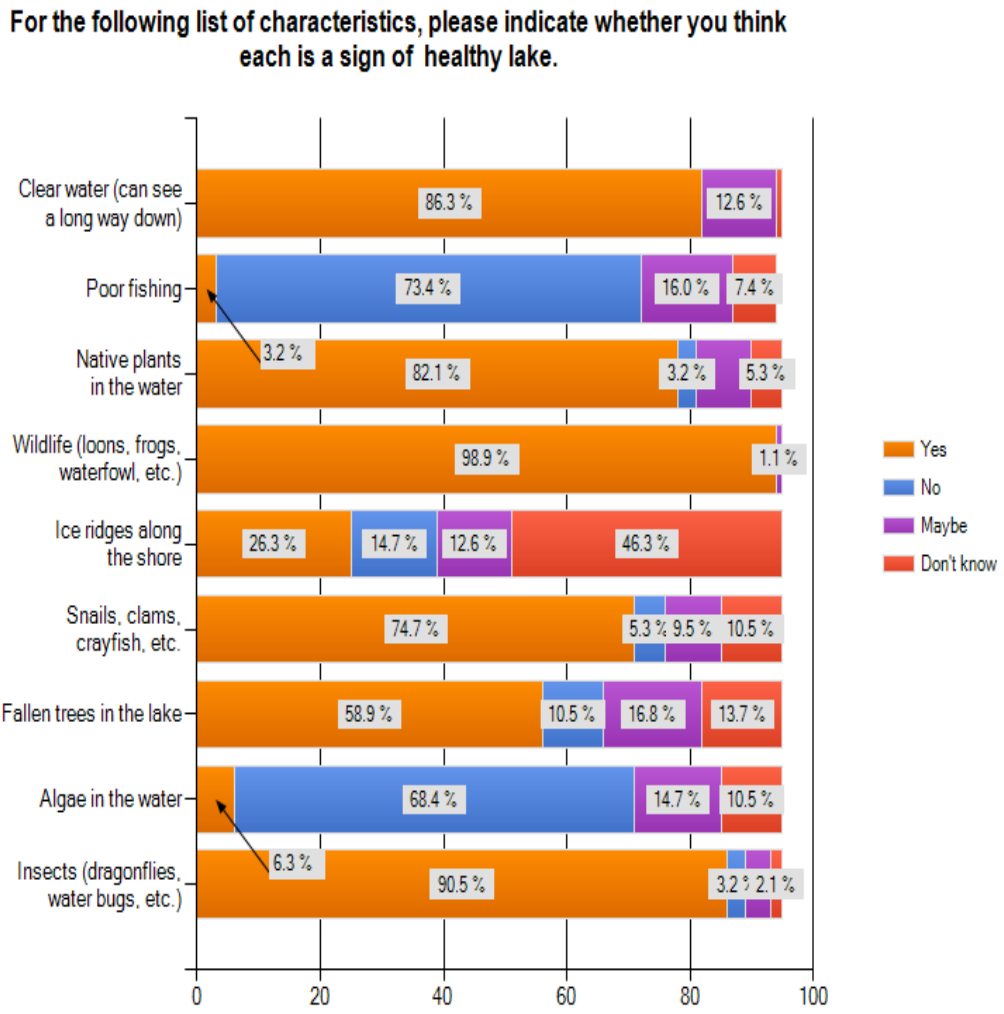
First-round responses (2009) for **knowledge of lake health** are presented in the table below.

Table 5 (2009):



This question was repeated in the second-round survey (2011), and results are presented in the following table:

Table 6 (2011):



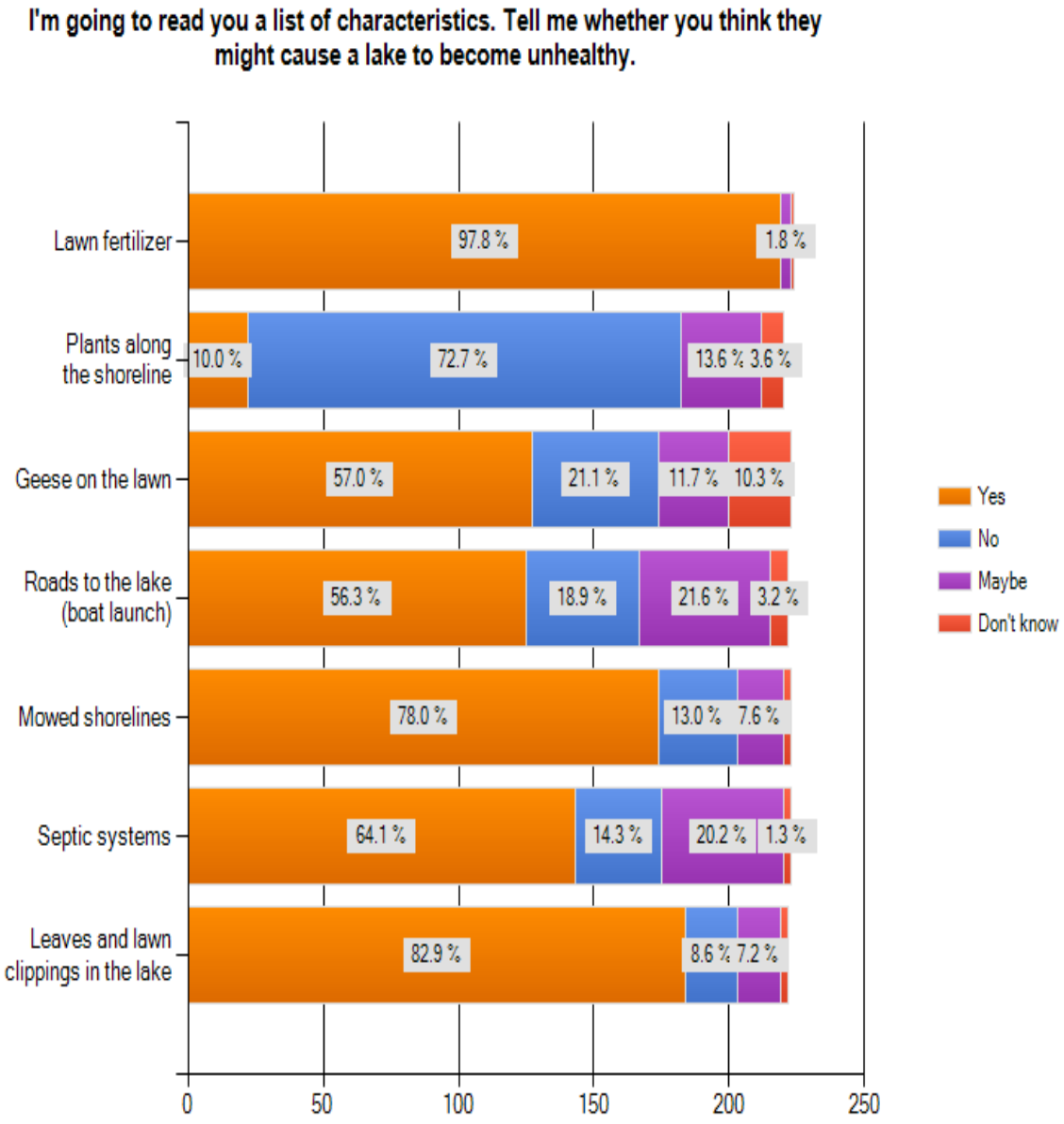
Comparing the two data sets, the highest-frequency responses did not shift significantly (more than a few percentage points in any direction). Five of the knowledge values declined slightly, and three values increased. "Clear water" declined by 1.3%; "Poor fishing" declined by 5%; "Native plants in the water" declined by 5%; "Ice ridges along the shore" declined by 4.4%; and "Fallen trees in the lake" declined by 2%. Knowledge values for "Wildlife" increased by .08%; "Algae in the water" increased by 4%; and "Insects" increased by 2.5%. Comparing the results for this question do not show a significant or clear trend in knowledge about characteristics of a healthy lake.

- Overall, data from both KAP studies show that there is already a high level understanding about signs of lake health. More than 85% understood that clear water, native aquatic vegetation,

abundant wildlife and invertebrates are signs of a healthy lake ecosystem. A slightly lower percentage (61%) understood that too much algae can diminish lake health; that fallen trees along the shoreline can benefit fisheries (61%); or that poor fishing is a possible sign of an unhealthy lake (79%). About half (51%) did not understand how ice ridges may act to protect the lake by creating a barrier to sediments and pollutants in runoff. Across the board, respondents were unsure of how ice ridges could help maintain lake health by capturing runoff. Seasonal residents were somewhat less likely to make the connection about ice ridges preventing erosion (44%) than year-round residents (54%).

Conversely, respondents were asked a **knowledge question about what might cause a lake to become unhealthy**. The following data summarizes results in the 2009 survey:

Table 7 (2009):

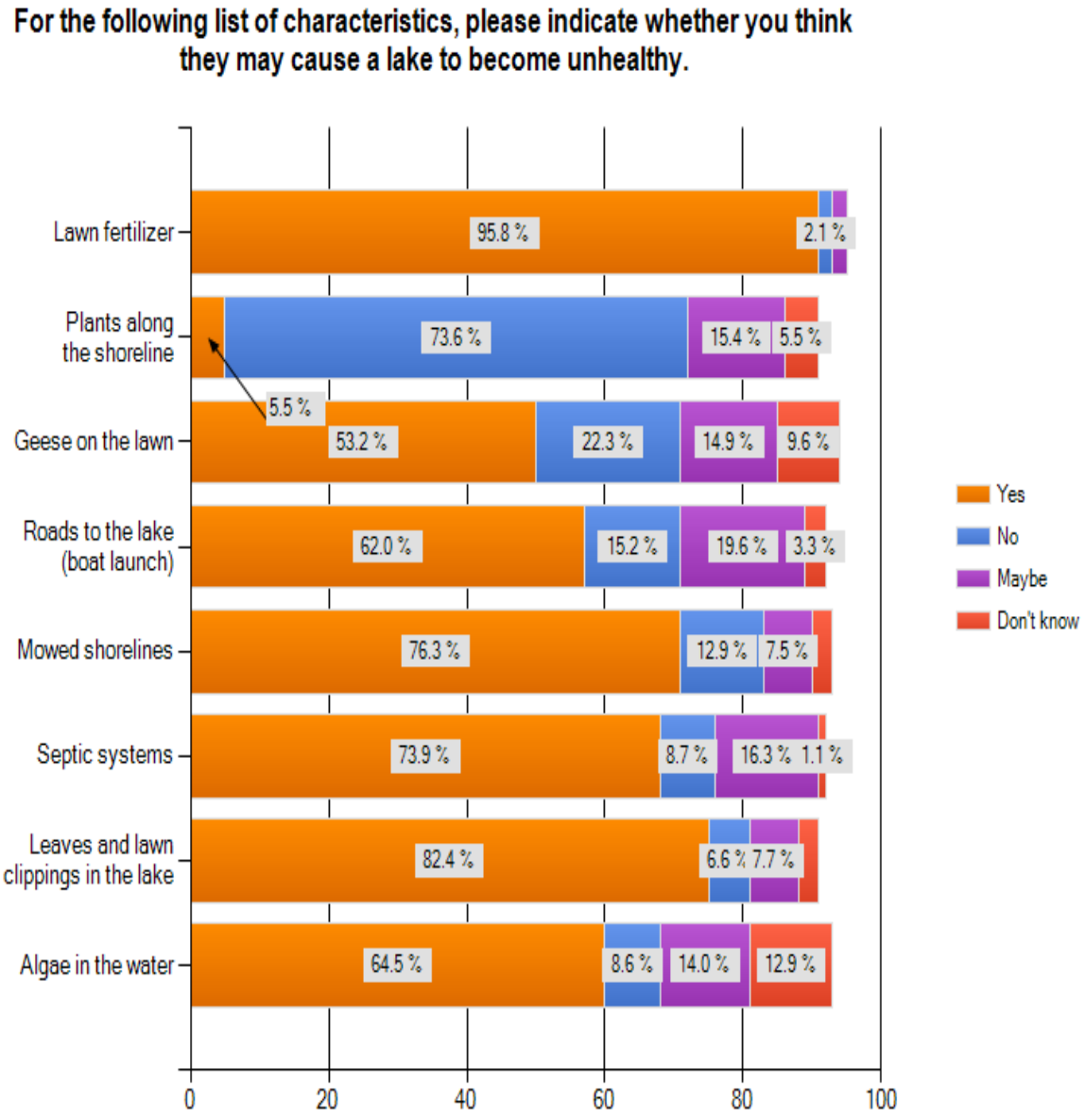


Results show that there was very good understanding of the causes of lake degradation in 2009. Ninety-eight percent of respondents showed a high level of understanding that lawn fertilizers and improper disposal of lawn clippings (83%) adversely impact the lake. However, there was a more moderate connection between lake degradation and practices such as mowing shorelines (78%) or improper septic maintenance (64%). There appeared to be a poor connection made between lake degradation and boat launches (56%) and lawns that attract geese (57%). Year-round residents (86%) appeared to have higher recognition than seasonal residents (74%) that mowing lawns may decrease lake health. Moreover, a higher percentage of seasonal owners

reported that they don't think mowed shorelines can cause a lake to become unhealthy (16% v. 7% of year-round homeowners).

The following table summarizes results from the second-round 2011 survey.

Table 8 (2011):



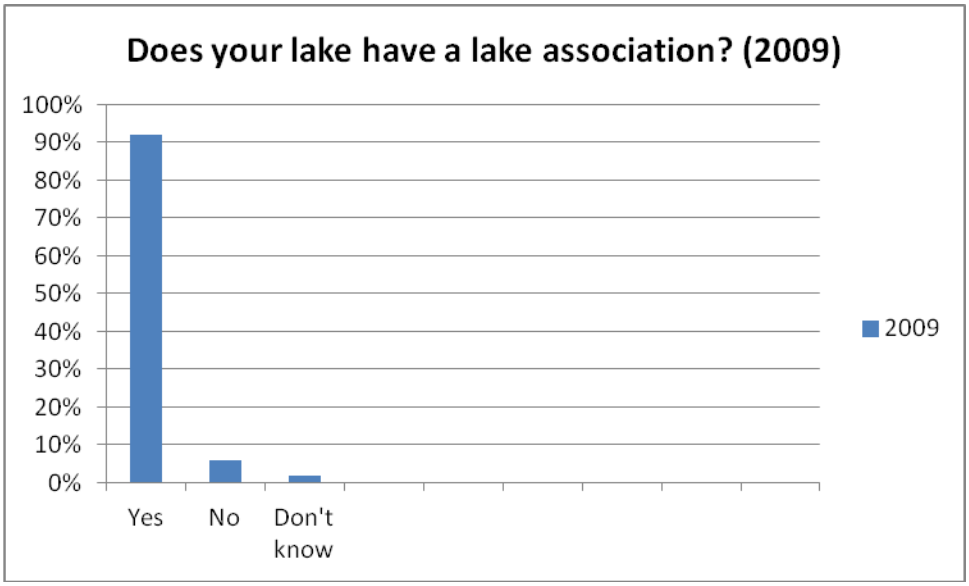
In 2011, four of the knowledge values declined slightly, and three values increased. Of these, "Lawn fertilizer" declined by 2%; "Plants along the shoreline" declined by 4.5%; "Mowed shorelines" declined by 1.7%; and "Leaves and lawn clippings in the lake" declined by .5%.

Knowledge values for “Geese on the lawn” increased by 3.6%; “Roads to the lake” by 5.7%; and “Septic systems” by 9.9%.

- Comparing the two data sets results for this question do not reveal a significant or clear trend in knowledge about what might contribute to an unhealthy lake. The highest-frequency responses did not shift significantly (*e.g.* more than a few percentage points in any direction).

Respondents were asked in 2009 whether their lake had a **lake association**. Results are as follows:

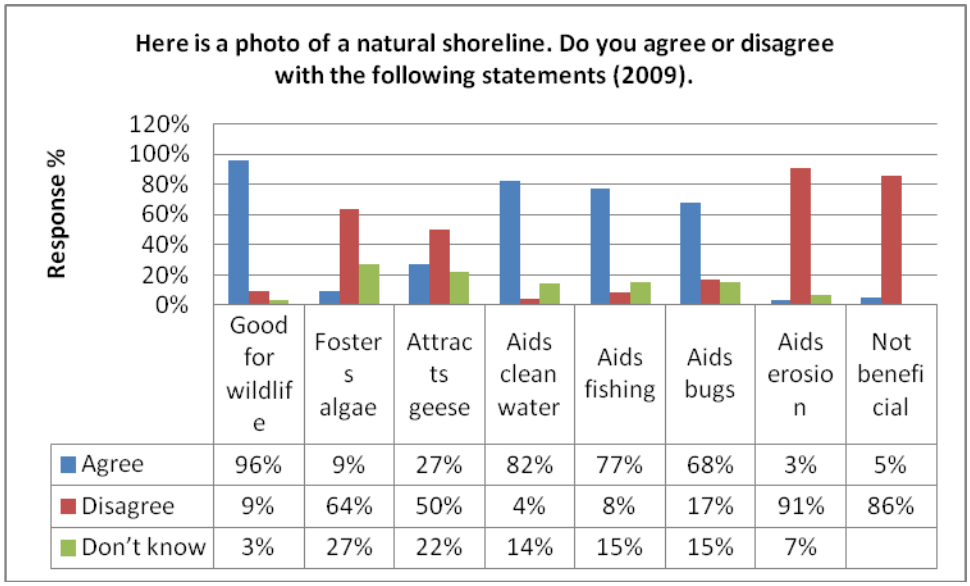
Table 9: Awareness of Lake Association



- Concerning knowledge of their lake association, ***almost all of the shoreline property owners (92%) knew about the lake association*** on their lake in 2009 (all of the lakes in the study have a lake association except Johnson Lake - north). This question was not repeated in 2011.

Knowledge about the benefits of natural shoreline buffers was relatively high in 2009, with more than 90% recognizing that they are beneficial to wildlife (96%) and help to prevent shoreline erosion (91%). There was a slightly more moderate understanding that buffers also contribute to clean water (77%). However, less well understood were connections to reduced algae (64%) and discouraging of geese (50%). Results for both 2009 are summarized in the table below.

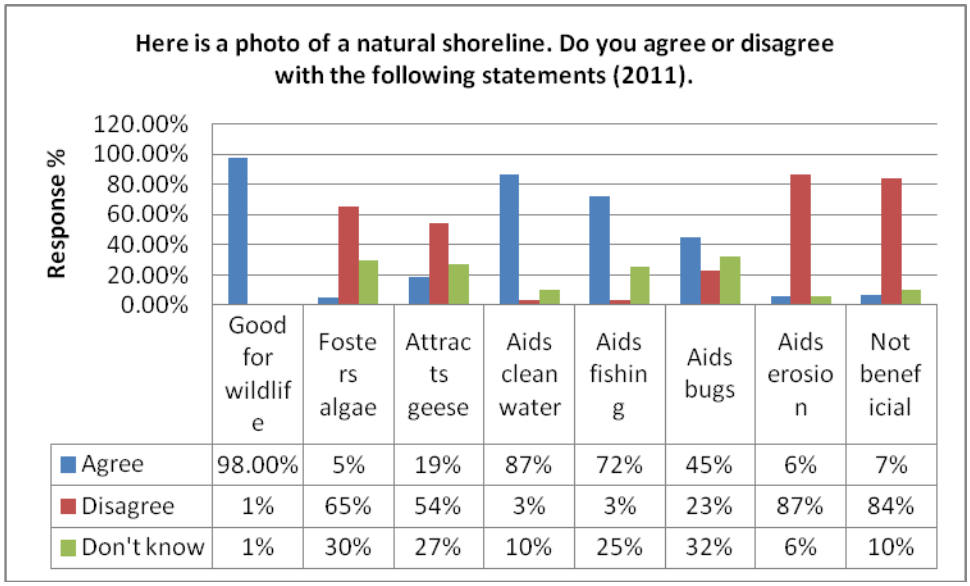
Table 10: Benefits of Shoreland Buffers (2009)



	Good for wildlife	Fosters algae	Attracts geese	Aids clean water	Aids fishing	Aids bugs	Aids erosion	Not beneficial
Agree	96%	9%	27%	82%	77%	68%	3%	5%
Disagree	9%	64%	50%	4%	8%	17%	91%	86%
Don't know	3%	27%	22%	14%	15%	15%	7%	

The 2001 results are summarized in the table below.

Table 11: Benefits of Shoreland Buffers (2011)

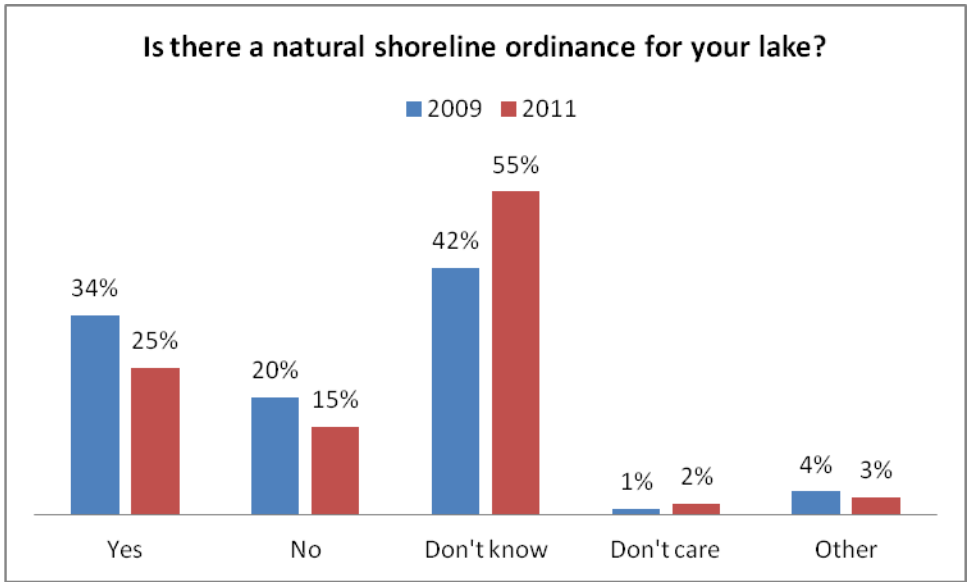


	Good for wildlife	Fosters algae	Attracts geese	Aids clean water	Aids fishing	Aids bugs	Aids erosion	Not beneficial
Agree	98.00%	5%	19%	87%	72%	45%	6%	7%
Disagree	1%	65%	54%	3%	3%	23%	87%	84%
Don't know	1%	30%	27%	10%	25%	32%	6%	10%

Comparing these first and second-round data sets shows modest gains in knowledge between 2009 and 2011 about the characteristics and functions of natural shoreland buffers. Of the highest-frequency responses, there was a 1.8% increase for "Good for wildlife;" "Contributes to clean water" (+5.5%); and "Harbors ticks and mosquitoes" (-22.7%). There was a 3% decline in those disagreeing with the option "Contributes to shoreline erosion;" and a 3% decline in those disagreeing with the statement "It is not beneficial." The only variable that moved slightly in the wrong direction was "Contributes to algae in the water" (+.6%).

