Itasca Native Shoreland Buffer Incentives Program:

The Itasca County Lake Challenge

Final Report to the Itasca Water Legacy Partnership

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Submitted by:

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Itasca County

Itasca Water Legacy Partnership

Itasca County Natural Shoreland Buffer Incentives Program

PRELIMINARY RESEARCH

Knowledge, Attitudes and Practices (KAP) SURVEY

Under the leadership of Dr. Karlyn Eckman, U of MN, a KAP Survey was completed by two thirds of the shoreland property owners with 10K or greater structural improvements to property (340 total population size; 225 surveys total completed).

A summary of KAP results and interpretation (Dr. Karlyn Eckman, U of MN; Michael Goldberg, Action Media; and Mary Blickenderfer, U of MN Extension):

1) *Target the seasonal property owners. (Note: This does not mean ignoring the year-round residents, but all communications should be planned and timed with this population in mind.)*. Nearly two-thirds of property owners on these lakes are seasonal. They are more likely than year round residents to prefer a natural shoreline (74% compared to 61%) and more likely to participate in the NSBI program (60% compared to 45%).

2) *Invest in shoreland owner education.* Lakeshore property owners are about as likely to seek lake information from their neighbor (63%) as from state and county resources (64% each). We need to equip these landowners with the marketing "tools" to effectively reach their neighbors, as well as make sure they have accurate and up-to-date lake information. Landowners appear to be well-informed on the lake environment, but lack information on the county shoreland ordinances.

3) *The lake associations are effective avenues of communication.* Lake associations were the most common place for property owners to go for lake information (73%). 88% of property owners are members of their lake association and 90% of the members read the newsletter.

4) *The motivating message to the shoreland property owners should be that they can make their shorelines even better and it is in everyone's best interest to do so (emphasize the lake community rather than the individual).* Nearly all landowners (99%) want to be good stewards of their property. Many property owners indicated they already have a natural shoreline (33%) and are not interested in the buffer program, but some would like to know what else they can do to be good stewards.

5) *We need a variety of information and services to help owners with natural buffer installation (i.e., overcome existing barriers to owners taking action).* Landowners requested (listed here in order of importance) detailed information and instructions, technical assistance, how-to workshop, financial assistance and labor assistance.

BOAT-BY SHORELAND ASSESSMENT

Volunteers and natural resource professionals conducted boat-by assessments of the shoreline on all five research lakes in order to become familiar with typical shoreland practices and trends on each lake and to ground-truth the KAP survey results indicating a high percentage of existing natural shorelines.

In addition, these field assessments documented certain features of shoreland development that channel significant stormwater run-off to the lake – even on well-buffered sites, as well as other shoreland practices that affect lake quality and wildlife habitat. These features were addressed in the development of the Itasca Lake Challenge (buffer) Program:

- numerous private boat accesses funnel upland run-off directly to lake
- foot paths funnel upland run-off directly to lake
- when present, ice ridges are often breached, also serving to funnel upland run-off directly into lake
- numerous fire rings close to water are potential source of nutrients via run-off and air-borne ash
- excessive corridor clearing of vegetation decreases wildlife habitat and increases erosion
- numerous water accessories (and associated foot/watercraft traffic) along shore degrade the natural buffer, redirect run-off and appear to increase shoreline erosion

FOCUS GROUP - Celebrate Your Lake (12-9-09)

Twenty landowner attendees representing three of the five lakes (plus two county officials) learned the results of the KAP survey and were asked to consider these along with their particular lake community to create a vision of the buffer program.

Summary of focus group participant comments:

What would success look like on your lake?

- Majority of owners **buy into/**agree to the program
- Owners would be encouraged to take **action**
- Owner **attitudes** of mowed shorelines would change
- Existing buffer zoning ordinances would be **enforced**
- Increased **knowledge** of natural shorelines communicated via lake association to LA members, non-participating LA members and non-LA members

How would success be celebrated and rewarded? What incentives might work?

- Emphasize that almost ***everyone*** **can do** ***something*** **to improve** ("we can do better")
- And "everyone is doing it" (in vogue; "norm")

- **Recognition**
- Tax or other monetary incentive

What resources do you need?

