KAWISHIWI WATERSHED PROTECTION PROJECT

AQUATIC INVASIVE SPECIES SURVEY REPORT

November 2012

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On behalf of:



White Iron Chain of Lakes Association

Kawishiwi Watershed Protection Project Minnesota Pollution Control Agency Lake County Soil and Water Conservation District



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Although the survey team retains no interest in this report and its contents, acknowledgement of its work is greatly appreciated.

Citation: Mason, W. and Mason, C. (2012) "Kawishiwi Watershed Protection Project Aquatic Invasive Species Survey Report." This report is on the web at http://kawishiwiwatershed.com/ais

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EXECUTIVE SUMMARY

A survey to determine the awareness, attitudes, knowledge, and behaviors with regard to aquatic invasive species (AIS) was mailed in late summer 2012 to all 2210 individual parcel taxpayers in the Kawishiwi Watershed. Residential parcel taxpayers (32.0% of returns), seasonal parcel taxpayers (57.7%) and rural vacant land parcel taxpayers (10.3%) returned 810 usable surveys. Over two-thirds of the returns came from people who have lakeshore parcels.

The first question of the survey asked: "To what extent do you feel each of the following is a problem in the Kawishiwi Watershed?" Reponses provide a comparison about the extent of the problem of AIS as compared to fifteen other issues of possible concern to taxpayers in the watershed. The respondents indicated the following were the major big or medium problems:

- Water level fluctuation (43.7%)
- Aquatic invasive species (34.0%)
- Trees lost to disease (30.8%)
- Response of public officials (29.5%)

The responses to the issue of non-iron mining (non-ferrous or sulfide mining) are divided with the results virtually evenly split between those who find it a big problem and those who consider it not a problem, with many fewer responses in the middle.

Almost 88% of the respondents to the survey own one or more watercraft and 80.7% used watercraft during the 2012 boating season. The primary motorized watercraft owned is a fishing boat with motor (29.3% of all owners). Half (50.0%) of the watercraft owned are either canoes or kayaks, owned by 43.5% of the respondents. At least three fourths of the respondents who reported use of waterbodies used their watercraft exclusively within one waterbody or contiguous (connected) waterbodies.

Respondents to the survey rated it important or very important to take action against all types of AIS. The range was from a high of 93.9% for zebra/quagga mussels to 80.4% for curly pondweed. Eighty-four percent (84.1%) considered rusty crayfish, the most prevalent AIS in the Kawishiwi Watershed, important or somewhat important against which to take action.

The most important information sources about AIS in the view of the respondents are:

- Water access signs (selected by 14.4% of respondents to the question)
- Newspapers and magazines (12.7% selected)
- Television ads (11.5% selected)
- Regulation books (11.4% selected)

TV news was mentioned voluntarily by 10 respondents, more than responses to many of the provided sources, indicating that it is also an important information source.

Over 90% of the respondents always or usually drain water from bilges, bait buckets, and live wells. The same high percentage also inspect their watercraft for aquatic plants and remove them if found. Moreover, over 80% always or usually dispose of live bait in the trash. However rinsing watercraft with garden hoses and washing with high-pressure hot water are actions taken always or usually less than one-third of the time.

- Drain water from bilge, bait and live wells (92.9%)
- Inspect and remove aquatic plants (92.6%)
- Dispose of unwanted live bait in trash (81.9%)
- Dry everything for at least five days (62.2%)
- Rinse watercraft with garden hose (33.1%)
- Wash watercraft with high-pressure hot water (11.4%)

The top reason for not taking an action against AIS was that the watercraft was not transported to another waterbody (61% of respondents to the question). No available boat washing equipment was selected by 15.3% of respondents corresponding to the low response above regarding rinsing the watercraft with a garden hose and washing the watercraft with high-pressure hot water.

Forty-five or 7.2% of the respondents reported they were not in waterbodies having aquatic invasive species. However, 152 respondents (18.8% of all survey respondents) reported visiting waterbodies outside of the Kawishiwi Watershed infested with AIS. Of these respondents, 80 (9.9%) reported visiting waters infested with other types of AIS than rusty crayfish. The difference between self-reporting and actual visits might indicate that people are not aware of when they are visiting waters infested with AIS. Informing watercraft users about infested waters may be as important as educating them about the potential problems of AIS.

However, of the 152 respondents reporting visits to AIS infected waterbodies outside of the watershed, only 6 did not take one of the actions listed above against the spread of AIS.

The respondents thought personal motivations would be very or somewhat effective (desire to keep AIS out of the waters and personal responsibility) followed closely by the threat of fines. Many of the other choices also clustered near the top.

- It is their desire to keep AIS out of our lakes and rivers (92.7%)
- They feel it is their personal responsibility; their actions make a difference (91.1%)
- They see other watercraft users doing it (90.1%)
- Friends, relatives or acquaintances told them to do it (89.5%)
- Threat of fines that would cost them money (88.4%)
- Laws or regulations that prevent transport of AIS affect their actions (85.6%)
- Threat of enforcement action by conservation officers (85.5%)

Personal desire and actions were rated as slightly more effective than fines, regulations and enforcement.

The Stop Aquatic Hitchhikers! message was seen by 85.5% of the respondents. Over 96% say that they will take action always or usually in the future to prevent the spread of AIS.

The respondents had a good knowledge of the new Minnesota regulations aimed at preventing the spread of AIS. Except for the regulations about using crayfish and smelt, over half of the respondents answered the questions about the regulations correctly. The need to use water from home to reuse minnows and the transportation of game fish are regulations about which people need more education.

Greater educational efforts are also needed so people are more aware of how AIS affect biodiversity and spread disease as nearly 20% of respondents indicated they did not know if AIS affected these problems.

The survey generated many comments. Among the issues raised are:

- Whether introductions by the Department of Natural Resources of wild rice and small mouth bass should be considered AIS; also questions were raised about the spread of AIS by animals and birds.
- The need for more and focused education about AIS, especially for people using canoes and visitors from outside of the watershed, including mailings to taxpayers who do not live in the watershed and working with resort owners to police their customers. Seeing the damage done by AIS to other lakes is also viewed as effective, as is person to person contact; using the radio to spread the word, and programs for K-12 students.
- The need for better and more supervision and inspections at boat ramps and other access points
- The provision of boat washing equipment

- Suggestions for licensing watercraft to use [or not use] AIS infected waters; including more widespread rental of boats on infected lakes instead of bringing personal watercraft for use
- Recommendations regarding research about what works elsewhere

There were also those who commented that it was too late in the game to prevent the spread of AIS; it is just a matter of time before they spread further.

Finally, we received comments commending lake associations, including the White Iron Chain of Lakes Association, for their efforts in educating people about AIS and its spread.

Watson and Charlene Mason KWPP AIS survey team November 2012 This page left blank intentionally.

REPORT

Introduction

The Kawishiwi Watershed Protection Project (KWPP) is a 30 month joint project of the Minnesota Pollution Control Agency (MPCA), the Lake County Board, the Lake County Soil and Water Conservation District, and the White Iron Chain of Lakes Association (WICOLA). The overarching goal of the first phase of a two-phase project is to collect and compile watershed data necessary for the development of a comprehensive watershed management plan that will maintain or improve water quality for the Kawishiwi Watershed. The result will be an implementation plan leading to a second phase of the project.

One of the objectives of this phase of the project is to determine the vulnerability of the watershed to aquatic invasive species (AIS). As Doug Jensen of the University of Minnesota Sea Grant Program said in a proposal for the Great Lakes Sea Grant Network, "AIS prevention starts with behavior. People are pathways for AIS introduction and spread." Thus, one of the activities of the KWPP is to "Conduct [a] survey to determine awareness, attitudes, knowledge and behaviors relating to AIS."

This report provides the results of the Aquatic Invasive Species survey conducted in the late summer and fall of 2012. Significant support for the development and review of the survey was and continues to be provided by Doug Jensen of the University of Minnesota Sea Grant Program; Joel Peterson of the Minnesota Pollution Control Agency; Derrick Passe, KWPP Coordinator; Wayne Seidel representing the Lake County Soil and Water Conservation District, as well as members of the Oversight Committee for the Project and the Board of WICOLA, including the Chair of the Oversight Committee and President of WICOLA, Jo Kovach. Thanks also go to the many people who filled out surveys and provided helpful and cogent comments.

Survey Development Process

The survey team, using resources from previous WICOLA surveys as well as AIS surveys conducted in other states, prepared an initial draft of the survey. Doug Jensen and members of the KWPP Oversight Committee reviewed this draft. Doug Jensen, drawing upon his knowledge of AIS issues and expertise in survey design, provided significant help in re-drafting the survey. The WICOLA Board of Directors pretested the survey before it was finalized.

Two versions of the survey were developed, the second one of which had the items in two questions (8 and 12) reversed to address the issue of the primacy effect. (For example, if a subject reads a sufficiently long list of words, he or she is more likely to remember words read toward the beginning than words read in the middle.)

Version A of the final survey as well as the cover letter and reminder card may be found in Appendix A.

Logistics and Returns

Through previous activities, the survey team had in hand the full set of taxpayer records for parcels within the Kawishiwi Watershed for both Lake County (3459, excluding state and federal parcel records) and St. Louis County (2693, excluding state and federal parcel records). The taxpayer information from both St. Louis and Lake Counties was merged, sorted, and combined to provide a final list of 2197 individual or household taxpayers for the mailing list.

Transient housing parcels (30 resorts, camps, outfitters, and the like) were not included in the mailing list, as a different version of the survey would be necessary to elicit appropriate responses. In addition companies which did not have residential housing on their property (62 power, mining and mineral, logging, tower, land development, and other operations) were also eliminated from the mailing list, as they would not be able to provide information about personal behaviors and attitudes, which was the goal of the survey. No surveys were sent to banks holding property that appeared to be forfeited or to governmental units (municipalities, townships, state, and federal). Two taxpayers were eliminated from the initial mailing due to known bad addresses. When in doubt, a survey was sent.

Because of their interest in WICOLA and its activities, the survey was also mailed to 13 members of WICOLA who are not taxpayers in either county. The survey was mailed on August 24, 2012 to a total of 2210 individuals (the 2197 taxpayers plus the remaining 13 members of WICOLA).

As surveys were received, the envelopes were sorted and, using the identification code printed on the envelope return label, the surveys were checked-in on the mailing list. The envelopes were opened, the identification code and date of receipt written on the survey, and the surveys set aside for later input, thus preserving the confidentiality of the persons returning the surveys.

Two weeks after the initial survey was mailed, a reminder postcard went to all the persons (1674) who had not returned their surveys. A copy of the postcard may be found in Appendix A, following the survey.

Using county records provided some complexity to the mailings. The survey team missed four taxpayers in the process of sorting and combining the records. Three taxpayers got two surveys because of variant addresses in the parcel records. Returns from the Post Office led to finding deceased taxpayers and addresses deemed not deliverable by the Post Office (20). An additional transient housing taxpayer was uncovered; this survey was eliminated from the input process.

Thirty-three (33) surveys were returned by the Post Office for which new or corrected addresses were found for the taxpayer and the survey resent to them. Of the latter, eight (8) returned the survey. For the remaining 25, the Post Office has not returned their mail as undeliverable. One unanticipated outcome of this work was to create a more accurate mailing list of Kawishiwi Watershed property taxpayers for future mailings.

In total 810 usable surveys were returned, 6 of which came in with the identifying code removed from the envelope. An additional four surveys were returned after October 15, two weeks after the due date and too late to include in the input process. The tally is broken down as follows:

Total good surveys mailed	2186
Additional transient housing removed from input process	-1
Non-deliverable surveys	-20
Duplicate surveys mailed out (see above)	-3
Surveys mailed out	2210

Table 1. Surveys Mailed Out

Surveys returned with ID codes	804
Surveys returned anonymously	6
Total usable surveys	810

Table 2. Usable Surveys

18
4
1
23
20
3
1354
1400
2210

Table 3. Survey Responses

The return rate is 36.7% (810 usable surveys out of 2210 sent out).

Demographics

At the end of the survey the following questions were asked to gain some information about the demographics of the people responding to the survey:

19. What is your gender?

Q19. Reported Gender	Number	Percent of total
Male	582	71.9%
Female	191	23.6%
Both Male and Female answered survey	5	.6%
Preferred not to answer or no answer	32	4.0%
Total	810	100%

Table 4. Gender of Respondents

20. What year were you born? [The responses have been converted to age.]

The average age of the respondents who provided an age is 54.6 years old; the median age is 60. The age of the respondents is skewed towards an older age distribution, as seen in Table 5 and Graph 1 below.

Q20. Age (by decade)	Number
20-29	1
30-39	20
40-49	77
50-59	241
60-69	228
70-79	117
80-89	38
90-99	1
Over 100	1
No answer or	86
preferred not to	
answer	
Total	810





Table 5. Age of Respondents by Decade

21. Where is your primary residence?

Not surprising, over 25% of the respondents reported their primary residence as Ely. Over 50% of the respondents report a primary residence outside of the two counties in which the Kawishiwi Watershed is located. The states with the largest number of residents outside of Minnesota are: Illinois (23), Iowa (15), Indiana (13), Wisconsin (13), and Florida (11).

Q21. Primary Residence	Number	Percent of total
Ely Area	210	25.9%
Lake County, not in Ely area	68	8.4%
St. Louis County, not in Ely area	112	13.8%
Other Minnesota	290	35.8%
Outside Minnesota	130	16.0%
Total	810	99.9%

Table 6. Primary Residence of Respondents

22. How long did you spend in the Kawishiwi Watershed during the 2012 boating season? Almost 25% of the respondents reported being in the watershed for the entire season, although 72% reported being here 6 months or less. A rough average number of days spent in the watershed was about 130 days for all respondents. An error was made in the survey leaving off the time span of 6-9 months. Two people self-reported this length of time in the watershed and were placed in the 9-12 month category.

Q22. Time in Watershed	Number	Percent	Time in Watershed Not in
		of total	watershed Entire
Entire season	200	24.7%	1 day-1 / 11% season
9-12 months	27	3.3%	week25%
3-6 months	96	11.9%	1%
2-3 months	60	7.4%	
1-2 months	143	17.7%	1-3 weeks 9-12
1-3 weeks	135	16.7%	17% months
1 day-1 week	58	7.2%	1-2 3-6
Not in watershed	88	10.9%	months months 2-3
No answer	3	.4%	18% 12% months
Total	810	100.0%	7%

Table 7. Time Spent in Watershed by Respondents



Other Demographic Information

In addition to the information gathered by the survey, the information from the two counties for parcels on lakes and parcel tax classification was attached to the input data of the respondents. Use of this data is helpful in determining whether there is a difference between respondents and non-respondents in terms of the type of property they own and/or whether they have property on a lake.

Lake Parcel Ownership

Of the 2210 surveys mailed, 1303 went to persons who paid taxes on lake parcels, as identified by the county records. Of these, eight were deemed undeliverable. Taxpayers who have a parcel on a lake returned five hundred fifty nine (559) surveys, or 43% of the total returns. The chart in Appendix B shows the number of parcel taxpayers by lake and the returns by each lake for the 79 lakes in the watershed which have parcels for the taxpayers surveyed.

Some taxpayers have parcels on multiple lakes. For the purposes of this analysis, the lake with a residential property or most value was chosen. In addition, there are cases where people have parcels on lakes outside the watershed (Twin and Round Island), but it appears that the parcel itself extends into the watershed.

Table 8 shows the comparison of returned surveys for lakeshore parcel taxpayers and non-lakeshore parcel taxpayers. Given the focus of the survey, it is not surprising that significantly more lakeshore parcel taxpayers than non-lakeshore parcel taxpayers returned the survey.

Lake Parcel Ownership	Count	Percent	Number	Percent of	Non-	Percent of
		of total	of	returns	returns*	non-
			returns			returns
Lakeshore parcel	1303	59.0%	559	69.0%	744	53.1%
taxpayers						
Non-lakeshore parcel	907	41.0%	251	31.0%	656	46.9%
taxpayers						
Totals	2210	100%	810	36.7%	1400	63.3%

Table 8. Lakeshore and non-Lakeshore Parcel Taxpayers Surveyed

* For consistency, includes surveys returned as not deliverable, duplicates and other surveys not considered responsive as described above

Tax Classification of Parcels

Although there is some variation of tax classification descriptions by county, it is possible to make a rough cut to separate residential parcels, seasonal parcels, and rural vacant land parcels. For the purposes of this analysis, a single tax classification was chosen for each taxpayer surveyed, with residential parcel tax classifications taking precedence over seasonal parcel tax classifications, which in turn took precedence over rural vacant land tax classifications. Often the same parcel has multiple parcel records with different tax classifications.

The totals in this analysis do not match the total surveys sent out due to seventeen surveys that cannot be matched to parcel tax classes for various reasons. Fourteen of the usable survey cannot be matched to parcel information as they were returned anonymously or by WICOLA members who do not live in the watershed.

Parcel Tax	Count	Percent of total	Number of	Percent of total	Percent of
Classification		surveys to which	returns by	returns to which	parcel tax
		parcel information	parcel tax	parcel	classification
		could be attached	classification	information	returning
				could be	survey
				attached	
Residential	807	36.8%	255	32.0%	31.6%
Seasonal	1051	47.9%	459	57.7%	43.7%
Rural vacant	335	15.3%	82	10.3%	24.5%
land					
Totals	2193	100.0%	796	100.0%	
Not matched	17		14		
to parcel					
information					
Totals	2210		810		

Table 9. Parcel Tax Classifications for Survey

Table 9 shows, of the surveys sent out, almost half (47.9%) went to people who pay taxes on parcels with seasonal tax classifications. They returned 459 surveys, or 57.7%, of all of the returned surveys to which parcel information could be attached. Of the taxpayers with seasonal parcels, 43.7% returned a survey.

An analysis of questions 1, 11, 12 and 16 in the survey was performed based upon this rough three level tax classification of parcels. The results may be found in Appendices C, F, G, and H.

Questionnaire Results

The following section follows the order of the survey itself. See Appendix A for a copy of the survey.

Note that all the substantive comments for the questions are included in Appendices I, J, and K. Comments in the body of the report are not meant to be inclusive, but representative or illustrative of those made by respondents.

1. To what extent do you feel each of the following is a problem in the Kawishiwi Watershed? The purpose of this question was two-fold. The first was to help persons using the results of the survey to determine the relative importance of each problem listed and the need for addressing the item. The second was to compare the results with those of a survey taken in 2006 of taxpayers with parcels on the White Iron chain of lakes that included essentially the same question¹.

There were several comments received about the inclusion of this question and items within it. For instance, one respondent wrote, "Your cover letter purports to be about AIS. Much has NOTHING to do with AIS!" Others were more pointed about the inclusion of the items on iron mining and non-iron mining, "In question 1, what does ferrous and non-ferrous mining have to do with AIS? Stick to the issue of AIS in future surveys. Mining is a separate issue!" On the other hand, as one respondent said, "It is ALL interrelated."

Q1. Issues	Big	Medium	Small	Not a	Don't	Big and	Total
	Problem	Problem	Problem	Problem	Know	Med	responses
	Percent	Percent	Percent	Percent	Percent	Problem	
						Percent	
Water Level	15.8%	27.9%	23.0%	19.8%	13.5%	43.7%	773
Fluctuation							
Overall Water	7.4%	19.6%	23.0%	36.0%	14.0%	27.0%	774
Quality							
Algae Growth	6.1%	17.0%	25.9%	32.1%	18.8%	23.1%	775
Aquatic Plant	7.7%	18.3%	25.5%	29.2%	19.2%	26.0%	764
Growth							
Aquatic	18.6%	15.4%	15.3%	18.6%	32.1%	34.0%	764
Invasive							
Species							
Septic Systems	7.8%	17.7%	22.1%	23.9%	28.5%	25.5%	769
Wells	1.8%	7.3%	16.8%	43.4%	30.7%	9.2%	763
Alteration to	7.3%	16.4%	25.7%	32.5%	18.1%	23.7%	769
Shoreline							
Lakeshore	5.5%	13.3%	26.3%	36.9%	18.0%	18.8%	767
Erosion							

The following table shows the results of question 1 with the mining items retained.