Most respondents were unclear about **shoreline ordinances** in 2009 and 2011, and did not know that Itasca County requires that shorelines be left in a largely natural state. Forty-two percent of shoreland owners were unaware of the shoreline buffer ordinance, while thirty-four percent responded that they were aware of an ordinance. Of those that did know of the existence of an ordinance, none could correctly identify the requirements for Natural Environment (NE), General Development (GD) or Recreational Development (RD) lakes.

Table 12: Knowledge of Itasca County Shoreland Buffer Ordinance



In 2009, thirty-four percent said that a shoreline ordinance existed for their lake; while in 2011 this number declined somewhat to thirty percent. In 2009 forty-two percent responded "didn't know," and this number increased in 2011 to fifty-two percent. About thirty-five respondents provided vague statements concerning setbacks or minimal cutting. Year-round residents had slightly higher awareness of the ordinance than non-residents (40% v. 31%). The question asked respondents to describe the ordinance, and in 2009 there were 79 comments recorded. Of these, fifteen respondents noted either a 50 foot setback or 50 percent of shoreline; although others referred to various restrictions (no tree cutting; no vegetation removal; docks, etc.) at 20' (seven people); 250' (two people); 100'; 75 feet (1 respondent); 30'; 15'; or 10'.

By 2011, there was much greater uncertainty expressed by respondents, and the percentage replying affirmatively had declined from 34% to 25%. Only twenty-four comments were recorded, and these referred to a 300' setback (one respondent); 150' setback (1 respondent); 100' setback (5 respondents).

- When asked what the Itasca County shoreline ordinance is, very few could accurately describe the ordinance in either 2009 or 2011. Respondents continue to express considerable uncertainty about the existence of shoreland ordinances, and their content. This suggests that the Itasca County shoreland ordinance is not familiar or understood by many people and that future educational and outreach efforts should focus on this point. There is clearly significant potential for Itasca County to improve public awareness and understanding of its shoreland ordinances, especially for property owners. Itasca County shoreland ordinances are described in the Itasca County Zoning Ordinance (http://www.co.itasca.mn.us/Home/Departments/Environmental%20Services/Documents/Zoning%20Ordinance.pdf). While the ordinance has a number of restrictions on shoreland use and development, the basic setbacks are summarized in the following table (IBID p.32):

Table 13: Itasca County Buffer Ordinance

Lake class	Buffer (distance from OHWL landward in feet)
General Development (GD)	10
Recreational Development (RD)	15
Natural Environment (NE)	50
Phosphorus-sensitive	50

During the course of project implementation the Itasca NSBI project lead (Blickenderfer) developed a civic engagement and education tool called "The Itasca County Lake Challenge." The tool was designed in 2010 and introduced in the ICOLA newsletter sent to all lake associations, and via email list-serves. It was piloted in 2010 and continued in 2011 during the final months of the NSBI with a small number of participants. Although it has not yet been widely disseminated, the second-round KAP study posed a series of questions asking respondents about the Itasca Lakes Challenge.

Of the 104 respondents in 2011, one quarter (25%) had heard of the Itasca Lakes Challenge, and sixty-six had not. Nine percent were unsure. Of those that had heard of the Challenge, fifteen (65%) had learned about it from their lake association; three (13%) had heard about it from a neighbor; one person had heard about it on the radio, and five individuals had read about it in the

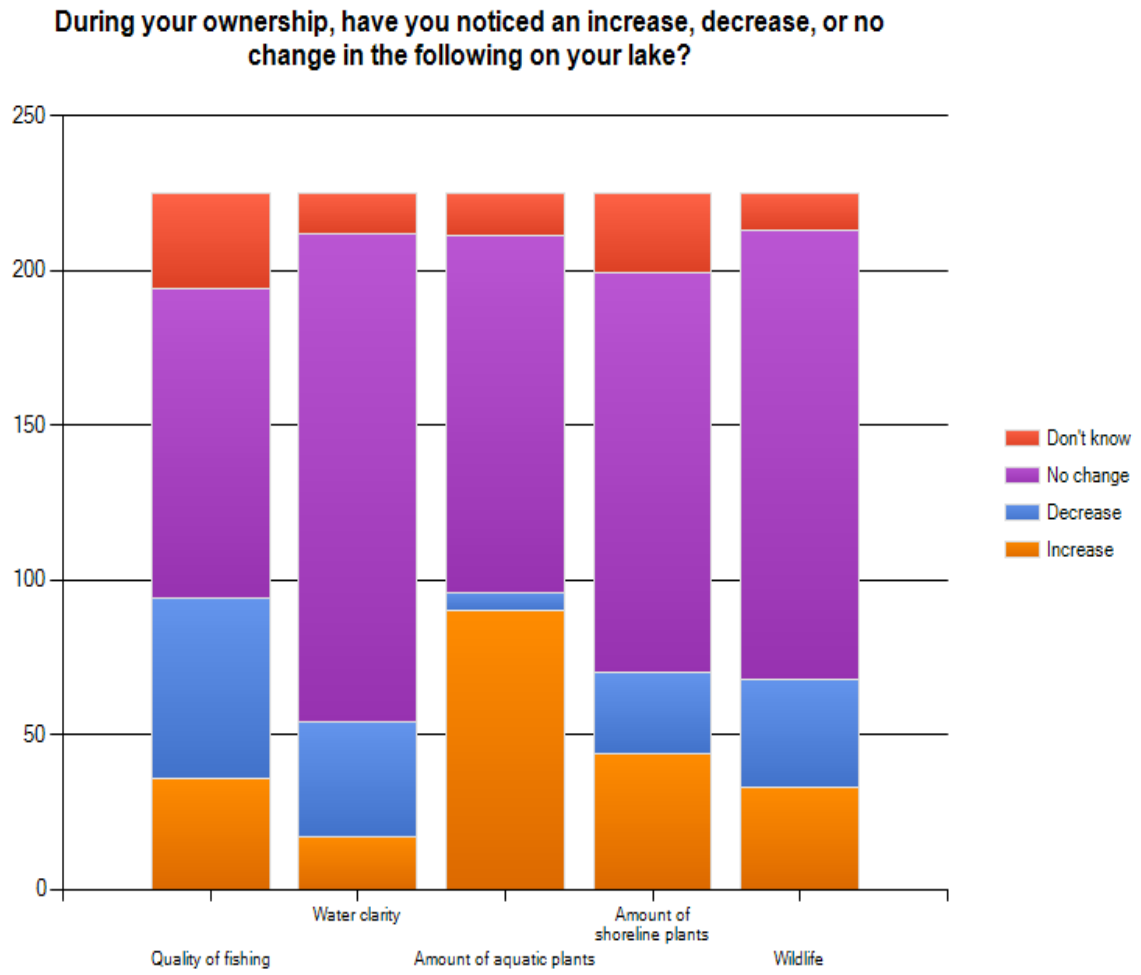
newspaper. Of those that had heard about the Challenge, eight had participated in the Itasca County Lake Challenge, fifty percent had not, while nineteen percent were not certain.

- Eighty-five percent of respondents stated that they would have engaged in lake and wildlife-friendly activities without the Lake Challenge; while fifteen percent replied in the affirmative. These results suggest that the high stewardship ethic noted in 2009 was possibly a motivating factor for the majority, but that the Itasca County Lake Challenge helped to motivate a smaller minority to take individual action on their properties. Seventy-eight percent of those participating in the Challenge would recommend it to friends or neighbors; while seventeen percent were not sure and three individuals responded negatively. For those who chose not to participate, a constraints question was posed. Sixty-two percent said that they already engaged in healthy lakeshore practices. Five individuals said that they liked the shoreline as it is and didn't want to change it. One respondent thought that it might take too much time, and another reported having physical limitations. Finally, respondents were asked if they might take the Challenge in the future. Fifty-three percent replied positively, while seventeen percent said no. Thirty percent were unsure.

Attitudes findings

Shoreland property owners were asked in 2009 about their **perceptions of change on the five lakes**. Results are shown in the following table.

Table 14: Perceptions of Change



Most respondents did not perceive significant changes over time on the condition of their lake. The majority of responded reported no change in the quality of fishing, water clarity, amount of aquatic and shoreline plants, and wildlife. Forty percent reported an increase in aquatic plants, and twenty percent noticed an increase in shoreline plants. A minority (26%) noted a decline in fishing quality. This question was not repeated in 2011.

Several questions about **shoreland preferences** were posed to respondents. Photos of a typical natural shoreline, a replanted shoreline, and a lawn shoreline were shown to respondents. In 2009, sixty-three percent disliked the general appearance of lawns, and the majority (84%) preferred the appearance of a natural shoreline**.** Seventy-six percent disliked the lack of privacy that turf landscapes provide. Sixty-four percent, however, liked the access to the lake that lawns

provide; while thirty-nine percent liked the view that lawns provide. Fifty-three percent liked the enjoyment of the lake that lawns provide. The following table summarizes the 2009 results. The highest ranked response for each category is in bold font.

Table 15: Preferences for Shoreline Characteristics (2009)

I'm going to show you three photos of different kinds of shorelines. Tell me whether you like or dislike the following characteristics of each.

Lawn shoreline				
	Like	**Dislike**	**Neutral/Don't know**	**Response Count**
General appearance	24.7% (55)	**62.8% (140)**	12.6% (28)	223
View from house	39.4% (87)	**51.6% (114)**	9.0% (20)	221
Privacy	10.9% (24)	**75.5% (166)**	13.6% (30)	220
Lake access	**63.8% (141)**	22.2% (49)	14.0% (31)	221
Potential maintenance associated with this shoreline	15.8% (35)	**70.3% (156)**	14.0% (31)	222
Use of the shoreline for enjoyment	**53.4% (117)**	30.6% (67)	16.0% (35)	219
Replanted shoreline				
	Like	**Dislike**	**Neutral/Don't know**	**Response Count**
General appearance	**72.5% (161)**	19.4% (43)	8.1% (18)	222
View from house	**68.3% (151)**	17.2% (38)	14.5% (32)	221
Privacy	**45.5% (100)**	23.6% (52)	30.9% (68)	220
Lake access	**56.1% (124)**	23.1% (51)	20.8% (46)	221
Potential maintenance associated with this shoreline	40.7% (90)	**44.3% (98)**	14.9% (33)	221
Use of the shoreline for enjoyment	**49.8% (109)**	29.2% (64)	21.0% (46)	219

Natural shoreline				
	Like	Dislike	Neutral/Don't know	Response Count
General appearance	**83.9% (187)**	9.4% (21)	6.7% (15)	223
View from house	**84.8% (189)**	9.4% (21)	5.8% (13)	223
Privacy	**80.6% (179)**	7.7% (17)	11.7% (26)	222
Lake access	**80.3% (179)**	13.9% (31)	5.8% (13)	223
Potential maintenance associated with this shoreline	**80.2% (178)**	10.4% (23)	9.5% (21)	222
Use of the shoreline for enjoyment	**70.5% (155)**	20.5% (45)	9.1% (20)	220

For the lawn shoreline, sixty-three percent disliked the general appearance, seventy-six percent disliked the degree of privacy provided, and seventy percent disliked the potential maintenance associated with lawns. This shoreline was rated positively for lake access by sixty-four percent, and for use of the shoreline for enjoyment (fifty-three percent).

Concerning landscaping preferences, in 2009 a majority preferred the appearance and functions of a natural shoreline. Eighty-six percent liked the general appearance of a natural shoreline. Eighty-seven percent liked the view; eighty-one percent liked the privacy; and eighty-three percent liked the shoreline access. Eighty-one percent liked the maintenance associated with a natural shoreline; and seventy-three percent liked the use of the lake that it affords.

For replanted shoreline landscaping, in 2009 seventy-three percent liked the general appearance; sixty-eight percent liked the view; forty-six percent liked the privacy of a replanted shoreline; and fifty-six percent liked the access afforded. Fifty percent liked the use of the shoreline for enjoyment with this landscaping treatment. Forty-four percent disliked the maintenance of a replanted shoreline.

The same question (with photographs) was posed to respondents in 2011. Responses are tabulated in the table below. The highest ranked response for each category is in bold font.

Table 16: Preferences for Shoreline Characteristics (2011)

Below are three photos of different kinds of shorelines. Please indicate whether you like, dislike, or are neutral towards the following characteristics.

Lawn shoreline				
	Like	**Dislike**	**Neutral/Don't know**	**Response Count**
General appearance	23.4% (22)	**55.3% (52)**	21.3% (20)	94
View from house	**43.0% (40)**	41.9% (39)	15.1% (14)	93
Privacy	14.3% (13)	**68.1% (62)**	17.6% (16)	91
Lake access	**64.5% (60)**	22.6% (21)	12.9% (12)	93
Potential maintenance associated with this shoreline	8.6% (8)	**75.3% (70)**	16.1% (15)	93
Use of the shoreline for enjoyment	**50.5% (47)**	26.9% (25)	22.6% (21)	93
Replanted shoreline				
	Like	**Dislike**	**Neutral/Don't know**	**Response Count**
General appearance	**75.3% (70)**	18.3% (17)	6.5% (6)	93
View from house	**69.9% (65)**	18.3% (17)	11.8% (11)	93
Privacy	**34.4% (32)**	31.2% (29)	34.4% (32)	93
Lake access	**48.4% (45)**	22.6% (21)	29.0% (27)	93
Potential maintenance associated with this shoreline	30.1% (28)	**53.8% (50)**	16.1% (15)	93
Use of the shoreline for enjoyment	**46.2% (42)**	23.1% (21)	30.8% (28)	91

Natural shoreline				
	Like	Dislike	Neutral/Don't know	Response Count
General appearance	**83.5% (76)**	8.8% (8)	7.7% (7)	91
View from house	**82.8% (77)**	10.8% (10)	6.5% (6)	93
Privacy	**66.7% (62)**	11.8% (11)	21.5% (20)	93
Lake access	**73.1% (68)**	11.8% (11)	15.1% (14)	93
Potential maintenance associated with this shoreline	**80.6% (75)**	8.6% (8)	10.8% (10)	93
Use of the shoreline for enjoyment	**70.0% (63)**	14.4% (13)	15.6% (14)	90

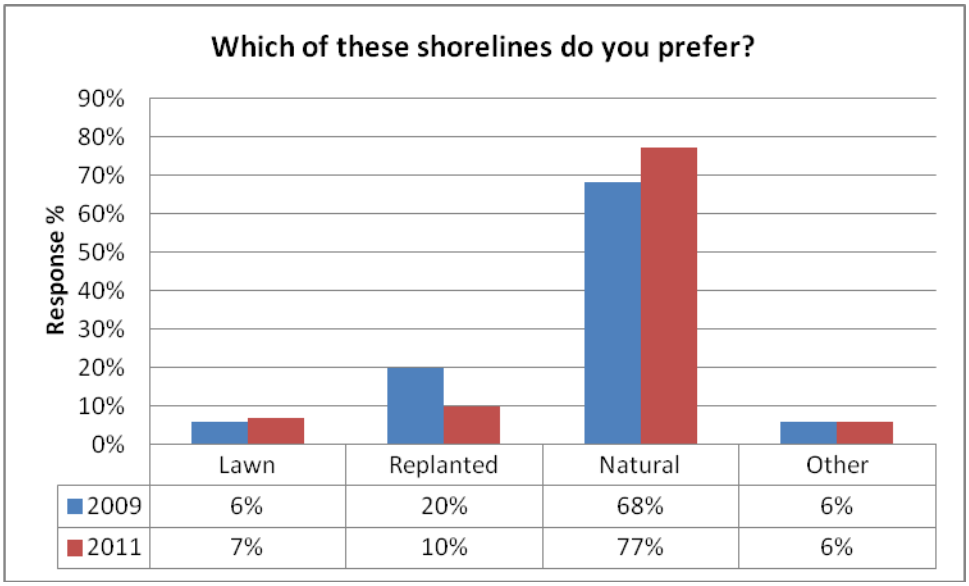
- When comparing the 2009 and 2011 highest-ranked responses for each category, the clearest trend is the modest decline in preference for a lawn shoreline. "General appearance" for lawn shorelines declined by 7.5%; "View from the house" declined by 8.6%; "Privacy" declined by 7.4%; and "Use of the shoreline for enjoyment" declined by 2.9%. Dislike for potential maintenance increased by 5%. The only value that moved in a positive direction was "Lake access," which increased by .7%.

For the replanted shoreline, comparative results are mixed. Respondent attitudes increased for the following factors: "General appearance" (+2.8%) and "View from house" (+1.6%). However, there were declines in "Privacy" (-11.1%); "Lake access" (-7.7%); and "Use of the shoreline for enjoyment" (-3.6%). There was a 9.5% increase in "Dislike" of potential maintenance associated with this shoreline.

Despite the increased dislike in 2011 for the lawn shoreline, there is not a corresponding preference for natural shorelines expressed in this ranked question. Liking for the general appearance of a natural shoreline declined slightly (-.4%); as did "View from the house" (-.2%); "Privacy" (-13.9%); "Lake access" (-7.2%); and "Use of the shoreline for enjoyment" (-.5%). The only "Like" factor to increase was "Potential maintenance associated with this shoreline" (+.4%).

A follow-up question was posed about **shoreline preferences** in both surveys, asking which shoreline the respondent preferred overall. The following results were obtained:

Table 17: Shoreline Preferences

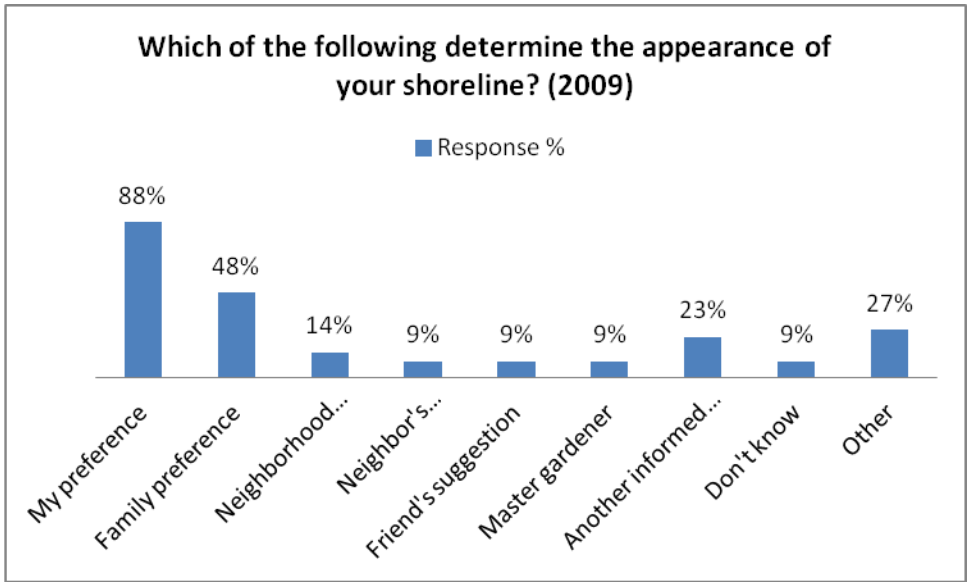


- Sixty-eight percent preferred a natural shoreline in 2009; twenty percent preferred a replanted shoreline; six percent preferred a lawn; and six percent reported "Other." Of these, more "weekenders" than permanent residents preferred a natural shoreline. This challenges the conventional belief that "weekenders" want their properties to look like their yards in the city. In 2011, there was stronger preference expressed for the natural shoreline (77%); followed by the replanted shoreline (10%). "Lawn" and "Other" preferences were 7% and 6% respectively.

Respondents were asked the same question posed in 2009 about their preferences of shoreline appearance. By 2011 these values shifted generally in a positive direction, as was hoped. In 2009, six percent of respondents preferred a lawn shoreline, and in 2011 seven percent did so. About twenty percent preferred a replanted shoreline in 2009. This number dropped to nine percent in 2011. In 2009 sixty-eight percent preferred a natural shoreline, and this number increased to seventy-eight percent in 2011.

A question was posed in the 2009 survey on **determinants of the appearance of the respondent's shoreline.** Results are summarized as follows:

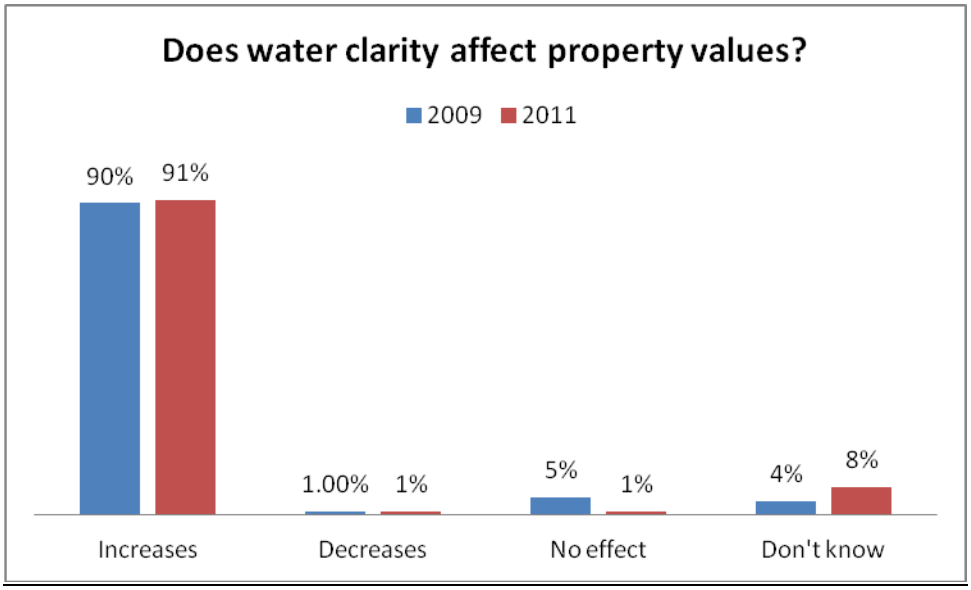
Table 18: Determinants of Shoreline Appearance



- Most respondents (88%) reported that their own personal preferences determined how their property looks, and about half (48%) indicated that family preferences also play a role. Nearly two thirds commenting on the question (of which 27% did) indicated that local ordinances or DNR rules played a role in determining how their property looked as well. This is an interesting finding given the widespread lack of understanding about the Itasca County shoreland ordinance. Other informed people influenced some property owners (23%) while neighborhood trends (14%) and suggestions from neighbors (9%), friends (9%) or Master Gardeners (9%) seemed to have less influence. This question was not repeated in the 2011 survey.