- "**Personal touch**" site visits and assessment of property by trained experts
- Train shoreland owners to be "**local experts**" that can consult and provide information
- (also those listed in KAP survey)

ITASCA NSBI COMMUNICATION PLAN

Action Media reviewed the survey results and created the following communication media and materials strategy:

1) Define what constitutes participation in building the buffer program on the part of the individual landowners, and set goals for each of the lakes as a community-wide objective.
2) Develop "how-to" communications. Review of existing materials indicates a need for simpler, more strategically presented print materials.
3) Build an image bank showing different kinds of shorelines at different stages of restoration.
4) Be in all issues of the targeted Lake Associations' newsletters.
5) Recruit and train peer messengers committed to making direct contact with landowners.
6) Directly contact target property owners with personalized letters, inviting their participation in the program, and continuing with site visits.
7) Develop signage specific to each lake (with LCCMR logo).
8) Present the project to the public.
9) Use local newspapers and radio (including interviews of those participating in program).

SUMMARY: PRELIMINARY RESEARCH

Key components and strategies for developing a natural buffer incentives program:

- **An informed lake community will promote, support and recognize "lake stewards". Focus will be on what WE can do as a group for our lake.**
- **Professionals will develop a marketing and implementation plan and train lake associations on how to use it.**
- **Lake associations will orchestrate the program marketing, communication, education, information, and services (the "clearing house").**
- **Trained "local experts" will provide one-on-one consultation, engage/train new participants (i.e., the "personal touch") and complete record-keeping related to these activities. Local natural resource professionals will train and provide continued support to these "local experts".**
- **The buffer program will be holistic. It will involve landowners not only in maintaining or establishing a buffer of native plants, but also correcting run-off and erosion issues within the buffer area, as well as citizen research to document and better understand the benefits and complexities of buffers (e.g., run-off monitoring, frog survey, fish survey, bird survey, AIS monitoring).**
- **All landowners can engage in the program. The program will offer a variety of options to suit owner interests, abilities, pocketbook, and site needs; ranging from "entry level", awareness-building options to encourage buy-in of the lesser inclined to "higher level" buffer installations.**
- **With greater knowledge and awareness of the shoreland ordinances and the dynamics of buffers, trained landowners will be better equipped to intervene prior to a buffer violation or damage and enlist these potential offenders in the program.**

DEVELOPING AN EFFECTIVE NATURAL SHORELAND BUFFER PROGRAM THAT WILL LAST

Overview

Life experiences, knowledge, financial means, physical status and other factors determine where a shoreland owner falls on the continuum between buffer-disinclined (e.g., "I like my shoreline the way it is and will never change it!") and buffer-inclined (e.g., "I've read the Lakescaping book, viewed Restore Your Shore, attended an Extension shoreland landscaping workshop and restored my shoreline five years ago."). As indicated by the first Itasca KAP survey and confirmed by the boat-by assessment, approximately two-thirds of the lake owners on the five Itasca NSBI research lakes are already buffer-inclined – they prefer a natural shoreline, most of these owners also have a natural buffer along their shore and understand the benefits to the lake and wildlife of maintaining their shoreline in its natural state. To date, a limited number of shoreland owners have restored native plants to their shore with the help of existing resources and strategies. As a result, the primary goal of the Itasca NSBI program – also the most cost-effective and with greatest benefit to the lake environment – became preservation of existing natural shorelines, with the secondary goal of revegetation of developed shorelines, and a tertiary goal to ensure that new owners and future generations maintain the natural shorelines.

This incentive program explored ways of reaching and rewarding those owners already with natural shorelines, and equip them with the knowledge and resources to promote lake-friendly practices among their peers. It also explored alternative strategies of reaching and motivating the minority of shoreland property owners (approximately one-third) that fall in the "less-inclined" portion of the continuum to adopt lake-friendly practices.

Development of The Itasca County Lake Challenge Program was based upon the results of the first KAP survey, the shoreland owner focus group and boat-by assessments; recommendations from Action Media (marketing consultants); and research on social science/behavioral change. The Program was field tested in 2010 and 2011 and is being revised. It relies primarily on lake associations to promote the program, trained Master Gardeners to consult with shoreland owners on their shoreland practices using an educational site evaluation sheet developed for this program (see attached PDF of The Itasca Lake Challenge), trained local resource professionals to provide additional technical assistance and educational opportunities, and a coordinator.