Q1. Issues	Big	Medium	Small	Not a	Don't	Big and	Total
	Problem	Problem	Problem	Problem	Know	Med	responses
	Percent	Percent	Percent	Percent	Percent	Problem	
						Percent	
Burning of	1.3%	6.5%	19.3%	54.0%	18.8%	7.8%	766
Leaves and							
Brush							
Trees Lost to	10.8%	20.1%	28.9%	20.5%	19.8%	30.8%	772
Disease							
Response of	12.3%	17.2%	17.2%	19.3%	34.0%	29.5%	762
Public Officials							
Zoning	6.9%	15.8%	20.0%	34.3%	22.9%	22.8%	764
Ordinances							
Iron Mining	12.8%	11.7%	14.7%	39.3%	21.5%	24.5%	771
Non-iron	31.7%	8.3%	7.2%	30.0%	22.8%	40.1%	769
Mining							

Table 10. Extent of Problems in the Kawishiwi Watershed

Other identified issues are as follows:

Specific water quality issues, such as mercury and phosphates from fertilizers (6) Government and politics, as they relate to water quality (5)

Tourists (2)

Timber and woodlands, such as the effect of clear-cutting; fragmentation and major disturbances (3)

Graphs 3 and 4 below show the differences between the results of this survey and the 2006 survey. To simplify the comparison, the two mining issues were removed. Current events may explain some of the differences, particularly for water level fluctuation and aquatic invasive species. Water levels for both the White Iron chain and for Birch Lake have been more extreme this year than usual. In addition, the appearance of a survey on AIS as well as the now-known presence of rusty crayfish in the White Iron chain and Birch Lake has raised the consciousness of respondents about AIS in general. There may well be equivalent reasons for other differences.





Graph 4. Percent of White Iron chain Taxpayers Considering Problem to be Serious or Very Serious (2006 survey)

A breakdown of Question 1 by parcel tax classification of the respondents, not including the issues of iron mining and non-iron mining, provides the following results:



Graph 5. Percent by Parcel Tax Class of Respondents Considering Issue Big or Medium Problem

Supporting data for Graph 5 may be found in Appendix C.

Mining

The issues related to mining in this survey are considered separately as the analysis above does not reveal the true nature of the results, particularly for non-iron mining. Numerous comments, both for and against non-iron mining, were received and were compiled as a separate Appendix J. The responses to the question itself show that the perception about the size of problem of the non-iron mining issue, is virtually evenly split between those who find it a big problem and those who consider it not a problem, with little response in the middle.





Graph 6. Perception of the Size of Problem of Iron Mining

Graph 7. Perception of the Size of Problem of Non-iron Mining

A breakdown of Question 1 by parcel tax classification of the respondents of the issues of iron mining and non-iron mining was also done. The iron mining issues also elicited slightly different responses from the three groups of taxpayers. Taxpayers with residential parcels considered non-iron mining less of a problem thank seasonal and rural vacant land parcel taxpayers.



Graph 8. Perception of Size of Iron Mining by Parcel Tax Class Graph 9. Perception of Size of Non-Iron Mining by Parcel Tax Class

Supporting data for Graphs 8 and 9 may be found in Appendix C.

2. Do you currently own any watercraft?

Over seven-eighths (or 7 out of 8) of the respondents own one or more watercraft.

Q2. Own Watercraft?	Number	Percent
		owning
Yes	711	87.8%
No	99	12.2%
Totals	810	100.0%

Table 11. Ownership of Watercraft

3. How many licensed watercraft did your household own during the 2012 boating season? The primary motorized watercraft owned is a fishing boat with motor (29.3% of all owners) Half (50.0%) of the watercraft owned are either canoes and kayaks, owned by 43.5% of the respondents. The average number of watercraft owned is 1.35. The largest number of watercraft owned was 16 with almost 40 respondents reporting seven or more watercraft.

Q3.Type of watercraft	Number	Percent of	Number	Percent of
		total	of owners	owners
		watercraft	owning	owning
Canoe	796	34.9%	528	31.3%
Fishing Boat with motor	626	27.5%	495	29.3%
Kayak	344	15.1%	206	12.2%
Pontoon boat	143	6.3%	141	8.4%
Speed boat	90	3.9%	89	5.3%
Rowboat	84	3.7%	75	4.4%
Paddle boat	67	2.9%	63	3.7%
Sailboat	40	1.8%	38	2.3%
Duck boat	36	1.6%	12	0.7%
Personal watercraft (jet ski)	21	0.9%	17	1.0%

Q3.Type of watercraft	Number	Percent of	Number	Percent of
		total	of owners	owners
		watercraft	owning	owning
Sailboard	12	0.5%	11	0.7%
Sea Plane	10	0.4%	5	0.3%
Other: Paddle Board	4	0.2%	3	0.2%
Other: Canoe with motor	1	0.0%	1	0.1%
Other: Houseboat	1	0.0%	1	0.1%
Other: Jet boat	1	0.0%	1	0.1%
Other: Rubber raft with paddles	1	0.0%	1	0.1%
Other: Swim raft	1	0.0%	1	0.1%
Other: Unidentified	1	0.0%	1	0.1%
Totals	2279	100.0%	1688	100.0%

Table 12. Type of Watercraft owned by Respondents

4. Did you use any watercraft during the 2012 boating season?

Although there is a drop in the number of users of watercraft over the number of watercraft owners, 80% of the respondents used a watercraft and were out on one or more lakes during the boating season.

Q4. Use Watercraft?	Number	Percent of total responses
Yes	654	80.7%
No	156	19.3%
Totals	810	100.0%

Table 13. Use of Watercraft in 2012 by Respondents

5. Upon which waterbody(s) of the Kawishiwi Watershed did you use your watercraft during the 2012 boating season?

Including the map on the back of the cover page for the survey enabled people to determine which waterbodies were in the watershed and which were not. In addition, research was done on many of the waterbodies reported as visited to correctly place them in or out of the watershed. Fifty-eight (58) waterbodies outside of the BWCAW, but within the watershed, were visited by one or more of the respondents. [For purposes of this survey, South Farm, because it is connected to the rest of the White Iron chain and has taxpayers on its lakeshore, was considered outside of the BWCAW.] In addition twenty (20) lakes within the BWCAW and in the watershed were identified as being visited 123 times by 55 respondents.

The lakes were arranged in a relative order from the west to the east of the watershed. Lakes and rivers that are connected (such as the South Kawishiwi River and Birch Lake) were identified. This provides some indication of whether people transported their watercraft to another non-connected waterbody.

Of the 654 respondents who reported they visited waterbodies in 2012, in both this question and question 6, at least 371 (56.7%) did not report travel which would require them to transport their watercraft within the watershed or to/from the watershed to waterbodies outside of the watershed. That is, they visited only one or more waterbodies that are interconnected or they only used their watercraft outside of the watershed.

If reported travel to the BWCAW is omitted, because it is probable that they used a non-motorized watercraft in the Boundary Waters and a motorized one otherwise, then at least 404 (or 61.8%) did not transport their watercraft.

However, with multiple boat ownership, it was not always possible to determine with certainty whether a specific watercraft had been transported. The number of persons transporting a given watercraft might be much lower if one could track individual watercraft use.

The list of waterbodies in the watershed and the number of reported visits of a particular waterbody may be found in Appendix D. Those infected by AIS (rusty crayfish) are so indicated. A total of 1539 visits were reported within the watershed.

For future research, the reported visits by individual were recorded. Someone may wish to track the travel of respondents among the waterbodies in the watershed to help establish potential risk for spread and common patterns of travel among the waterbodies.

6. During the 2012 boating season, did you transport any watercraft to a body of water OUTSIDE of the Kawishiwi Watershed?

Two hundred (200) respondents reported making 375 visits to 151 different waterbodies outside the Kawishiwi Watershed in 2012. Fifty nine (59) of these waterbodies are infested with one or more species of AIS; there were 249 visits by 152 respondents (18.8% of all respondents) to the infested waterbodies. Of the 59 infested waterbodies, rusty crayfish are the only type of AIS found in 22 of them. Seventy-five (72) respondents only visited these lakes in 155 visits. The remaining 37 waterbodies contained other types of AIS. Eighty respondents visited these lakes in 94 visits.

Q6. Water-	#	% of	# Visits by	% of Total	#	%	% of Total
bodies	Water-	Total	Respondents	Visits by	Respondents	Respondents	Respondents
Outside	bodies	Water-		Respondents	to Q6	to Q6	to Survey
Watershed		bodies			Visiting	Visiting	Visiting
Rusty	22	14.6%	155	41.3%	72	36.0%	8.9%
Crayfish							
infested							
only							
Other	37	24.5%	94	25.1%	80	40.0%	9.9%
AIS*infested							
Sub-total	59	39.1%	249	66.4%	152	76.0%	18.8%
Non-	92	60.9%	126	33.6%	48	24.0%	5.4%
infested							
waterbodies							
Totals	151	100.0%	375	100.0%	200	100.0	24.2%**

Table 14. Visits to Waterbodies outside of the Kawishiwi Watershed

*includes one waterbody, Lake Vermilion, which also has rusty crayfish

**810 surveys were returned; 75.8% of the returned surveys did not indicate travel outside of the watershed

A list of visits may be found in Appendix E along with a chart showing those waterbodies infected with various aquatic invasive species. Because all of these waterbodies are outside of the watershed, if the respondents also used their watercraft within the watershed, it may be assumed that they had transported the watercraft. The exception would be if people had multiple watercraft and used one outside of the watershed and others inside the watershed.

The waterbodies used ranged from the close-by (Fall Lake, Shagawa, Basswood, Vermilion, all of which are infested with AIS) to the far away and esoteric (Tety Lake in Canada, the Mississippi River near St. Louis).

Again, the reported visits by individual were recorded. Someone may wish to track the travel of respondents among the waterbodies to help establish potential risk for spread and common patterns of travel among the waterbodies.

7. How important is it that watercraft users take actions to prevent the spread of these aquatic invasive species (AIS)

The results show that the respondents tended to be very uniform in their understanding of the importance of preventing the spread of all aquatic invasive species, with a large majority knowing about the threats and considering it important to prevent the spread of every AIS in the list.

Q7. Aquatic Invasive	Very	Somewhat	Not Very	Not at All	Don't	Number of
Species	Important	Important	Important	Important	Know	Respondents
Zebra/quagga mussels	90.4%	3.5%	0.4%	0.7%	5.0%	686
Rusty crayfish	74.7%	8.4%	2.8%	1.2%	12.9%	680
Curly leaf pondweed	72.9%	7.5%	1.6%	0.4%	17.5%	680
Eurasian water milfoil	87.2%	5.2%	0.4%	0.4%	6.7%	686
Purple loosestrife	73.4%	9.3%	2.2%	1.8%	13.4%	680
Spiny water fleas	77.3%	7.1%	1.9%	0.6%	13.1%	678
Asian carp	85.9%	4.7%	1.0%	1.0%	7.3%	682
VHS (a fish virus)	77.2%	5.3%	1.0%	0.7%	15.7%	674

Table 15. Importance of Preventing the Spread of Different Types of AIS

Graph 10 helps illustrate the relative importance, as seen by the respondents, of each aquatic invasive species. In the graph, the percent of respondents who consider the need to take action for each species is the total of those who responded "very important" and "somewhat important".



One of the most telling comments about the ability of aquatic invasive species to spread quickly and easily came from a person with personal experience with Eurasian water milfoil: "I live in Washington County on Long Lake. It does not have a public access (been there 31 years). We got Eurasian [water] milfoil 7 years ago. We had 1 home pulling their boat to other lakes and 1 home being rented by young men that hauled their boats and friends' boats in and out. It was devastating

to our lake. Fifteen home owners spent big money on chemicals and bought a weed harvester to control it.—It's better now".

- 19. From what source did you get information about AIS?
- 9. Of the sources of information that you checked above in Question 8, which four are the MOST EFFECTIVE sources for AIS in reaching YOU?

The results of these two questions are very similar, as is demonstrated by the charts below. Other sources the respondents listed in question 8 were added to the list as some had multiple responses. There is a distinct division also between the top four sources (newspapers or magazines, water access signs, television ads, and regulation booklets) with a decreased importance for the rest of the sources. What also is interesting is the number of sources (35) used by at least one respondent. One respondent reported seeing 18 sources; another said, "About 100 others; too much????"

Q8 Sources	Number of	Percent	Q9 Sources	Number	Percent
	Responses	of total		of	of total
	-	responses		Responses	responses
Newspapers or	393	11.2%	Water access signs	304	14.4%
magazines					
Water access signs	391	11.2%	Newspapers or	268	12.7%
			magazines		
Regulation booklets	337	9.6%	Television ads	243	11.5%
Television ads	331	9.5%	Regulation	241	11.4%
			booklets		
Billboards	250	7.1%	Billboards	147	7.0%
Brochures, fact sheets	238	6.8%	Radio ads	139	6.6%
Signs along roadways	231	6.6%	Brochures, fact	134	6.4%
			sheets		
Radio ads	208	5.9%	Signs along	109	5.2%
			roadways		
Bait shop posters	178	5.1%	Bait shop posters	97	4.6%
Web sites	165	4.7%	Web sites	91	4.3%
Newspaper ads	164	4.7%	Watercraft	74	3.5%
			inspections		
Displays at rest areas	124	3.5%	Newspaper ads	66	3.1%
Watercraft inspections	109	3.1%	Displays at rest	52	2.5%
			areas		
Highway radio	81	2.3%	Regulation cards	31	1.5%
messages					
Regulation cards	66	1.9%	Highway radio	24	1.1%
			messages		
Stickers	60	1.7%	Kiosk at sporting	21	1.0%
			goods stores		
Kiosk at sporting goods	43	1.2%	Stickers	19	0.9%
stores					
Identification cards	34	1.0%	Identification cards	10	0.5%
Posters at airports	26	0.7%	Other: TV news	7	0.3%
Other: TV news	10	0.3%	Other: Lake	6	0.3%
			Associations		

Q8 Sources	Number of Responses	Percent of total	Q9 Sources	Number of	Percent of total
		responses		Responses	responses
Other: Conservation	8	0.2%	Facebook	5	0.2%
personnel					
Other: Lake	7	0.2%	Other:	5	0.2%
Associations			Conservation		
			personnel		
Other: Friends	6	0.2%	Posters at airports	4	0.2%
Other: Not specified	6	0.2%	Windshield flyers	2	0.1%
Windshield flyers	5	0.1%	Other: Displays	2	0.1%
Other: Experts in field	5	0.1%	Other: Friends	2	0.1%
Other: Displays	4	0.1%	Other: Not	2	0.1%
			specified		
Other: Radio news	4	0.1%	Twitter	1	0.0%
Other: US mail	4	0.1%	Other: Experts in	1	0.0%
			field		
Facebook	2	0.1%	Other: Fishing	1	0.0%
			synopsis		
Other: Many	2	0.1%	Other: Radio news	1	0.0%
Other: Other	2	0.1%	Other: US mail	1	0.0%
organizations					
Other: Education	1	0.0%	Other: Education	0	0.0%
opportunities			opportunities		
Other: Fishing synopsis	1	0.0%	Other: Many	0	0.0%
Other:	1	0.0%	Other:	0	0.0%
Laws/regulations			Laws/regulations		
Twitter	0	0.0%	Other: Other	0	0.0%
			organizations		
Totals	3497	100.00%	Totals	2110	100.0%

Table 16. Sources of AIS Information used

Table 17. Best Sources of AIS Information

10. During the 2012 boating season, did you take action to prevent the spread of AIS? Sixteen (16) respondents reported that they did not use their watercraft in 2012, but also reported they took action to prevent the spread of AIS. Other respondents who did not transport their watercraft also reported taking actions to prevent the spread of AIS. The ideal answer if either of these cases was true was to answer no to this question and then report that they did not transport their watercraft in question 12. However, people may rent or borrow other watercraft and then take action to prevent AIS spread. They may also be very careful about not spreading AIS even when not needing to transport their watercraft.

10. Took Action	Number	Percent reporting taking action
Yes	396	58.1%
No	286	41.9%
Totals	682	100.0%

Table 18. Took Action to Prevent the Spread of AIS

11. After removing watercraft from the water, prior to transporting it to another body of water, how often did you take the following actions?

Over 90% of the respondents always or usually drain water from bilges, bait buckets and live wells as well as inspecting their watercraft for aquatic plants and removing them if found. And over 80% always or usually dispose of live bait in the trash. However rinsing watercraft with garden hoses and washing with high-pressure hot water are actions taken always or usually less than one-third of the time. This may be related to the lack of appropriate boat washing equipment mentioned in the responses to question 12 below.

11. Action Taken	Always	Usually	Sometimes	Never	Number
Drain water from bilge, bait, and live well	86.93%	5.97%	1.14%	5.97%	352
Inspect and remove aquatic plants	83.42%	9.21%	2.63%	4.74%	380
Dispose of unwanted live bait in trash	70.00%	11.94%	7.78%	10.28%	360
Dry everything for at least 5 days before	42.29%	19.95%	18.88%	18.88%	376
use					
Rinse watercraft, etc. with garden hose	18.49%	14.57%	24.93%	42.02%	357
Wash watercraft with high pressure hot	8.16%	3.21%	14.29%	74.34%	343
water					

Table 19. Actions Taken to Prevent the Spread of AIS

One person also reported helping to inspect boats; another reported using inflatable boats, which are inspected and then deflated after use.

Graph 11 shows the percent of respondents of each parcel tax class who chose "Always" or "Usually" for each action. The chart shows there is little difference among the tax class of the parcel people pay taxes upon in terms of how often they perform certain actions to prevent the spread of aquatic invasive species. Over 80 % of the respondents from all classes of taxpayers drain water from bilges, bait buckets and live wells as well as inspecting their watercraft for aquatic plants and removing them if found.



Graph 11: Actions Taken by Respondents with Different Parcel Tax Classifications

Supporting data for Graph 11 may be found in Appendix F.

12. If you did not take actions, why not?

Most respondents (61%) did not transport the watercraft to another body of water, so they were not required and did not necessarily feel the need to take any further action. Second as a reason for 15% of the respondents the reason for not taking action, however, is that no boat washing equipment was available. This problem was commented upon several times in the survey, not only for this question. People reported: "Hot water not available at my house outside" and "Pressure washer not available in all areas; never saw at roadside site." One person did say, however, "And don't buy any w/ my tax dollars!"

Another reason people told us that they did not take action was that they used a canoe (10 respondents). Canoes are a special case. They have neither bilges nor livewells; they often are used in the Boundary Waters where they go from lake to lake; but they can also be used in the same waters where there are invasive species infestations.

Forty-five or 7.2% of the respondents reported in this question that they were not in waterbodies having aquatic invasive species. However, 155 respondents (19.1%) reported visiting waterbodies outside of the Kawishiwi Watershed infested with AIS in question 6 above. [See also Appendix E].

Of the 59 waterbodies infested with AIS, 22 are infested with rusty crayfish only. Seventy-two (72) respondents reported visiting only these waterbodies in 155 visits. Of these 72 respondents, 65 reported in question 10 that they took action to prevent the spread of AIS. Of the remaining 7, 3 reported actual actions taken in question 11. Two of the remainder commented that they only used canoes and two reported they were not in waters containing AIS.

Eighty (80) respondents, or 9.9% of all respondents made 94 visits to the 37 waterbodies infested with other types of AIS, one of which (Lake Vermilion) also is infested with rusty

crayfish. Of the 80 respondents visiting waterbodies infested with other types of AIS, 8 reported in question 10 that they took no action to prevent the spread of AIS, although 1 of these did report actions taken In question 11. Another four reported not transporting their watercraft; one reported forgetting to take action; one reported not knowing what to do; and one reported that the waters did not have AIS.

The difference between self-reporting and actual visits might indicate that people do not know when they are visiting waters infested with AIS. Informing watercraft users about infested waters may be as important as educating them about the potential problems of AIS.