Respondents were asked their opinion about whether water quality affects **property values**. The table below compares the 2009 and 2011 values.

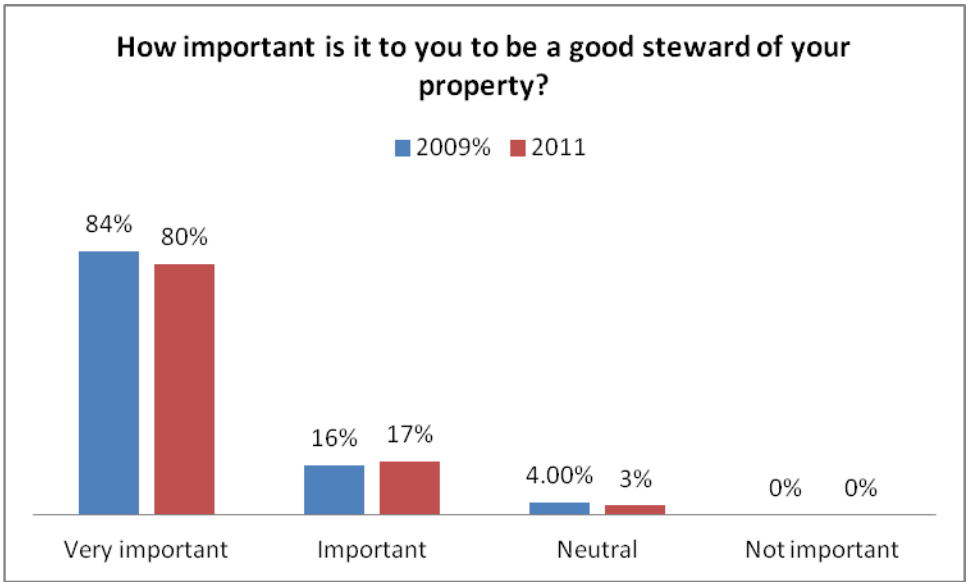
Table 19: Water Clarity and Property Values



A significant majority (90%) felt that water clarity positively affects property values in 2009. Five percent felt that water clarity did not affect property values; while none felt that water clarity inversely affects property values. Four percent did not know. The strong perception that water clarity affects property values was almost unchanged from the 2009 survey**.** Ninety one percent felt that water clarity increases property values, compared with 90% in 2009. Only one respondent felt that water clarity does not affect property values in the second-round survey, compared with twelve people in 2009. Seven percent in 2011 did not know, compared with eleven in 2009. While values did not shift significantly for this question, there were fewer saying that water clarity had no effect; and a slightly higher degree of uncertainty expressed in the 2011 survey.

Respondents were asked in both surveys about **stewardship of their property**. Results are shown in the table below:

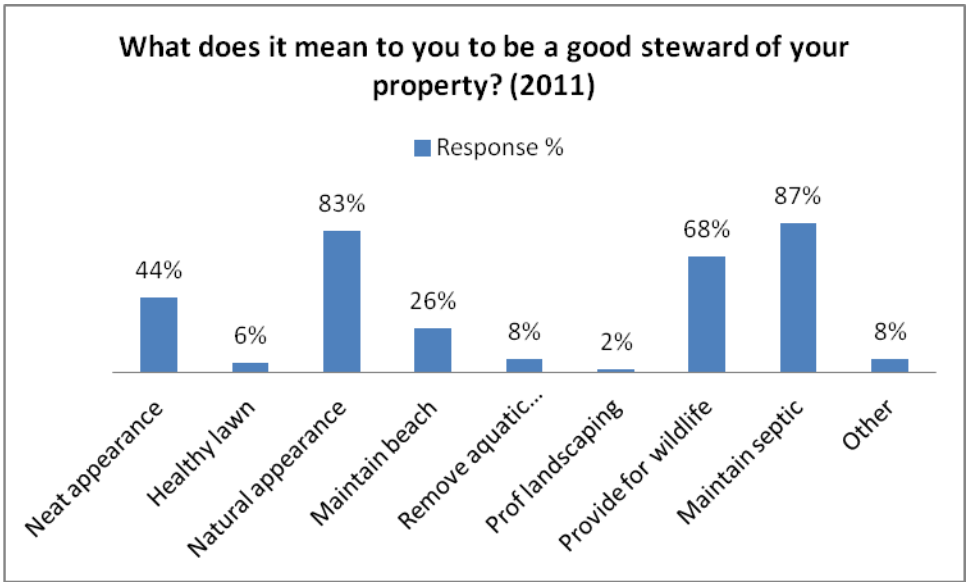
Table 20: Importance of Stewardship



Eighty-percent reported in 2011 that it is very important for them to be a good steward of their property (compared with eighty-four percent in 2009) and another seventeen percent said that it was important (compared with sixteen percent in 2009)**.** A strong stewardship ethic was expressed by almost 99% of respondents in total. This value was shared by permanent residents and "weekender" alike. Only one individual reported being neutral, and no one said that it is not important. There were numerous written comments that underscored the importance of environmental stewardship to the respondents. The strong stewardship ethic voiced by shoreland property owners is an important core value upon which to build a shoreland conservation strategy.

A follow-up question was asked about the **meaning of stewardship**. Results are as follows:

Table 21: Meaning of Stewardship

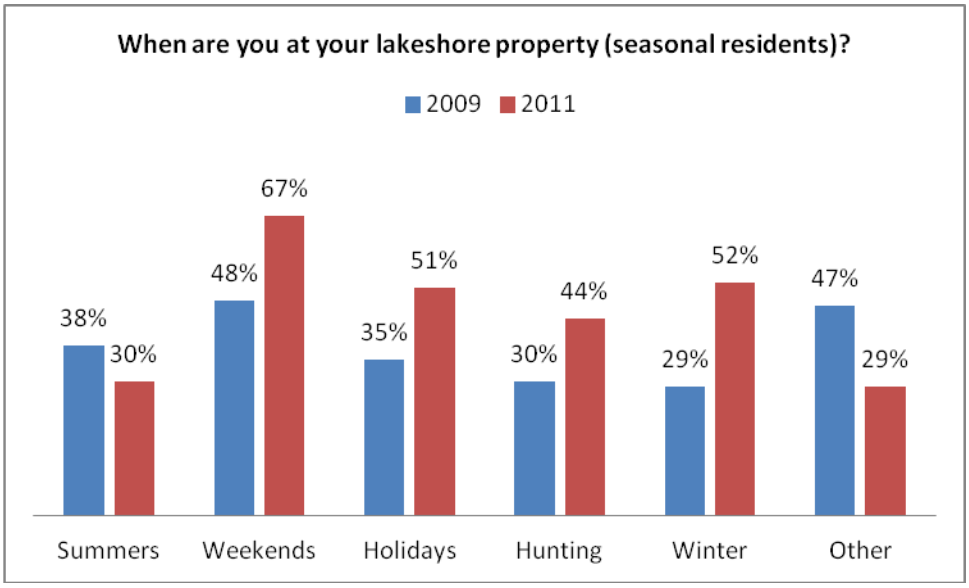


- The most frequently reported response was "Check and maintain my septic system regularly" (87%); followed by "Maintain a natural appearance" (83%) and "Provide wildlife with food and shelter" (68%); "Maintain a neat appearance (mowed and trimmed)" (44%); "Maintain the beach area" (26%); "Remove plants in the water" (8%); "Other" (8%); "Maintain a healthy lawn" (6%); and "Have my property landscaped by a professional (2%). This question was not asked in the 2009 survey. The "take-home" message from these findings is that environmental stewardship has the potential to be a significant driver of behavior.

Practices findings

Two practices questions aimed at establishing whether respondents were **full-time or seasonal residents**. In 2009, 32% were full-time residents, and 68% were not. In 2011, full-time residents increased to 35%, and 65% were not. For those who were not full-time residents, a follow-up question asked when they are at their lakeshore property. Results are summarized in Table 22 below.

Table 22: Amount of Time Spent At Shoreland Property

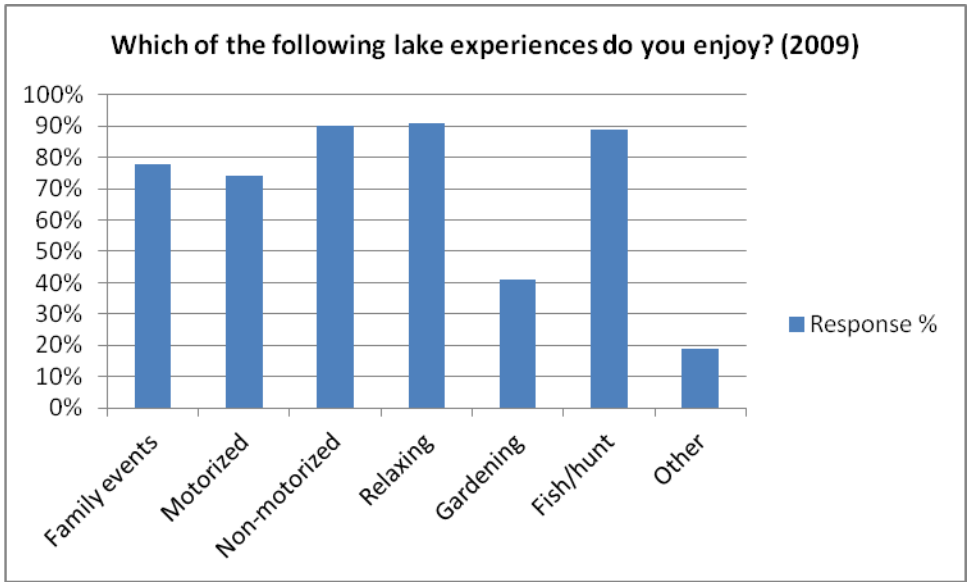


As noted, the majority of property owners in 2009 were weekenders (67%), and thirty-two percent were year-round residents. About half (48%) of nonresidents were at their property on weekends. Twenty-nine percent were there in winter; 38% during the entire summer; thirty percent during hunting season; and 35% on holidays. In 2011 sixty-seven percent report spending weekends at their shoreland property, while thirty percent spent "all summer." Fifty-one percent spend holidays at their property, and fifty-two percent make winter visits. Forty-four percent are at their property during hunting season.

- Seasonal respondents appear to spend somewhat less time on their property "all summer," and somewhat more time on holidays and weekends. Weekends during the summer are the best time for contacting property owners.

In 2009, a question was posed about **enjoyment of lake experiences**. The following results were obtained:

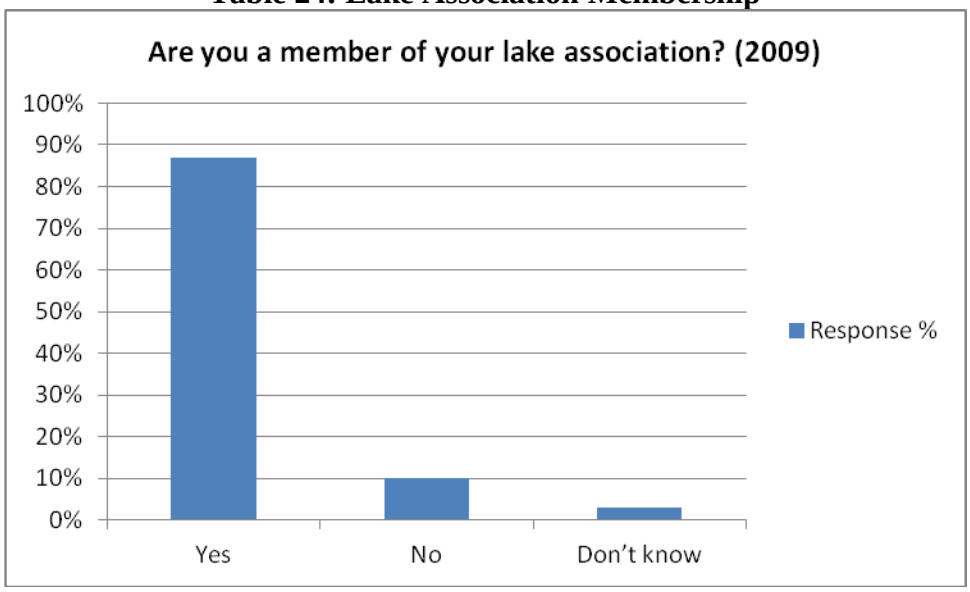
Table 23: Enjoyment of Lake Experiences



- The majority of residents routinely used their properties for either active or passive activities. Many shoreland owners reported relaxing, engaging in non-motorized activities, and fishing/hunting/trapping (all near 90%) as their preferred activities. To a lesser extent they enjoyed socializing and participating in motorized recreation (near 75%). About 40% reported engaging in yard and garden care at their lake property. This question was not repeated in 2011.

Respondents were asked if they are a **member of their lake association**. Results are summarized Table 24 below.

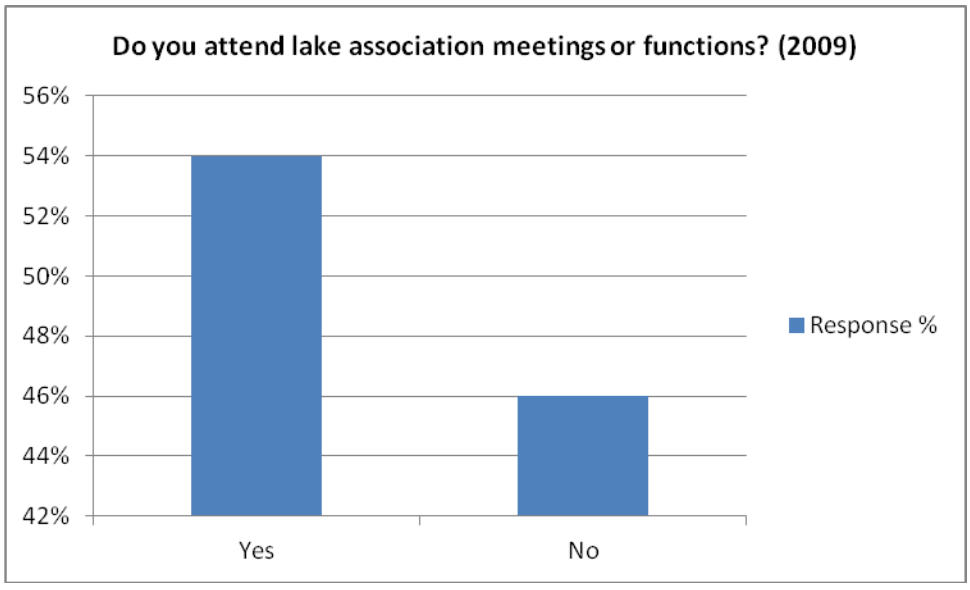
Table 24: Lake Association Membership



The great majority of respondents are lake association members. Eighty-seven percent said "Yes," while ten percent said "No." Three percent were unsure. This question was not repeated in 2011.

A follow-up question was posed asked about **attendance at lake association meetings** or functions. Results are in the table below:

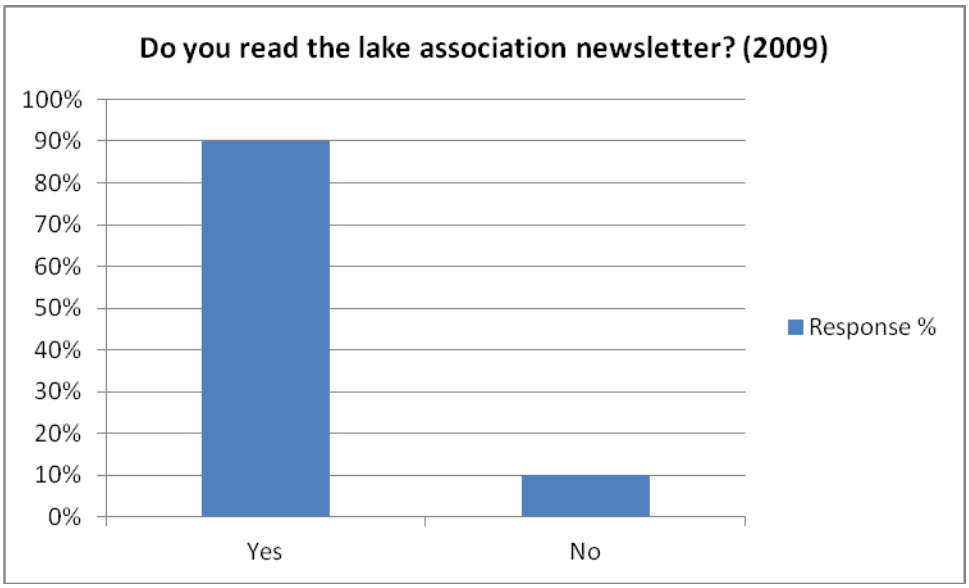
Table 25: Attendance at Lake Association Functions



- Fifty-four percent replied "Yes," and forty-six percent responded "No." While 87% of respondents are association members, only 54% attend association meetings.

A follow-up question was posed in 2009 whether respondents read the **lake association newsletter**, yielding the following results:

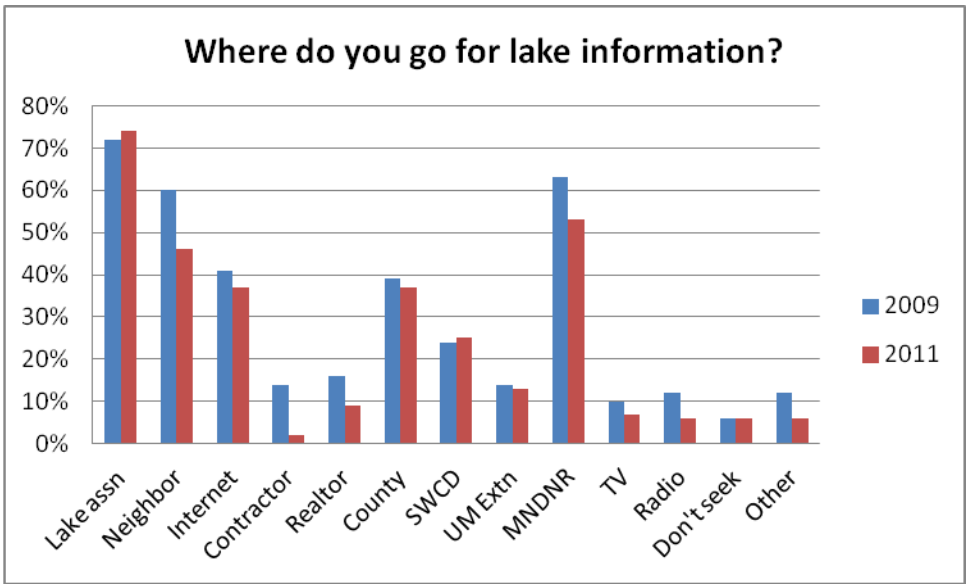
Table 26: Lake Association Newsletter



- Ninety-percent responded "Yes" and ten percent replied "No." This question was not repeated in 2011. This indicates that while only 54% of respondents attend meetings, 90% read the newsletter. High readership levels suggest that lake association newsletters are a useful vehicle for disseminating information about shoreline conservation.

Respondents were asked about their **most important sources of information** about their lake. Results are presented in Table 27 below.

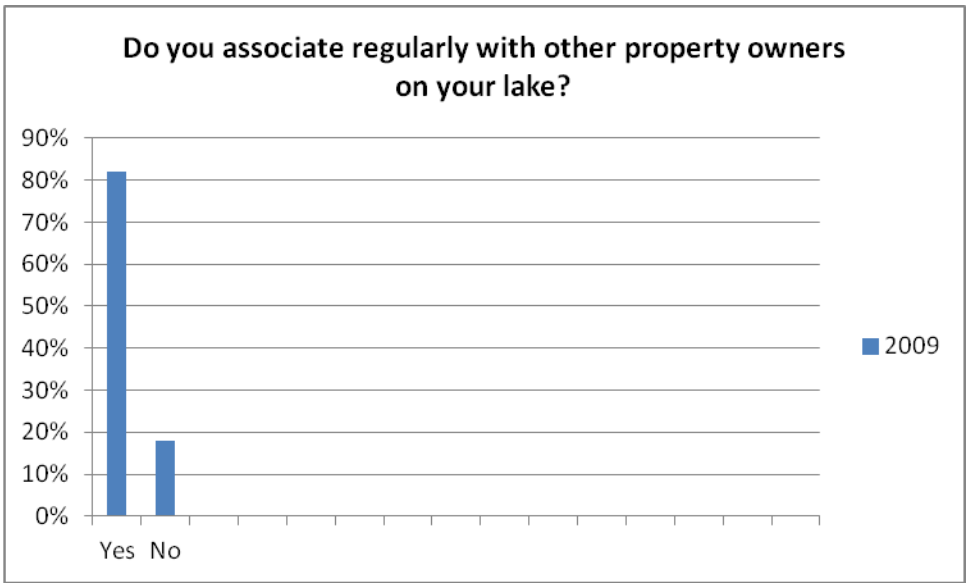
Table 27: Sources of Lake Information



Lake associations continue to be the most important sources of information for 74% of property owners. This value was almost unchanged from 2009 (73%). However, the importance of neighbors as a source of information declined from sixty percent in 2009 to forty-six percent in 2011. The Internet declined from forty-one percent in 2009 to thirty-seven percent in 2011; and local contractors declined in importance from fourteen percent in 2009 to two percent in 2011. Realtors declined from sixteen percent in 2009 to nine percent in 2011. Itasca County declined slightly from thirty-nine percent in 2009 to thirty-seven percent in 2011. The Itasca SWCD very slightly increased from twenty-four percent in 2009 to twenty-five percent in 2011; as did UM Extension (fourteen percent in 2009 to thirteen percent in 2011). The DNR also decreased from sixty-three percent in 2009 to fifty-three percent in 2011. In 2009 about ten percent sought information on television but this declined to seven percent in 2011. Radio also declined from twelve percent in 2009 to six percent in 2011. About the same number reported that they don't seek information (six percent in both surveys). Lake associations are the most sought-after sources of information about the lake, and are key entry points and conduits for working with shoreland property owners.