The Target Audience

Based upon their analysis of the first KAP survey, Action Media (10/1/09 communication) recommended that "the primary audience should be seasonal property owners, with year-round property owners as the secondary audience," since nearly two thirds of the property owners on the five research lakes are seasonal, indicated slightly greater preference for a natural shoreline and are slightly more inclined to participate in the NSBI program than permanent residents. In other words, all NSBI communications should be to all shoreland property owners, with consideration given to ensure that seasonal residents are reached in a timely and appropriate manner (e.g., during weekends in the summer).

Communication and Marketing:

In Phase I of Itasca NSBI, Action Media recommended "…the primary medium of communication should be direct contact from trained lakeshore property owners speaking as peers (to shoreland owners on the five research lakes)… In Phase II, the primary audience is lakeshore property owners throughout the County. The key media will be newspapers, radio, and lake shore associations (with featured articles and interviews with the 'early adopters' participating in the Itasca County Lake Challenge)," (Action Media 10/2/09 communication and personal communication). Similarly, McKenzie-Mohr (1999) recommends enlisting the citizen "early adopters" – now local experts – to assist in motivating the disinclined.

The Itasca County Lake Challenge worksheet – an educational tool

The Itasca County Lake Challenge worksheet (Attachment: Lake Challenge) was developed, incorporating background information from the preliminary research, using a combination of the above-mentioned strategies and information and emphasizing a variety of shoreland owner activities that:

- directly affect lake-related things owners care about (e.g., fishing, wildlife viewing, hunting, swimming and water sports were listed in KAP #1 survey),
- reflect the range of financial and physical means and time constraints of shoreland owners and
- demonstrate their lake stewardship (also in KAP #1 survey).

It is intended to be a non-threatening, non-judgmental, educational tool to evaluate a shoreland property, describe multiple actions from which a property owner can chose to improve their shoreline, state the results of these actions in terms of lake- or wildlife-benefit, indicate relative level of cost and time to complete activity, and provide an opportunity for public commitment to taking action or indicate that they are already engaging in the activity. It includes a wide variety of lake-friendly activities for the less-inclined, children and family (future shoreland owers!) and those that already maintain a healthy buffer and want to do more to protect the lake. Its intended use is to structure the peer-peer site visit and maintain a level of consistency in the message, inspire property owners to take action on their own shoreland, as well as facilitate neighbor-to-neighbor exchange of lake-friendly ideas and information.

A three-ring binder of images illustrating each of the challenges and showing before/after shots of buffer projects was created. Trained volunteers used these images while conducting site visits with property owners.

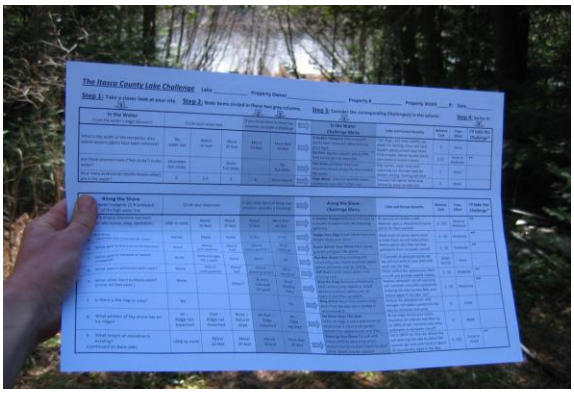

Image 1. The Itasca County Lake Challenge worksheet (Attachment: Lake Challenge).

By the end of the 2010 field season, it was apparent that a web version of the Lake Challenge was needed for the following reasons:

- facilitate frequent updates to the Challenges
- facilitate addition and update of support materials - images, resources, contacts
- facilitate record-keeping and Challenge participant tracking and follow-up
- participants can update Challenges over time without additional site visits
- easy access to current Challenge worksheet and images by peers for site visits
- provides an alternative delivery medium
- readily available to property owners not on the NSBI research lakes
- notification of upcoming workshops and trainings and other news

The web version is in the developmental stage, with the base format created and worksheet information entered, but images, resources and additional features yet to be added.