Q12. Why actions not undertaken	Responses	Percent of
	-	Respondents
I did not transport the boat to another body of water	384	61.0%
No boat washing equipment was available	96	15.3%
I was not in water which had invasive species	45	7.2%
I did not know what I was supposed to do	18	2.9%
I believed the current regulations were ineffective	14	2.2%
It is inconvenient, I did not have the time	11	1.7%
Other: I used a canoe	10	1.6%
I did not realize the importance of my actions	8	1.3%
Spread of AIS is only a matter of time, my actions would not have made a difference	8	1.3%
l forgot	7	1.1%
AIS are everywhere anyway; my actions would not have made a difference	5	0.8%
I was physically unable	5	0.8%
I believed it only takes one to cause an infestation; my actions would not have made a difference	3	0.5%
Other: General	3	0.5%
I did not believe that AIS was a problem; I did not care	2	0.3%
I did not want anyone telling me what to do	2	0.3%
Other: I changed/used water at home	2	0.3%
Other: My boat does not have a bilge	2	0.3%
Other: I don't fish	1	0.2%
Other: I use a service provider	1	0.2%

Q12. Why actions not undertaken	Responses	Percent of
		Respondents
Other: I wrongly thought the waters I	1	0.2%
use are connected		
Other: I worry about regulations	1	0.2%
I was willing to pay the fine	0	0.0%
Totals	629	100.00%

Table 20. Why People Do Not Take Certain Actions to Prevent the Spread of AIS

Graph 12 shows the percent of respondents of each parcel tax class selecting each option for not taking action. As the graph demonstrates, the only option which had enough respondents to show a difference among the three parcel tax classes is "I did not transport the boat to another body of water."



Graph 12. Actions Not Taken by Respondents by Parcel Tax Classification

Supporting data for Graph 12 may be found in Appendix G.

13. What do you think motivates other people to take action(s) to prevent the spread of AIS? The respondents focused on personal motivations for their top two choices (desire to keep AIS out of the waters and personal responsibility) followed closely by the threat of fines. Many of the other choices also clustered near the top.

People also suggested that seeing what has happened in other places that are AIS infested is a good motivator {"Witnessing lakes and rivers choked with AIS so bad they are impassable!") as is education. One suggestion was, "Response to a 'dashboard'; a way to see how what you are doing or not doing is impacting the watershed; similar to an energy use dashboard."

Q13. Motivations	Very	Somewhat	Not Very	Not at All	Number of
	Effective	effective	Effective	Effective	Responses
It is their desire to keep	61.6%	31.1%	6.4%	0.9%	640
AIS out of our lakes					
and rivers					
They feel it is their	55.5%	35.6%	7.7%	1.3%	638
personal responsibility;					
their actions make a					
difference					
Threat of fines that	53.3%	35.1%	8.8%	2.8%	638
would cost them					
money					
Friends, relatives or	46.4%	43.1%	8.7%	1.8%	619
acquaintances told					
them to do it	16.404	20.49/	14 50/	2.00/	
Inreat of enforcement	46.1%	39.4%	11.5%	3.0%	642
action by conservation					
Officers They see other	42.00/	46.29/	0.00/	1 10/	626
mey see other	43.8%	40.3%	8.8%	1.1%	020
it					
Laws or regulations that	36.0%	10.6%	17 5%	1 0%	622
nevent transport of	30.078	49.076	12.570	1.976	033
AIS affect their actions					
They want to prevent	32.2%	33.8%	25.7%	8 3%	615
damage to their boat.	52.270	33.676	23.770	0.370	015
equipment or property					
Embarrassment of being	27.4%	38.5%	25.8%	8.3%	624
found in violation					
Other: See what is done	100.0%	0.0%	0.0%	0.0%	4
to environment					
Other: Education	100.0%	0.0%	0.0%	0.0%	3
Other: Don't care	0.0%	0.0%	100.0%	0.0%	1
because don't live on					
lake					
Other: Don't know	66.7%	0.0%	0.0%	33.3%	3
Other: Suggestion	100.0%	0.0%	0.0%	0.0%	1

Table 21. Motivation to Take Action Against AIS

14. Have you ever seen the Stop Aquatic Hitchhikers! message?

Someone is doing a good job of getting the word out; over 85% of persons responding to this question have seen the message and 72.2% of all respondents, including those who do not boat, do not fish, do not live on a lake, have seen it.

Q14. Stop Aquatic Hitchhikers message	Number	% of those responding
Yes	585	85.50%
No	99	14.50%
Total	684	100.0%

Table 22. Respondents Who Have Seen the Stop Aquatic Hitchhikers Message

15. Based upon your exposure to Stop Aquatic Hitchhikers!, how often WILL you take actions in the FUTURE to prevent the spread of AIS in the Kawishiwi Watershed?

Even more people responded positively to this question than responded "yes" to the previous one. Over 96% of the respondents said that they will always or usually take action in the future to prevent the spread of aquatic invasive species.

Responses from the few people (1% of the respondents) marking "Never" range from never transporting the boat ("We will continue to use just the canoe and use it only on Farm and the Kawishiwi. In that sense we are "always" doing something.") to considering it unimportant ("No need to [take actions against spreading AIS]").

Q15. Take action in the future	Number	Percent of those
		responding
Always	506	82.3%
Between Usually and Always	1	0.2%
Usually	87	14.1%
Sometimes	14	2.2%
When necessary	1	0.2%
Never	6	1.0%
	615	100.0%

Table 23. Respondents Agreeing to Take Future Action Against the Spread of AIS

16. Recent Minnesota regulations are aimed at preventing the spread of AIS. Which of the following is true or false?

For almost all of the questions, a majority of the respondents knew the new laws. [The correct answers are in the answer column and in bold and underlined in the responses columns.] However, education about the new regulations is still needed to reach both the respondents who did not know the answer and others from out of the area.

A special note should be made about the question about smelt. The current regulations are clear that if transporting smelt, you must use commercially prepared smelt or smelt preserved under license from the Minnesota Department of Natural Resources. However, the regulations appear to be mute on the issue of using live smelt in a lake in which it was harvested. So, you can use smelt as bait in other waters than which it was caught IF preserved or commercially prepared. But, can you use live bait in waters in which it was caught? This may be one of the reasons why there appears to be confusion among the respondents about the answer.

16. Regulations	Answer	Percent	Percent	Percent	Number
		Saying	saying	reporting	
		True	False	Don't	
				Know	
It is legal to dump leftover bait into lakes and	False	16.80%	<u>77.24%</u>	5.97%	637
rivers to help feed the fish					
It is recommended to insert the plug in the boat	False	11.41%	<u>75.12%</u>	13.47%	631
before leaving access					
If I want to reuse the minnows, it is recommended	True	<u>56.87%</u>	13.27%	29.86%	633
that tap or spring water be brought from home to					
replenish water removed from bait bucket at water					
access					

16. Regulations	Answer	Percent	Percent	Percent	Number
		Saying	saying	reporting	
		True	False	Don't	
				Know	
Use of smelt as bait is legal only if caught in those	False	21.43%	<u>22.54%</u>	56.03%	630
waters					
Crayfish can be used as bait only if caught in those	True	<u>38.54%</u>	10.99%	50.48%	628
waters					
it is illegal to transport any aquatic plants or	True	<u>81.86%</u>	4.26%	13.88%	634
prohibited species on public roads					
Water must be drained from motor, bilge, and	True	<u>93.87%</u>	0.79%	5.35%	636
livewells before leaving access					
Game fish should be stored in the livewell during	False	6.97%	<u>66.09%</u>	26.94%	631
transport on public roads					

Table 24. Knowledge of Respondents about New Minnesota Regulations

The following chart shows the percent of persons of each tax class responding correctly to the choices for each stated regulation. The low number of responses from taxpayers with rural vacant land (48) make it difficult to generalize about these respondents, although it appears that they might have a lower understanding of the new regulations with regards to dumping bait and reusing minnows.



Graph 13. Respondents by Parcel Tax Classification Providing Correct Answer to New Regulations

Supporting data for this chart may be found in Appendix H.

17. Please rate to what extent you agree or disagree with the following statements on aquatic invasive species:

The purpose of this question is to gain information about how people perceive the impacts of aquatic invasive species. From 75% to 92% of the respondents either strongly agree or agree with the provided statements. However, the responses of "Don't Know" show that greater educational efforts are needed so that people have more knowledge of how AIS affect biodiversity and spread disease, in particular. Questions have also been raised about introduced species of fish, such as

small mouth bass, and aquatic plants, such as wild rice, and whether they should be considered AIS given the definition provided in the survey.

Q17. Aquatic Invasive Species	Strongly	Agree	Disagree	Strongly	Don't	Number
	Agree			Disagree	Know	
spread disease	51.4%	23.7%	2.9%	0.1%	21.9%	782
reduce biodiversity	54.6%	23.5%	2.7%	0.3%	18.9%	778
outcompete desirable native	68.3%	22.3%	1.3%	0.1%	7.9%	783
organisms/destroy popular fisheries						
cost money annually	59.2%	32.7%	1.2%	0.3%	6.7%	779
degrade water quality	67.9%	23.2%	2.3%	0.4%	6.3%	781
can be spread by people moving	79.8%	18.0%	0.4%	0.0%	1.8%	784
contaminated equipment, boats, and						
vehicles						

Table 25. Perceptions of Impacts of AIS

18. How important is it to protect the Kawishiwi Watershed from the spread and impact of AIS? The respondents are almost unanimous in considering the Kawishiwi Watershed a place that should be protected from the spread and impact of aquatic invasive species. Over 98% told us it was very important or somewhat important to do so. One person also told us "All watersheds; not just Kawishiwi", reminding us that many lakes and rivers in Minnesota are infested with AIS.

Q 18 Protect Kawishiwi	Number	Percent of those
		responding to question
Very Important	701	88.62%
Somewhat important	78	9.86%
Not very important	8	1.01%
Not at all important	4	0.51%
Total	791	100.00%

Table 26. Importance of Protection of Kawishiwi Watershed

23 What recommendations or other comments would you like to offer about the spread of aquatic invasive species in our area?

The comments provided by the respondents to this question and others may be found in Appendix I, with the comments directly about mining in Appendix J. Comments provided solely to clarify coding of the survey have not been included, but are available from the survey team upon request. Because of the high concentration of non-motorized watercraft in the Kawishiwi Watershed than in other areas in Minnesota and also because users of these watercraft have indicated in their comments differences in attitude and behaviors versus users of motorized watercraft, a separate section includes all comments about canoe usage.

Respondents were generous in their comments with a full range of topics covered. Education of people about aquatic invasive species was important to many. Others had suggestions about the staffing of water access points as well as licensing of boats and their users. Communication, especially with residents and visitors who are not in the area full time, is another area of concern. If not before the survey, certainly as part of the survey, people are engaged in the issue of aquatic invasive species and want, for the most part, to help prevent and control what is happening in our lakes and rivers in the Kawishiwi Watershed.

On a final note, many of the comments throughout the survey are supportive of WICOLA and its involvement in AIS issues. Typical is this comment, "<u>Thank you</u>, WICOLA Board members, for your work! <u>Much appreciated</u>!" In addition, the survey was perceived as a good awareness tool ("Thank you for doing this research. It is important to spread the word.")" The kudos and kind words may be found in the separate Appendix K.

The place and work of lake associations in keeping their members informed and engaged in aquatic invasive species actions, as well as other activities in keeping lakes and rivers clean, enjoyable, and as a place where people want to be cannot be over-emphasized. As one respondent said, "Lake associations (for small/large lakes) need to be encouraged & educated so they can help spread the word & help their members recognize the importance of maintaining & repairing/restoring water quality."

^{1.} "WICOLA Survey 2006. Report of Findings and Summary" This survey was conducted by Watson and Charlene Mason on behalf of the Board of the White Iron Chain of Lakes Association (WICOLA) to collect information from the parcel taxpayer on the White Iron chain about which issues were of primary importance to the households and commercial properties on the chain. The survey may be requested from WICOLA, P.O. Box 493, Ely Minnesota 55731 or at wicolaely@gmail.com. Please provide your e-mail address as the survey will be sent as a PDF file.



Appendix A WICOLA White Iron Chain of Lakes Association P.O. Box 493 Ely Minnesota 55731

http://www.wicola.org



August 25, 2012

Dear Kawishiwi Watershed Resident or Owner,

The White Iron Chain of Lakes Association (WICOLA) is engaged in a multi-year project (the Kawishiwi Watershed Protection Project or KWPP) in association with the Minnesota Pollution Control Agency (MPCA) to gather baseline data about the water quality in the Kawishiwi Watershed. A map of the watershed can be found on the back of this letter, so you can see how your property fits into the overall watershed.

A significant part of the project is focused on aquatic invasive species (AIS). Aquatic invasive species (AIS) are defined as non-native plants, animals and diseases that spread to lakes and rivers where they have NOT always lived. WICOLA is working to determine where the invasive species are in the watershed and to gather information to improve actions to increase the protection of our waters from new invasion or further invasion.

One aspect of our work is to conduct a survey of the residents and property owners relating to aquatic invasive species. This survey has been prepared with the help and support of the University of Minnesota Sea Grant Program. The information gathered in this survey will help guide the Association, the MPCA, and other interested agencies in planning future best practices relating to invasive species in the Kawishiwi Watershed.

You are one of a select number of residents and property owners who are being asked to provide opinions about aquatic invasive species. *It is very important that you complete this survey. It should be completed by one adult in your household.* Your voluntary response will help prevent the spread of these invasive species and protect our lakes.

You are assured of complete confidentiality. The survey return envelope has an identification number which will be used to check off the corresponding number on the mailing list when your survey is returned. This way we will not have to send a reminder to you. Your name will never be placed on the survey or in our survey return database. Other than the identification number no other personal information is collected or used.

Please return this survey in the enclosed self-addressed, postage paid envelope as soon as possible and no later than **October 1. 2012**

If you have any questions, the people managing the survey can be reached via e-mail at <u>wandcmason@frontiernet.net</u> or at 218-365-4599.

If this survey raises your interest in what we are doing, I urge you to join the White Iron Chain of Lakes Association. You can find a membership form at http://wicola.kawishiwiwatershed.com/files/2013-membership_form.pdf. Please consider becoming a member and keeping up to date with our project.

Thank you for completing the survey! Your response is important to the success of our project.

Sincerely,

Jo Kovach President, WICOLA



Appendix A

WICOLA

White Iron Chain of Lakes Association P.O. Box 493 Ely Minnesota 55731



http://www.wicola.org

Please return this survey by October 1, 2012

Please circle the answer that corresponds closest to your opinion or situation. For this survey, **Aquatic invasive species** (AIS) are defined as non-native plants, animals and diseases that spread to lakes and rivers where they have NOT always lived. **Watercraft** are canoes, kayaks, duck boats, sailboats, personal watercraft, fishing and motor boats, rafts, and seaplanes.

1. To what extent do you feel each of the following is a problem in the Kawishiwi Watershed? (Circle one number for each item)

	Big	Medium	Small	Not a	Don't
Item	Problem	Problem	Problem	Problem	Know
Water level fluctuations	1	2	3	4	0
Overall water quality	1	2	3	4	0
Algae growth	1	2	3	4	0
Aquatic plant growth	1	2	3	4	0
Aquatic invasive species	1	2	3	4	0
Septic systems	1	2	3	4	0
Wells	1	2	3	4	0
Alteration to shoreline	1	2	3	4	0
Lakeshore erosion	1	2	3	4	0
Burning of leaves and brush	1	2	3	4	0
Trees lost to disease	1	2	3	4	0
Response of public officials to concerns	1	2	3	4	0
Zoning ordinances (lot use, sizes, setbacks)	1	2	3	4	0
Iron mining	1	2	3	4	0
Non-iron mining	1	2	3	4	0
Other (specify)	1	2	3	4	0

- Do you currently own any watercraft? (✓ one box)
 1□Yes (continue) 2□No → (Skip to 4)
- 3. How many licensed watercraft did your household own during the 2012 boating season? (write in number by type of watercraft owned)

#	Type of Licensed Watercraft	#	Type of Licensed Watercraft
	1. Pontoon boat		8. Sailboard
	2. Speed boat		9. Sailboat
	3. Fishing Boat with motor		10. Paddle boat
	4. Rowboat		11. Personal watercraft (jet ski)
	5. Sea plane		12. Duck boat
	6. Canoe		13. Other (describe):
	7. Kayak		

4. Did you use any watercraft during the 2012 boating season? (✓ one box) 1□Yes (Continue) 2□No → (Skip to 17)

Appendix A

5. Upon which waterbody(s) of the Kawishiwi Watershed did you use your watercraft during the 2012 boating season?

Please list other lakes including those within the Boundary Waters Canoe Area Wilderness. (<a>v all that apply)

1	Bear Island	8	Greenwood	15	North McDougal
2	Bearhead	9	Harriet	16	One Pine
3	Birch	10	Isaac (Kingfisher)	17	Sand
4	Dumbbell	11	Johnson	18	Silver Island
5	Farm	12	Kawishiwi River	19	Slate
6	Garden	13	Middle McDougal	20	Stony River
7	Greenstone	14	Mitawan	21	White Iron

Other including lakes in the Boundary Waters Canoe Area Wilderness:

6. During the 2012 boating season, did you transport any watercraft to a body of water OUTSIDE the Kawishiwi Watershed?

(see map on back of cover letter) (✓ one box) 1□Yes If 'YES', where did you go? Identify water body/nearest town: _____ 2□No.....