Respondents were then asked whether they **socialize with other property owners** regularly on their lake. This question was posed only in 2009, and yielded the following results:

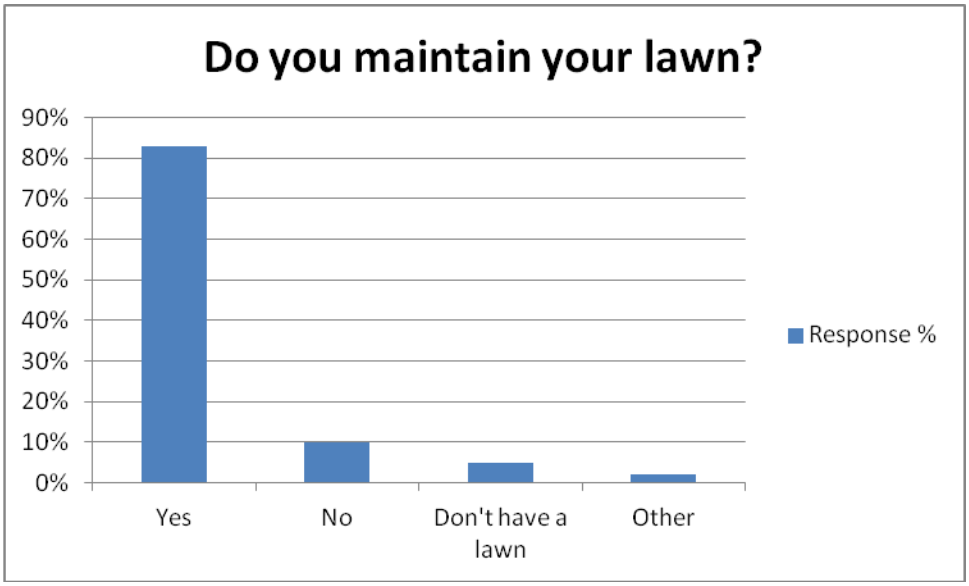
Table 28: Socialization among Property Owners



- Eighty-two percent replied "Yes" in 2009, while eighteen responded "No." This indicates a fairly high degree of socialization among lakeshore property owners, and may present an opportunity for peer-to-peer communication and networking. This question was not repeated in 2011.

A series of questions were posed in the first-round (2009) survey about l**awn and yard care practices**. The first question asked respondents if they maintain a lawn:

Table 29: Lawn Maintenance

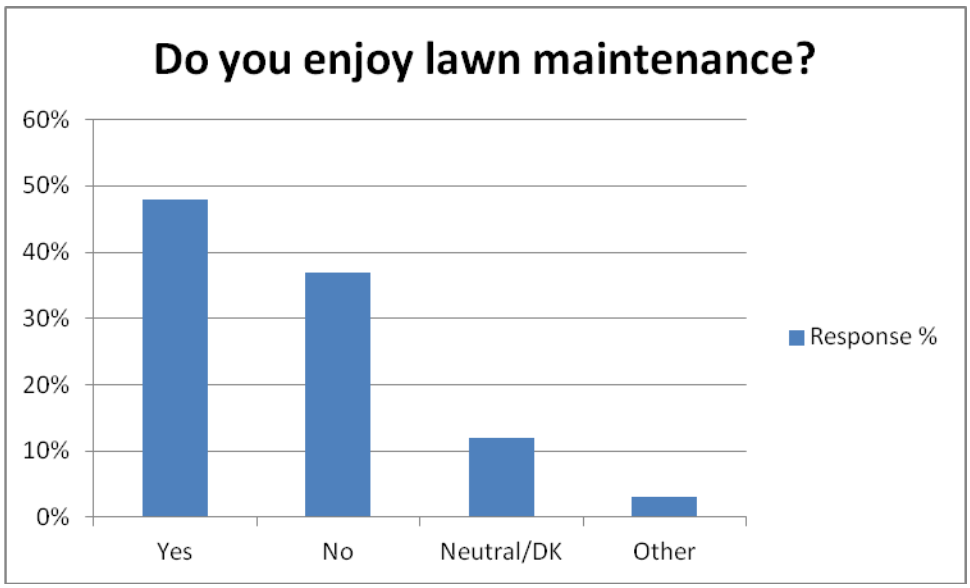


Most respondents maintained their own lawn (83%); ten percent do not maintain a lawn; and 5% reported not having a lawn. 2.2% reported "Other." This question was not repeated in 2011.

For those checking "No" on the above question, respondents were asked "Who maintains your lawn?" Eight percent reported using a landscape professional, and ninety-two percent replied "Other."

A follow-up question asked about **enjoyment of lawn care**. Results are summarized in Table 30 below:

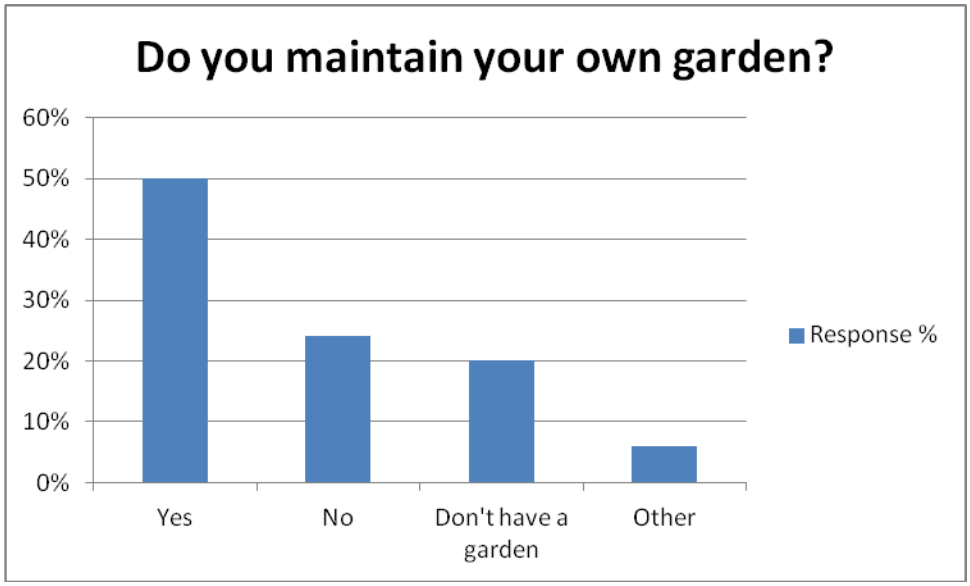
Table 30: Lawn Care Enjoyment



About half (48%) responded affirmatively; while 37% replied "No." Twelve percent replied "Neutral/Don't know" and three percent responded "Other." This question was not included in the 2011 survey. Year-round residents reported a higher level of enjoyment with maintaining a lawn (Q24, 53.9%; Q6, 61.6%) than seasonal residents (Q24, 45%; Q6, 31%). Year-round residents were more likely to maintain their own lawns (Q23, 96%) than seasonal residents (Q 23, 76%). This question was not repeated in 2011.

Respondents were next asked if they **maintain a garden** (2009). The following results were obtained:

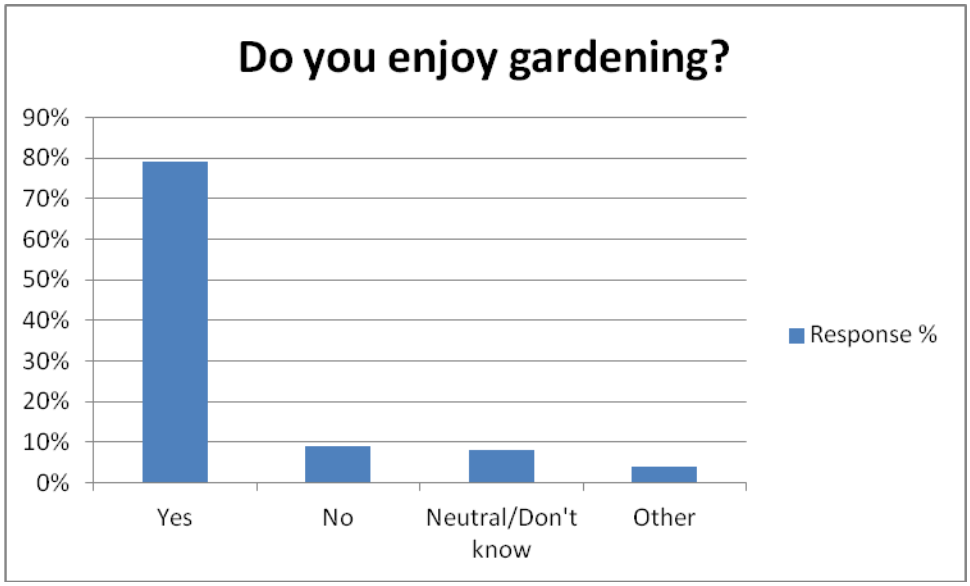
Table 31: Garden Maintenance



Fifty percent responded "Yes;" twenty-four percent replied "No;" twenty percent replied "I don't have a garden;" and six percent responded "Other." This question was not repeated in the 2011 survey.

A follow-on question asked "Do you **enjoy gardening**?" The following table summarizes the 2009 responses:

Table 32: Gardening Enjoyment

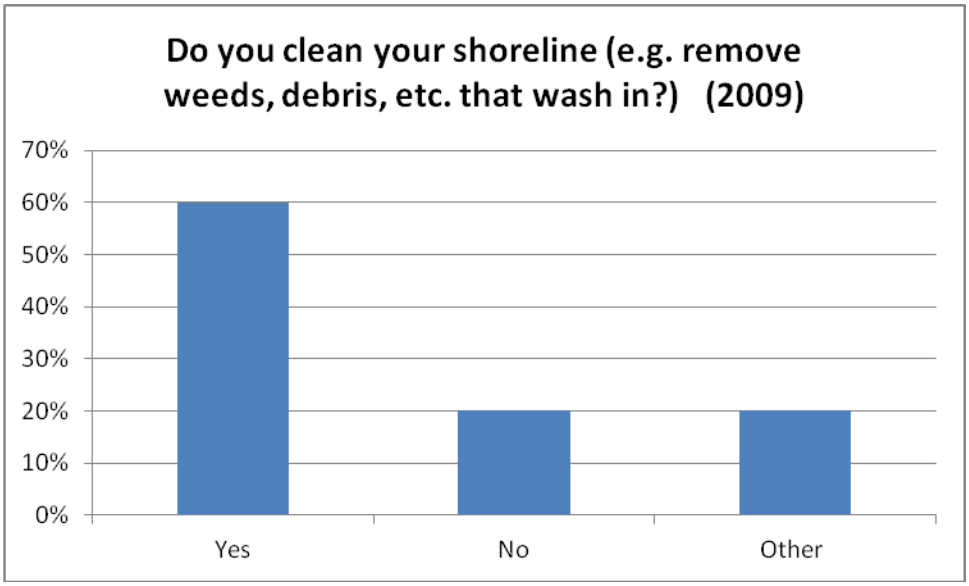


Seventy-nine percent responded "Yes;" nine percent said "No;" eight percent said "Neutral/Don't know:' and four percent said "Other." This question was not repeated in 2011.

In sum, about half of respondents maintain a garden, and of those, about 80% enjoy gardening.

Respondents were then asked if they **clean their shoreline** (e.g. remove debris, weeds etc. that wash in). The following 2009 results were obtained:

Table 33: Shoreline Cleaning

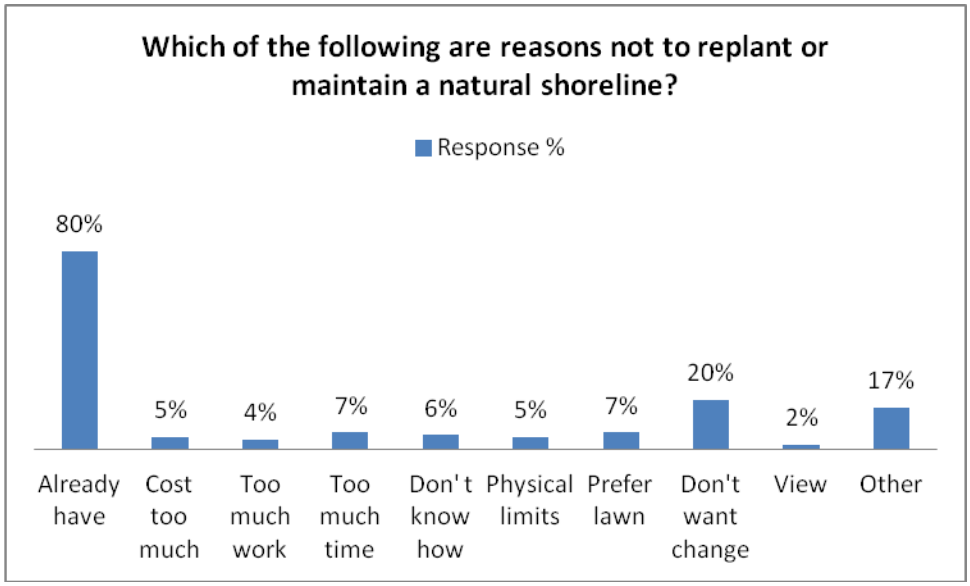


Sixty percent of respondents report cleaning their shoreline**.** Twenty percent do not clean their shoreline, and another twenty percent checked "other." This question was not repeated in 2011.

Constraints findings

In the 2009 survey a series of questions were posed that explored possible constraints and barriers to shoreline adoption. The first question aimed at exploring the **reasons that respondents might not want a natural shoreline**. This was a check-all-that-apply question. The following results were obtained:

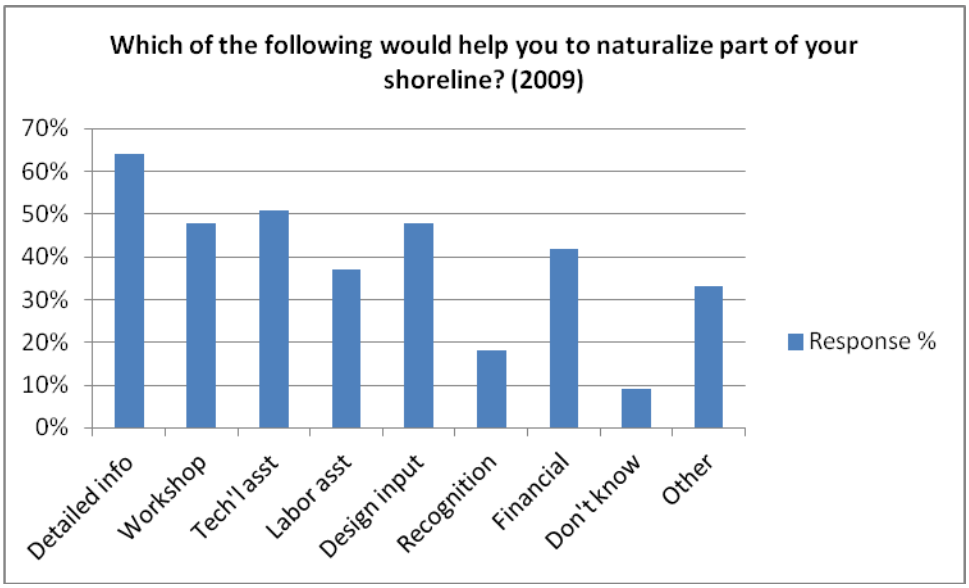
Table 34: Reasons Not to Maintain a Natural Shoreline



- Of the reasons NOT to have a natural shoreline, there were few major insurmountable constraints reported except for a reluctance to change that was expressed by one-fifth of the respondents. Indeed, eighty percent reported that they already have a natural shoreline. For those reporting negative reasons, seven percent felt that it would take too much time. Five percent felt that it might cost too much, while another four percent felt that it might be too much work. Six percent did not know where to start. Five percent reported that they had physical limitations. Seven percent reported that they liked the look of a mowed yard. Two percent felt that a natural shoreline might limit their view of the lake. Twenty percent reported that they liked shore as is and didn't want to change. Seventeen percent gave a range of "other" answers. This question was not repeated in 2011.

A follow-up question was asked about **enabling mechanisms** ("Which of the following would help you to naturalize part of your shoreline?"). The following results were obtained:

Table 35: Incentive Preferences



Results helped the Itasca County partners to focus education, outreach and incentives strategies for the Itasca County NSBI. The most frequently checked option was "Detailed information and instructions on naturalizing my shoreline" (64%); followed by "Technical assistance in designing the shoreline and selecting and ordering plants" (51%); a "How-to workshop on design, installation and maintenance of a natural shoreline" (48%); "Having input into the design" (48%); "Financial help" (42%); "Other" (33%); "Recognition as a lake steward" (18%); and "Don't know" (9%).

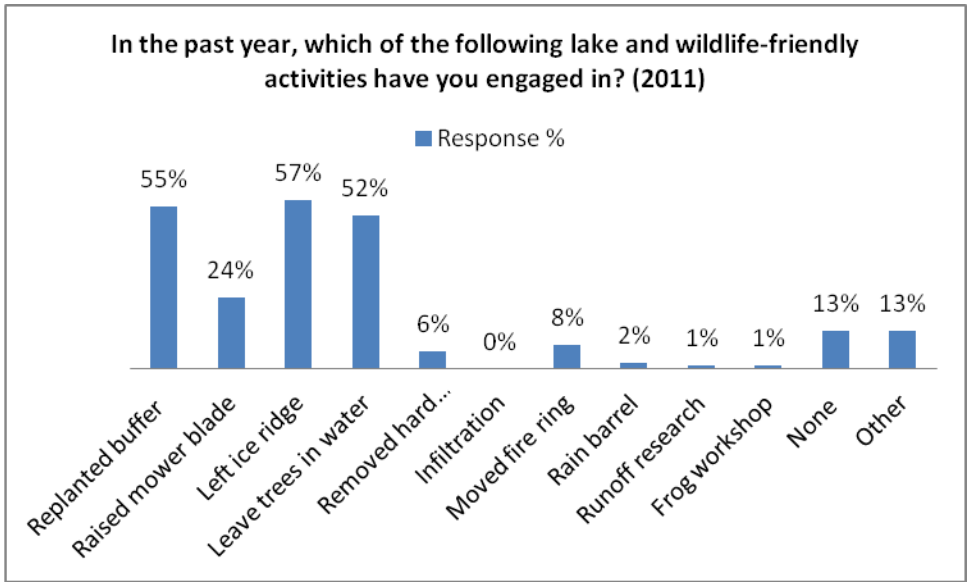
- The top three preferences expressed by respondents were all services provided by natural resources educators or professionals. Financial incentives ranked fifth at 42%. Direct "hands-on" technical information from a natural resources professional is more highly valued than financial incentives. Interestingly, few respondents actually adopted a buffer because they were offered a financial incentive, as will be discussed below. This question was not repeated in 2011.

Efficacy questions

In the 2011 KAP study, a series of efficacy questions were posed to learn about the utility and acceptability of the NSBI strategy to project participants, and to determine whether there were positive outcomes as a result of implementation.

A question was asked about which **lake and wildlife-friendly activities** respondents had engaged in, and that were promoted by the NSBI project education and outreach efforts. Results are summarized in Table 36 below.

Table 36: NSBI Engagement



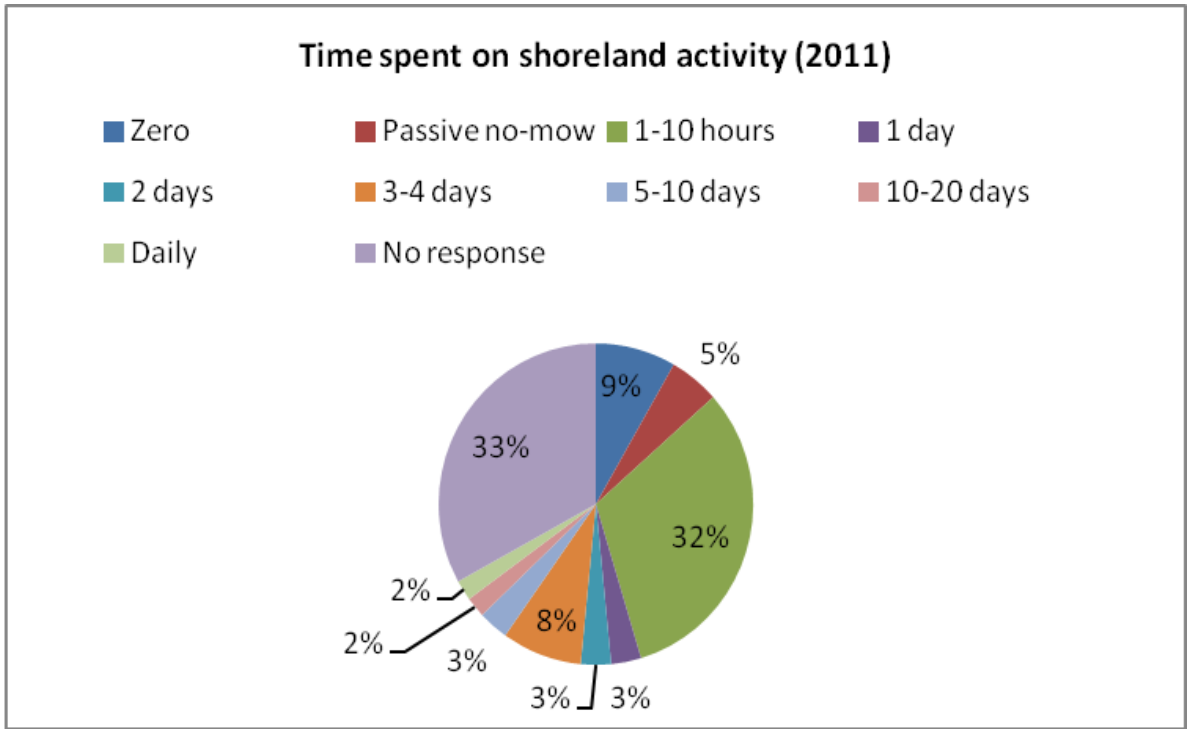
- The most frequently reported option was "Left ice ridge in place" (57%; fifty property owners); followed by "Planted shoreland plants or allowed native plants to grow back" (55%; forty-eight property owners); "Let downed trees remain in the water" (52%; forty-six property owners); "Raised the blade on my mower" (24%; twenty-one property owners); "None" (13%; eleven property owners); "Other" (13%; eleven property owners); "Moved the fire ring away from the lake" (8%, or seven property owners); "Moved or removed hard surfaces" (6%. Or five property owners); "Installed a rain barrel or rain garden" (2%, or two property owners); "Conducted runoff research" (1%, one property owner); "Attended a frog workshop" (1%, or one property owner); and "Modified my lake access to redirect or filter rainwater into the soil" (0%).

A follow-up question was asked about how much **time was spent on lake-friendly activities**. Results are summarized in Table 37 below.

Table 37: Time Spent on Shoreland Activity (A)

The frequency table offered no clues into the specific amount of time spent, so a content analysis was done of the comments written on the questionnaires. Results are show in Table 38 below.