PROGRAM DELIVERY

In 2010 eight college students and peers were trained in communications, shoreland ecology, and use of the Itasca County Lake Challenge worksheet. In 2011, five Master Gardeners attended a similar training. In addition, the Master Gardeners assisted with an actual shoreland site visit to complete their training.

These trained peers either contacted residents on the research lakes (2010) or responded to site visit requests (2011) to schedule the site visits. Teams of two peers conducted the site visits, entered the resulting data and responses, responded to site visit follow-up requests and communicated this information to the coordinator.

Shoreland Buffer Challenge/ Installations

Of the sixteen property owners that participated in The Itasca Lake Challenge in 2010 (an additional 6 site visits were conducted in 2011), ten expressed interest in installing a buffer (one of the Challenge options), but only 5 property owners elected to install a buffer or enhance their existing buffer in 2011 - three owners on Johnson (south) Lake, one on Johnson (north) Lake, and one on Turtle Lake (see Table 1 for summary of projects).

Table 1. 2011 NSBI Planting Projects

Property owners	Lake	Planting Zone: planting goal	Area (sq ft)	# Plants	Materials	Est. Cost
Owner A	Johnson (south)	Aquatic : establish aquatic species	1,000	50 plants	5 biologs 15 e. anchors 100' rope	1,325
		Wet transition: establish flood tolerant wetland species	2,000	900 plants		1,350
		Upland: add understory (shrubs), enhance groundlayer	1,000	12 shrubs 300 forbs		690
		Est. Project Total				**$3,365**
Owner B	Johnson (south)	Upland: add overstory and understory plants to existing ground cover (trees,shrubs)	6,000	5 trees 60 shrubs	Shredded wood mulch	1,800
		Est. Project Total				**$1,800**
Owner C	Johnson (south)	Aquatic: add aquatic plants to existing sparse bullrush	1,000	50 plants		500
		Wet transition: plant additional wetland plants in bare patches along shore	1,000	4 tree/shrub 450 plants		675
		Est. Project Total				**$1,175**
Owner D	Turtle	Rock riprap: vegetate	400	40 plants 20 live stake		60
		Upland: plant to control erosion and allow for dock/lift winterstorage	2,000	18 shrubs 800 plants seed	Coir blanket stakes	1545
		Est. Project Total				**1,605**
Owner E	Johnson (north)	Upland: extend existing buffer to capture runoff	600	3 shrubs 450 plants	mulch	735
		Est. Project Total				**$735**
ESTIMATED 5-PROJECT TOTAL FOR PLANTS AND MATERIALS						**$8,680**

A local landscape designer (graduate of the MN Extension Shoreland Landscape Design workshop series) was contracted to assist Itasca SWCD and U of MN Extension design and oversee the installation of the five projects. U of MN Extension coordinated the aquatic plant permit application for Owner A and

Owner C sites, the other three buffer projects were installed above the ordinary high water level (OHWL) and did not require a permit. The U of MN Extension and local plant nursery coordinated the purchase and delivery of native plants for the project. U of MN Extension also coordinated the purchase and delivery of erosion control materials. The MCC crew was not available to provide labor for the plantings. Instead, eight college/high school students were contracted and trained to provide the labor.

The five projects were installed the week of June 13, 2011.

Images 1 and 2. Owner A project areas: upland (left) needing understory, and shoreline (right) where aquatic and wetland plants will be installed.

Image 3. Students installing plants in wet transition area at Owner A property.

Images 4 and 5. Owner B property south (above) and north (right) of stairs before planting. Note: riprap previously installed to protect from wave/ice erosion at toe of slope. Erosion still occurring in sparsely vegetated upland area.

Images 6 and 7. Owner B property – planting completed.

Image 8. Owner C property before planting. Goal of this project is to extend the existing buffer along the shore to capture run-off from lawn and construction upslope. Existing turf along shore is weak and eroding.

Images 9 and 10. Owner C property after planting.

The three year-round resident owners watered their projects throughout the summer 2011. The seasonal owners made other arrangements for watering their newly installed projects (neighbor and water timer) to insure that the plants became well-established. U of MN Extension will visit the sites in 2012 and provide further instruction on site maintenance.