7. How important is it that watercraft users take actions to prevent the spread of these aquatic invasive species (AIS)?

(circle one number per invasive species)

	Very	Somewhat	Not Very	Not at All	
Aquatic Invasive Species	Important	Important	Important	Important	Don't Know
Zebra/quagga mussels	1	2	3	4	5
Rusty crayfish	1	2	3	4	5
Curly leaf pondweed	1	2	3	4	5
Eurasian water milfoil	1	2	3	4	5
Purple loosestrife	1	2	3	4	5
Spiny water fleas	1	2	3	4	5
Asian carp	1	2	3	4	5
Viral hemorrhagic septicemia or	1	2	3	4	5
VHS (a fish virus)					
Other⊗ (specify)	1	2	3	4	5

8. From what sources did you get information about AIS? (</ all that apply)

1 Billboards	9 🗆 Television ads	17 Watercraft inspections
2 Identification cards	10□ Displays at rest areas	18□ Signs along roadways
3□ Bait shop posters	11 Brochures, fact sheets	19□ Newspaper ads
4□ Water access signs	12□ Radio ads	20 Newspapers or magazines
5□ Stickers	13 Regulation booklets	21 Posters at airports
6 Windshield flyers	14□ Twitter	22□ Web sites
7□ Regulation cards	15□ Facebook	23 Other(specify):
8 Highway radio messages	16□ Kiosk at sporting goods stores	

9. Of the sources of information that you checked above in Question 8, which four are the MOST EFFECTIVE sources for AIS in reaching YOU? (write numbers from the previous table in the spaces provided)

#(____) #(____) #(____)

- **10.** During the 2012 boating season, did you take action to prevent the spread of AIS? (✓ one box) 1□Yes
 - ${}_2\squareNo$ if no skip to 12

Appendix A

11. After removing watercraft from the water, prior to transporting it to another body of water, how often did you take the following actions? (*Circle one answer for each item*)

Action Taken	Always	Usually	Sometimes	Never
Inspect and remove aquatic plants and animals from watercraft,	1	2	3	4
trailer and equipment				
Drain water from bilge, bait and live well	1	2	3	4
Dispose of unwanted live bait, worms and fish parts in the trash	1	2	3	4
Wash watercraft with high pressure water hot water	1	2	3	4
Rinse watercraft and equipment with garden hose	1	2	3	4
Dry everything for at least 5 days before use	1	2	3	4
Other:	1	2	3	4

12. If you did not take action, why not? (<a>
 all that apply))

I did not transport the boat to another body of water:	
2□ I did not realize the importance of my actions	
₃□ I forgot	
₄□ It is inconvenient. I did not have the time	

- 5 Spread of AIS is only a matter of time; my actions would not have made a difference
- 6 I did not know what I was supposed to do
- $\tau \Box$ I believed it only takes one to cause an infestation; my actions would not have made a difference
- **I** did not believe that AIS was a problem; I did not care
- **9**□ I was not in waters which had invasive species
- 10 AIS are everywhere anyway; my actions would not have made a difference
- 11□ No boat washing equipment was available
- 12 I believed the current regulations were ineffective
- 13□ I was willing to pay the fine
- 14 I did not want anyone telling me what to do
- 15□ I was physically unable
- ¹⁶□ Other (specify)
- 13. What do you think motivates other people to take action(s) to prevent the spread of AIS? (Circle one number for each item)

	Very	Somewhat	Not Very	Not at All
Motivations	Effective	Effective	Effective	Effective
Friends, relatives, or acquaintances told them to do it	1	2	3	4
They see other watercraft users doing it	1	2	3	4
They feel it is their personal responsibility; their actions make a difference	1	2	3	4
It is their desire to keep AIS out of our lakes and rivers	1	2	3	4
They want to prevent damage to their boat, equipment or property	1	2	3	4
Laws or regulations that prevent transport of AIS affect their actions	1	2	3	4
Threat of enforcement action by conservation officers	1	2	3	4
Threat of fines that would cost them money	1	2	3	4
Embarrassment of being found in violation	1	2	3	4
Other (specify):	1	2	3	4

- **14.** Have you ever seen the Stop Aquatic Hitchhikers! message? (see right; ✓one box below) 1□Yes 2□No →-if no skip to 17
- 15. Based on your exposure to *Stop Aquatic Hitchhikers!*, how often WILL you take actions in the FUTURE to prevent the spread of AIS in the Kawishiwi Watershed? (✓ one box below) 1□Always 2□Usually 3□Sometimes 4□Never



STOP AQUATIC HITCHHIKERS!
Appendix A

16. Recent Minnesota regulations are aimed at preventing the spread of AIS. Which of the following is true or false?

(circle one for each statement)

			Don't	
Regulation	True	False	Know	
It is legal to dump leftover bait into lakes and rivers to help feed the fish	1	2	3	
It is recommended to insert the plug in the boat drain before leaving access	1	2	3	
If I want to reuse live minnows, it is recommended that tap or spring water be	1	2	3	
brought from home to replenish water removed from bait bucket at water				
access				
Use of smelt as bait is legal only if caught in those waters	1	2	3	
Crayfish can be used as bait only if caught in those waters	1	2	3	
It is illegal to transport any aquatic plants or prohibited species on public roads	1	2	3	
Water must be drained from motor, bilge, and livewells before leaving access	1	2	3	
Game fish should be stored in livewell during transport on public roads	1	2	3	

17. Please rate to what extent you agree or disagree with the following statements on aquatic invasive species. (circle one number for each statement)

	Strongly			Strongly	Don't
"Aquatic invasive species	Agree	Agree	Disagree	Disagree	Know
cost money annually"	1	2	3	4	5
can be spread by people moving contaminated equipment, boats, and vehicles"	1	2	3	4	5
degrade water quality"	1	2	3	4	5
outcompete desirable native organisms/destroy popular fisheries"	1	2	3	4	5
reduce biodiversity"	1	2	3	4	5
spread disease"	1	2	3	4	5

18. How important is it to protect the Kawishiwi Watershed from the spread and impacts of AIS. In your opinion? (v one box)

1 Very Important 2 Somewhat Important 3 Not Very Important 4 Not at All Important

19. What is your gender? (✓ one box)

1 Male 2 Female 3 Prefer not to answer

- 20. What year were you born? (write in) 19____ Prefer not to answer
- 21. Where is your primary residence? (one box)

1□ Ely Area	2□ Lake County, not in	3□ St. Louis County, not in	₄□ Other	₅⊡ Other 1
	Ely area	Ely area	Minnesota	Specify State:

22. How long did you spend in the Kawishiwi Watershed during the 2012 boating season? (vone)

1□ Entire season	2 9-12 months	3□ 3-6 months	₄□ 2-3 months
₅□ 1-2 months	6□ 1-3 weeks	⁷ □ 1 day-1 weeks	8□ I was not in watershed

23. What recommendations or other comments would you like to offer about the spread of aquatic invasive species in our area? (please write in the space provided)

Thank you for participating in this survey. Please return this survey in the enclosed stamped envelope by October 1, 2012. If you have lost the envelope you may return it to: WICOLA, PO Box 493, Ely, MN 55731

Appendix A



Appendix B Parcel Taxpayers and Returns by Lake

The following chart shows the lakes in the Kawishiwi Watershed which have parcels for which individuals pay taxes, all of whom received a survey. The number of returns by lake are also shown.

Name of Lake	Number of	Number	Percent
	Taxpayers	of	Responding
		Returns	
ARTHUR (CANARY)	3	1	33.3%
BANDANA 30 60 9	1		0.0%
BEAR ISLAND	181	83	45.9%
BEARSKIN LAKE	1		0.0%
BEAVER (GRASSY) (31-62-13)	1		0.0%
BEETLE 7 60 9	1		0.0%
BIRCH (St. Louis County)	165	68	41.2%
BIRCH LAKE (Lake County)	40	21	52.5%
BLUEBERRY (9-61-12)	2	1	50.0%
CANARY (CORTES)	4	1	25.0%
CAT 10 60 9	1		0.0%
CHARITY 32 60 6	1	1	100.0%
CHOW 11 60 11	1	1	100.0%
COLD	1	1	100.0%
DRAGON	1	1	100.0%
DUMBBELL 31 60 7	16	10	62.5%
DUMBBELL 36 60 8	1	1	100.0%
EAST CHUB 21 60 10	1		0.0%
FARM 34 63 11	145	71	49.0%
FILSON CREEK	9	2	22.2%
FULTON 30 60 6	4	1	25.0%
GANDER 18 60 9	1	1	100.0%
GARDEN 30 63 11	82	29	35.4%
GEGOKA 28 60 9	9	2	22.2%
GREENSTONE 22 63 10	5	2	40.0%
GREENWOOD 20 58 10	3		0.0%
GREENWOOD RIVER	1		0.0%
GROUSE 15 60 9	7	1	14.3%
GUNSTEN 10 60 10	8	5	62.5%
HARRIET 29 60 6	11	5	45.5%
HOMESTEAD 36 60 7	1	1	100.0%
HORSESHOE (4-61-14)* (should be Star Lake)	1	1	100.0%
ISAAC (KINGFISHER)	8	1	12.5%
ISABELLA RIVER	1		0.0%
ISABELLA RIVER LITTLE	1		0.0%
JEWELL 14 63 10	1		0.0%
JOHNSON (36-62-13)	12	2	16.7%
JOSEPH (CROW)	1		0.0%
KANGAS	2		0.0%

Appendix B
Parcel Taxpayers and Returns by Lake

Name of Lake	Number of	Number	Percent
	Taxpayers	of	Responding
KAWISHIWI RIVER	27	Returns	59.3%
KEMPTON 24 63 11	1	10	0.0%
KITIGAN 14 60 9	11	3	27.3%
LARK 23 63 10	1		0.0%
UTTLE WAMPUS 28 60 10	1	1	100.0%
MEADOW	1		0.0%
MIDDLE MCDOUGAL 2 59 10	21	12	57.1%
MITAWAN 24 60 9	37	11	29.7%
MUCKWA	4	1	25.0%
MUD (9-62-12)	2	1	50.0%
NIP CREEK	1		0.0%
NORTH MCDOUGAL 36 60 10	20	6	30.0%
ONE PINE	48	20	41.7%
PIKE 24 60 10	1		0.0%
PLANTED 19 60 9	1		0.0%
ROUND ISLAND 12 59 8*	1		0.0%
SAND 26 59 11	29	16	55.2%
SILVER ISLAND 36 61 7	1		0.0%
SISTER 28 60 6	2		0.0%
SLATE 17 60 10	10	7	70.0%
SOCK	8	2	25.0%
SOUTH FARM 36 63 11	2	1	50.0%
SOUTH MCDOUGAL 12 59 10	4	2	50.0%
SPRUCE	1		0.0%
STEAMHAUL 23 60 9	1	1	100.0%
STONY 34 60 10	6	1	16.7%
STONY RIVER	4	1	25.0%
STONY RIVER NO	1		0.0%
SWALLOW 11 60 10	6	2	33.3%
TANNER 8 59 7	5	2	40.0%
TRIANGLE 24 63 10	1	1	100.0%
TRIBUTARIES	4	2	50.0%
TWIN (15-62-13)*	6	3	50.0%
UNNAMED LAKE (NOT CVT SPECIFIC)	6	2	33.3%
VICTOR 13 60 9	4	1	25.0%
WADOP 25 60 10	1	1	100.0%
WAMPUS 33 60 10	4	2	50.0%
WEST CHUB 20 60 10	4	3	75.0%
WHITE IRON (HAYES) (St. Louis County)	114	52	45.6%
WHITE IRON (Lake County)	166	72	43.4%
Totals	1303	559	42.9%

Question 1 asked, "To what extent do you feel each of the following is a problem in the Kawishiwi Watershed?" The following analysis uses the parcel tax classes described in the section "Tax Classification of Parcels" on page 5 to show the differences in responses among the taxpayers of different types of parcels in the Kawishiwi Watershed. For the purposes of this analysis, a single tax classification was chosen for each taxpayer surveyed, with residential parcel classifications taking precedence over seasonal parcel classifications, which in turn took precedence over rural vacant land. Often the same parcel has multiple parcel records with different tax classifications.

The following chart shows the percent of persons responding to each issue who thought the issue was either a big or a medium problem. As with the chart in the main report, the mining items have been removed. The items are ordered in the order of the percent of residents responding to the issue as a big or a medium problem.



The issues of most concern to taxpayers with residential parcels (more than 30% of the respondents) are: water level fluctuation; AIS; response of public officials, and septic systems. Seasonal parcel taxpayers are most concerned about water level fluctuation, trees lost to disease, and AIS. Taxpayers for rural vacant land parcels tended to rank most issues lower than taxpayers in the other three classes, but they reported concerned with response of public officials, zoning ordinances and AIS. AIS ranked in the top five concerns of all parcel tax classes.

The iron mining issues also elicited slightly different responses from the three groups of taxpayers. Residents considered non-iron mining less of a problem seasonal and rural vacant land taxpayers.



The following charts display the individual responses by parcel tax class.

Q1. Resident	Big	Medium	Small	Not a	Don't	Big and	Total
Taxpayers	Problem	Problem	Problem	Problem	Know	Med	responses
	Percent	Percent	Percent	Percent	Percent	Problem	
						Percent	
Water Level	20.2%	27.3%	25.6%	14.9%	12.0%	47.5%	242
Fluctuation							
Overall Water	10.0%	18.3%	23.8%	35.4%	12.5%	28.3%	240
Quality							
Algae Growth	7.8%	18.9%	24.7%	28.0%	20.6%	26.7%	243
Aquatic Plant	10.2%	17.4%	24.3%	27.2%	20.9%	27.7%	235
Growth							
Aquatic	25.1%	12.6%	16.7%	17.2%	28.5%	37.7%	239
Invasive							
Species							
Septic Systems	11.9%	21.0%	23.5%	18.1%	25.5%	32.9%	243
Wells	2.5%	8.8%	19.6%	40.0%	29.2%	11.3%	240
Alteration to	9.5%	16.1%	28.5%	29.3%	16.5%	25.6%	242
Shoreline							
Lakeshore	7.1%	14.6%	26.3%	32.5%	19.6%	21.7%	240
Erosion							

Q1. Resident	Big	Medium	Small	Not a	Don't	Big and	Total
Taxpayers	Problem	Problem	Problem	Problem	Percent	Problem	responses
	rereent	rereent	rereent	rereent	rereent	Percent	
Burning of Leaves and Brush	1.2%	7.9%	20.7%	53.7%	16.5%	9.1%	242
Trees Lost to Disease	11.5%	17.3%	34.6%	18.9%	17.7%	28.8%	243
Response of Public Officials	14.3%	20.6%	20.6%	18.1%	26.5%	34.9%	238
Zoning Ordinances	6.2%	15.3%	26.0%	32.2%	20.2%	21.5%	242
Iron Mining	8.6%	9.8%	15.9%	47.3%	18.4%	18.4%	245
Non-iron Mining	29.1%	5.7%	9.4%	36.1%	19.7%	34.8%	244

Q1. Seasonal	Big	Medium	Small	Not a	Don't	Big and	Total
Taxpayers	Problem	Problem	Problem	Problem	Know	Med	responses
	Percent	Percent	Percent	Percent	Percent	Problem	
						Percent	
Water Level	15.6%	30.2%	23.8%	22.0%	8.4%	45.8%	441
Fluctuation							
Overall Water	6.1%	21.7%	23.5%	39.6%	9.0%	27.8%	442
Quality							
Algae Growth	5.0%	16.1%	29.6%	37.1%	12.2%	21.0%	442
Aquatic Plant	7.1%	19.2%	29.5%	31.3%	13.0%	26.3%	438
Growth							
Aquatic	15.1%	18.1%	15.6%	20.2%	31.0%	33.3%	436
Invasive							
Species							
Septic Systems	5.3%	16.7%	24.0%	28.1%	25.9%	22.0%	437
Wells	1.4%	6.5%	17.1%	48.4%	26.7%	7.8%	434
Alteration to	6.2%	17.4%	27.2%	36.5%	12.8%	23.5%	438
Shoreline							
Lakeshore	4.6%	13.5%	28.8%	41.9%	11.2%	18.1%	437
Erosion							
Burning of	1.4%	6.0%	20.7%	57.2%	14.7%	7.4%	435
Leaves and							
Brush							
Trees Lost to	10.7%	24.1%	28.4%	21.6%	15.2%	34.8%	440
Disease							
Response of	10.8%	16.3%	16.3%	21.3%	35.3%	27.1%	436
Public							
Officials							

Q1. Seasonal	Big	Medium	Small	Not a	Don't	Big and	Total
Taxpayers	Problem	Problem	Problem	Problem	Know	Med	responses
	Percent	Percent	Percent	Percent	Percent	Problem	
						Percent	
Zoning	6.7%	16.2%	18.3%	38.2%	20.6%	22.9%	432
Ordinances							
Iron Mining	14.4%	13.0%	15.3%	37.3%	19.9%	27.5%	437
Non-iron	33.9%	10.1%	6.7%	28.0%	21.3%	44.0%	436
Mining							

Q1. Rural	Big	Medium	Small	Not a	Don't	Big and	Total
Vacant Land	Problem	Problem	Problem	Problem	Know	Med	responses
Taxpayers	Percent	Percent	Percent	Percent	Percent	Problem	
						Percent	
Water Level	2.6%	14.3%	10.4%	24.7%	48.1%	16.9%	77
Fluctuation							
Overall Water	5.1%	11.5%	15.4%	21.8%	46.2%	16.7%	78
Quality							
Algae Growth	5.1%	14.1%	11.5%	19.2%	50.0%	19.2%	78
Aquatic Plant	3.8%	14.1%	9.0%	24.4%	48.7%	17.9%	78
Growth							
Aquatic	17.1%	9.2%	7.9%	14.5%	51.3%	26.3%	76
Invasive							
Species							
Septic Systems	7.9%	10.5%	7.9%	19.7%	53.9%	18.4%	76
Wells	2.6%	6.6%	7.9%	26.3%	56.6%	9.2%	76
Alteration to	6.6%	11.8%	9.2%	19.7%	52.6%	18.4%	76
Shoreline							
Lakeshore	6.6%	7.9%	13.2%	22.4%	50.0%	14.5%	76
Erosion							
Burning of	1.3%	5.3%	6.6%	38.2%	48.7%	6.6%	76
Leaves and							
Brush							
Trees Lost to	9.2%	7.9%	14.5%	18.4%	50.0%	17.1%	76
Disease							
Response of	14.7%	14.7%	8.0%	10.7%	52.0%	29.3%	75
Public							
Officials							
Zoning	10.4%	15.6%	10.4%	18.2%	45.5%	26.0%	77
Ordinances							
Iron Mining	18.4%	10.5%	6.6%	22.4%	42.1%	28.9%	76
Non-iron	28.0%	6.7%	1.3%	20.0%	44.0%	34.7%	75
Mining							

Appendix D Question 5: Waterbodies in the Kawishiwi Watershed Used by Respondents in 2012 with AIS Information

The waterbodies reported as being visited within the Kawishiwi Watershed are arranged in relative order from west to east across the watershed. The colored bars represent waterbodies that are connected. The Kawishiwi River was assumed to be the South Kawishiwi River when reported by someone using Birch Lake and the North Kawishiwi River when reported being used by someone using the White Iron Chain of Lakes. The only AIS reported in the watershed is rusty crayfish, present in Birch Lake and the White Iron chain.

A total of 58 waterbodies were reported as being visited during the 2012 boating season, with another 20 visited in the portion of the Boundary Waters Canoe Area Wilderness (BWCAW) in the watershed. There were 1,539 total visits reported to these waterbodies, with 123 of those visits in the BWCAW. Primary waterbodies used were those in the White Iron Chain, Birch Lake, Bear Island Lake, and the Kawishiwi River (North and South combined), all of which except Bear Island and the Kawishiwi River are reported as being infested with rusty crayfish.

Lakes In Watershed	# Respondents	Rusty
Visited	Reporting Visits	Crayfish
Arthur	1	
Q5.10 Issac (Kingfisher)	6	
Joseph (Crow)	2	
Cold	1	
Sock	1	
Q5.1 Bear Island	110	
Bear Island River	2	
Muckwa	4	
Q5.11 Johnson	40	
Mud	2	
Q5.2 Bearhead	9	
Blueberry	1	
Q5.16 One Pine	50	
Perch	1	
Whisper	1	
Q5.3 Birch	173	Х
Birch Creek	1	
Q5.12 Kawishiwi River	138	
Q5.5 Farm	185	Х
Q5.6 Garden	167	Х
South Farm	15	Х
Q5.21 White Iron	228	Х
Q5.7 Greenstone	7	
Nickel	1	
Q5.20 Stony River	34	
Q5.19 Slate	26	
Chow	1	
Gypsy	1	
Dunnigan	2	
August	1	
West Chub	1	
Deep (Swallow)	1	

Lakes In Watershed	# Respondents	Rusty
Visited	Reporting Visits	Crayfish
Q5.17 Sand	27	
Sand River	1	
Stony Lake	1	
Q5.8 Greenwood	9	
Q5.13 Middle McDougal	34	
Q5.15 North McDougal	26	
Beetle	1	
Dragon	2	
Grouse	1	
Cat	1	
Kitigan	1	
Q5.14 Mitawan	17	
Victor	1	
Gegoka	1	
Little Isabella River	1	
Snake [Creek} River	2	
Eighteen	1	
Q5.4 Dumbbell	34	
Homestead	1	
Hogback	2	
Fulton	1	
Charity	1	
Q5.9 Harriet	10	
Sister	1	
Island River	8	
Q5.18 Silver Island	18	
BWCA	123	
BWCA only		
# Lake Visits	1539	
Visits to AIS infested waters		768

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Two hundred (200) respondents reported making 375 visits to 151 different waterbodies outside the Kawishiwi Watershed in 2012. Fifty nine (59) of these waterbodies are infested with one or more species of AIS; there were 249 visits by 152 respondents (18.8% of all respondents) to the infested waterbodies. Of the 59 infested waterbodies, rusty crayfish are the only type of AIS found in 22 of them. Seventy-five (72) respondents only visited these lakes in 155 visits. The remaining 37 waterbodies contained other types of AIS. Eighty respondents visited these lakes in 94 visits.

Waterbodies Outside	#	% of Total	# Visits by	% of Total Visits	# Respondents	% Respondents	% Respondents
Watershed	Waterbodies	Waterbodies	Respondents	by Respondents	to Q6 Visiting	to Q6 Visiting	Visiting
Rusty Crayfish infested only	22	14.6%	155	41.3%	72	36.0%	8.9%
Other AIS*infested	37	24.5%	94	25.1%	80	40.0%	9.9%
Sub-total	59	39.1%	249	66.4%	152	76.0%	18.8%
Non-infested waterbodies	92	60.9%	126	33.6%	48	24.0%	5.4%
Totals	151	100.0%	375	100.0%	200	100.0	24.2%**

*includes one waterbody, Lake Vermilion, which also has rusty crayfish

**810 surveys were returned; 75.8% of the returned surveys did not indicate travel outside of the watershed

The following table tallies each lake, the number of visits made, and shows the specific AIS infestation(s) in the waterbody. Blue highlighting indicates a waterbody infested only with rusty crayfish; yellow highlighting indicates a waterbody infested with other types of AIS.