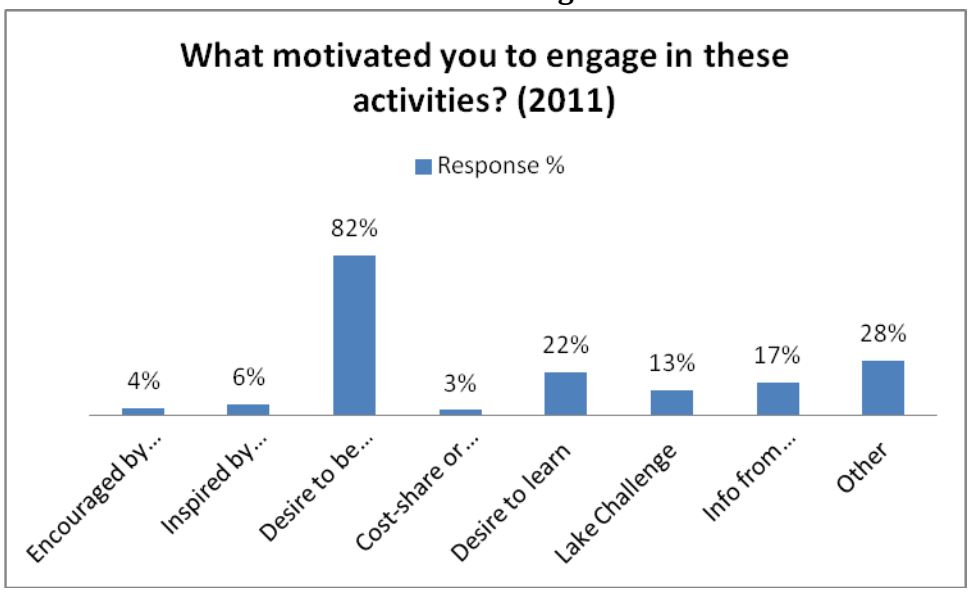
Table 38: Time Spent on Shoreland Activity (B)



Many of property owners (33%) did not respond to this question. Of those that did, thirty-two percent spent one to ten hours on their activity during the 2011 season; followed by nine percent who spent no time; eight percent who spent three to four days; and another five percent who passively allowed their shoreline to naturalize (no-mow). Smaller numbers of respondents mentioned other, longer periods of time. The majority, however, spent less than four days maintaining their shoreland activity.

A critical question in the 2011 KAP study investigated the **motivational factors behind adoption** of a recommended BMP. Responses are summarized in the table below:

Table 39: Motivating Factors

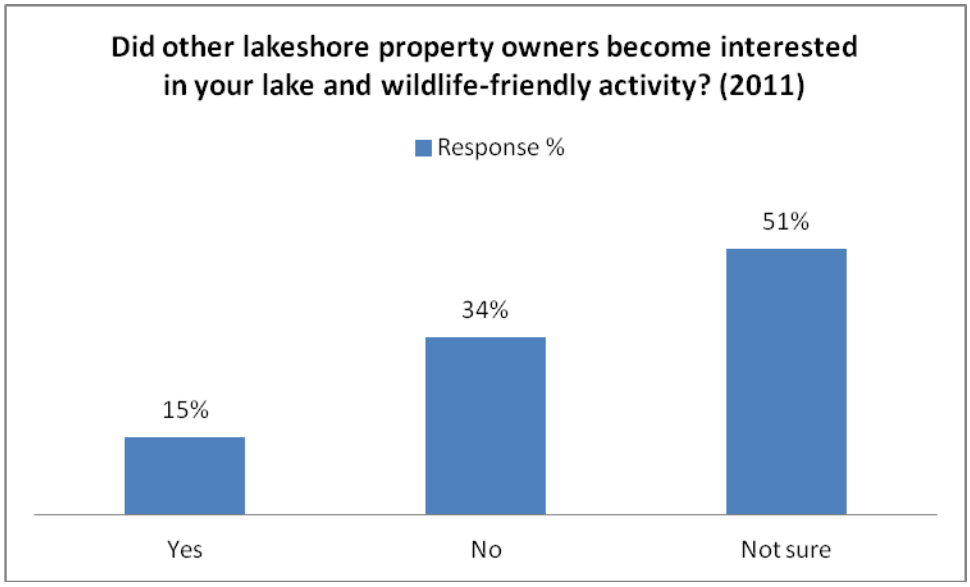


Clearly, the most important factor was "Desire to be a good steward of the lake and wildlife" (82%). This was followed by "Other" (28%); "Desire to learn more about the lake and wildlife" (22%); "Information provided by another source (17%); "Information provided by the Itasca County Lake Challenge" (13%); "Inspired by a neighbor participating in a lake and wildlife-friendly activity" (6%); "A neighbor encouraged me" (4%); and lastly, "I received a cost share and/or assistance with the activity" (3%). Many of the "Other" handwritten comments reiterated intensions and commitments to be a good steward of their lake.

Interestingly, only 3% reported in 2011 that "Cost-share" motivated them to engage in lake and wildlife-friendly activities, while in 2009 42% reported that "Financial help" would help them to naturalize part of their shoreline. ***The great majority of respondents (82%) indicate that their stewardship values far outweigh the motivation provided by a financial incentive (3%).***

The NSBI team wanted to learn **how shoreland information and activities are spread locally**. A question was therefore posed "Did other lakeshore property owners become interested in your lake and wildlife-friendly activity?" Results are summarized in the table below:

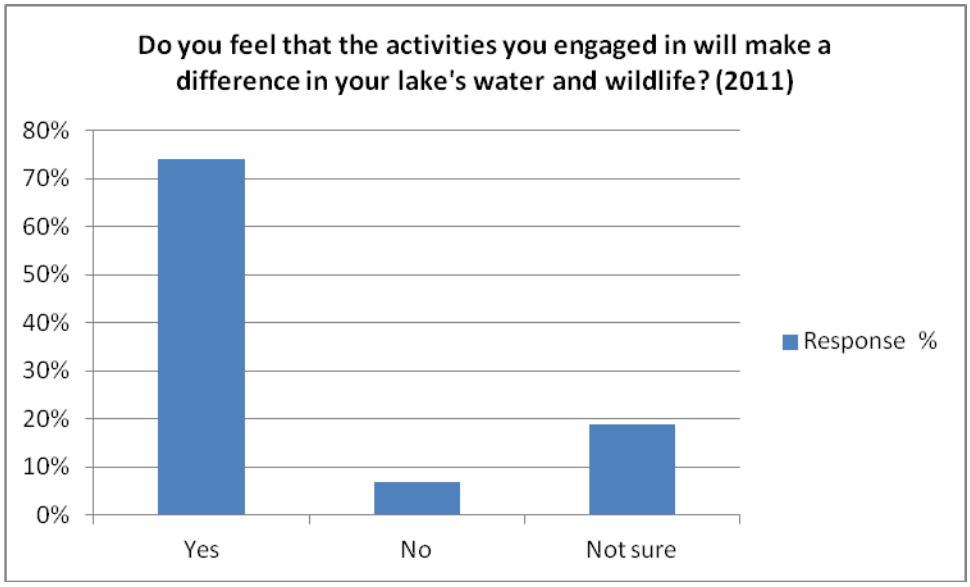
Table 40: Neighbors' Interest in Shoreland Installation



Fifteen percent responded affirmatively, and thirty-four percent responded "No." A slight majority (51%) are not sure. One observation is that too little time has passed for participants to know whether others have become interested in their projects, as the survey took place during buffer installation.

Respondents were then asked about **perceived effectiveness of the adopted practice**. Results are summarized below in Table 41.

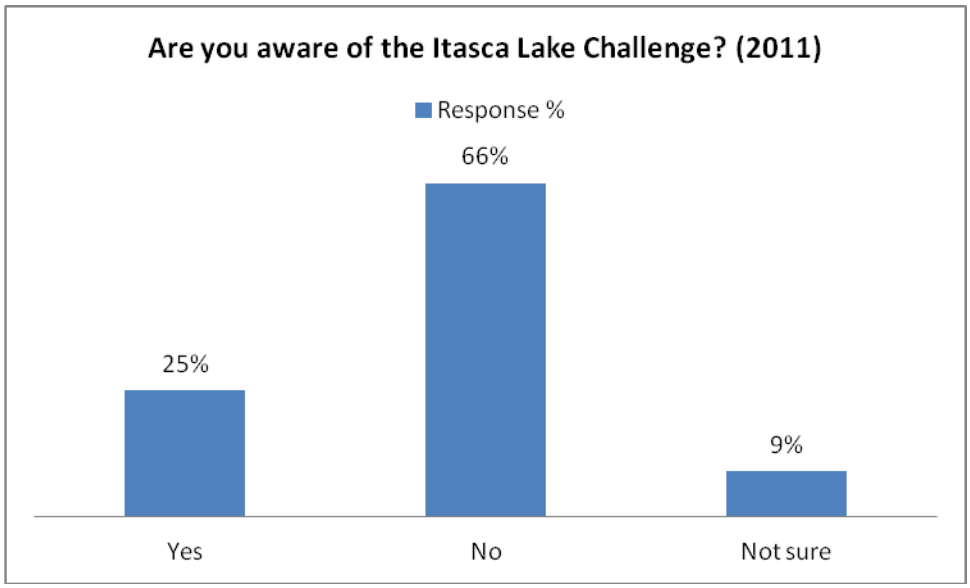
Table 41: Perception of Buffer Effectiveness



- Seventy-four percent of respondents replied affirmatively; seven percent said "No;" and nineteen percent were not sure.

Itasca County NSBI staff (Blickenderfer) designed, tested and piloted the Itasca Lake Challenge as a citizen engagement strategy in the fall of 2010, and announcements were sent to lake associations (three of five lakes) at that time. In May of 2011 Action Media, a local partner specializing in social marketing, conducted training on the Itasca Lake Challenge with students. The Iasca NSBI project lead, Mary Blickenderfer, gave presentations statewide in 2010 and 2011 on the Itasca Lake Challenge, including the Minnesota Waters Conference. To test awareness of Itasca residents about the Itasca Lake Challenge, a question was asked in the 2011 KAP study whether responds had heard about it (Table 42 below).

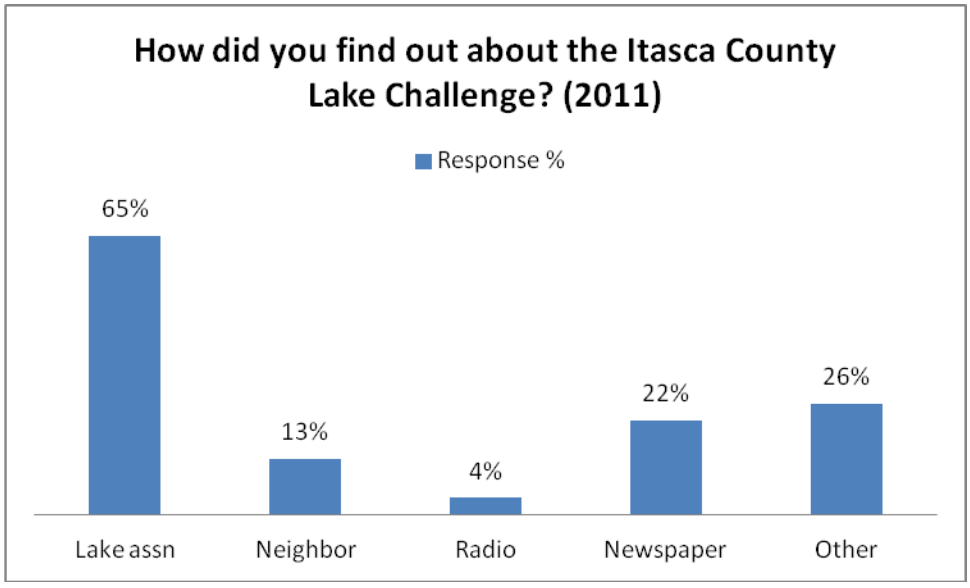
Table 42: Awareness of Itasca Lake Challenge



Sixty-six percent of respondents had not heard about the Itasca Lake Challenge; twenty-five percent knew about it; and nine percent were uncertain.

Several follow-up questions were asked about **sources of information**, including how respondents found out about the Challenge. Results are summarized in Table 42.

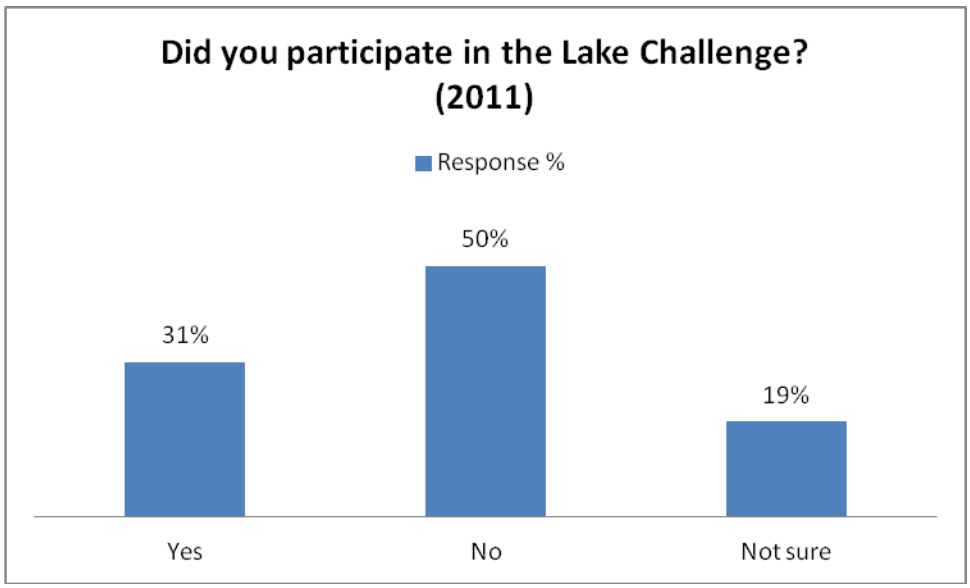
Table 43: Source of Information about the Lake Challenge



Lake associations were the most commonly reported source of information (65%), followed by "Other" (26%), "Newspaper" (22%), "Neighbor (13%) and Radio (4%). These data reinforce the finding that lake associations are the most important source of information for lakeshore property owners.

Respondents were then asked if they had **participated in the Itasca Lake Challenge**. Results are summarized below in Table 44.

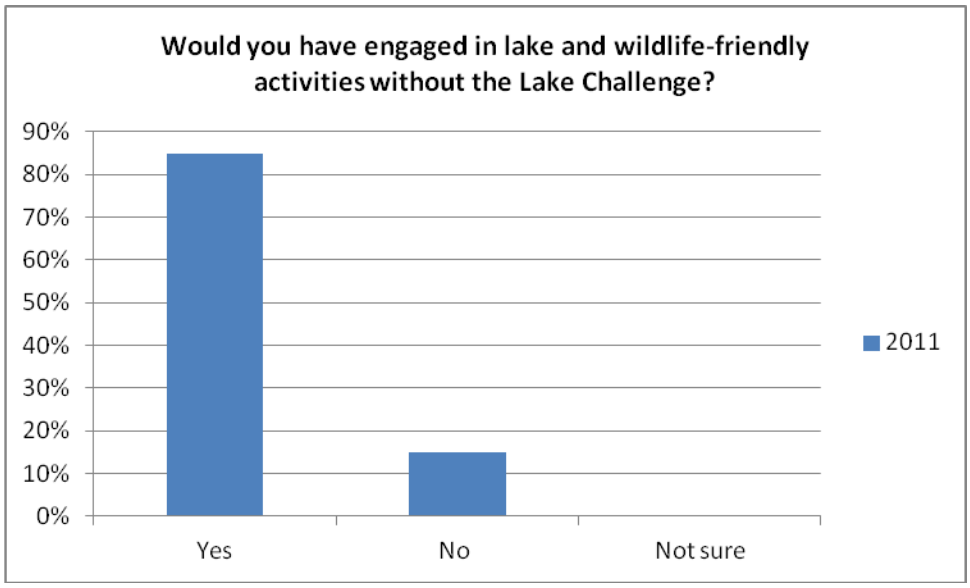
Table 44: Participation in the Lake Challenge



Half of the second-round KAP respondents had not participated (*n*=13), while 31% (*n*= 8) had. Nineteen percent (*n*=5) were uncertain.

The next question was a "**with and without**" question. Results are summarized in Table 45.

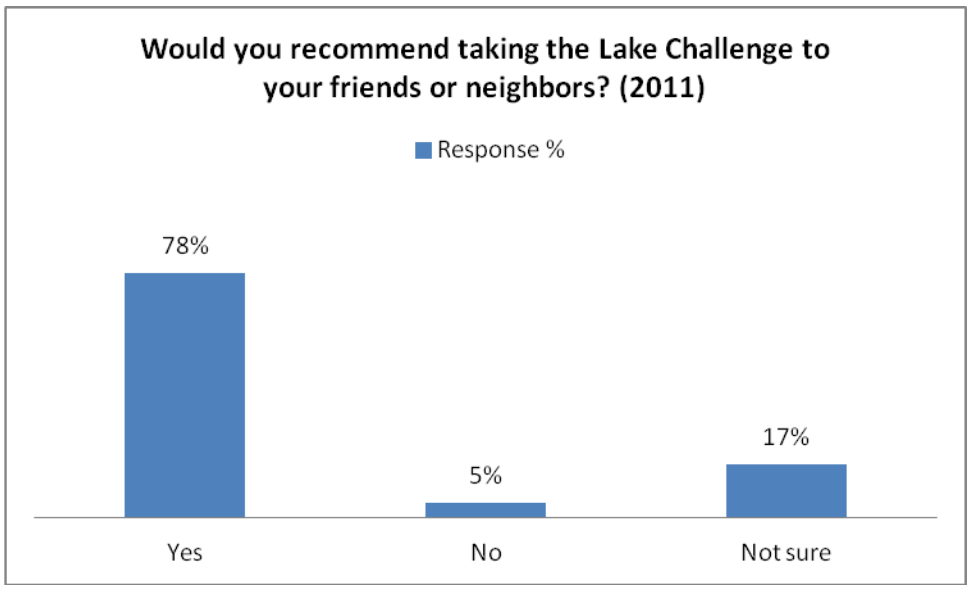
Table 45: "Moving the Maybes" with the Itasca Lake Challenge



- Eighty-five percent (*n* = 17) would have engaged without the Lake Challenge. The Challenge helped to motivate fifteen percent of respondents (*n* = 3) to adopt shoreland-friendly activities.

The next follow-up question asked respondents if they would **recommend taking the Lake Challenge** to their friends and neighbors. Results are summarized in Table 46.

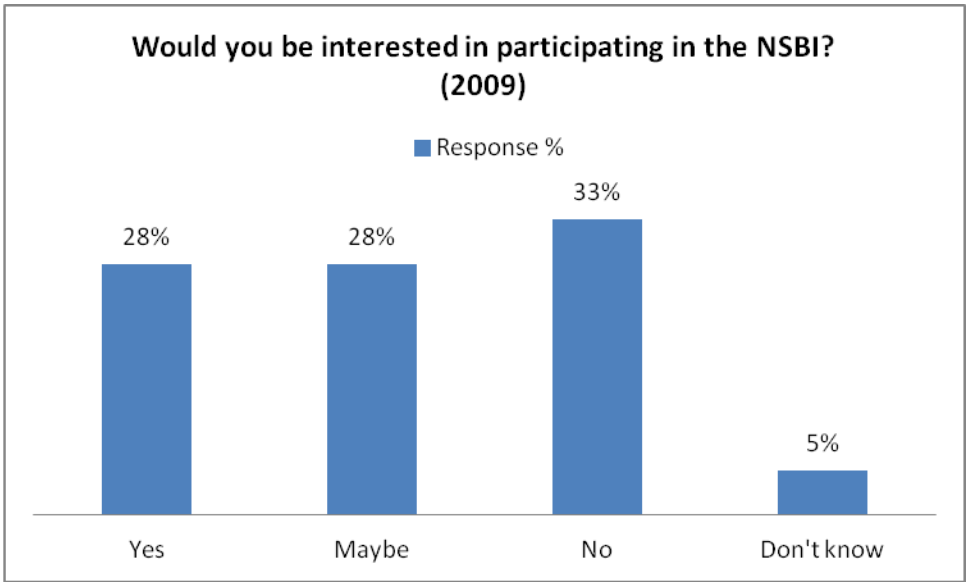
Table 46: Propensity to Recommend the Lake Challenge



Seventy-eight percent would recommend the Challenge; five percent would not; and seventeen percent were uncertain.

Respondents were asked in 2009 about their **interest in participating** in the NSBI ("There is a new program in Itasca County to assist lakeshore property owners to replant or maintain a natural shoreline. It is called the NSBI. Would you be interested in participating in this project?"). Results are summarized in Table 47.

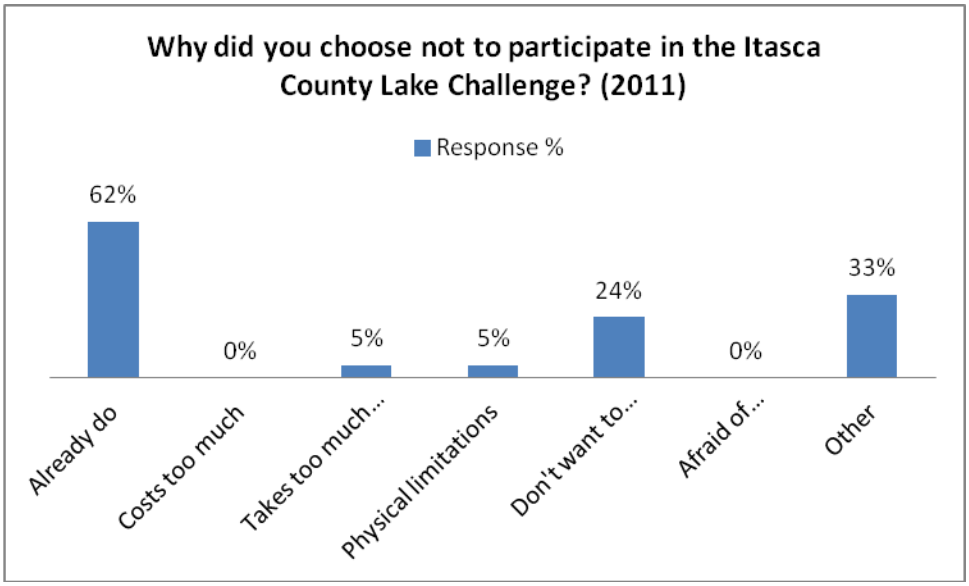
Table 47: Interest in NSBI Participation (2009)



More than a quarter of respondents (28%) indicated that they would be interested in participating in NSBI, and twenty-eight percent said they might be interested. Of those who weren't interested (33%), half stated they weren't interested because they already have a natural shoreline. Five percent responded "Don't know."

A follow-up **barriers question** was posed, asking non-participating respondents why they chose not to participate in the Itasca County Lake Challenge. Results are summarized in Table 48 below.