Summary of Buffer Establishment

The property owners were very pleased with the shoreland plantings on their properties. Four of these owners were interviewed during the second KAP survey. When asked to comment on what made them decide to participate in the program they indicated that involving them in the design process, the customized design and coordination of their project by "experts" and providing labor for planting were key reasons. At three of the properties, owners had physical limitations and could not have installed the projects themselves. Owners of the other two properties were "weekenders" and would otherwise not have installed the projects due to time restrictions.

These demonstration projects provided tangible examples of shoreland buffers and the owners of these properties, having had a positive and successful experience, promoted buffers with other shoreland property owners. Additional property owners requesting buffer plantings later in the summer 2011 could not be fulfilled due to the state shutdown. At least one of these requests was the direct result of observing the installation on the Flaherty property and the owners wanting their shore evaluated by the Lake Challenge program and a similar buffer planting on their property. Other requests were generated by The Itasca Lake Challenge Phase II marketing.

These projects provided experience for local landscape professionals in shoreland landscaping, increasing local capacity to provide these services to property owners in the future. Two professionals, a landscape designer/contractor and nursery /landscape business owner, had previously attended the U of MN Extension's Shoreland Landscaping workshop series, but requested additional on-the-ground experience before feeling confident in tackling buffer projects on their own. These two professionals worked together to coordinate these diverse plantings, with oversight by Itasca SWCD and U of MN Extension, and will continue to provide these services for future shoreland plantings.

The 5-project cost of plants and materials ($6,681) was under the estimated cost ($8,680) primarily due to finding a less costly source of plant materials (see Table 2).

Table 2. Cost summary for five Itasca NSBI buffer projects

Item	Cost
Materials (coil logs, erosion blanket, stakes)	828.27
Native trees and shrubs	793.00
Native herbaceous plants	5,059.78
Labor	2,400.00
Project design, coordination and labor	2,000.00
TOTAL	**$11,081.05**

Citizen Engagement Challenges

Citizen engagement activities (including rain run-off, frog/toad survey and fish survey) were "Extra Credit" options on the Itasca County Lake Challenge worksheet. Several lakeshore property owners on the research lakes, as well as other citizens, engaged in these challenges. This challenge provided property owners the opportunity to engage in an "entry level" activity that could lead to greater understanding of lake environment changes and trends, as well as increase the likelihood they will engage in future lake-friendly, "higher level" activities (McKenzie-Mohr 1999).

Citizen Research: Rainwater Run-off Study

Adapted from existing methodology, the protocol for citizen run-off collection was developed and implemented. This was field tested in 2010 at two pre-buffer shoreland properties (on Turtle and Johnson Lakes) and two control properties. These were modified and re-installed in 2011on one control property and after the buffers were planted on the two shorelands. Run-off collection was discontinued at the Turtle Lake site shortly after the buffer was installed, due to the need to water the site daily to insure survival of the newly installed plants.

College students and natural resource professional installed at least two run-off collectors at each property – one or more collector(s) in "area(s) of concern" (e.g., lawn, an eroding path, road access, below fire ring, etc.) and the other in a nearby undisturbed area (the control). A collector consists of lawn edging defining the collection area, preventing collection of run-off from outside the area and funneling run-off within the area to the inner PVC tube sunk into the ground to just below grade (see images below).

Image 1. Collectors were constructed from materials purchased at the local hardware store: (clockwise starting at upper left) lawn edging, 4" PVC with cap, (12" ruler for scale), 3.5" PVC with cap, screen to keep critters out, connector (used to funnel water into PVC tube) and rain gauge. Total material cost per collector: about $15.

Image 2. Assembled collector ready to be put into ground.

Image 3. College student installs collector on lawn.

Image 4. BSU student intern measures slope of the collection area.

A rain gauge was placed along the edge of the collection area to determine the rainfall at that collector. If the collector site was forested, a second rain gauge was placed in a nearby unforested part of the property to measure actual rainfall, also making it possible to calculate the amount of rain intercepted by the forest. The student/professional installers recorded site and owner information, trained the owners on collection protocol and how to complete the data sheets and made arrangements for timely delivery of samples to the water lab for analysis.