Significant travel was reported to several lakes close to the Kawishiwi Watershed, including Fall Lake [rusty crayfish], Shagawa Lake [rusty crayfish], Burntside Lake [spiny water fleas] and Lake Vermilion [rusty crayfish and Chinese Mystery snail], all infested with AIS, as noted.

The total number of visits to waterbodies infested with a specific aquatic invasive species was also calculated. The greatest number of visits (155) was to waterbodies infested with rusty crayfish, already present in lakes in the Kawishiwi Watershed. The next greatest number of visits was to waterbodies with spiny water fleas (60) and to waterbodies with zebra mussels (16) indicating species which might be of high concern in terms of spreading to the watershed.

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Agnes	1													
Alder (east	1													
end, BWCA)														
All over	1													
Angleworm	1													

Name of Lake Outside Kawishiwi	Number of Visits Reported	Eurasian Water- milfoil	Zebra Mussels	Spiny Water- fleas	Rusty Crayfish	Bighead and Silver Carp	Chinese Mystery Snail	Faucet Snail	Flowering Rush	New Zealand Mud- snail	Round Goby	Ruffie	VHS	White Perch
Watershed														
Annandale	1													
Ash River	1			Х										
Banner Marsh (Peoria IL)*	1													
Baptism River (tributary of Lake Superior)	1													
Bass, St, Louis County	2				Х									
Basswood including Pipestone Bay	50				Х									
Beauty Lake (Hibbing)	1													
Beaver Dam Lake (Cumberlan d WI)	1	X												
Big	1													
Big Rice (south of Tower)	2													

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Boats on	1													
water														
outside of														
watershed														
Bone, Lake	1													
County														
Breda	1													
Buffalo	1													
Lake, Detroit														
Lakes MN														
Burntside	25			Х										
BWCA/Queti	1													
со														
Calm Lake	1													
(Ontario														
Canada)														
canoes to	1													
other BWCA														
entries														
Caribou	1			Х										
(east end,														
BWCA)														
Cedar	1				Х									
Christmas	1	Х												
Lake														
(Excelsior														
MN)														

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Cloquet MN	1			Х										
(If Cloquet														
River)														
Cook (Isanti)	1	Х												
(if in Anoka														
County)														
Crab Lake	2													
Cramer Lake	1													
(Finland)														
Crane Lake	2			Х										
Crooked	3	Х												
Dam Five	1													
Deer River	1													
area MN														
Delay	2													
Disappointm	2													
ent														
Eagle Lake	1													
(near														
Cromwell														
MN)														
Eagles Nest	1				Х									
One														
Eagles Nest	1				Х									
Three														
Eagles Nest	1				Х									
Two														

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Echo Lake	1													
(Finland)														
Elbow Lake	1													
(near Lake														
Superior)														
Ely (area,	1													
not lake)														
Ely Lake	1													
Ely Tower	1													
area														
Fall	28				Х									
Fenske	2													
Forest Lake,	3								Х					
Forest Lake														
MN														
Four Mile	1													
Lake														
Fourtown	3													
Fraser	1													
George	1													
(Isanti)														
Grand	1													
Marais														
Grassy	1													
Green	1	Х												
(Isanti)														
Hegman	7													

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Horse (Lake	1													
County)														
Horseshoe	1													
(Cross Lake)														
Jordan	1													
Kabetogama	1			Х										
Katherine	1													
Kincaid Lake	1													
(Carbondale														
IL)														
Knife	2				Х									
Lac La Croix	2			Х										
Lake Carlos,	1	Х	Х											
Alexandria														
Lake Elmo	1	Х												
Lake	1				Х									
Esquagama														
Lake	2	Х	Х						Х					
Minnetonka														
Lake	1	Х	Х											
Nokomis,														
Minneapolis														
Lake of the	2			Х										
Woods														
Lake	1	Х												
Owasso,														
Shoreview														
MN														

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Lake	7	Х	Х	Х						Х	Х	Х	Х	Х
Superior														
(including														
Two														
Harbors)														
Lake Thirty,	1													
Bovey														
Lake	11				Х		Х							
Vermilion														
Lake	1	Х												
Waconia,														
Waconia														
MN														
Lake	2							Х						
Winnibigosh														
ish, Deer														
River														
Leech Lake,	1	Х												
Walker MN														
Little Indian	4													
Sioux River														
(Echo Trail)														
Little Long,	3				Х									
Ely														
Little Rice,	1													
south of														
Tower														
Little Sletten	1													
Long	1													

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Low	4													
Lower	1													
Pauness														
Madden	1													
Manytoo	1													
many in 5														
states														
Mercer WI	1						Х							
(did not														
transport)*														
Milaca	1													
Miner's Lake	2				Х									
Minneapolis	1													
Mississippi	1													
River,														
Champlain														
Park, MN														
Mississippi	1	Х	Х			Х								
River, Red														
Wing MN														
Mississippi	1					Х								
River, St.														
Louis MO														
Moose	1				Х									
Chain of														
lakes														
Moose Lake	10				Х									

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Moose Lake	1													
(east end of														
BWCA)														
Moose River	1													
(St. Louis														
County)														
Motorboat	1													
route with														
canoe														
Mountain	1													
(east end of														
BWCA)														
Mudro	3													
Nels	1													
Newfound	1				Х									
Newton	10				Х									
Nina Moose	2													
North	4													
Hegman														
Ojibway	5				Х									
Parent	1													
Pine (east of	1			Х										
BWCA)														
Prior Lake	1													
Quetico Park	1													
Rainy Lake	2			Х										
Rainy River	3			Х										
Richey Lake	1													

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Rush (Isanti)	1	Х												
[if Chisago														
County]														
Saganaga,	2			Х										
Grand														
Marais														
Saginaw	1													
area, MN														
Sandpit	1													
Sawbill Lake	1													
Seagull,	1													
Grand														
Marais														
Shagawa	12				Х									
Side	1													
(Bowman),														
Duluth area														
Silver Lake	1													
Sioux	1													
Narrows,														
Ontario														
Sletten	1													
Slim (near	1													
north end of														
Burntside)														
Snowbank	13				Х									

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	Of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Vutside	Reported	milloli		neas		Silver	Shall			iviua-				
Watershed						Carp				Slidii				
South Fowl	1			V										
(east end of	Ţ			^										
BWCA)														
South	4													
Hegman														
St. Croix	1	Х	Х		?	Х								
River,														
Hudson WI														
St. Croix	1	Х	Х		?	Х								
River,														
Prescott WI														
St. Louis	1		Х	Х	?					Х	Х	Х	Х	Х
River,														
Duluth MN														
Star Lake,	1													
Perham MN														
Sturgeon	1													
Lake/Sauant														
Lake,														
Ontario	4				V									
Sucker	4				X									
Swallow	1													
(BWCA)	1													
Lety Lake,	1													
Thomas	1													
Tin Car	1													
Tin Can	1													
IVIIKe	4				V									
TOTTE Lake	4				Х									

Name of	Number	Eurasian	Zebra	Spiny	Rusty	Bighead	Chinese	Faucet	Flowering	New	Round	Ruffie	VHS	White
Lake	of Visits	Water-	Mussels	Water-	Crayfish	and	Mystery	Snail	Rush	Zealand	Goby			Perch
Outside	Reported	milfoil		fleas		Silver	Snail			Mud-				
Kawishiwi						Carp				snail				
Watershed														
Toohey Lake	1													
Tower area	2													
Triangle	1				Х									
Triangle	2				Х									
(Little)														
Trout	1													
Twin Lakes	6			Х										
(East and														
West)														
Upper	1													
Pauness														
Vermilion	1				?									
River														
Voyageur	1													
National														
Park														
West Fowl	1													
(east end of														
BWCA)													 	
White Face	4													
Reservoir	_												<u> </u>	
Wilson	2													
Wind	1													
# Visits/#	375	18	9	17	23**	5	3	2	3	3	3	3	3	3
Lakes														
Infected														

*did not transport; not included in count of visits to infected waterbodies or respondents visiting infected waterbodies

** Does not include 4 waterbodies which may have rusty crayfish; does include Lake Vermilion which has other types of AIS

Appendix F Question 11: Actions Taken Prior to Transporting a Watercraft By Parcel Tax Class

Question 11 asked, "After removing watercraft from the water, prior to transporting it to another body of water, how often did you take the following actions?" The following analysis uses the parcel tax classifications described in the section "Tax Classification of Parcels" on page 5 to show the differences in responses among the taxpayers of different types of parcels in the Kawishiwi Watershed. For the purposes of this analysis, a single tax classification was chosen for each taxpayer surveyed, with residential parcel classifications taking precedence over seasonal parcel classifications, which in turn took precedence over rural vacant land. Often the same parcel has multiple parcel records with different tax classifications.

The following chart shows the percent of respondents of each parcel tax class who chose "Always" or "Usually" for each action. The chart shows there is little difference among the tax class of the parcel people pay taxes upon in terms of how often they perform certain actions to prevent the spread of aquatic invasive species. Over 80 % of the respondents from all classes of taxpayers drain water from bilges, bait buckets and live wells as well as inspecting their watercraft for aquatic plants and removing them if found.



The same conclusions may be drawn from the following information, which also shows that the paucity of responses from taxpayers of rural vacant land parcels makes it difficult to say with confidence what the group as a whole might do.

Q11. Resident Taxpayers	Always	Usually	Some-	Never	Total	Number
			times		Always and	Responses
					Usually	
Inspect and remove aquatic plants	76.7%	10.1%	6.2%	7.0%	86.8%	<u>129</u>
Drain water from bilge, bait, and	82.4%	9.2%	2.5%	5.9%	91.6%	<u>119</u>
live well						
Dispose of unwanted live bait in	64.2%	11.4%	9.8%	14.6%	75.6%	<u>123</u>
trash						

Appendix F Question 11: Actions Taken Prior to Transporting a Watercraft By Parcel Tax Class

Q11. Resident Taxpayers	Always	Usually	Some-	Never	Total	Number
			times		Always and	Responses
					Usually	
Wash watercraft with high	8.5%	4.3%	12.8%	74.4%	12.8%	<u>117</u>
pressure hot water						
Rinse watercraft, etc. with garden	21.0%	13.4%	28.6%	37.0%	34.5%	<u>119</u>
hose						
Dry everything for at least 5 days	42.0%	16.8%	20.6%	20.6%	58.8%	<u>131</u>
before use						

Q11. Seasonal Taxpayers	Always	Usually	Sometimes	Never	Total	Number
					Always and	Responses
					Usually	
Inspect and remove aquatic plants	86.2%	9.2%	0.9%	3.7%	95.4%	217
Drain water from bilge, bait, and	88.5%	5.0%	0.5%	6.0%	93.5%	200
live well						
Dispose of unwanted live bait in	71.1%	12.7%	7.8%	8.3%	83.8%	204
trash						
Wash watercraft with high	6.8%	2.6%	16.1%	74.5%	9.4%	192
pressure hot water						
Rinse watercraft, etc. with garden	16.7%	16.7%	23.0%	43.6%	33.3%	204
hose						
Dry everything for at least 5 days	42.1%	21.5%	18.7%	17.7%	63.6%	209
before use						

Q11. Rural Vacant Land Taxpayers	Always	Usually	Sometimes	Never	Total	Number
					Always and	Responses
					Usually	
Inspect and remove aquatic plants	88.5%	7.7%	0.0%	3.8%	96.2%	26
Drain water from bilge, bait, and live well	91.7%	0.0%	0.0%	8.3%	91.7%	24
Dispose of unwanted live bait in trash	80.0%	12.0%	0.0%	8.0%	92.0%	25
Wash watercraft with high pressure hot water	4.0%	4.0%	12.0%	80.0%	8.0%	25
Rinse watercraft, etc. with garden hose	14.8%	7.4%	25.9%	51.9%	22.2%	27
Dry everything for at least 5 days before use	42.9%	21.4%	14.3%	21.4%	64.3%	28

Appendix G Question 12: Reasons Why Actions Not Taken Prior to Transporting a Watercraft By Parcel Tax Class

Question 12 asked, "If you did not take actions, why not? The following analysis uses the tax classes described in the section "Tax Classification of Parcels" on page 5 to show the differences in responses among the taxpayers of different types of parcels in the Kawishiwi Watershed. For the purposes of this analysis, a single tax classification was chosen for each taxpayer surveyed, with residential parcel classifications taking precedence over seasonal parcel classifications, which in turn took precedence over rural vacant land. Often the same parcel has multiple parcel records with different tax classifications.

The following chart shows the percent of respondents of each parcel tax class selecting each option. As the graph demonstrates, the only option which had enough respondents to show a difference among the three parcel tax classes is "I did not transport the boat to another body of water."



Appendix G Question 12: Reasons Why Actions Not Taken Prior to Transporting a Watercraft By Parcel Tax Class

12 Why	Resident	Percent	Seasonal	Percent	Rural	Percent Rural
, actions not	Taxpaver	Resident	Taxpaver	Seasonal	Vacant	Vacant Land
undertaken	Count	Taxpaver	Count	Taxpaver	Land	Taxpaver
		Responding		Responding	Taxpaver	Responding
					Count	
L did not	105	41 2%	243	52.9%	30	36.6%
transport the	100	1112/0	210	52.570	50	501070
hoat to						
another body						
of water						
I did not realize	1	1.6%	3	0.7%	1	1 7%
the		1.070	5	0.770	-	1.270
importance						
of my actions						
I forget	1	1 69/	2	0.7%	0	0.0%
Tiorgot	4	1.0%	3	0.7%	0	0.0%
It is	3	1.2%	6	1.3%	2	2.4%
inconvenient,						
I did not have						
the time						
Spread of AIS is	4	1.6%	3	0.7%	1	1.2%
only a matter						
of time, my						
actions						
would not						
have made a						
difference						
I did not know	6	2.4%	11	2.4%	1	1.2%
what I was						
supposed to						
do						
I believed it	2	0.8%	1	0.2%	0	0.0%
only takes						
one to cause						
an						
infestation;						
my actions						
would not						
have made a						
difference						
I did not	0	0.0%	2	0.4%	0	0.0%
believe that						
AIS was a						
problem: I						
did not care						
I was not in	15	5.9%	24	5.2%	5	6.1%
waters which		3.370	- ·	3.2,0		0.1/0
had invasive						
species						
50000	1	1			1	

Appendix G Question 12: Reasons Why Actions Not Taken Prior to Transporting a Watercraft By Parcel Tax Class

12 Why	Resident	Percent	Seasonal	Percent	Rural	Percent Rural
, actions not	Taxpayer	Resident	Taxpayer	Seasonal	Vacant	Vacant Land
undertaken	Count	Taxpayer	Count	Taxpayer	Land	Taxpayer
		Responding		Responding	Taxpayer	Responding
					Count	
AIS are	2	0.8%	3	0.7%	0	0.0%
everywhere						
anyway; my						
actions						
would not						
have made a						
difference						
No boat	28	11.0%	57	12.4%	11	13.4%
washing						
equipment						
was available						
I believed the	8	3.1%	4	0.9%	2	2.4%
current						
regulations						
were						
ineffective						
I was willing to	0	0.0%	0	0.0%	0	0.0%
pay the fine						
I did not want	2	0.8%	0	0.0%	0	0.0%
anyone						
telling me						
what to do						
I was physically	3	1.2%	1	0.2%	1	1.2%
unable						

Appendix H Question 16: Response to Regulation Questions By Parcel Tax Class

Question 16 asked, "Recent Minnesota regulations are aimed at preventing the spread of AIS. Which of the following is true or false? The following analysis uses the tax classes described in the section "Tax Classification of Parcels" on page 5 to show the differences in responses among the taxpayers of different types of parcels in the Kawishiwi Watershed. For the purposes of this analysis, a single tax classification was chosen for each taxpayer surveyed, with residential parcel classifications taking precedence over seasonal parcel classifications, which in turn took precedence over rural vacant land. Often the same parcel has multiple parcel records with different tax classifications.

The following chart shows the percent of persons of each tax class responding correctly to the choices for each stated regulation..For all classes there is a good awareness of the regulations, except for those about the use of crayfish and smelt. The low number of responses from taxpayers with rural vacant land (48) make it hard to generalize about these respondents, although it appears that they might have a lower understanding of the new regulations with regards to dumping bait and reusing minnows.



Q 16. Resident Taxpayer	Answer	True	False	Don't	Total	Percent
				Know		correct
It is legal to dump leftover bait into lakes and rivers to help feed the fish	False	38	155	11	204	76.0%
It is recommended to insert the plug in the boat before leaving access	False	25	139	38	202	68.8%
If I want to reuse the minnows, it is recommended that tap or spring water be brought from home to replenish water removed from bait bucket at water access	True	132	14	57	203	65.0%
Use of smelt as bait is legal only if caught in those waters	False	43	52	107	202	25.7%
Crayfish can be used as bait only if caught in those waters	True	78	24	100	202	38.6%

Appendix H Question 16: Response to Regulation Questions By Parcel Tax Class

Q 16. Resident Taxpayer	Answer	True	False	Don't	Total	Percent
				Know		correct
It is illegal to transport any aquatic plants or prohibited species on public roads	True	168	8	28	204	82.4%
Water must be drained from motor, bilge, and livewells before leaving access	True	188	3	13	204	92.2%
Game fish should be stored in livewell during transport on public roads	False	11	127	65	203	62.6%

Q 16 Seasonal Taxpayer	Answer	True	False	Don't Know	Total	Percent correct
It is legal to dump leftover bait into lakes and rivers to help feed the fish	False	56	299	19	374	79.9%
It is recommended to insert the plug in the boat before leaving access	False	42	289	40	371	77.9%
If I want to reuse the minnows, it is recommended that tap or spring water be brought from home to replenish water removed from bait bucket at water access	True	200	59	112	371	53.9%
Use of smelt as bait is legal only if caught in those waters	False	81	82	206	369	22.2%
Crayfish can be used as bait only if caught in those waters	True	145	41	181	367	39.5%
It is illegal to transport any aquatic plants or prohibited species on public roads	True	306	16	49	371	82.5%
Water must be drained from motor, bilge, and livewells before leaving access	True	353	2	18	373	94.6%
Game fish should be stored in livewell during transport on public roads	False	30	254	85	369	68.8%

Q 16 Rural Vacant Land Taxpayer	Answer	True	False	Don't	Total	Percent
				Know		correct
It is legal to dump leftover bait into lakes and rivers to help feed the fish	False	11	29	8	48	60.4%
It is recommended to insert the plug in the boat before leaving access	False	4	37	7	48	77.1%
If I want to reuse the minnows, it is recommended that tap or spring water be brought from home to replenish water removed from bait bucket at water access	True	21	8	19	48	43.8%
Use of smelt as bait is legal only if caught in those waters	False	9	6	33	48	12.5%

Appendix H Question 16: Response to Regulation Questions By Parcel Tax Class

Q 16 Rural Vacant Land Taxpayer	Answer	True	False	Don't	Total	Percent
				Know		correct
Crayfish can be used as bait only if caught in those waters	True	15	3	30	48	31.3%
It is illegal to transport any aquatic plants or prohibited species on public roads	True	36	1	11	48	75.0%
Water must be drained from motor, bilge, and livewells before leaving access	True	45	0	3	48	93.8%
Game fish should be stored in livewell during transport on public roads	False	3	27	18	48	56.3%

Many of the comments provided on the surveys have been eliminated in this appendix. These include, but are not limited to, information provided to clarify coding; places where people put a question mark or said N/A; and information already compiled and presented in the survey. The following is meant to be a compilation of the rest of the comments which might be helpful to people using the results of this survey.

As much as possible the comments included below follow the outline of the survey, with comments that go beyond the survey at the end. Some comments are repeated so that all comments about a particular item or issue are placed together.