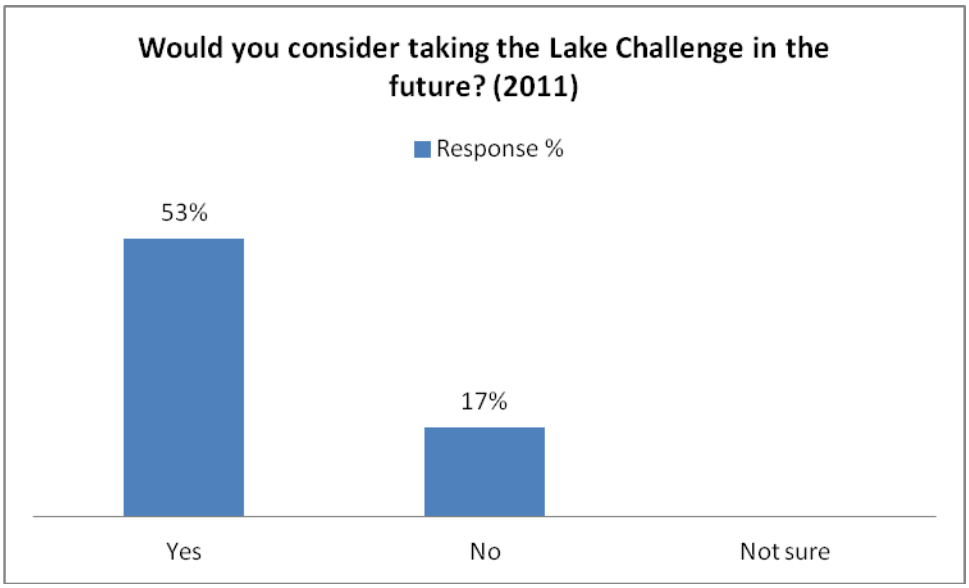
Table 48: Reasons Not to Participate in NSBI



- The most common reason given by respondents was that they already engage in healthy lakeshore practices (62%). This was followed by "Other" (33%); "I like the shoreline as it is and don't want to change" (24%); "I have physical limitations" (5%); and "It might take too much time." No respondents checked "It might cost too much," or "I'm afraid the information might be reported and used against me."

Finally, in 2011, respondents were asked about their **interest in taking the Lake Challenge** ("The Itasca County Lake Challenge is a no-cost, no-strings-attached evaluation of your property to provide you with feedback on lake and wildlife-friendly practices and resources. Would you consider taking the Lake Challenge in the future?"). Results are summarized in Table 49 below.

Table 49: Propensity to Take the Lake Challenge



A slight majority (53%) responded affirmatively, while seventeen percent declined.

Discussion

This section synthesizes the social science research findings from the pre/post KAP data and participant interviews, and includes input from key project staff.

Key Findings of KAP 1 (2009)

The traditional viewpoint that local audiences lack knowledge about conservation and water quality is not completely accurate for this study area. Data show that landowners have significant (but generalized) knowledge about habitat, lake condition, stormwater conveyance and other water quality aspects. Ninety-two percent of respondents were aware that land management impacts water quality. The KAP data also revealed very high concerns for water quality in "their" lake. There was also considerable receptivity toward learning more about lake ecosystems and shoreland management.

In general, ***shoreland owners do not perceive trends on their lake***, in particular trends related to water clarity (70% reported "no change"). As one respondent noted, "longer-term residents feel that the lake will always stay the same; they don't perceive change." And "newer residents come because they love nature and want to keep the natural beauty." A notable exception was the perception of aquatic plants, which forty percent reported had increased in abundance over time. About a quarter (26%) perceived a decrease in fishing quality, while twenty percent perceived an increase in shoreline plants.

Most were members of their lake association (87%), and even more (90%) reported that they read the lake association newsletter. However, only about half reported that they attend lake association meetings with any regularity (once per year was the most common response). Most reported regularly socializing with 1-5 people at their lake property; 27% reported socializing with more than ten people on their lake. These findings confirm that lake associations are the most effective means of transmitting information about shoreland conservation, and that neighbor networking is also useful but of secondary importance.

Nearly two-thirds of respondents maintained a garden at the lake, and of those, half maintained it themselves. While sixty percent reported that they "clean" their shoreline, a large number of responses in the comment field indicated that respondents knew that they should do this only minimally. Forty-nine percent reported that they only did so sometimes; and thirty-two percent reported that they did so only around beaches, swimming areas and docks. Twelve percent commented that they removed deadfalls and large limbs.

With regard to natural shoreline vegetation, when shown three pictures of shorelines (lawn, replanted, and natural), ***respondents strongly preferred the natural shoreline*** (68%) over the replanted (20%) or lawn (6%) images. When looking at the lawn shoreline, respondents strongly disliked the privacy turf landscapes provided (76%), the maintenance of lawns 70%), and the general appearance of lawns (70%). For the replanted shoreline, the only negative reported was that it might require more maintenance than respondents wanted (44%). However, nearly as many respondents indicated that they would enjoy the maintenance associated with the replanted shoreline (41%). Respondents strongly liked nearly all of the elements of the natural shoreline (greater than 80% like the attributes listed). The exception was a slightly lower percentage for ability to "use" the shoreline (71% reported that they liked the shoreline usage v. 21% reporting that they disliked the shoreline for that attribute. Respondents generally like lawn care (48%) and garden maintenance (79%). Respondents overwhelmingly consider being a steward of their land to be very important (84%) or important (16%).

With regard to incentives, the first-round KAP findings did not support the notion that financial incentives would be needed to motivate the adoption of recommended practices. In fact, ***the availability of technical expertise in the form of human interaction was clearly more important and valued than financial incentives***. Financial incentives ranked only fifth among respondents, behind detailed information and instruction, labor assistance, a "how-to" workshop, or input on their site design. ***These first-round KAP findings challenged the conventional wisdom that people need a financial incentive to adopt a new behavior.*** In this instance, direct access to knowledge and information from a trained natural resources professional was clearly much more important and motivating to shoreland property owners.

<u>How was the KAP 1 data used?</u>

The social research data from the first KAP study was used to design and refine education and outreach strategies that were tailored to expressed local needs. ***We learned that medium or high***

"touch," community-building and peer-to-peer incentives seem to work better in the context of the Itasca County sample. However, not enough time has passed to say with certainty that a medium or high-touch strategy is more sustainable and effective than a low-touch approach.

The outcome of the first-round KAP and the boat-by was confirmation that ***people generally know what to do and want to do the right thing, but they could be doing more***. Most residents self-report that they already have a natural shoreline (verified by observational methods), and report doing some level of environmental activity. However, such knowledge reaches a certain level beyond which respondents need (and request) additional technical support and guidance. Their strong preference, as already noted, is not for a financial incentive but rather direct, in-person interaction.

We learned that ***a strong environmental stewardship is nearly universal, and that stewardship binds lakeshore property owners together socially***. We learned that there are existing social networks present on most lakes, and that lakeshore associations are trusted and important sources of information. Collectively, these are essential building blocks for any successful program effort. Indeed, this extends beyond shoreland conservation and water quality efforts, and could be utilized for more comprehensive environmental efforts (habitat conservation, fisheries, nongame or migratory species, etc.).

Photo 4: Testing the boat-by shoreland assessment technique

Photo 5: Testing the boat-by shoreland assessment technique

The experimental "boat-by" (total lake survey) was used to triangulate and to verify self-reported practices. This observational method was tested in 2010. It was determined to be too labor-intensive and not quantitative enough for the purposes of assessing shoreline changes. Nor could it quantify changes longitudinally with accuracy. Nonetheless it was useful because it allowed staff to ground-truth self-reported practices from KAP questionnaires. The "boat-by" information was consistent with the self-reported KAP data, confirming that the majority of owners already had natural shorelines or were doing the "correct" things (maintaining buffers). We also discovered that those with buffers were likely contributing to water quality problems via other practices (*e.g*. inappropriate boat access and footpath designs; storage of boats and water accessories; breaching ice ridges, fire rings close to water's edge, etc.).

<u>What did people know?</u>

People had a relatively high level of knowledge and awareness about water quality and lake health, but only to a certain extent. Knowledge was mostly gained from each other and through lake associations. The social research confirmed that ***lake associations are the obvious conduit and most significant entry point to shoreland property owners***.

With those already doing the "right thing" it is also a matter of awareness. A cluster of elements seem to reinforce citizen behavior: sense of community; a sense of caring about "our" lake; peer pressure and social networks; and informal networking all appear to contribute to the spread of conservation messages among lakeshore property owners. One property owner commented that an informal lake group had rallied around the removal of a beaver dam. Individual property owners had previously had very different opinions and values, but that the issue brought people together about the condition of the lake.

While almost all respondents (99%) consider themselves to be stewards, some expressed uncertainty as to what to do. Many felt that they had inadequate resources/information to take the next step, and needed technical information and guidance to take action. Access to a natural resources professional and experiential learning-by-doing seemed to be a motivating factor, which resulted in neighbor-to-neighbor dissemination.

What civic engagement actions did property owners take as a result of the Lake Challenge?
The experiential, "hands-on" Itasca Lake Challenge to date has been piloted with a small number of lakes and residents. The activities have included buffers; citizen research (runoff); and training/citizen monitoring of frogs and fish. Frog workshop participants expressed sense of curiosity; some wanted to get their children interested in the natural world. Children "loved" the frog workshop. There was evidence from the key informant interviews that neighbors influenced each other to become engaged and to try new practices introduced by the Lake Challenge.

Conclusions

This section of the paper revisits the underlying questions posed by the NSBI team, and summarizes what was learned through the combined social research tools. A comparison of the first and second-round KAP study data has already been presented in this report. This section synthesizes the findings from the pre/post KAP studies, focus group (2009) and key informant interviews (2011).

To recap the "big picture" questions posed earlier:

- What motivates people to adopt and maintain a recommended practice? Why are some individuals inclined and others disinclined to adopt?
- Are the customary financial incentives offered by state and local agencies sustainable? Do people maintain the practice after the incentives end?
- How can education and outreach strategies be designed for better impact?
- How can we, as natural resources professionals, foster civic engagement?
- How do we know what impact the NSBI project has on property owners? What are the social outcomes?

These questions were explored in both the East Otter Tail and Itasca NSBI cases. The answers to these questions undoubtedly vary from one location to another, and depend upon demographics (age, education, income, etc), predominant cultural norms and many other factors. The social research methods used were customized specifically for Itasca County (especially the KAP studies), and the sample size was not representative. Therefore, caution must be used in drawing conclusions and inferring representativeness or broader patterns. Nevertheless, some insights were gained and are summarized here.

- **What motivates people to adopt and maintain a recommended practice? Why are some individuals inclined and others disinclined to adopt?**

What motivated people to participate in the NSBI and Lake Challenge?

Motivation is clearly related to sense of stewardship. Most property owners already had a buffer; were aware of its link to clear water; and liked what they saw. Those individuals influenced a few other neighbors to adopt, demonstrating that neighbor-to neighbor connections were important. One family had an erosion problem and wanted to do the "right thing." All five projects were based on sense of stewardship. The NSBI effort "piggybacked" on a popular weekly radio program about phenology by John Latimer on KAXE, with each delivering complementary environmental messages.

Were financial incentives the most important factor motivating participation and adoption?

Financial incentives were not effective in motivating behavior changes, especially when compared with other non-monetary incentives (labor, direct technical help). Evidence from KAP data, key informant interviews and focus groups served to verify this finding. Only 3% (*n* = 2) of respondents reported that for them the motivating factor was receiving a cost-share and/or assistance with their activity. The most important motivating factor was the opportunity to interact directly with a natural resources professional, and to gain technical advice, support and information.

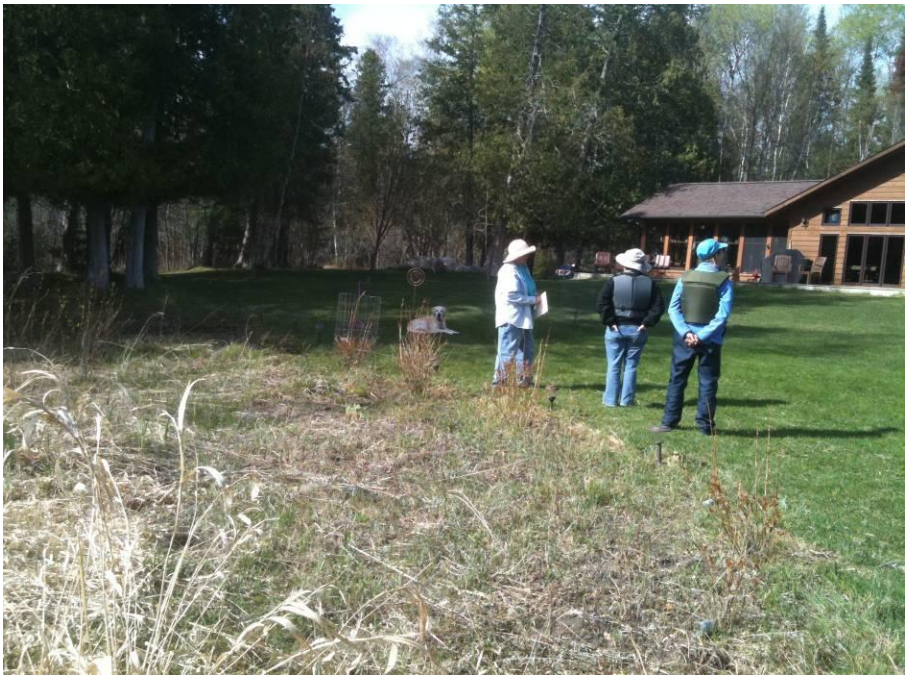


Photo 6: NSBI team members talking with a landowner on Johnson Lake (North)

The KAP study data found that financial incentives (such as a cost-share) ranked only as fifth in importance.

At the Marcell focus group (December 2009) participants said they needed a trained "warm body" to interact with, and to "tell us what to do on our lot." Participants expressed a need for somewhat customized information and recommendations. People said "we need more practical, hands-on information, and we need more informational resources" (*e.g.* lists of plants; plant sources; speaker at lake association meeting). Focus group participants were mostly retired people, possibly reflecting the demographic trends for recreational property in the county. Many already had printed information and literature, but this was not sufficient for them. The focus group reinforced and verified the results gained in the first-round KAP study.

Comments from the key informant interviews (June 2011) confirmed the importance and value to property owners of "high-touch" technical advice provided by a natural resources professional, as well as labor assistance:

- ✓ "We got good technical advice from our local specialist; they know what they're doing. Technical support was the most valuable aspect to us."

- ✓ "I really like the help with shoreline plans and plantings…I liked the technical advice that was customized for our lot. The cost-share helped, but the technical advice was much more important."

✓"Cost was not so important to us; we needed help with what to do and how to plan it."

✓"The most valuable part for us was labor and trees. And we actively seek technical support and information.

✓"What helped the most? Labor assistance."

● **Are the customary financial incentives offered by state and local agencies sustainable? Do people maintain the practice after the incentives end?**

There are many counties in Minnesota with limited resources. County staff often find themselves in a position of "doing more with less." Clearly, county staff must organize their time and resources to reach the maximum number of people, and collaborating with lakeshore associations, volunteers and peer-to-peer networks are important means of doing so. Budgetary resources that currently are dedicated to financial incentives (such as cost-shares) should be reconsidered because cost-shares were shown in this case to be ineffective.

While some property owners accepted financial incentives, there appear to be very few (if any) that adopted a shoreland-friendly practice only because of the cost-share. In this light, resources dedicated to cost-shares might be better utilized if invested in civic engagement and outreach efforts, and in trained natural resources professionals who can interact directly with property owners. The opportunity costs and overall cost-effectiveness of this recommendation should be further explored. The customary model of offering financial incentives to foster adoption should be questioned. Property owners will almost always accept a financial incentive, but they will readily adopt without it. Financial incentives may be an ineffective opportunity cost that could be used in a more efficacious way if invested in the mechanism shown to be more effective (direct contact with a natural resources professional, paired with peer-to-peer engagement and the Lake Challenge).

The higher-touch models tested in the NSBI have been shown to be more effective in terms of improving respondent knowledge. However, in Itasca County, not many property owners installed new buffers. In part, this is because the majority already had a naturalized shoreline. Property owners were receptive to "lake and wildlife friendly" activities, particularly those associated with the Itasca Lake Challenge, and participated in run-off research, frog and fish workshops, and other activities.

● **How can education and outreach strategies be designed according to local needs for better impact?**

The social science research methods used in the Itasca NSBI contributed to the design of incentives (especially non-financial incentives), and helped staff to customize education

messages and outreach efforts. The research findings put to rest some preconceived notions, including the assumption that people go to the DNR and MN Extension for primary sources of information. Rather it was learned that lake associations was the most commonly sought and preferred resource, with county, SWCD and state agencies well behind.

The social research also laid to rest the assumption that it is seasonal people from the metro area and snowbirds that are "bad" stewards, and that weekenders and "snowbirds" are causing environmental problems. In fact, weekenders also had a very strong stewardship ethic, and demonstrated somewhat higher knowledge and awareness of water quality. "Snowbirds" and weekenders also preferred the natural shoreline in higher numbers than permanent residents, which was ground-truthed by enumerators during the KAP field work. More weekenders than permanent residents were willing to consider a natural buffer.

The social research also contributed to the design of education and outreach strategies. As the existing level and content of respondent knowledge became known, specific gaps in respondent knowledge and awareness were identified. ***The social science research findings aided the team in customizing educational messages and craft them at an appropriate level***. It was also recognized that while people were generally knowledgeable and concerned, there was potential to enhance their knowledge about water quality, habitat and lake condition/trend. That extra "touch" enabled those property owners to take the next step and adopt new practices.

Eighty percent of NSBI KAP study respondents state that they already have a natural shoreline. Summarizing the outcomes of the high, medium and low touch strategies in Itasca County, the following patterns of adoption and maintenance took place:

> **"*High-touch*"** (frequent and direct on-site contact by shoreland specialists, with multiple shoreland activity options,buffer installations, multiple messengers, site visits, and peer to peer contact).
> Adoption rate (percentage that adopted a shoreland-friendly practice):
> Turtle Lake (204 parcels): 4%
> South Johnson Lake (63 parcels): 6%
>
> **"*Medium-touch*"** (less frequent contact, but with some site visits, and peer to peer contact).
> Adoption rate (percentage that adopted a shoreland-friendly practice):
> North Johnson (33 parcels): 27%
>
> **"*Low-touch*"** (one direct contact with the property owner, who received a newsletter only.
> Adoption rate (percentage that adopted a shoreland-friendly practice)

Mike Lake (5 parcels): 0
Horseshoe Lake (26 parcels): 0
Other “low-touch: lakes:
Wabana: (0)
Deer: 3 took the Lake Challenge
Pokegama: 4 took the Lake Challenge

Photo 7: Buffer installation on “meedium-touch” Johnson Lake (North)

The second-round KAP study provided additional information about adoption. Fifty-five owners installed shoreland plants or allowed native plants to grow back (55%); Twenty-one people raised the blade on their lawn mower (24%); fifty owners left the ice ridge in place (57%); five owners removed hard surfaces (6%); seven owners moved their fire rings away from the lake (8%); two installed a rain barrel or rain garden (2%); and a few attended workshops or conducted runoff research.

Photo 8: Simple materials and processes are used in run-off research on shoreland property owners' parcels

● **How can we, as natural resources professionals, foster civic engagement?**

This is an area of active discussion among many state and local agencies, and several are making strides with new models and approaches. This is especially the case for watershed planning and the TMDL process. ***The NSBI project has shown that the use of basic social science research tools, and application of resulting data, can contribute to the understanding of public preferences, concerns and needs.*** The KAP study data provided the NSBI team with social information that was useful in identifying constraints, motivating property owners, highlighting preferences (especially for treatments that people are likely to dislike), and selecting likely options and venues for public participation. The data helped to define the appearance and content of educational materials, and provided staff with insights into what property owners would most likely respond to. With a better understanding of the priorities and concerns of property owners,

the NSBI staff were able to change their engagement approach from a top-down conventional delivery system to be much more responsive, people-centered model.

In addition, social reinforcement and networking that is lake-focused (*e.g* "our" lake), and that features neighbor-to-neighbor activities and lake associations, was well-received by property owners in this Itasca County sample. Smaller lakes seem to have more social cohesiveness and possibly a greater sense of community (even North Johnson Lake, which has no lake association). ***Neighbor-to-neighbor (peer-to-peer) communication and group-centered activities may aid in the dissemination and adoption of lakeshore-friendly practices***. Directly engaging property owners and lake associations in knowledge dissemination was also an important step that helped to maximize scarce resources while fostering civic engagement.

Photo 9: Buffer installation on "medium-touch" North Johnson Lake

- **How do we know what impact the NSBI project has on property owners? What are the social outcomes?**

Actual outcomes have been measured in this project through comparison of pre/post data from the KAP study. The KAP data facilitated the evaluation of social outcomes, and documented actual changes in adoption, maintenance, and acceptability of shoreland-friendly practices. In general the social research aided in understanding of adoption patterns. The social research was insightful to staff, contributing hard data and evidence that resolved uncertainty and disproved some assumptions. It was determined to be worthwhile to undertake, and provided many insights

about how to best invest staff time to obtain better results. Staff agreed that social research enables natural resources professionals to become more effective in their efforts.

Recommendations

The following recommendations are offered based upon the experience of the NSBI in Itasca County.

1. Reorient shoreland education/outreach activities from a conventional, top-down service delivery model to a peer-based experiential one, where participants can become active learners.

2. Further research. There are a number of areas outlined in this report where further research would be useful. Much of this can be accomplished by key informant interviews or focus groups. Some of the areas where further research would be useful include perceptions of what constitutes a natural shoreline; and further work on how to foster neighbor-to-neighbor or peer-to-peer networking about buffer adoption.

3. Expand the Lake Challenge model, and adapt it for other settings in Minnesota. The NSBI experience has shown that property owners in Itasca and East Otter Tail counties differ considerably in perceptions, practices and inclinations. The Lake Challenge is a very useful framework for engagement, but it should not be a "one-size-fits-all" model. We are currently discussing modalities to scale-up and scale-out the Lake Challenge for broader application in Minnesota.

5. Invest in staffing. Property owners seem more receptive to adoption and maintenance of shoreland buffers when they have direct access to a natural resources professional. We recommend that those budgetary resources used for cost-shares instead be invested in shoreland professionals using a medium to high touch civic engagement strategy, as efficacy will be maximized.

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References

http://www.co.itasca.mn.us/Home/Departments/Environmental%20Services/Documents/Zoning%20Ordinance.pdf

Eckman, Karlyn. February 2012. *Native Shoreland Buffer Incentives (NSBI) Project Final Report – Social Research and Efficacy Outcomes*. Saint Paul: University of Minnesota Water Resources Center.