Itasca Community College Water Lab (certified) analyzed the samples for total nitrogen, total phosphorus, and total sediment. After the first round of samples was processed in 2010, modifications were made to the protocol. Specifically, property owners needed to collect the run-off samples within 36 hours and freeze them immediately. At the Johnson Lake site the resident neighbors collected the mid-week run-off samples. At the other sites, only samples collected while the owners were at the cabin were used. The Water Lab revised their analysis protocol to include ALL sediment and not just suspended sediment, as they had done in the first round. The Johnson Lake shoreland owners suggested several improvements to the collectors, several of which were made prior to the 2011 season.

Run-off analysis

[The data from the first year of the study (2010) are in, but the analysis of 2011 samples is not yet completed. The Bemidji State College student intern overseeing this project will analyze the data and provide a report on this run-off study for her internship as soon as the data are available.]

Efficacy of citizen research

Shoreland property owners at both collection sites were extremely cooperative and interested to see the results of the analysis. Even before the lab report was completed in 2010, the owners had already

noted differences in the rainwater quantities and sediment loads collected from the differently managed areas of their property and had formulated several hypotheses explaining the differences. The very observant neighbors on Johnson Lake noted that during a light rain, the quantities of water and sediment from the turf area were greater than those collected from the forested area, but that the reverse was true in a heavy downpour.

Since the installations at these two pilot shoreland sites and two control sites, three other curious shoreland owners (from Turtle, Deer and Little Bass Lakes in Itasca County), having heard about the study, would like the collectors installed on their properties to measure run-off from a road they intend to remove (How much sediment and phosphorous from the road is entering the lake? And how much after road removal and restoration?), groundcover of moss (Is it effective in protecting ground from erosion or should I plant something else there?) and a fire ring (Just how many pollutants are washing from my fire ring and how far back do I need to move it from the lake to prevent this from happening?). These owners are clearly making the connection between their actions on their properties affecting what pollutants they contribute to their lake via run-off – and are motivated to do something about it!

McKenzie-Mohr, D. and W. Smith. 1999. *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*. http://www.cbsm.com/pages/guide/preface/.

Citizen Research: Minnesota Frog and Toad Survey

Adapted from the national survey, the existing Minnesota Frog and Toad Call Survey (run by MN DNR) was selected as one measure (indicator) of biodiversity and shoreland health. Green frogs, in particular, are sensitive to changes in terrestrial and aquatic habitats, and their populations decline with removal of understory vegetation (Elias and Meyer, 2003). Other frog and toad species are affected by development of their critical habitat as well. The survey is typically used by citizen volunteers and natural resource professionals to monitor frog and populations throughout Minnesota. It is an ideal citizen engagement activity for this program with about ten frog/toad species to study and only ten calls to recognize. Everyone sees and hears frogs and toads while at the lake during the growing season. Adults enjoy recognizing the frog calls, especially the first spring peepers, while kids chase after them in the near-shore areas. But most importantly, participants learn the important role shoreland habitat plays in the life cycles of frogs, toads and other amphibians. As one participant of the 2011 frog workshop stated, “I’ve left my shore alone while all the neighbors have developed theirs. The neighborhood kids are always over at my house looking for fish, frogs…anything in the shallow water. I’m sure it’s because I left all the weeds grow there. Anyways, it’s about time I and the kids learn more about what’s out there.”

Introduction to Frog and Toad Calls (and their ecology) - the first of two workshops for shoreland owners on NSBI research lakes (but also open to the general public) was conducted on June 11, 2011 at the Forest History Center in Grand Rapids, MN. Shoreland property owners that selected the frog and toad call survey on the Itasca County Lake Challenge were contacted about the workshop via email or phone. Announcements were sent to lake associations, the local radio station and newspaper inviting the

general public as well. The workshop instructors (from Itasca Community College) have taught a similar class several times in the area and it is usually well attended.

Seven youth and eight adults attended the workshop. During the classroom portion of the workshop frog/toad ecology was emphasized, clearly stating the link between shoreland plants/water quality and frog/toad populations. The outdoor portion of the workshop was spent looking for frogs in their habitat and listening for their calls.

Image 5. Frog and Toad Call workshop attendees search for amphibians during outdoor portion of workshop held at Forest History Center, Grand Rapids, MN.