- For comments about iron and non-iron mining see Appendix J
- For kudos and comments about lake associations, including WICOLA, see Appendix K.

Question 1: Issues or Problems in the Kawishiwi Watershed

Overall

- This is about the future of our lakes! It is what defines Minnesota!
- It is ALL interrelated
- Currently a problem or of concern? Depends on one's point of view and time in the area.
- 2 people responded that they answered only about their own waterbody area

Issues concerning question 1

- Your cover letter purports to be about AIS. Much has NOTHING to do with AIS! [1 Other response:2: medium problem]
- X=what does this have to do with aquatic invasive species? [items x'ed are: Burning; diseased trees; response of public officials; zoning; iron mining; non-iron mining, all with response 4: Not a problem]
- Since when do small scale "burning leaves or brush" or "trees lost to disease" have any effect on AIS or even water quality? [response :to question 1 Burning of leaves and grass: 4] Not a problem]
- Keep this survey away from mining and stick to the mission statement.
- How can non-iron mining have an effect on the watershed when only drilling operations have been done—no mining has been done?
- If this survey is about AIS, why are questions/opinions listed in Question #1 concerning mining? What is your major concern—AIS or mining? We need this development of mining in this area.
- In question 1, what does ferrous and non-ferrous mining have to do with AIS? Stick to the issue of AIS in future surveys. Mining is a separate issue!

1. A. Water Level Fluctuations

This is a HUGE problem on Birch Lake. I understood that MN Power (MP) was supposed to
manage the chain of lakes between Birch and Fall as closely as possible to <u>natural</u> lake
fluctuations. This is not being done! During a weeklong rain event this early summer, which
produced four (4) inches of precipt., the Birch Lake level actually dropped. Now, the elevation is
so low that people are having trouble getting boats off their lifts. Why is this happening? Could
it be because lakes downstream have voices on MP's advisory board demanding more water at
the expense of Birch? To my knowledge, no lake associations on Birch Lk or the Babbitt
Conservation Club have any input on this advisory committee. This has to change! [Question 1
Water level fluctuation response: 1: big problem]

Appendix I

General Comments, Excluding

Those about Mining and Those about Lake Associations and Kudos

- Water level low a huge concern—know situation has been addressed by officials. [Bear Island Lake]
- Wild rice relates to [water level fluctuations] [response to question 1 Water level fluctuations: 2: medium problem] [Garden]
- !!! (on question 1 had check mark box in higher position on Water level fluctuations than 1: big problem) [White Iron]
- water fluctuation is normal [response to question 1 Water level fluctuations:4: not a problem] [not on a lake]

1. B. Overall water quality

- Mercury in the water was mentioned by 3 respondents [for all response to question 1 Water quality or Other: 1 big problem]
- Fertilizer runoff was mentioned by 2 respondents [response to question 1 Other: one responded 1: big problem; the other responded 2: medium problem]
- Lake sediment was mentioned by 1 respondent [Gunsten Lake] [response to question 1 Other : big problem
- Also, the water quality, including algae growth, is a <u>huge concern....</u> Since 1979 (when we bought our land), the water quality has gone downhill. {Farm Lake]
- I am concerned about the quality/safety of drinking water from lake water supply systems with respect to lakeshore properties with no approved septic system and discharge of gray water. [White Iron]
- I drink it; Birch OK [response to question 1 Water quality: 3: small problem]
- Also, the water quality, including algae growth, is a <u>huge concern {Farm Lake</u>]
- Use rain barrel collection [no response to question 1 Water quality]
- Depends [will AIS will degrade water quality?]
- Politics vs. water quality [response to question 1: big problem]
- Future water quality [response to question 1: big problem]

1. C. Algae growth

- Also, the water quality, including algae growth, is a <u>huge concern {Farm Lake</u>]
- Certain times of the year [response to question 1 Algae growth 2:medium problem][White Iron]

1. D. Aquatic plant growth

- What can be done about the weeds & plants that are filling our bays? [White Iron]
- Cat tails & water lilies [response to question 1 Aquatic plant growth3: small problem] [Kawishiwi River]
- A lot of "sea weed" up on surface of lake by dock this year. Do not know how to get rid of it, except to pull it out. [Bear Island Lake]
- In our lake area [Middle McDougal] early spring & low water levels are causing extensive weed growth in all of our lakes—totally changing lake quality & use.
- Three respondents reported a lack of aquatic vegetation [response to question 1 Aquatic plant growth 1: big problem for all]
- Our property [response to question 1 Aquatic plant growth 1: big problem] [Farm]
- In Garden and Farm Lakes we have lost a tremendous amount of aquatic vegetation.
- My concern—rusty crayfish destroying plant life in waters [response to question 1 Aquatic plant growth 1: big problem] [Farm]
- Crawfish eating all plant growth [response to question 1 Aquatic plant growth 1: big problem] [Farm]

- I live in Coon Lake in Anoka County. We have curly leaf pondweed and Eurasian milfoil but so far I do not believe we have zebra/quagga mussels.
- We have Eurasian milfoil in our lakes down here [Blue Earth county MN]. I do believe it helps water quality, but it is unfishable, and will ruin your swimming experience.
- I live in Washington County on Long Lake. It does not have a public access (been there 31 years). We got Eurasian milfoil 7 years ago. We had 1 home pulling their boat to other lakes and 1 home being rented by young men that hauled their boats and friends' boats in and out. It was devastating to our lake. Fifteen homeowners spent big money on chemicals and bought a weed harvester to control it.—it's better now.

1. D. (a) Aquatic plant growth: Wild rice

- Wild Rice [response 1 Aquatic plant growth 1: Big problem] [Farm]
- I feel planting wild rice should be included in this discussion—bad policy of MN Fish & Game
- The DNR should stop promoting the growth of wild rice. It truly is impacting our quality of lake experience negatively.
- Wild rice is taking over McDougal Lakes. It was planted there in the 1970's by a cabin owner. I believe it should be controlled. Change the law. Let property owners control the spread of WILD RICE!
- Wild rice relates to...[water level fluctuations] [response to question 1 Water level fluctuations: 2: medium problem] [Garden]
- How does "AIS" impact wild rice? [no lake information]
- The effect they [AIS] have on our wild rice crop. [Birch]
- I am very concerned about the rusty crayfish, including but not limited to their impact on the wild rice.[Farm[
- [I still want to know there is] lots of wild rice growing for my neighbor to harvest.

1. E. Aquatic invasive species

- Comments relating to specific aquatic invasive species may be found under question 7 below.
- This is a very important issue. We cherish the fact that our lake seems AIS free. I never take my boat into other lakes so I don't worry too much about following all the rules, but I certainly want all those who travel their boats to be extremely careful!!!
- I've never been on the lakes in Minnesota, but I think it's very important to keep zebra mussels and other invasive species out of the lakes because of the problem we have with the Great Lakes.
- It is a problem state-wide.
- Very bad problem—over 130 lakes in MN already have AIS. Getting close to the B.W.C.A.
- Don't know a lot about it but it sounds bad.
- I strongly believe in trying to stop AIS. If there is anything I can do in the future (within reason), please let me know. (signed)
- In regard to missing answer in question #1: I did not know how to answer as I am not aware of AIS in the watershed <u>YET</u>? I certainly hope that the spread can be avoided [no response]
- Invasive sp[ecies] laws [can't read for sure] [response to question 1 Other 1: big problem]
- There were 7 additional general responses to this item; these comments ranged from don't know and not a problem to big concern.

- 1. F. Septic Systems
 - I am concerned about the quality/safety of drinking water from lake water supply systems with respect to lakeshore properties with no approved septic system and discharge of gray water. [White Iron]
 - I am in favor of an aggressive, comprehensive inspection of <u>all</u> septic systems, and strict enforcement. I am concerned that there is a major septic system issue on the chain. Since 1979 (when we brought our land), the water quality has gone downhill. [Farm Lake]
 - Also concern [response to question 1 Septic systems 1: big problem] [Farm]
 - None at our cabin [response to question 1 Septic systems 4: not a problem] [not sure if this means there is not a problem at their cabin or they don't have a septic system]

1. G. Wells

1. H. Alteration to shoreline

• No lakeshore, but creek; county altered creek bed along road [response to question 1 Alteration to shoreline 3: small problem]

1. I. Lakeshore erosion

 Too much <u>clear cutting</u> of timber, therefore causing runoff & erosion [response to question 1 Other: big problem]

1. J. Burning of leaves and brush

1. K. Trees lost to disease [and other tree issues]

- Condition of Native Plant Communities (e.g. lack of long-lived conifers): fragmentation, parcelization, major disturbances (clear cut, wind, fire) [response question 1 Other1: big problem]
- Too much <u>clear cutting</u> of timber , therefore causing runoff & erosion [response to question 1 Other: big problem]
- Clean-up after tree harvest [response to question 1 Other 1: big problem]
- Balsam firs die off (70-80%) [response to question 1 Trees lost to disease 1: big problem] [TWP 60 RGE 10]
- Or drought [response to question 1 Trees lost to disease 1: big problem]
- 2 respondents reported no problem yet or normal loss to disease

1. L. Response of public officials to concerns

- I wish they would enforce ordinances they have [response to question 1 Zoning 1: big problem]
- Enforcement of the existing laws [response to question 1 Other 1: big problem]
- Too much government [response to question 1 Other 1: big problem]
- Politics vs. water quality [response to question 1 Other 1: big problem]
- Permissive for mining [response to question 1 Public Officials 1: big problem]
- DNR allows electric company huge flexibility and micromanages lake front owners.[response to question 1 Other 1: big problem]
- SLC Sheriff [response to question 1 Public Officials 1: big problem]
- Dog excrement [on my lawn] [response to question 1 Other 1: big problem] [Birch]

1. M. Zoning ordinances (lot use, sizes, and setbacks)

- Too many rules & too small of lots [response to question 1 Zoning: 1 big problem]
- Over Regulation [response to question 1 Other 1: big problem]

- <u>Strictly</u> apply state/county/township building statutes. <u>NO</u> waivers.
- Too many variances [response to question 1 Zoning 2: medium problem]
- I wish they would enforce ordinances they have [response to question 1 Zoning 1: big problem]
- Money speaks! [response to question 1 Zoning 1: big problem]

1. M. Iron mining See separate Appendix J

1. O. Non-iron mining See separate Appendix J

1. P. Other

- Watercraft issues [4 responses]
 - Watercraft [response to question 1 Other 1: big problem]
 - Large power boats endangering waterfowl [response to question 1 Other 1: big problem]
 - jet ski [response to question 1 Other 1: big problem]
 - Snowmobiles in summer [response to question 1 Other 2: medium problem]
- Environmental groups [3 responses]
 - Environmental groups [response to question 1 Other 1: big problem]
 - Radical environmentalists [response to question 1 Other 1: big problem]
 - And we need to keep the Sierra Group and other radical people <u>out</u> of <u>our</u> area!
- Visitors/Tourists
 - Mentioned twice [response to question 1 Other 1: big problem]
- Poaching
 - Poaching [response to question 1 Other 1: big problem]
- Fishing
 - Over-fishing; unsustainable catch [response to question 1 Other 2: medium problem]
 [Dumbbell]
- Burning garbage
 - Burning garbage [response to question 1 Other 2: medium problem]

Question 2. Do you currently own any watercraft?

Question 3. How many licensed watercraft did your household own during the 2012 boating season?

• Other types of watercraft reported are included in the chart for this question in the report.

3.6. Canoe

- Not sure how many were licensed actually; at least 2 canoes for sure (the ones we used).
- Paddle only

3.7. Kayak

- We are keeping 2 kayaks for someone who moved to Ohio (we don't own them) [were not counted in the responses to the question]
- 3.12. Duckboat
- Unlicensed

Question 4. Did you use any watercraft during the 2012 boating season?

• Our renters use all but the fishing boat.

Appendix I

General Comments, Excluding

Those about Mining and Those about Lake Associations and Kudos

Question 5. Upon which waterbody(s) of the Kawishiwi Watershed did you use your watercraft during the 2012 boating season?

- A complete list of waterbodies used in the Kawishiwi Watershed may be found in Appendix D.
- South Farm—very little, cannot get day motor permits.

Question 6. During the 2012 boating season, did you transport any watercraft to a body of water OUTSIDE the Kawishiwi Watershed?

• A complete list of waterbodies used outside of the Kawishiwi Watershed may be found in Appendix E.

Question 7. How important is it that watercraft users take actions to prevent the spread of these aquatic invasive species (AIS)?

• The comments below group all comments about a particular invasive species, not just the comments about actions to prevent their spread

General

• I assume you are asking this state-wide, not just Kawishiwi Watershed.

7.1. Zebra/quagga mussels

- I would like you to contact the MN DNR and find out the truth about zebra mussels. Did you know that they actually clean the lakes they are in? The problem is that, after the zebra mussels finish cleaning a lake, then they run out of the "bad" material to eat. Zebra mussels filter the water in the lakes. The DNR and others need to get the facts correct BEFORE jumping to conclusions.
- Zebra mussels also help quality, but destroy native clams, and you will need water shoes so your feet don't get cut up.
- Zebra mussels love scuba gear too! And they can be extremely tiny slimy little spots!
- Not sure if they can grow in our lakes [response to question 7 Zebra/quagga mussels 5: don't know]

7.2 Rusty crayfish

- I applaud the efforts to prevent the spread of aquatic invasive species. I am very concerned about the rusty crayfish, including but not limited to their impact on the wild rice.
- 3 respondents reported rusty crawfish as a big problem [2 in question 1 under AIS and 1 in question 1 under Other] [2 Farm Lake; 1 not on lake]
- My concern—rusty crayfish destroying plant life in waters [response in question 1 Aquatic plant growth 1: big problem] [Farm]
- Crawfish eating all plant growth [response in question 1 Aquatic plant growth 1: big problem] [Farm]
- No weeds—rusties destroyed them [Farm Lake]
- Rusty crayfish are a <u>huge</u> problem. I will have trapped over 7,000 off my 6' wide dock by month's end; they are in all lakes in the White Iron Chain. (signed)
- Trapped rusty crayfish [no lake property; TWP 60 RGE 20]
- Set traps last year; they are not so evident this summer [Farm Lake]
- Piragis ads for rusty crayfish traps[as a resource for knowing about AIS] [coded as 19 in question 9: Newspaper ads]
- I noted in discussions with some DNR personnel that their comment about the rusty crayfish problem was "Just learn to live with it." This does not help.[White Iron]
- Too late [response to question 7 Rusty crayfish 3: Not very important] [Garden]
7.3. Curly Leaf Pondweed

• I live in Coon Lake in Anoka County. We have curly leaf pondweed and Eurasian milfoil but so far I do not believe we have zebra/quagga mussels.

7.4. Eurasian water milfoil

- I live in Coon Lake in Anoka County. We have curly leaf pondweed and Eurasian milfoil but so far I do not believe we have zebra/quagga mussels.
- We have Eurasian milfoil in our lakes down here [Blue Earth county MN]. I do believe it helps water quality, but it is unfishable, and will ruin your swimming experience.
- I live in Washington County on Long Lake. It does not have a public access (been there 31 years). We got Eurasian milfoil 7 years ago. We had 1 home pulling their boat to other lakes and 1 home being rented by young men that hauled their boats and friends' boats in and out. It was devastating to our lake. Fifteen homeowners spent big money on chemicals and bought a weed harvester to control it.—it's better now.

7.5. Purple loosestrife

• I don't believe Purple Loosestrife is aquatic.{response to question 7 Purple Loosestrife 4: Not at all important]

7.6. Spiny water fleas

• Too late [response to question 7 Spiny water fleas 3: Not very important

7.7. Asian carp

- Marked as higher than 1: Very important in question 7 Asian carp
- Potential [response to question 7 Asian carp 1: Very important]

7.8. Viral hemorrhagic septicemia or VHS (a fish virus)

7.9. Other

- ALL [Response to question 7 Other 1: Very important]
- Fish
 - Why isn't anyone talking about smallmouth bass? They were brought into the area and are ruining walleye fishing in many areas. In my view, they are invasive also.
 - Small mouth bass [response to question 7 Other 1: Very important] [Birch]
 - It depends; do smallmouth bass, walleye, etc. degrade [water quality]?
 - o It depends; do smallmouth bass, walleye, etc. outcompete?
 - Suckers? [response to question 7 Other 1: Very important] [White Iron]
 - People are still adamant about what introduction of small mouth bass did to walleye population, but both are edible & fun to catch.

8. From what sources did you get information about AIS?

9. Of the sources of information that you checked above in Question 8, which four are the MOST EFFECTIVE sources for AIS in reaching you?

- Most of the other resources are listed in the response to these questions in the report.
- Again, comments from other questions in the survey are all grouped together to facilitate the use of the results of this report.
- Those that provide the <u>most detailed & accurate</u> information. Most sources only "graze" the subject so folks still don't know what they're really looking for on their watercraft. All they know is that they should. You have to educate yourself!

- About 100 others; too much????
- All are good
- All of the above
- The combination makes an impact.
- Keep informing the public

8.1. Billboards

• Considered [billboards] and [signs along roadways] equivalent

8.4. Bait shops

• I don't think that there is enough information available at critical spots. Example: at minnow places give each buyer a small card or provide a sticker for minnow pails or containers.

8.4. Water access signs

- Specific water access signs about which comments were received were the ones at the BWACW entry points (2 respondents), Fall Lake landing (1), and public accesses (2)
- Signs at all public accesses on the status or condition of that lake. Let people know if it is clean so we can keep it that way.
- More signs at landings telling boaters that the lake that they are on is infected—and specifically with what AIS.
- Posting reminder about: draining live wells, cleaning off weeds, etc. @ boat launches.
- Warning signs at all boat landings.
- More signs... especially on small lakes!
- Post signs.

8.5. Stickers

• I believe that the "aquatic hitchhiker" sticker placed onto boat trailer is the best reminder to follow the regulations!

8.11. Brochures, fact sheets

- Brochures, fact sheets and regulation booklets should give websites.
- Perhaps brochures should be handed out with each fishing license. (Since we don't fish, we wouldn't know if that's being done or not.)

8.13. Regulation booklets

- Brochures, fact sheets and regulation booklets should give websites
- Provide information in fishing regulation booklet which lakes/rivers have which AIS and how severe.
- Make the regulations available on website, printer friendly

8.17. Watercraft inspections (including recommendations for water access points)

- Boat accesses are most important to control AIS.
- There needs to be more oversight of public landing areas. It is terrible what goes on...including public urination & pooping! Put up signs that say no pooping and urination.
- Inspection!
- Inspectors cited as a source of information in question 8
- All boats brought to the area must be CONSISTENTLY inspected before any watercraft is placed in the water.

- Have all public landings manned to ensure boats, trailers, and water drained are checked before and after landing.
- Volunteer boat inspectors at public landings.
- Volunteer inspections at all water access points.
- Use volunteers @ ramps during busy weekends to hand out brochures.
- Try to have volunteers at boat launches to help teach about invasive species and help people learn how to take time to clean watercraft and trailers.
- Pay local teens (high school) a wage to monitor public access.
- More money dedicated for conservation officers to perform equipment checks at lake access.
- More knowledgeable individuals at boat ramps explaining requirements necessary to lessen spread of AIS. Also knowing legislation (more info why needed than just the "fluffy" jargon I've heard).
- Posting reminder about: draining live wells, cleaning off weeds, etc. @ boat launches.
- More signs, more washing stations, more spot checking especially on small lakes.
- Make users aware of the laws—especially at boat landings. Occasional inspections at landings.
- Continual public awareness at the public boat ramps. Official presence on occasion with portable steam power wash.
- Let's get serious and install gates and inspectors at all public accesses.
- Block access points to lake that cannot be routinely monitored. Issue stickers to display on boats to show owner has passed a test re: AIS safe practices.
- Close access to lake.
- May have to consider controlling boat access landings and/or closing boat landings.
- It's coming and it's going to happen no matter what we do at the boat landings.

8.18. Signs along roadways

- Considered [billboards] and [signs along roadways] equivalent.
- More signs along roadways & at boat ramps.
- Have large signs on all roads entering the areas of lakes.