Eckman, Karlyn. August 2011. Literature Review Report: Adapting the Knowledge, Attitudes and Practices (KAP) Study Method for Natural Resources Projects in Minnesota. WRC Working paper. Saint Paul: University of Minnesota Water Resources Center.

Eckman, Karlyn. In preparation for submission to the *American Journal of Evaluation. Crossing Disciplinary Boundaries: Adapting the KAP Study Method to Evaluate Environmental Programs*.

Eckman, Karlyn. *Evaluating Outcomes of Water Resources Projects on Target Audiences.* Presentation given at the Watershed Partners Meeting, October 13 2010, at the Capitol Region Watershed District.

Eckman, Karlyn. *Evaluating Social Outcomes in Water Resources Projects: Lessons from Minnesota.* Presented at the 2010 UCOWR/NIWR Conference July 13 2010, Seattle.

Karlyn Eckman, Kimberly Nuckles, Erika Rivers and Valerie Were. *Adapting Interdisciplinary Methods to Evaluate Social Outcomes of Environmental Programs: Five Lessons From Minnesota.* Paper presented November 10 2010 at the American Evaluation Association 2010 Annual Conference, San Antonio, Texas.

Erika Rivers and Karlyn Eckman. *What Will it Take to Get You to Conserve? Lessons from the Native Shoreland Buffer Incentives Program Surveys*. Minnesota Waters Conference, October 2009.

Eckman, Karlyn and Rachel Walker, with Kimberly Nuckles and Lilao Bouapao. 2008. *Minnesota Non-point Source Pollution (NPS) Project Evaluation Practices: Survey Report.* Saint Paul: University of Minnesota Water Resources Center.

Annex 1: Comparison of First and Second Round Data

Annex 2: Itasca Lakes Challenge Worksheet

Annex 3: First-Round KAP Questionnaire

Annex 4: Second-Round KAP Questionnaire

Itasca County NSBI KAP Study
Comparison of First and Second Round Data

September 29 2011 KE DRAFT

Number of respondents who are the same in both data sets:

Question	Question Type	2009 All Responses	2011 All responses	% change	Comments
1. Name of respondent	Demo graphic	*n*= 225	*n* = 104		
2. Parcel number	Demo graphic	*n*=225	*n* = 104		
3. First letter of Lake and Fire Number	Demo graphic	*n*= 212	*n* = 104		
KAP 1 #4. Are you a year-round resident? **KAP 2 #6. Are you a year-round resident?**	Demo graphic	n=225 Y=32.4% (73) **No =67.6% (152)** Answered question: 225 Skipped: 0	*n* = 104 Yes: 35.0% (36) **No 65% (67)** Answered question: 103 Skipped question: 1		
33. On which Lake is this property located? **KAP 2 #4: Itasca County lake name on which you have property:**	Demo graphic	**Turtle Lake: 58.5% (131)** Johnson Lake North: 12.1% (27) Johnson Lake South: 17.0% (38) Horseshoe Lake: 10.3% (23) Mike Lake: 1.3% (3) Other: 0 Unknown: 0.9% (2) Answered question: 224 Skipped question: 1	**Turtle: 60.8% (62)** Johnson North: 5.9% (6) Johnson South: 22.5% (23) Horseshoe: 9.8% (10) Mike: 1.0% (1) Other: 0 Answered question: 102 Skipped question: 2		
KAP 2 #5: Property number (optional)	Demo graphic		Answered question: 87 Skipped question: 17		
5. If NO, When are you at your lakeshore property?	Demo graphic	All summer: 37.7% (59) **Weekends: 47.8% (75)** Holidays: 35% (55) Hunting season: 29.9% (47) Winter visits: 29.3% (46) **Other (e.g. renter): 47.1% (74)**	All summer: 30.2% (19) **Weekends: 66.7% (42)** Holidays: 50.8% (32) Hunting season: 44.4% (28) Winter visits: 52.4% (33) Other: 28.6% (18)		

		Answered question: 157 Skipped question: 68	Answered question: 63 Skipped question: 41		
6. Which of the following lake experiences do you enjoy?	P	Family events: 77.8% (175) Motorized activities: 74.2% (167) Non-motorized activities 89.8% (202) **Relaxing: 90.7% (204)** Gardening and yard care: 40.9% (92) Fishing, hunting or trapping: 89.3% (201) Other: 19.1% (43) Answered question: 225 Skipped: 0	Not asked		
7. During your ownership, have you noticed an increase, decrease or no change in the following on your lake:	K	See SM download	Not asked		
8. Where do you go for lake information?	P	**Lake association: 72.4% (163)** Neighbor: 60.4% (136) Internet: 41.3% (93) Local contractor: 14.2% (32) Realtor: 15.6% (35) Itasca County: 38.7% (87) Itasca SWCD: 23.6% (53) UM Extension: 14.2% (32) MN DNR: 63.1% (142) TV: 9.8% (22) Radio: 12.4% (28) I don't seek information: 5.8% (13) Other: 11.6% (26) Answered question: 225 Skipped:)	**Lake association: 73.5% (72)** Neighbor: 45.9% (45) Internet: 36.7% (36) Local contractor: 2.0% (2) Realtor: 9.2% (9) Itasca County: 36.7% (36) Itasca SWCD: 24.5% (24) UM Extension: 13.3% (13) MN DNR: 53.1% (52) TV: 7.1% (7) Radio: 6.1% (6) I don't seek information: 6.1% (6) Other: 6.1% (6) Answered question: 98 Skipped question: 6		
9. Does your lake have a lake association?	K	**Yes: 92.0% (207)** No: 6.2% (14) Don't know: 1.8% (4) Answered question: 225 Skipped: 0	Not asked		
10. Are you a member	P	**Yes: 86.5% (180)**	Not asked		

of the lake association?		No: 10.1% (21) Don't know: 3.4% (7) Why? 33 Answered question: 208 Skipped question: 17			
11. Do you attend lake association meetings or functions?	P	**Yes: 54.3% (113)** No: 45.7% (95) Answered question: 208 Skipped question: 17	Not asked		
12. Do you read the lake association newsletter?	P	**Yes: 90.4% (188)** No: 9.6% (20) Answered question: 208 Skipped question: 17	Not asked		
13. Do you associate with other property owners on your lake regularly?	P	**Yes: 82.2%** (185) No: 17.8% (40)	Not asked		
14. I'm going to read a list of characteristics. Tell me whether you think each is a sign of a healthy lake?	K	See SM download	See SM download		
15. I'm going to read you a list of characteristics. Tell me whether you think they might cause a lake to become unhealthy.	K	See SM download	See SM download		
16. I'm going to show you three photos of different kinds of shorelines. Tell me whether you like or dislike the following characteristics of each.	A	See SM download	Not asked		
17. Which of these shorelines do you prefer?	A	Lawn shoreline: 5.8% (13) Replanted shoreline: 19.6% (44) **Natural shoreline: 68.3% (153)**	Lawn shoreline: 7.0% (7) Replanted shoreline: 9.0 (9) **Natural shoreline: 78.0% (78)**		

		Answered question: 224 Skipped: 1	Answered question: 100 Skipped question: 4		
18. Here is a photo of a natural shoreline. Tell me if you agree or disagree with the following statements.	A	See SM download	Not asked		
19. Is there a natural shoreline ordinance for your lake?	K	Yes: 33.9% (76) No: 19.6% (44) **Don't know: 42% (94)** Don't care: 0.4% (1) Answered question: 224 Skipped: 1	Yes: 29.7% (30) No (skip to 16): 13.9% (14) **Don't know (skip to 16): 51.5% (52)** Don't care: 2.0% (2) Answered question: 101 Skipped question: 3		
20. If YES, do you know what the natural shoreline ordinance is for your lake?	K	See raw comments	**Yes: 51.1% (23)** No: 17.8% (8) Don't know: 31.1% (14		
21. How do you feel water clarity affects property values?	K	**Water clarity increases property values: 90.2% (202)** Clear water decreases property values: 0.4% (1) Water clarity does not affect property values: 5.4% (12) Don't know: 4.0% (11) Answered question: 224 Skipped: 1	**Clear water increases property values: 91.1% (82)** Clear water decreases property values: 1.1% (1) Water clarity does not affect property values: 1,1% (1) Don't know: 6.7% (6) Other: 3 Answered question: 90 Skipped question: 14		
22. Which of the following determine the appearance of your shoreline?	A	**Your own preference 88.4% (198)** Family preference: 47.8% (107) Neighborhood trends:13.8% (31) Your neighbor's suggestion: 8.5% (19) Your friend's suggestion: 8.9% (20) Master gardener recommendation: 8.9% (20) Another informed person: 23.2% (52) Don't know: 0.9% (2) Other: 26.8% (60) Answered question: 224 Skipped question: 1	Not asked		

23. Do you maintain your lawn? (if yes, skip to 25)	P	**Yes: 82.6% (185)** No: 9.8% (22) You don't have a lawn: 5.4% (12) Other: 2.2% (5) Answered question: 224 Skipped question: 1	Not asked		
24. (If yes on #23) Do you enjoy lawn maintenance?	A	**Yes: 48% (95)** No: 37.4% (74) Neutral/Don't know: 12.1% (24) Other: 2.5% (5) Answered question: 198 Skipped question: 27	Not asked		
25. If NO (on #23), who maintains your lawn?	P	Landscape professional: 8.3% (4) **Other: 91.7% (44)** Answered question: 48 Skipped question: 177	Not asked		
26. Do you maintain your own garden?	P	**Yes (skip to #27): 49.6% (111)** No (skip to #28): 24.1% (54) Don't have a garden (skip to #28): 20.5% (46) Other: 5.8% (13) Answered question: 224 Skipped question: 1	Not asked		
27. Do you enjoy gardening?	A	**Yes: 78.7%** No: 8.7% (13) Neutral/Don't know: 8.0% (12) Other: 4.7% (7) Answered question: 150 Skipped question: 75	Not asked		
28. Do you clean your shoreline (e.g. remove debris, weeds, etc. that wash in?)	P	**Yes: 60.3% (135)** No: 20.1% (45) Other: 19.6% (44) Answered question: 224 Skipped question: 1	Not asked		
29. How important is it to you to be a good steward of your property?	A	**Very important: 83.5% (187)** Important: 16.1% (36) Neutral: 0.4% (1) Not important: 0	**Very important: 80.2% (73)** Important: 16.5% (15) Neutral: 3.3% (3) Not important: 0		

		Answered question: 224 Skipped question: 1	Answered question: 91 Skipped question: 13		
KAP 2 #18: What does it mean to you to be a good steward of your property? CATA	A	Not asked	Maintain a neat appearance (mowed and trimmed): 44.4% (40) Maintain a healthy lawn: 5.6% (5) Maintain a natural appearance: 83.3% (75%) Maintain a beach area: 25.6% (23) Remove plants in the water: 7.8% (7) Have my property landscaped by a professional: 2.2% (2) Provide wildlife with food and shelter: 67.8% (61) **Check and maintain my septic system regularly: 86.7% (78)** Other: 7.8% (7) Answered question: 90 Skipped question: 14		
KAP 2 #19: In the last year, which of the following lake and wildlife-friendly activities have you engaged in? CATA	P	Not asked	Planted shoreland plants or allowed native plants to grow back: 54.5% (48) Raised the blade on my mower: 23.9% (21) **Left ice-ridge in place: 56.8% (50)** Let downed trees remain in water: 52.3% (46) Moved or removed hard surfaces: 5.7% (5) Modified my lake access to redirect or filter rainwater into the soil: *.0% (7) Move fire ring away from lake: 8.0% (7) Installed a rain barrel or rain garden: 2.3% (2) Conducted rainwater runoff research: 1.1% (1) Attend a frog workshop: 1.1% (1) None (skip to 24): 12.5% (11)		

			Other: 12.5% (11) Answered question: 88 Skipped question: 16		
KAP 2 # 20: In the last year, how much time did you spend on the activity(s) you chose? Please specify hours or days.	P	Not asked	**Hours: 72.5% (29)** Days: 27.5% (11) Please specify the number of hours or days: 60 responses Answered question: 40 Skipped question: 64 CHECK COMMENTS		
KAP 2 #21: What motivated you to engage in these activities? CATA	A	Not asked	A neighbor encouraged me: 4.4% (3) Inspired by a neighbor participating in a lake and wildlife-friendly activity: 5.9% (4) **Desire to be a good steward of the lake and wildlife: 82.4% (56)** I received cost share and /or assistance with the activity: 2.9% (2) Desire to learn more about the alke and wildlife: 22.1% (15) Information provided by the Itasca County lake Challenge: 13.2$ (9) Information provided by another source: 17.6% (12) CHECK SOURCES Other: CHECK COMMENTS: 27.9% (19) Answered question: 68 Skipped question: 36		
KAP 2 #22: Did other lakeshore property owners become interested in your lake and wildlife friendly activity?	A	Not asked	Yes: 14.9% (11) No: 33.8% (25) **Not sure: 51.4% (38)** Answered question: 74 Skipped question: 30		
KAP 2 #23: Do you feel that the activities you engaged in will make a difference in your lake's	A	Not asked	**Yes: 74.3% (55)** No (6.8%) (5) Not sure: 18.9% (14) Answered question: 74		

water and wildlife?			Skipped question: 30		
KAP 2 #24: Are you aware of the Itasca County lake Challenge?	K	Not asked	Yes (25%) (22) **No (skip to 30): 65.9% (58)** Not sure (skip to 30): 9.1% (8) Comment: 1 Answered question: 88 Skipped question: 16		
KAP 2 # 25: How did you find out about the Itasca County Lake Challenge?	K	Not asked	**My lake association: (65.2% (15)** My neighbor: 13.0 (3) The radio: 4.3% (1) The newspaper: 21.7% (5) Other CHECK COMMENTS: 26.1% (6) Answered question: 23 Skipped question: 81		
KAP 2 #26: Did you participate in the Lake Challenge?	P	Not asked	Yes: 30.8% (8) **No (skip to 29): 50% (13)** Not sure: 19.2% (5) Answered question: 26 Skipped question: 78		
KAP 2 #27: Would you have engaged in the lake and wildlife friendly activities without the Lake Chellenge?	A	Not asked	**Yes: 85% (17)** No: 15% (3) Not sure: 0 Comment: 1 CHECK COMMENT Answered question: 20 Skipped question: 84		
KAP 2 #28: Would you recommend taking the Lake Challenge to your friends or neighbors?	A	Not asked	**Yes: 77.8%** No: 5.6% (1) Not sure: 16.7% (3) Answered question: 18 Skipped question: 86		
KAP 2 #29: Why did you choose not to participate in the Itasca County lake Challenge? CATA	A	Not asked	**I already engage in healthy lakeshore practices 61.9% (13)** It might cost too much: 0% It might take too much time: 4.8% (1) I have physical limitations: 4.8% (1) I like the shoreline as it is and don't want to change it: 23.8% (5) I'm afraid the information might be reported and used against me: 0		

			Other CHECK COMMENTS: 33.3$ (7) Answered question: 21 Skipped question: 83		
30. There is a new program in Itasca County to assist lakeshore property owners to replant or maintain a natural shoreline. It is called the NSBI. Would you be interested in participating in this project?	A	Yes (skip to #32): 28.1% (63) Maybe (skip to #32): 28.1% (63) **No (skip to #31): 33.0% (74)** Don't know: 4.9% (9) Other: 6.7% (15) Answered question: 224 Skipped question: 1			
KAP 2 #30: The Itasca County Lake Challenge is a no-cost, no-obligation, no-strings-attached evaluation of your property to provide you with feedback on lake and wildlife friendly practices and resources. Would you consider taking the Lake Challenge in the future?	A		**Yes: 53% (44)** No: 16.9% (14) Not sure: 30.1 (25) Comment: 12 (CHECK COMMENTS) Answered question: 83 Skipped question: 21		
31. (Barriers/constraints) Which of the following are reasons not to replant or maintain a natural shoreline?	All	**You already have a natural shoreline: 79.6% (109)** It might cost too much: 5.1% (7) It might be too much work: 4.4% (6) It might take too much time: 7.3% (10) You don't know how to start: 5.8% (8) You have physical limitations: 5.1% (7) You like the look of a mowed yard: 6.6% (9) You like the shoreline as it is and don't want to change it: 19.7% (27)	Not asked		

		It will limit your view: 2.2% (3) Other: 16.8% (23) Answered question: 137 Skipped question: 88 (39%)			
32. Which of the following would help you to naturalize part of your shoreline?	A	**Detailed information and instructions on naturalizing my shoreline: 64.4% (96)** A "how-to" workshop on design, installation and maintenance of a natural shoreline: 47.7% (71) Technical assistance in designing the shoreline and selecting and ordering plants: 51% (76) Labor assistance to prepare, install and maintain the natural shoreline: 36.9% (55) Having input into the design: 47.7% (71) Recognition as a lake steward: 18.1% (27) Financial help: 42.3% (63) Don't know: 8.7% (13) Other: 33.6% (50) Answered question: 149 Skipped question: 76 (34%)	Not asked		
34 . How was this survey information obtained? **KAP 2 #31: How was this survey data collected?**		Door-to-door: 48.7% (109) **Mailed: 51.3% (115)** Answered question: 224 Skipped question: 1	Door to door: 20% (1) **Mailed: 80% (4)** Other: 0 Answered question: 5 Skipped question: 99 CHECK WITH MARY ON THESE FIGURES		
35. Survey year		**2009: 99.6% (222)** 2010: 0.4% (1) Answered question: 223 Skipped question: 2			
36. 2009 Survey		**June 2009 (door-to-door): 48.2% (108)**			

completion date		**July 2009 (mail): 48.2 (108)** October 2009 (Johnson South only): 3.6%: 8			

The Itasca County Lake Challenge

Lake _____ **Property Owner**_____ **Property #**_____ **Property Width**_____**ft.** **Date**_____

Step 1: Take a closer look at your site. **Step 2:** Note items circled in these two grey columns. **Step 3:** Consider the corresponding *Challenge(s)* in this column. **Step 4:** Go for it!

In the Water From the water's edge lakeward	Circle your responses (1)			If you circle items in these two columns, consider a *Challenge* (2)	(2)		**In the Water *Challenge* Menu** (3)	**Lake and Human Benefits**	**Relative Cost**	**Time-Effort**	***I'll take this Challenge**** (4)
What is the width of the recreation area where aquatic plants have been removed?	No water use	About 10 feet	About 20 feet	About 30 feet	More than 40 feet	⇨	**A Smaller Footprint** Where aquatic plants were removed, allow them to grow back.	Fish, frogs, and other wildlife use plants for nesting, cover and food. Aquatic plants protect your shore from erosion. Native aquatic plants can minimize invasive plants.	0	None	
							Go Fish! Replant aquatic plants (MN DNR no-fee permit required).		$-$$	Some to Moderate	**
Are there downed trees ("fish sticks") in the water?	Abundant fish sticks		Some fish sticks		No fish sticks	⇨	**Fish Sticks** Let fallen trees and branches remain along the shore and in the water.	Fish, turtles, water birds and mammals use downed trees for shelter, resting, hunting and food.	0	None	
How many accessories (docks+boats+other) are in the water?	0	1-2	3	4	More than 4	⇨	**Ships Ahoy!** Store on land the water accessories you don't often use.	Increase fish habitat (otherwise limited by water accessories).	0	None	

Along the Shore From water's edge to 15 ft landward of the high water line	Circle your responses			If you circle items in these two columns, consider a *Challenge*			**Along the Shore *Challenge* Menu**	**Lake and Human Benefits**	**Relative Cost**	**Time-Effort**	***I'll take this Challenge****
What width of your shoreline has been altered for lake access, view, recreation, other?	Little or none	About 10 feet	About 20 feet	About 30 feet	More than 40 feet	⇨	**A Smaller Footprint** Reduce this area to a smaller footprint with the following option(s).	80 percent of wildlife in MN depends upon a shoreland of native plants for their survival.	0 - $$$	None to Moderate	**
Within this area: a. Describe the tree/shrub cover.	Dense	Many	Some	A few	None	⇨	**Hedge Your Edge** Plant native trees and shrubs along your shore.	Deep roots of native plants resist erosion from ice and wave action. Native plants also filter soil and pollutants from rainwater run-off.	$ - $$	Moderate	**
b. What part is lawn or sand blanket?	None	About one quarter	About half	About three quarters	All or nearly all	⇨	**Green Armor Your Shore** Plant native grasses and grass-like plants.		$ - $$	Moderate	**
c. What part is mowed or weed-whipped?	None	Only enough for a path	Some	Most	All	⇨	**Bye-Bye Geese** Stop mowing and weed-whipping. Geese avoid tall plants where predators may be lurking.	1.5 pounds of poop per goose per day will not land on your lawn and wash into the lake.	Saves you $$	None	
d. What part is armored with rock?	None	About one quarter	About half	About three quarters	All or nearly all	⇨	**Soft Rock** Install native plants into existing rock.	Plants soften the appearance, filter run-off and provide wildlife habitat.	$ - $$	Moderate	**
e. What other hard surfaces exist? (Circle all that exist.)	None		Other?	Boat(s) Sidewalk Dirt path	Road Building Patio	⇨	**Stop the Drop** Remove unnecessary hard surfaces and replant or install pervious surfaces, berms, etc. to capture and filter rainwater.	Reduce rainwater run-off (carrying soil, nutrients and other pollutants) entering the lake by over 80%, and reduce algae in the lake, too!	$ - $$	Moderate	**
f. Is there a fire ring or area?	No				Yes	⇨	**Ring of Fire** Move fires and fire rings away from the lake (25 to 50 feet is recommended).	Reduce the phosphorous- and nitrogen-rich ashes carried into the lake by rainwater and wind.	0	Some	
g. What portion of the shore has an ice ridge?	All – Ridge not breeched	Part – Ridge not breeched	None – Natural slope	All/Part – Ridge breeched	All – Ridge regraded	⇨	**No Water Over This Dam** Leave ice ridge in place and create an access over it. Plant a rain garden behind it for added beauty and filter.	An ice ridge across your entire shoreline can capture and filter up to 100% of soil, nutrients and other pollutants in rainwater run-off.	0	None	
h. What length of shoreline is eroding? (continued on back side)	Little to none	About 10 feet	About 20 feet	About 30 feet	More than 40 feet	⇨	**Shore Up Your Shore** Consult with Itasca SWCD to determine which erosion control method is best for your	For a 100-ft lot, this can reduce the soil entering the lake by about 360 pounds per year and result in about	$ - $$$	Some to Great	**

							shore. Permit may be required.	90 pounds less algae in the lake.				
Closer to Home 50 feet landward of the high water line (excluding the Along the Shore area)	Circle your responses			If you circle items in these two columns, consider a *Challenge*		⇨	**Closer to Home *Challenge* Menu**	**Lake and Human Benefits**	**Relative Cost**	**Time-Effort**	***I'll take this Challenge****	
What average width of this upland area has been altered for access, recreation, view, other?	Little to none	About 10 feet	About 20 feet	About 30 feet	More than 40 feet	⇨	**A Smaller Footprint** Reduce this area to a smaller footprint with the following option(s).	80 percent of wildlife in MN depends upon a shoreland of native plants for their survival.	0 - $$$	None to Great	**	
In this area a. Describe the amount of trees.	Dense	Many	Some	A few	None	⇨	**Super Filter** Plant native trees, shrubs, ferns, vines, flowers, grasses and/or grass-like plants. They filter run-off, minimize erosion and provide food, shelter and nesting sites for songbirds and other wildlife.	For a 100-ft lot, replacing lawn with a 50-ft forested filter can reduce the soil entering the lake by about 360 pounds per year and result in about 90 pounds less algae in the lake.	$ - $$$	Some to Great	**	
b. Describe the amount of shrubs.	Dense	Many	Some	A few	None	⇨						
c. What part is covered by lawn or bare soil?	None	About one quarter	About half	About three quarters	All or nearly all	⇨						
d. What part is mowed or weed-whipped?	None	Only enough for a path	Some	Most	All	⇨	**No Mow-Let It Grow!** Stop mowing and allow plants to grow back.	Taller grasses will better filter run-off from your property. A longer lawn will also better tolerate stress and limit weeds.	Saves you $300/acre/yr	None		
							Set Your Sights High Raise the blade on your mower to 3 inches.		0	None		
e. Is erosion or runoff related to the following? (Circle all that apply.)	Little or None	Stairs Lift	Other?	Sidewalk Path Steps	Road Building Patio/Deck Wall	⇨	**Step it Up!** Modify your foot access to filter rather than funnel rainwater directly to the lake.	Reduce rainwater run-off (as well as the soil, nutrients and other pollutants it carries) entering the lake by over 80%. This will reduce the algae in the lake, too!	0 - $$$	Some to Great	**	
							Get with the Flow! Modify hard surfaces with water bar, berm, etc. to redirect rainwater to filter into soil rather than flow directly into lake.		0 - $$$	Some to Great	**	
							Who'll Stop the Rain? Install rain barrel, rain garden, drip trench, etc. to capture and use rainwater.		$ - $$$	Some to Great	**	