Image 6. If you can't find frogs, explore their critical habitat!

Attendees of the first workshop will be notified of the second workshop (2012) and encouraged to attend before they start frog monitoring. During the second workshop participants will review the frog calls and the times of the summer they are heard, plus receive training by MN DNR wildlife specialist on how to conduct a frog survey and complete the Minnesota Frog and Toad Call survey forms. They will receive a notebook with survey instructions, data forms, and a place to keep copies of their completed surveys and other observations for future reference.

Frog and Toad Call Survey Results

With only one of two training workshops completed. Participants are not yet prepared to conduct the surveys. Feedback on the first workshop was enthusiastic in general, with two requests to provide the training in the northern part of the county and offer it earlier in the year when more frog calls can be heard.

ELIAS, J. E. AND M. W. MEYER. 2003. Comparisons of undeveloped and developed shorelands, northern Wisconsin and recommendations for restoration. Wetlands, 23:800-816.

Citizen Research: Fish Survey

A MN DNR Fisheries employee, Cindy Tomcko, with assistance of MN Extension, is developing a workshop and a citizen fish survey protocol to be used for the Itasca County Lake Challenge. Similar to the frog and toad survey workshop, there will be a classroom component that covers fish habitat and ecology and emphasizes the importance of shoreland vegetation to provide critical habitat for young fish-of –the-year and other shallow water fish species. The field component will feature invertebrates (fish food) that were captured the night before with a "night light" and training on how to conduct a shallow water fish survey. Survey protocols were field tested in July 2011. This workshop is planned for mid-July 2012.

Image 7. Near-shore critical fish habitat at potential fish workshop site.

Image 8. "Night light" with invertebrates that are captured in the stainless bowl at the bottom.

Second-Round (2011) KAP Study Results
(to evaluate the efficacy of the Itasca County Lake Challenge)
from Final Report by Dr. Karlyn Eckman, U of MN – Water Resources Center

Sampling issues

The main difference between the pre and post KAP surveys was the sample size. 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, and was followed by a mailed survey (particularly to seasonal owners), resulting in another 155 questionnaires returned for a total of 224. 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).

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. A tabular comparison of the question formats and corresponding data is included as an Annex. This section of the report summarizes the data obtained during the second-round survey.

● Of the 104 respondents in 2011, one quarter (25%) had heard of the Lakes Challenge, nine percent were unsure and the remainder had not heard of the Lake Challenge. Of those that had heard of the Challenge, 65% had learned about it from their lake association; 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. For those who chose not to participate, 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. Eighty-five percent of respondents stated that they would have engaged in lake and wildlife-friendly activities without the Lake Challenge. ***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 and three individuals responded negatively. 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.

Discussion

This section of the paper discusses the underlying questions posed by the NSBI team, and summarizes what was learned through the combined social research tools. 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?

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.

How was the social research data used?

The social research data was used to design and refine education and outreach strategies that were tailored to expressed local needs. We learned that "high touch," community-building and peer-to-peer incentives seem to work better, in the context of the Itasca County sample. Their strong preference is not for a financial incentive but rather direct, in-person interaction. However, not enough time has passed to say with certainty that a high-touch strategy is more effective than a medium or low-touch approach.

We learned that a strong environmental stewardship is nearly universal, and that that stewardship binds lakeshore property owners together socially. We learned that there are existing social networks present on most lakes, 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.).

What did people know?

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 have some 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. Experiential learning-by-doing seemed to be a motivating factor, which resulted in neighbor-to-neighbor dissemination.

<u>Were financial incentives the most important factor motivating participation and adoption?</u> Clearly not, and the evidence from KAP data, key informant interviews and focus groups served to verify this finding. The most important motivating factor was the opportunity to interact directly with a trained natural resources professional, and to gain technical advice, support and information. Financial incentives (such as a cost-share) ranked only as fifth in importance. Comments from the 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."

At the Marcel focus group (December 2009) participants said they need 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.

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.

What civic engagement actions did property owners take as a result of the Lake Challenge?
The 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 a 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

In sum, 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, County 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. This enabled the team to customize 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.

Finally, comparison of the KAP study data facilitated the evaluation of social outcomes, and 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.

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