8.19. Newspaper ads

• Piragis ads for rusty crayfish traps.

8.20. Newspapers or magazines

- Articles, not ADS, in newspapers.
- <u>Minnesota Conservation Volunteer</u> [mentioned by 3 persons, including listing it as one of the most effective sources
- <u>Outdoor News [also mentioned as one of the most effective sources]</u>

8.22. Web sites

• The DNR web site was mentioned specifically by one person.

8.23 Other

- Conservation Personnel
 - Inspectors [1 mention]
 - Campgrounds [1 mention]
 - Game wardens [1 mention, also listed as one of the most effective sources]
 - Do <u>not</u> increase the number of game wardens.

Appendix I

General Comments, Excluding

Those about Mining and Those about Lake Associations and Kudos

- o DNR mentioned 3 times, including being listed as one of the most effective sources
 - DNR display at the state fair mentioned once as a resource and listed as one of the most effective sources
 - More money dedicated for conservation officers to perform equipment checks at lake access.
 - No MN C.O. (conservation officer) at Babbitt [response to question 1 Other 1: big problem]
 - Do you have a Cons.officer on hand checking boats at a major landing on Birch Lake? I have not seen one. I know you are understaffed, but would be a good one on popular weekends.
 - I wish the DNR would have taken the spread of AIS more seriously sooner.
 - I noted in discussions with some DNR personnel that their comment about the rusty crayfish problem was "Just learn to live with it." This does not help.[White Iron]
 - DNR allows electric company huge flexibility and micro-manages lake front owners. [response to question 1 Other 1: big problem]
- U.S. Forest Service employees [2 mentions, including 1 as one of the most effective sources]
 - Get the F.S. [Forest Service] to help stop the spread of AIS in the BWCA.
- Experts in the field
 - The professional ecology literature
 - Researchers in the field
 - o Sea Grant
 - ...also have many friends employed by Sea Grant, NRRI, & MPCA
 - Employed by EPA 24 years; some research performed on AIS
 - Classes at UMN University for Seniors
- State statutes
- Displays
 - Blueberry Festival info tables
 - Also, maybe with all the activity in Ely, a float could be put in the parade.
 - o St. Louis county fair
 - DNR display at the state fair mentioned once as a resource and listed as one of the most effective sources
 - DNR display
- Friends
 - Word of mouth (3 mentions; 1 as most effective)
 - Farm Lake neighbors
- Lake associations see separate Appendix K
- Other organizations
 - Minnesota Seasonal and Recreational Property Owners
 - Wildlife Forever
 - Chamber of commerce and other tourist contacts: Enclose AIS info with every pkg sent to prospective visitors

- Radio news (both are listed also as one of the most effective sources)
 - Minnesota Public Radio (2 mentions)
 - National Public Radio
 - Go on radio and give talks & discussions on AIS.
- TV News (all of the mentioned sources also are listed as one of the most effective sources
 - Channel 4 and 5 on TV in Minneapolis; channel 2 (public television)
 - KARE 11 News in Minneapolis has run stories
 - Also Minnesota Bound show
 - Fishing programs
 - TV ads on local news channels at news time [recommendation]
- U.S. Mail •
 - 0 This information [referring to survey and cover letter]
 - o Put info in newspaper or flier in mail. Something should have been sent with THIS...or was that enough on that other page? I don't know too much about AIS.
 - Mailbox fliers to all residents.
 - We live out of state & own vacation cabin but do not receive mail there—in area during summer only so little access to local communications about AIS. Mailing brochure to home address (where this arrived) would be helpful to get educated.
 - Mailings could be sent to all cabin owners which would reach people like us.

Question 10. During the 2012 boating season, did you take action to prevent the spread of AIS?

Comments for this guestion are included in 11 and 12 below.

Question 11. After removing the watercraft from the water, prior to transporting it to another body of water, how often did you take the following actions?

- Taking boat out for the season [does actions when taking boat out for the season since does not leave waterbody]
- Outside of the watershed where we have boats on water.
- But not in our WSD. Boats in Ely were not moved to other water.
- Since I don't use this boat, I can't answer this.
- Canoe only (reported by 2 respondents)
- We only use canoes 99.9% of the time & don't live up here—just have a rustic cabin.

11. A. Inspect and remove aquatic plants and animals from watercraft, trailer and equipment

- No weeds—rusties destroyed them. [Farm Lake]
- No trailer [owns 3 canoes and 1 kayak]
- Joe's Marine (has pontoon used on only one lake)
- Boat lifts can be a problem as is the decline in water quality.

11. B. Drain water from bilge, bait and livewell

- It's required.
- Coming or going?
- 9 persons with canoes reported N/A
- Not possible with canoe. [owns motorized watercraft but did not report action for them]
- Drain canoe between trips. [response to question 11 Drain water from 4: Never]
- Didn't fish; no bilge or live well. [did not transport outside of waterbody] •
- Small boat, no bilge or floor.

- For us, the pontoon was the only craft that changed water bodies in less than a 5 day span. No bilge.
- I would like to see a boat plug that would support this and make it fool proof. Same for LIVE WELLS, so they are reminded to train and plugged AFTER.

11. C. Dispose of unwanted live bait, worms, and fish parts in the trash

- Not possible with canoe. [to dispose of live bait appropriately]
- Except fish parts. [question is marked "canoe only", so this may refer to trip to Lake One in the BWCAW]
- Don't use live bait. (mentioned by 2 respondents)
- Don't fish. (mentioned by 16 respondents)
- N/A response provided by 6 people who indicated canoe use and by 4 people who do not transport their watercraft

11. D. Wash watercraft with high pressure hot water

- Not possible with canoe.
- Boat washing equipment not available.
- No access to wash watercraft with high pressure hot water.
- See question 12. 11 for more about boat washing equipment)

11. E. Rinse watercraft and equipment with garden hose

- Did wash boat for debris.
- I took a dry boat into Little Indian Sioux & back home and my neighbor washed it off.
- Canoes rinsed and dried prior to next use.
- Not possible with canoe.

11. F. Dry everything for at least 5 days before use

- Have only gone into lake dry—boat has not yet been removed for season.
- Canoes rinsed and dried prior to next use.
- Could not dry canoe for 5 days between lakes [trip in BWCAW].
- It's a canoe. It dries <u>at least</u> a week between uses.
- My boat is out of water (longer than 5 days).
- My boat is out of water 5 days before coming to Kawishiwi Watershed.
- I was weeks between uses. [2 respondents]
- Waited 5 days before going to different lake.
- It was over one month between trips.
- Dry motor (always).

11. G. Other

- Helped check boats.
- Set traps last year; they are not so evident this summer. [Farm Lake]
- Trapped rusty crayfish. [no lake property; TWP 60 RGE 20]
- My boats are inflatable; 6 are deflated after use except for canoe; I inspect & then deflate my boats.

12. If you did not take actions, why not?

12.1. I did not transport the boat to another body of water

• The waters I use are connected. [Bear Island and Birch were reported, which are not connected]

12.4. Inconvenient; I did not have the time

• Crossed out "I did not have the time"

12.5. Spread of AIS is only a matter of time; my actions would not have made a difference

• Crossed out "my actions would not have made a difference"

12.6. I did not know what I was supposed to do

- Did not think the above actions [to prevent the spread of AIS] pertained to canoes & rowboats thought my motorized had to.
- Wasn't aware that rinsing with garden hose would help.
- I never thought about "hot water" but, only once did we take our speed [boat] to another lake!

12.9. I was not in waters which had invasive species

- Fished in Ely area for 60 years.
- I don't know!

12.10. AIS are everywhere anyway; my actions would not have made a difference

• No need to [take actions against spreading AIS].

12.11. No boat washing equipment was available

- Not Available [mentioned by 3 respondents]
- Pressure washer [idea—not legible] is not available at all areas; never saw at roadside site.
- I don't have the cleaning equipment; i.e., power washer or running water.
- Hot water not available at my house outside.
- No access to wash watercraft with high pressure hot water.
- I won't pressure wash with hot water unless I find a place to do it.
- Let people know if it is clean so we can keep it that way. If AIS, be very though in cleaning, etc.
- Notify public of pressure washing sites for motor boats in Ely area.
- Boat washing stations at public water access points.
- Some sort of spray located at boat ramps.
- ...provide a hose, etc. that can be used to wash down boats after use at boat landing.
- Official presence [at boat ramps] on occasion with portable steam power wash.
- Boat cleaning stations at every public boat ramp would help, along with random unexpected inspections of boats (being transported).
- And don't buy any w/ my tax dollars! [response: did not take action because no boat washing equipment]

12.16. Other

- Use of canoes
 - Only transport canoes. Do not believe contamination risk is high.
 - Canoes only.
 - Non-motorized canoe—Kevlar.
 - Canoe was clean.
 - No algae; I dump canoe over.

Appendix I

General Comments, Excluding

Those about Mining and Those about Lake Associations and Kudos

- The canoe didn't have anything on it; would have checked trailer, etc., if used one.
- Only transported kayak and canoe; both were clean.
- We only take canoes on other lakes & they are easily inspected for AIS.
- Not normal to habits generated over 40 years of canoeing.
- Went into BWCA; portaged from Fall Lake to Basswood, then back home to Garden Lake. [assumed that no action was taken because of nature of the trip
- Did not think the above actions [to prevent the spread of AIS] pertained to canoes & rowboats—thought my motorized had to.
- Felt my actions were sufficient.
- Worry about regulation.
- Washed by Joe's Marine.

13. What do you think motivates other people to take action(s) to prevent the spread of AIS?

- How can I speak as to what motivates <u>other</u> people?
- I really don't understand basis or motives of # 13.
- 7 respondents commented that they didn't know or "beats me".
- All good.
- However, no matter how much in regards to the motivations section energy is put into, there will always be some who don't adhere to the regulations/policies.
- 13. C. They feel it is their personal responsibility; their actions make a difference
 - It is everyone's responsibility; it is not just a public water access issue.
 - People seem to be very polarized on this issue—generally locals seem to have sense of entitlement; "I pay taxes, so I can do whatever I want" –not my problem attitude.
 - Too many people don't care because they don't live on lakes. [response to question 13 Other: not very effective]
 - They just don't care even if they know they are potentially spreading AIS.
- 13. D. It is their desire to keep AIS out of our lakes and rivers
 - Desire to stop spread.

13. G. Threat of enforcement by conservation officers

- Education is the key, but should be backed up with fines/enforcement.
- We must enforce laws & regulations and <u>not get/let it into Northern lakes</u>.
- Enforcement!
- 1++ [rating for Enforcement motivation]
- Enforcement of the existing laws. [response to question 1 Other 1: big problem]
- Continue to support current DNR guidelines.
- We need enforcement of violations.
- Keep up on enforcement.
- Enforcement is necessary.
- Strong enforcement.
- Stronger enforcement presence.
- Patrol more.
- Near zero enforcement.
- Be more strict on violators.
- Strict enforcement of violations.

- More legal action/fines.
- Arrest violators & fine heavily.

13. H. Threat of fines that would cost them money

- 1++ [rating for Fines motivation]
- Fines-Penalties; Lose right to boat/fish.
- --More signs; --bigger fines; ---(zero) warnings.
- Raise the \$ amount of the fine.
- Large fines. Everyone with a boat should know about this problem.
- Heavy fines: people seem to remember more when they get hit in the pocketbook!!
- Heavy fines for offenders. Issue laws and regulations when purchasing watercraft licenses, including the \$ amount of the fines per offense.
- Fines should be very large (\$1000+ per offense).

13. J. Other

- Suggestion: Response to a "dashboard"; a way to see how what you are doing or not doing is impacting the watershed; similar to an energy use dashboard. [response to question 13 Other 1: very effective]
- Environmental problems
 - Seeing damage unusual to lakes. [response to question 13 Other 1: Very effective]
 - If they have firsthand experience on a lake with AIS.
 - Witnessing lakes and rivers choked with AIS so bad they are impassable! [response to question 13 Other:1 very effective]
 - Loss of habitat. [response to question 13 Other:1 very effective]
 - If it even comes close to what I've witnessed in TX waters, it will then be unstoppable.
 - I live in Washington County on Long Lake. It does not have a public access (been there 31 years). We got Eurasian milfoil 7 years ago. We had 1 home pulling their boat to other lakes and 1 home being rented by young men that hauled their boats and friends' boats in and out. It was devastating to our lake. Fifteen homeowners spent big money on chemicals and bought a weed harvester to control it.—it's better now.
 - Education
 - o See comments under question 23

14. Have you ever seen the Stop Aquatic Hitchhikers! message?

15. Based on your exposure to *Stop Aquatic Hitchhikers!*, how often WILL you take actions in the FUTURE to prevent the spread of AIS in the Kawishiwi Watershed?

15. A. Always

- I took extreme measures to prevent the spread of AIS before I saw the message.
- Assuming I even boat in Kawishiwi Watershed.
- When used.
- If I ever do use my canoe in another lake.
- If possible; can't wash or dry canoe between lakes.

15 B. Usually

- Depends upon usage.
- I won't pressure wash with hot water unless I find a place to do it.

15. C. Sometimes

• Whenever transporting watercraft among different bodies of water.

15. D. Never

- No need to [take actions against spreading AIS].
- Do not transport boat to another body of water. [visited Birch, Kawishiwi River, and Slate Lake, but has multiple watercraft]
- We will continue to use just the canoe and use it only on Farm and the Kawishiwi. In that sense we are "always" doing something.

15. E. No response

- The S.A.H. message makes no difference since I will continue to do the same as I'm already doing [no response provided]
- N/A; we rent a boat; we are not the ones who put the boat in the water or remove it from the water.

16. Recent Minnesota regulations are aimed at preventing the spread of AIS. Which of the following is true or false?

• Sixteen respondents reported that they didn't fish; but some of them did answer these questions. In addition 2 respondents reported that they did not use live bait.

16. A. It is legal to dump leftover bait into lakes and rivers to help feed the fish.

• See question 11. C above for comments about disposal of bait.

16 .B. It is recommended to insert the plug in the boat drain before leaving access.

• See question 11.B above for comments about draining boat bilges and livewells and bait buckets.

16. C. If I want to reuse live minnows, it is recommended that tap or spring water be brought from home to replenish water removed from bait bucket at water access.

- Use only well water from home—boat well.
- Bait too expensive to throw away; changed water at home.
- How do you prove it is tap or spring H₂O?
- Don't do.
- This is dumb [to bring fresh water from home].
- When boating on a chain of lakes connected by waterways, drop the bait water rules!
- Kill the minnow water rule. I don't believe it is a real concern.

16. D. Use of smelt as bait is legal only if caught in those waters.

- The 2012 edition of the Minnesota Fishing Regulations on page 12 says, "Only preserved rainbow smelt and cisco may be used as bait, unless harvested packaged, and labeled under a commercial license from certified VHS negative waterbody." According to this no fresh smelt can be used, which would make this statement false, as one can use smelt from any waters AS LONG AS IT IS PRESERVED. By the way, you need to have a DNR license to preserve smelt. There is no mention in the fishing regulations about the use of live smelt. The question, as worded, seems to be ambiguous and led to confusion on the part of the respondents.
- One respondent questioned whether the question was about live smelt.
- Another respondent commented "not sure".
- Two respondents indicated they did not use smelt as bait.

- 16. E. Crayfish can be used as bait only if caught in those waters.
 - Only natural to lake.
 - Two respondents indicated they do not use crayfish as bait.
- 16. F. It is illegal to transport any aquatic plants or prohibited species on public roads.
 - Permit required [to transport aquatic or prohibited species].
- 16. G. Water must be drained from motor, bilge, and livewells before leaving access.
 - Coming or going?
 - It's required. [changed response from false to true]
 - See question 11.B above for comments about draining boat bilges and livewells and bait buckets.
- *16. H. Gamefish should be stored in livewell during transport on public roads.*
 - Only if water is drained out.
 - Is livewell full or empty?
 - 2 respondents mentioned they did not have a livewell
 - "Don't do" was a comment by another respondent.

Question 17. Please rate to what extent you agree or disagree with the following statements on aquatic invasive species.

- ?? Need more obvious education for public!!
- 17. C. Degrade water quality
 - Depends. [whether AIS will degrade water quality]
 - It depends; do smallmouth bass, walleye, etc. degrade?
- 17. D. Outcompete desirable native organisms/destroy popular fisheries
 - It depends; do smallmouth bass, walleye, etc. outcompete?

17. E. Reduce biodiversity

• This is not true universally, but is in our waters.

17. F. Spread disease

- Sometimes.
- For some.
- For who or what?

Question 18. How important is it to protect the Kawishiwi Watershed from the spread and impacts of AIS?

- All watersheds; not just Kawishiwi. [response to question 18 1: very important]
- Protect watershed from ...AIS & sulfides. [response to question 18 1: very important]
- For me. [response to question 18: 4: not at all important]

Question 23. What recommendations or other comments would you like to offer about the spread of aquatic invasive species in our area?

• Herewith are gathered the remaining comments from all places in the survey. Other recommendations may be found in the comments above.

Advice

- I am not aware of AIS in the watershed <u>YET</u>? I certainly hope that the spread can be avoided...."
- Protect watershed from ...AIS & sulfides. [response to question 18 1: very important]
- Stop It.
- Stop it! However it is necessary.
- You must do everything possible to prevent AIS.
- Keep fighting.
- Please take every measure to keep up the fight with AIS. Minnesota's future depends upon it.
- Whatever we can: economically as well as politically.
- Everybody is NOT going to obey the law, so we better find a solution in addition to prevention or it is only a matter of time.
- It's easier to prevent than control.
- Protecting the existing quality of our aquatic & terrestrial systems is at least as important as trying to improve already impaired systems. Emphasis is too often placed on trying to "fix" problems rather than preventing them in the first place.
- All applications of energy (none-so far) to aquatic systems can have adverse outcomes if not
 accomplished with knowledge of consequences and care for future conditions and ecological
 integrity.
- We have to protect all of the waters, but we can't get stupid and go overboard. We have to be realistic on what we do to handle these problems.
- Try to prevent, but do not close off from all people to enjoy northern Minnesota.
- Clean off your boat.

Education

- I guess I want things like they were in old times. I know very little about IT. [born 1920]
- I am not sure adequate info is available to all persons. I can only speak for myself, but I am not fully knowledgeable regarding the impact of AIS.
- My limited knowledge is based on limiting most activity to Sand Lake. Information on other lakes is limited.
- We need more info.
- Become more knowledgeable. [response to question 13 Other:1 very effective
- Knowledge of AIS. [response to question 13 Other: 1 very effective]
- Educate public.
- Better education.
- Greater public education.
- ?? Need more obvious education for public!!
- Keep educating the cause and reason of the problems.
- Hopefully, people get well educated enough that this can be self-regulated--know that if they take time to clean up themselves, we won't have to budget more enforcement or laws.
- Continue to provide information describing what it is, where most prevalent, and the stops to be taken to stop it.
- It's one thing to educate MN anglers about AIS, but how do we stop tourists from other states from polluting our lakes? i.e., crayfish in Vermilion.
- Educate new boaters from Duluth & Mpls!
- As an out-of-state resident—I need to personally be more responsible to know the MN laws better—I will do that!!
- Education is the key, but should be backed up with fines/enforcement.

- Education—but not very effective. They just don't care even if they know they are potentially spreading AIS.
- People, if it isn't theirs, they don't care. They won't take the time. "Me, oh, it wasn't me." All the education will not change these people.
- It begins with more thorough education! If one does not fully understand what they're looking for, can't identify species, then results will always be imperfect. {response to question 13:1 very effective]
- More public awareness of the danger of contaminating other lakes.
- Keep us informed.
- Keep everyone informed as to what they can do. 😊
- Education of the residents is crucial. Person to person—neighbor to neighbor or neighborhood gatherings.
- Lake associations (for small/large lakes) need to be encouraged & educated so they can help spread the word & help their members recognize the importance of maintaining & repairing/restoring water quality.
- Keep up the WICOLA effort on educating public & our members.
- Make users aware of the laws—especially at boat landings.
- Keep educating and use examples of other lakes so people can relate better.
- Go on radio and give talks & discussions on AIS.
- Threat of monetary fines for violations only piss off people and could spur retaliatory action. Education and partnership relationship with boaters would work better.
- Boat owner registration renewals—must educate.
- Educate the boaters/fishermen! Make them take a test to get license!
- All boat owners should be required to take a class/test about AIS to renew their boat license/registration. This would prevent people from saying they "didn't know".
- Mandatory training would increase awareness. Similar to watching BWCA video—so, before you could renew boat reg. or buy fishing license, need to watch video.
- More programs aimed at students K-12.
- Classes at UMN University for Seniors.