Extra Credit *Challenges*	(Circle those that interest you.)				***I'll take this Challenge****
Pass It On!	**Help a neighbor with a *Challenge* Project** Plant a filter, make a water bar, survey for frogs, etc.	**Lake Cache** Establish a control points around the lake for youth activity	**Tell several neighbors about the *Lake Challenge*** Host a boat tour or back yard party	**Start a "Welcome Aboard " Program** Tell new lake neighbors about the *Lake Challenge*	

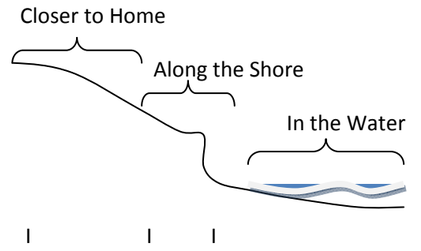
To enroll or seek more information on the

Itasca Lake Challenge,

Contact: Mary Blickenderfer, University of MN Extension

blick002@umn.edu 218-244-7996

Family Fun	**Shoreland Scientist** See what's in your rainwater run-off! *Equipment and training provided. Time: 15 min following each rain event.* **	**Fish Count** *Training provided. Time: 1 hour per year*	**Frog and Toad Count** *Training provided. Time: 1 hour per year*	**Beachcomber Program** Monitor your shore for aquatic invasive plants. *Training provided. Time: 5-15 minutes several times per year*	



**** or indicate if you've already met this challenge***

***** Cost-share available through June 2011***

Notes:

1. Introductory statement

I am a student at XXX and/or I am a property owner from XXX Lake. We are doing a survey of lakeshore property owners in Itasca County. We are conducting the survey in collaboration with the Itasca County, Itasca Team up for Clean Waters Partnership, the University of Minnesota, Minnesota Extension and Minnesota DNR. The purpose of the survey is to learn your opinions about lakeshore property on your Lake. The results will be used to design a shoreline education and outreach program for Itasca County. The survey will take about 20 minutes to complete. Are you interested in participating in the survey?

(If yes, skip to last paragraph.)

(If no, give letter and questionnaire, and SASE to owner.) We would appreciate it if a member of your household over 18 years old would complete this survey and mail it in the SASE by June 27.

Your responses will be completely confidential. Your name will not be used in any report. The County and University o Minnesota will conduct the analysis and will keep all data protected and confidential.

2. Background Information

1. Name of respondent:

2. Address:

3. Phone number:

4. Are you a year-round resident?

- ◯ Yes (If YES, skip to question #6)
- ◯ No (If NO, continue to question #5)

5. (If NO option) When are you at your lakeshore property?

- ☐ All summer
- ☐ Weekends
- ☐ Holidays
- ☐ Hunting season
- ☐ Winter visits
- ☐ Other (please specify)

6. Which of the following lake experiences do you enjoy? Indicate all that apply.

- ☐ Family events (picnics, BBQs, volleyball, partying, etc.)
- ☐ Motorized activities (boating, jet-skiing, snowmobiling, etc.)
- ☐ Non-motorized activities (canoeing, swimming, viewing nature)
- ☐ Relaxing (reading, napping, etc.)
- ☐ Gardening and yard care
- ☐ Fishing, hunting or trapping
- ☐ Other (please specify)

7. Have you noticed an increase, decrease, or no change in the following on your lake?

	Increase	Decrease	No change	Don't know
Quality of fishing	◯	◯	◯	◯
Water clarity	◯	◯	◯	◯
Amount of aquatic plants	◯	◯	◯	◯
Amount of shoreline plants	◯	◯	◯	◯
Wildlife	◯	◯	◯	◯

Other (please specify)

3. Info sources and Social Networks

8. To which of the following sources do you go for lake information? Indicate all that apply.

- [ ] Lake association
- [ ] Neighbor
- [ ] Internet
- [ ] Septic service
- [ ] Realtor
- [ ] Itasca County Ecological Services
- [ ] Itasca Soil and Water Conservation District
- [ ] U of MN Extension
- [ ] Minnesota DNR
- [ ] TV
- [ ] Radio
- [ ] I don't seek information
- [ ] Other (please specify)

9. Does your lake have a lake association?

- ◯ Yes
- ◯ No
- ◯ Don't know

10. Are you a member of the lake association?

- ◯ Yes
- ◯ No
- ◯ Don't know

Why?

11. Do you attend lake association meetings or functions?

- ◯ Yes
- ◯ No

If yes, how many meetings or functions per year?

12. Do you read the lake association newsletter?

- ◯ Yes
- ◯ No

If yes, how many per year?

13. Do you associate with other property owners on your lake regularly?

- ◯ Yes
- ◯ No

If yes, how many?

4. Knowledge

14. Tell me whether you think the following is a sign of a healthy lake. Please respond with Yes, No, Maybe or Don't know.

	Yes	No	Maybe	Don't know
Clear water (can see a long way down)	◯	◯	◯	◯
Good fishing	◯	◯	◯	◯
Native plants in the water	◯	◯	◯	◯
Wildlife (loons, frogs, waterfowl, etc.)	◯	◯	◯	◯
Ice ridges along the shore	◯	◯	◯	◯
Invertebrates (snails, clams, crayfish, etc.)	◯	◯	◯	◯
Fallen trees in the lake	◯	◯	◯	◯
Algae bloom	◯	◯	◯	◯
Insects (dragonflies, water bugs, etc.)	◯	◯	◯	◯

Other (please specify)

15. Tell me whether you think the following might cause a lake to become unhealthy. Please respond with Yes, No, Maybe or Don't know.

	Yes	No	Maybe	Don't know
Applying fertilizer to my lawn	◯	◯	◯	◯
Campfires on the beach	◯	◯	◯	◯
Applying herbicides or pesticides in the yard	◯	◯	◯	◯
Bathing in the lake	◯	◯	◯	◯
Removing plants in the water	◯	◯	◯	◯
Removing plants along the shore	◯	◯	◯	◯
Geese on the lawn	◯	◯	◯	◯
Docks	◯	◯	◯	◯
Mowing along the shoreline	◯	◯	◯	◯
Rainwater from roof or driveway	◯	◯	◯	◯
Pet waste in the yard	◯	◯	◯	◯
Leaky septic system	◯	◯	◯	◯
Foreign aquatic species like Eurasian watermilfoil, zebra mussels or rusty crayfish	◯	◯	◯	◯
Disposing of lawn clippings and leaves into the lake	◯	◯	◯	◯

16. Are you concerned that any of the above might affect your lake?

- ◯ Yes, all of the above
- ◯ Yes, some of the above (please list them)
- ◯ Maybe (please list them)
- ◯ No
- ◯ Don't know

List here:

5. Buffers

17. Here are three photos of shoreline landscapes. Please comment whether you like, dislike or have no opinion about the characteristics of each.

	Lawn shoreline	Replanted shoreline	Natural shoreline
General appearance			
View from house			
Owner privacy			
Lake access			
Potential maintenance associated with this shoreline			
How I use the shoreline (sun bathing, toddlers playing)			

18. (Point to the natural shoreline photo) For each of the following statements about this shoreline, tell me if you Agree, Disagree or Don't know.

	Agree	Disagree	Don't know
It is good for wildlife such as birds, frogs and butterflies	◯	◯	◯
It contributes to algae blooms	◯	◯	◯
It keeps the geese off the lawn	◯	◯	◯
It contributes to clean water	◯	◯	◯
It contributes to better fishing	◯	◯	◯
It harbors ticks and mosquitoes	◯	◯	◯
It prevents shoreline erosion	◯	◯	◯
It is not beneficial	◯	◯	◯

The results of this survey will help us develop a program that promotes natural and replanted shorelines in order to maintain healthy lakes in Itasca County.

19. (Point to the replanted shoreline photo) Do you know if someone has replanted a shoreline on this lake?

◯ Yes, (If YES, describe this shoreline and where it is located)

◯ No

◯ Don't know

Description and location of shoreline:

20. Is there a natural shoreline ordinance for your lake?

- ◯ Yes (If Yes, continue to question #21)
- ◯ No (Skip to question #22)
- ◯ Don't know (Skip to question #22)
- ◯ Don't care (Skip to question #22)
- ◯ Other (please specify)

21. (If YES) Do you know what the natural shoreline ordinance is for your lake?

6. Attitudes about property values

22. How do you feel water clarity affects property values?

- ◯ Clear water increases property values
- ◯ Clear water decreases property values
- ◯ Does not affect property values
- ◯ Don't know
- ◯ Other (please specify)

23. Which type of lakeshore property would you pay more for?

- ◯ Natural
- ◯ Replanted
- ◯ Lawn
- ◯ Beach
- ◯ Rock
- ◯ Don't know
- ◯ Other (please specify)

24. Which type of lakeshore would bring the best resale price?

- ◯ Natural
- ◯ Replanted
- ◯ Beach
- ◯ Rock
- ◯ Don't know
- ◯ Other (please specify)

7. Shoreline Maintenance

25. Who determines the appearance of your shoreline? Indicate all that apply.

- [ ] My own preference
- [ ] Family preference
- [ ] Neighborhood trends
- [ ] My neighbor's suggestion
- [ ] My friend's suggestion
- [ ] Master Gardener recommendation
- [ ] Another informed person
- [ ] Don't know
- [ ] Other (please specify)

26. Do you maintain your own lawn?

- ◯ Yes (If YES, then continue to question # 27)
- ◯ No (If NO, then skip to question #28)
- ◯ I don't have a lawn
- ◯ Other (please specify)

27. (If YES) Do you enjoy lawn maintenance? (Answer and skip to question #29)

- ◯ Yes
- ◯ No
- ◯ Neutral/Don't know
- ◯ Other (please specify)

28. (If NO) Who maintains your lawn?

- [ ] Landscape professional
- [ ] Other (please specify)

29. Do you maintain your own garden?

- ◯ Yes (If YES, then continue to question #30)
- ◯ No (If NO, then skip to question #31)
- ◯ I don't have a garden
- ◯ Other (please specify)

30. Do you enjoy gardening?

- ◯ Yes
- ◯ No
- ◯ Neutral/Don't know
- ◯ Other (please specify)

31. Do you clean your shoreline (e.g., remove debris, weeds, etc. that wash in)?

- ◯ Yes
- ◯ No
- ◯ Other (please specify)

32. How important is it to you to be a good steward of your property?

- ◯ Very important
- ◯ Important
- ◯ Neutral
- ◯ Not important

8. NSBI Buffer Program

33. There is a new program in Itasca County to assist lakeshore property owners to replant or maintain a natural shoreline. Would you be interested in participating in this project?

- ◯ Yes (If YES, skip to question #35)
- ◯ Maybe (If MAYBE, skip to question #35)
- ◯ No (If NO, continue to question #34)
- ◯ Don't know (please specify)
- ◯ Other (please specify)

Comments:

34. (If NO) Which of the following are reasons not to replant or maintain a natural buffer? Indicate all that apply.

- ☐ I already have a natural buffer
- ☐ It might cost too much
- ☐ It might be too much work
- ☐ It might take too much time
- ☐ I don't know how to start
- ☐ I have physical limitations
- ☐ I like the look of a mowed yard
- ☐ I like the shoreline as it is and don't want to change it
- ☐ It will limit my view
- ☐ Other (please specify)

35. (If YES or MAYBE) What would help you to naturalize part of your shoreline? Indicate all that apply.

- [ ] Detailed information and instructions on naturalizing my shoreline
- [ ] A "how-to" workshop on design, installation and maintenance of a natural shoreline
- [ ] Technical assistance in designing the shoreline and selecting and ordering plants
- [ ] Labor assistance to prepare, install and maintain the natural shoreline
- [ ] Providing my input to the design
- [ ] Recognition as a lake steward
- [ ] Financial reward
- [ ] Don't know
- [ ] Other (please specify)

9. Concluding statement

Thank you so much for your time. Here is a flier with contact information about the survey. The results will be availab through your lake association.

Itasca County KAP #2

Hi, I am_____and this is_____. We are volunteers with MN Extension.

We are doing a follow-up survey to a survey done in 2009 reassess people's opinions about lakeshore property on this lake.

The survey will take about 15 minutes to do. Are you interested in taking in the survey?

Your responses will be completely confidential. Your name will not be used in any report.
There is no right or wrong answer.

Itasca County KAP #2

1. Name of respondent:

2. Address:

3. Phone Number:

4. Itasca County lake name on which you have property:

- ◯ Turtle
- ◯ Johnson (North)
- ◯ Johnson (South)
- ◯ Horseshoe
- ◯ Mike
- ◯ Other (please specify)

5. Property Number (Optional):

6. Are you a year-round resident?

- ◯ Yes (If YES, skip to question #8)
- ◯ No

7. When are you at your lakeshore property?

- [ ] All summer
- [ ] Weekends
- [ ] Holidays
- [ ] Hunting season
- [ ] Winter visits
- [ ] Other (please specify; e.g., renter)

8. Where do you go for lake information? I'll read you a list of possible places.

- [ ] Lake association
- [ ] Neighbor
- [ ] Internet
- [ ] Local contractor
- [ ] Realtor
- [ ] Itasca County
- [ ] Itasca Soil and Water Conservation District
- [ ] U of MN Extension
- [ ] Minnesota DNR
- [ ] TV
- [ ] Radio
- [ ] I don't seek information
- [ ] Other (please specify)

9. For the following list of characteristics, please indicate whether you think each is a sign of healthy lake.

	Yes	No	Maybe	Don't know
Clear water (can see a long way down)	◯	◯	◯	◯
Poor fishing	◯	◯	◯	◯
Native plants in the water	◯	◯	◯	◯
Wildlife (loons, frogs, waterfowl, etc.)	◯	◯	◯	◯
Ice ridges along the shore	◯	◯	◯	◯
Snails, clams, crayfish, etc.	◯	◯	◯	◯
Fallen trees in the lake	◯	◯	◯	◯
Algae in the water	◯	◯	◯	◯
Insects (dragonflies, water bugs, etc.)	◯	◯	◯	◯

Other (please specify)

10. For the following list of characteristics, please indicate whether you think they may cause a lake to become unhealthy.

	Yes	No	Maybe	Don't know
Lawn fertilizer	◯	◯	◯	◯
Plants along the shoreline	◯	◯	◯	◯
Geese on the lawn	◯	◯	◯	◯
Roads to the lake (boat launch)	◯	◯	◯	◯
Mowed shorelines	◯	◯	◯	◯
Septic systems	◯	◯	◯	◯
Leaves and lawn clippings in the lake	◯	◯	◯	◯
Algae in the water	◯	◯	◯	◯

Other/comments

11. Below are three photos of different kinds of shorelines. Please indicate whether you like, dislike, or are neutral towards the following characteristics.

	Lawn shoreline	Replanted shoreline	Natural shoreline
General appearance			
View from house			
Privacy			
Lake access			
Potential maintenance associated with this shoreline			
Use of the shoreline for enjoyment			

Other/comments (please specify)

12. Which of these three shorelines do you prefer?

- ◯ Lawn shoreline
- ◯ Replanted shoreline
- ◯ Natural shoreline
- ◯ Other

Why?

13. Here is a photo of a natural shoreline. Tell me if you Agree or Disagree with the following statements.

	Agree	Disagree	Don't know
It is good for wildlife such as birds, frogs and butterflies	◯	◯	◯
It contributes to algae in the water	◯	◯	◯
It attracts geese	◯	◯	◯
It contributes to clean water	◯	◯	◯
It contributes to better fishing	◯	◯	◯
It harbors ticks and mosquitoes	◯	◯	◯
It contributes to shoreline erosion	◯	◯	◯
It is not beneficial	◯	◯	◯

Comment:

14. Is there a natural shoreline ordinance for your lake?

- ◯ Yes
- ◯ No (Skip to question 16)
- ◯ Don't know (Skip to question 16)
- ◯ Don't care (Skip to question 16)
- ◯ Other (please specify)

15. (If YES) Do you know what the natural shoreline ordinance is for your lake?

- ◯ Yes
- ◯ No
- ◯ Don't know

If YES, please describe:

16. How do you feel water clarity affects property values?

- ◯ Clear water increases property values
- ◯ Clear water decreases property values
- ◯ Water clarity does not affect property values
- ◯ Don't know

Other/comments

17. How important is it to you to be a good steward of your property?

- ◯ Very important
- ◯ Important
- ◯ Neutral
- ◯ Not important

Comment:

18. What does it mean to you to be a good steward of your property? Check all that apply.

- ☐ Maintain a neat appearance (mowed and trimmed)
- ☐ Maintain a healthy lawn (apply water, fertilizer, and herbicide regularly; lush, green, and no weeds)
- ☐ Maintain a natural appearance (wild; native plants)
- ☐ Maintain a beach area
- ☐ Remove plants in the water
- ☐ Have my property landscaped by a professional
- ☐ Provide wildlife with food and shelter (native plants, feeders, bird/bat houses, etc.)
- ☐ Check and maintain my septic system regularly
- ☐ Other (please specify)

19. In the last year, which of the following lake- and wildlife-friendly activities have you engaged in? Check all that apply.

- [ ] Planted shoreland plants or allowed native plants to grow back
- [ ] Raised the blade on my mower to its highest setting
- [ ] Left ice-ridge in place (did not breech or remove)
- [ ] Let downed trees remain in water
- [ ] Moved or removed hard surfaces (boats, boat house, sidewalk, patio, and/or road) from shoreland area
- [ ] Modified my lake access to redirect and/or filter rainwater into the soil
- [ ] Moved my fire ring away from lake
- [ ] Installed a rain barrel or rain garden
- [ ] Conducted rainwater run-off research
- [ ] Attend a frog workshop and conducted frog survey
- [ ] None (skip to #24)
- [ ] Other (please specify)

20. In the last year, how much time did you spend on the activity(s) you chose? (please specify hours or days)

- ◯ hours
- ◯ days

Please specify number of hours or days:

21. What motivated you to engage in these activities? Check all that apply.

- [ ] A neighbor encouraged me
- [ ] Inspired by a neighbor participating in a lake- and wildlife-friendly activity
- [ ] Desire to be a good steward of the lake and wildlife
- [ ] I received cost-share and/or assistance with the activity
- [ ] Desire to learn more about the lake and wildlife
- [ ] Information provided by the Itasca County Lake Challenge
- [ ] Information provided by another source (please specify):
- [ ] Other (please specify)

22. Did other lakeshore property owners become interested in your lake- and wildlife-friendly activity?

- ◯ Yes
- ◯ No
- ◯ Not sure

Comment:

23. Do you feel that the activities you engaged in will make a difference in your lake's water and wildlife?

- ◯ Yes
- ◯ No
- ◯ Not sure

Comment:

24. Are you aware of the Itasca County Lake Challenge?

- ◯ Yes
- ◯ No (skip to question 30)
- ◯ Not sure (skip to question 30)

Comment:

25. How did you find out about the Itasca County Lake Challenge? Check all that apply.

- ☐ My lake association
- ☐ My neighbor
- ☐ The radio
- ☐ The newspaper
- ☐ Other (please specify)

26. Did you participate in the Lake Challenge?

- ◯ Yes
- ◯ No (skip to question 29)
- ◯ Not sure (skip to question 29)

Comment:

27. Would you have engaged in lake- and wildlife-friendly activities without the Lake Challenge?

- ◯ Yes
- ◯ No
- ◯ Not sure

Comment:

28. Would you recommend taking the Lake Challenge to your friends or neighbors?

- ◯ Yes
- ◯ No
- ◯ Not sure

Comment:

Skip to Thank You! statement at the end of this survey.

29. Why did you choose not to participate in the Itasca County Lake Challenge? Check all that apply.

- [ ] I already engage in healthy lakeshore practices
- [ ] It might cost too much
- [ ] It might take too much time
- [ ] I have physical limitations
- [ ] I like the shoreline as it is and don't want to change it
- [ ] I'm afraid the information might be reported and used against me
- [ ] Other (please specify)

30. The Itasca County Lake Challenge is a no-cost, no-obligation, no-strings-attached evaluation of your property to provide you with feedback on lake- and wildlife-friendly practices and resources. Would you consider taking the Lake Challenge in the future?

- ◯ Yes
- ◯ No
- ◯ Not sure

Comment:

Thank you so much for taking the time to complete this survey. The results will be available through you lake association. If you are interested in participating in the Lake Challenge Program on your lake, please make sure you have provided your contact information at the beginning of this survey, or contact Mary Blickenderfer (218-244-7996 or blick002@umn.edu).

31. How was this survey data collected?

- ◯ Enumerators visited the property owner IN PERSON to conduct the survey.
- ◯ The property owner completed the MAIL-IN survey and returned it.
- ◯ Other (please specify)