Suggestions

- Where ever these AIS's came from—research or contact them to see what they are doing about it (how history has evolved for them).
- Spread is inevitable and can only be de-accelerated until natural cannibalistic counter measures can be adopted (introduce natural predators (such as they did in Great Lakes to control lamprey). Eradication is very expensive, non-productive, incomplete coverage. (People are still adamant about what introduction of small mouth bass did to walleye population, but both are edible & fun to catch.) Find something that will consume rusty crayfish, Asian carp, water fleas, etc. and let nature take care of itself.
- Response to a "dashboard"; a way to see how what you are doing or not doing is impacting the watershed; similar to an energy use dashboard .[response to question 13 Other 1: very effective]

Licensing of boats, boaters, and people who fish

- With every fishing license sold, a printed stern reminder should be handed the licensee and requested (insisted) that he or she adhere to the recommendations (laws).
- Educate the boaters/fishermen! Make them take a test to get license!

- All boat owners should be required to take a class/test about AIS to renew their boat license/registration. This would prevent people from saying they "didn't know".
- Issue stickers to display on boats to show owner has passed a test re: AIS safe practices.
- Add to boat license renewal.
- Increase fees on boaters who move from lake to lake (to pay for enforcement).
- Restriction from water or confiscate boat [response to question 13: Threat of enforcement] 1 very effective]
- Confiscation of boats found to contain AIS would be good start.
- two tier boat licenses: tier 1 only for one chain of lakes; tier 2 use boat statewide.
- There should be a permit to boat, at the boater's choice. For a small fee, a boater could apply for this permit and it would be good for the life of the owner. Stickers would be issued for each boat that corresponds to the permit. Each permit would list what lake or watershed like Kawishiwi. The bait and live well –washing regs would not apply as long as they stay in that lake or watershed. If at any time that boat leaves the permit area. You must do everything possible to prevent AIS. [double checked; this is what the person wrote.]
- The state of MN should pass a law, that upon licensing a watercraft, the licensor should declare for a license for clean lakes or AIS lakes. Be given a license of their choice of and only be allowed on AIS lakes or clean lakes. VIOLATION A MAJOR FINE!
- Should a person land a boat in any body of water known to have invasive species, they should have stickers attached to boat and trailer. If that boat is found contaminated north of Virginia MN, the owner should receive a \$10,000.00 fine & loss of boat or any boat with sticker should not be allowed in a non-contaminated lake.
- Make Great Lakes boat users display a sticker on their boat so law enforcement can concentrate on them; the same with lakes with invasive weeds. Example: Lake Minnetonka

Boat rental

- I believe the idea of setting up bait/boat/motor concessions on lakes such as Basswood, Saganaga, La Croix, etc. is a good one. Only rented boats to be used. Although outside our area, it is so important to protect these jewels of the system. I would go for it in the watershed too, but do not think it could come to be.
- May have to consider controlling boat access landings and/or closing boat landings & having rental boats available on individual lakes...drastic but may save fishery.
- Keep tourists' boats off our waters; make them rent a boat.
- They feel they are going to the lake only once! Cut out all public accesses.*If they want to use a lake, make them rent a boat (etc.) that is not moved from lake to lake. *I know this is not practical, but it is probably the only way to prevent spread. GOOD LUCK!

Visitors

- Two respondents indicated that tourists were a big problem [response to question 1:Other]
- It's one thing to educate MN anglers about AIS, but how do we stop tourists from other states from polluting our lakes? i.e., crayfish in Vermilion.
- Being a conservation officer in the area, I can tell you that it will come down to resort/lakeshore owners policing their customers and visitors (friends/relatives) that are coming in from other areas. No equipment should go un-checked from other areas!
- I think AIS should be monitored by the resorts which allow access to the watershed.
- Enclose AIS info with every pkg sent to prospective visitors.

- Make sure ALL out of state residents know what we are trying to protect & preserve. They should be checked and then given a booklet of regulations. Or make the regulations available on website, printer friendly
- Boats should be cleaned before visitors come to Ely (before they leave Minneapolis, or other cities located outside of the Kawishiwi Watershed.
- We need random checks at borders with other states and countries, with stiff penalties for <u>major</u> violations.
- Should a person land a boat in any body of water known to have invasive species, they should have stickers attached to boat and trailer. If that boat is found contaminated north of Virginia MN, the owner should receive a \$10,000.00 fine & loss of boat or any boat with sticker should not be allowed in a non-contaminated lake.
- Keep tourists' boats off our waters; make them rent a boat.

Laws/regulations

- State Statutes (cited in question 8 as a good resource)
- We have enough regs. Follow them!
- Poor regulations and possible fines.
- Over-regulation [response to question 1 Other 1: big problem]
- Invasive sp[ecies]. laws [can't read for sure] [response to question 1 Other 1: big problem]
- Stronger laws and actually enforce them. Confiscation of boats found to contain AIS would be good start.
- Restriction from water or confiscate boat [response to question 13: Threat of enforcement] 1 very effective]
- As a business owner, dependent on tourism, it is absolutely critical to prevent spread. I would prefer strong regulations that allow me to offset the cost of every guest that uses my lake.
- Over-regulation would be just as negative as AIS themself.
- Regulations should be developed with input from local users of the particular resource, not just "experts" and enviro-extremists from elsewhere!

Funding

- It is just a matter of time before AIS spreads throughout the watershed. So spending a lot of money on this makes no sense!
- At great expense we can slow them down, but we cannot stop them.
- There is a point beyond which is [not] possible to control AIS, i.e., starlings, English sparrows. It might be wise to determine how money should be spent, i.e., keeping certain chemicals out of the water might be more important than some species of AIS.
- I would support taxes or fees or whatever it takes to keep them out of any other lakes.
- Spend gov't money to get rid of AIS not more gov't control over people.
- More money dedicated for conservation officers to perform equipment checks at lake access.

Great Lakes

- I think it's very important to keep zebra mussels and other invasive species out of the lakes because of the problem we have with the Great Lakes.
- AIS should be stopped at the boat ramp sources at Lake Superior and other Great Lakes.
- It should have stopped at the Great Lakes boat ramps. High pressure hoses should have been installed; guards posted, and ramps closed at reasonable hours.

- After decades of inaction by state & federal government, the ballast H₂O of foreign ships has transmitted AIS into the Great Lakes. Now after the "cat" is out of the bag, they expect us to get him back in the bag.
- Introduce natural predators (such as they did in Great Lakes to control lamprey).
- Make Great Lakes boat users display a sticker on their boat so law enforcement can concentrate on them.

Fishing

- Do not allow fishing contests.
- All fishing tournaments must be required to check boats before & after the contest. Fines should be much higher.
- Over-fishing; unsustainable catch. [response in question 1 Other 2: medium problem] [Dumbbell]
- Even though I might or might not get to go fishing next year or the one after or ?, I still want to know that there are lots of strong <u>healthy</u> fish out there just in case.

Spread of AIS by animals

- Do animals spread aquatic invasive species from lake to lake??
- Do birds spread AIS? As you know it only takes a few bad apples and they are always out there.
- It is spread not only by boats, but also by birds & FISH.
- I do think it is not possible to stop spread-even wind and birds/animals transplant seedsbacteria-very sad.
- More is spread on the feathers of ducks than by boats "seeds & eggs".
- Have the beaver, muskrats, moose, etc. shower before going to another body of water.

Too late

- The sad thing is that it is only a matter of time until AIS have entered this area.
- With one lake flowing into the next lake, it would be pretty hard to stop the spread of invasive species.
- Most boaters do care, but with the way all the lakes are connected and the easy access to the popular lakes, it's just a matter of time.
- It is just a matter of time before AIS spreads throughout the watershed. It is spread not only by boats, but also by birds & FISH. So spending a lot of money on this makes no sense!
- It's coming and it's going to happen no matter what we do at the boat landings.
- Invasives have & always will happen because we are human (starlings, rabbits in Australia, dogs on Isle Royal)—we must be careful, but as we know the world is getting smaller. We need to keep learning.
- I wish the DNR would have taken the spread of AIS more seriously sooner.
- It's basically too late now!!
- AIS prevention is too little, too late.
- This came too late in the game. Actions & PR campaign should have been adopted long before this. The DNR & community groups failed once again. Now they are all behind the 8 ball, as usual.
- After decades of inaction by state & federal government, the ballast H₂O of foreign ships has transmitted AIS into the Great Lakes. Now after the "cat" is out of the bag, they expect us to get him back in the bag. Good luck
- If it even comes close to what I've witnessed in TX waters, it will then be unstoppable.

• AIS are seen as a problem because they change the status quo. They are very good at what they do and we don't like it. At great expense we can slow them down, but we cannot stop them. It's never been done in the US and probably never will. We need to learn to live with it.

Canoe and kayak usage

- This section gathers all of the relevant comments about canoe usage in one place, both because the high concentration of non-motorized watercraft is more significant in the Kawishiwi Watershed than in other areas in Minnesota and also because uses of these watercraft have indicated in their comments differences in attitude and behaviors than users of motorized watercraft have.
- I am unaware that canoes, which are the only watercraft I use, are a problem in the spread of invasive species. If they are, more education in this respect is needed.
- I didn't realize if I'm paddling, I should pay attention. I thought most regulations applied to people who fish and mostly use boats with motors.
- Did not think the above actions [to prevent the spread of AIS] pertained to canoes & rowboats—thought my motorized had to. [coded as 12.6 Did not know what to do]
- Not normal to habits generated over 40 years of canoeing. [response to question 12: Other why no action taken]
- I'm unsure of regulations for canoes. We clean our boat, but that is it.
- Since I never take my canoe to another lake, I have had little motivation to learn the regulations—something I would do if ever I do take them to another lake.
- In overall comments to question 11 about taking action prior to transporting the canoe, two respondents mentioned that they only used a canoe.
- Non-motorized canoe—Kevlar; Canoes only [responses to question 12 Other why did not take action]
- Only transported kayak and canoe; both were clean; Canoe was clean; only transport canoes. Do not believe contamination risk is high. [responses to question 12 Other why did not take action]
- We only take canoes on other lakes & they are easily inspected for AIS. [response to question 12 Other why do not take action]
- If I ever do use my canoe in another lake. [response to question 15: Always will take action in future]
- Canoe only .[used in one waterbody outside BWCAW and one lake in BWCAW] [response to question 10: No; did not take action to prevent the spread of AIS]
- No algae; I dump canoe over.
- The canoe didn't have anything on it; would have checked trailer, etc., if used one.
- No trailer. [in response to question 11 Inspect and remove aquatic plants and animals from watercraft, trailer and equipment]
- If possible; can't wash or dry canoe between lakes. [response to question 15: Always]
- Went into BWCA; portaged from Fall Lake to Basswood, then back home to Garden Lake. [assumed that no action was taken because of nature of the trip
- Not possible with canoe. [in response to question 11 Rinse watercraft and equipment with garden hose and Wash watercraft with high pressure water hot water]
- Could not dry canoe for 5 days between lakes .[trip in BWCAW]
- It's a canoe. It dries <u>at least</u> a week between uses.
- Canoes rinsed and dried prior to next use.

- As many respondents mentioned, there is no bilge or livewell in a canoe to drain.
- Drain canoe between trips.
- Not possible with canoe. [to dispose of live bait appropriately]
- Four other respondents with canoes commented "N/A" to question 11 "Dispose of unwanted live bait, worms and fish parts in the trash". One additional respondent did mention that he did not fish.

Miscellaneous

- Check if any of the liquids from the city sewage plant is leaching into White Iron from where it is dropped off of highway # 1.
- There needs to be more oversight of public landing areas. It is terrible what goes on...including public urination & pooping! Put up signs that say no pooping and urination.[Bear Island Lake]
- I actually have not used my boat yet this year. My too-close neighbor has a full-sized dog, no problem. But about a year ago an adult son (his son) moved in with his two pit bulls and excrement next to the shore and on my yard. Has been maddening since one popular area by the shore gets washed right into the lake by rain and snow melt. Send help! We do not speak. Signed by respondent

Explanations

- Not applicable; do not own a boat; only look at the water & enjoy its sounds.
- I stay & live on the lake & never go from lake to lake & don't fish.
- I rent out my cabin so I do not use it.
- I 'm severely handicapped & can't go in a boat.
- I regret that I could not be much help. We did not use any watercraft this year—& probably not in the future. My husband is 84 & has had 4 strokes. I am 83 & can't do these things without help.
- Not applicable—do not boat in Kawishiwi/White Iron watershed.
- Just moved to MN.
- We just bought land on White Iron this winter and have not yet spent time there.
- Hope to move to Ely area & become more active/aware.
- Sold cabin two years ago.
- Do Not Own. [now owned by Northwest Bank and Trust Company]
- We own land, but do not visit.
- We are absentee landowners and thank you for all your efforts on AIS.
- Own (family) property in Ely, MN; live out of state (Connecticut) so unable to answer questions.
- We live in Wisconsin.
- I live out of state; do not fish or do other H₂O activities in Minnesota.
- We do not use our land for recreational activities.
- I don't have lake shore [and did not respond to survey]
- I need to clarify—we own property within the Kawishiwi Watershed area but we have not visited or seen the property in ~ 20 years—the land has been "passed down" through the years. It was originally purchased by my great-grandfather. It may be utilized in the future.
- I tried to visit our land about 10 years ago, but I only had my truck & it wouldn't go between the trees so I have never seen the property & know nothing about it other than to pay the taxes. My wife passed away in May so I doubt if I will ever get back in that beautiful country. I am sorry I can't be of more help but feel these areas need to be preserved. I am thinking of ways to pass on my property but haven't come up with any ideas. [signed]

- I haven't been up there for over 5 years .(signed)
- (separate page) Hello, since my husband and I have spent very little time at our cabin the last 4 years you may want to disregard our survey & give another Bear Island Lake resident a chance to provide better feedback. Thanks for all your efforts.
- To whom it may concern: We are only at our cabin for approximately 2 months per year. Our boat has not been used in 3 years & I would not be able to provide useful input into your survey. Please issue to someone who will be able to provide you with useful input. Thanks.
- We do not live on our land—no buildings or residence there currently. If I'm on the water in the Kawishiwi Watershed, it's BWCAW travel. But all entries this season have been elsewhere.
- Note: I cannot answer a lot of questions, because I do not spend much time there. I own a lot on White Iron, but <u>no</u> cabin.
- Live on Bear Island lake—have dock (used only by Labrador retriever!); canoe in garage up in rafters last 5 years!
- My boat is in the water 2-3 times a year.
- I only used the boat in Lake Harriet besides Dumbbell.
- Our boat is trailered and stays at Silver Rapids Resort and has been on another lake (Carlos-Alex.) one day in 4 years.

Appendix J Comments about Mining

This includes all comments about mining no matter where they were located in the surveys.

- Be extremely honest & factual about the information, if any, WICOLA disseminates about mining & the effect on our water. Also be unbiased about mining & water information.
- Keep this survey away from mining and stick to the mission statement.
- In question 1, what does ferrous and non-ferrous mining have to do with AIS? Stick to the issue of AIS in future surveys. Mining is a separate issue!
- If this survey is about AIS, why are questions/opinions listed in Question #1 concerning mining? What is your major concern—AIS or mining? We need this development of mining in this area.
- I think we need to spend more time and energy on stopping AIS's instead of fighting against mining jobs!
- The actual effects of iron mining on the Kawishiwi watershed are almost non-existent. A small problem at the Dunka Mine caused by stockpiling Duluth Formation material is being handled effectively by wetland treatment. [response to question 1 Iron mining 4:not a problem]
- Existing or future? [response to question 1 Non-iron mining 2: medium problem]
- How can non-iron mining have an effect on the watershed when only drilling operations have been done—no mining has been done?
- I believe there will be no problems when Cu/Ni/precious metals mining begins. New state of the art methods of metal extraction fostered by adequate environmental regs and their enforcement will protect the Kawishiwi Watershed in fine fashion.[response to question 1 Non-iron mining 4: not a problem]
- ! mark next to ranking [response to question 1 Iron mining 4: not a problem]
- 1++ [response to question 1 Iron mining 1: big problem]
- None yet. [response to question 1 Non-iron mining 4: not a problem]
- Potential. [response to question 1 Non-iron mining 1: big problem]
- Potentially. [response to question 1 Non-iron mining 1:big problem]
- Could increase. [response to question 1 Non-iron mining 2: medium problem]
- Check again when mining starts. [response to question 1 Overall water quality 3: small problem] [Birch]
- !!!! [response to question 1 Non-iron mining 1: big problem]
- 1++ [response to question 1 Non-iron mining 1: big problem]
- YES! (circled) [response to question 1 Non-iron mining 1: big problem]
- Extreme problem. [response to question 1 Iron mining 1: big problem]
- Drilling (tests). [response to question 1 Non-iron mining 1: big problem]
- Sulfide mining. [response to question 1 Non-iron mining 1: big problem]
- Sulfide [mining]. [response to question 1 Non-iron mining 1: big problem]
- Sulfide mining—if not handled correctly. [response to question 1 Non-iron mining 1: big problem]
- Sulfate mining exploration & impact. [response to question 1 Non-iron mining 1: big problem]
- Changed to sulfide mining. [Response to question 1 Non-iron mining 1: big problem]
- Sulfide mining is of greater concern.
- No sulphide mining. [response to question 1 Non-iron mining 1: big problem]
- Copper. [response to question 1 Non-iron mining 1: big problem]
- Potential copper mining [response to question 1 Non-iron mining 1: big problem]
- Copper/nickel mining. [response to question 1 Non-iron mining 1: big problem]

Appendix J Comments about Mining

- Copper-nickel mining. [response to question 1 Non-iron mining 1: big problem]
- Stop copper-nickel mining.
- Precious metals. [response to question 1 Non-iron mining 1: big problem]
- Possible mining? [response to question 1 Overall water quality 1: big problem] [North McDougal]
- .Off topic—but have concerns re: sulfates from proposed mining.
- Will it really matter if non-ferrous mining comes to the region?
- We need to worry about sulfide mining or this is all a moot point !!! 😕
- If sulfide mining is allowed, it will not matter what gets in our lakes.
- If the copper mine happens in this area, all of these issues will become major issues that will be catastrophic! [response to question 1 Non-iron mining 1: big problem]
- (on attached sticky note) Stopping AIS is at best a delay, at worst a waste of time and money. Stopping sulfide mining would be worthwhile!! Why save from AIS and lost it all and more?
- Most of the AIS will go where it will in spite of our efforts. All we do is delay the inevitable at what cost? We <u>have control over sulfide mining</u> which will inevitably destroy the water quality! Put your efforts to stop that!
- Degradation of the water by <u>mining!</u>
- Mining pollution is a much bigger worry for my family & our next generation.
- Protect watershed from ...AIS & sulfides. [response to question 18 Protect Kawishiwi Watershed 1: very important]
- I'm <u>most</u> concerned about <u>copper mining</u>!! Could destroy the quality of our water & all lakes in BWCA.
- I am strongly concerned about the new mining activity, re: lake quality, disease to fish/eatability; contamination to wells, general water quality.
- I do not believe AIS is the biggest concern. Environmental impacts of sulfide mining could <u>devastate</u> the watershed. Who cares about AIS if sulfide mining pollution eventually kills everything in watershed anyway? If you want to collect baseline data on anything, do it to protect watershed from sulfide mining pollution.
- I would be personally more concerned if run-off from sulfer mines were to get into Kawishiwi River. I think it could destroy the vast majority of BWCA waters.
- Honestly, I'm at least every bit—if not more—concerned about copper, etc. mining & it's inevitable impact on our H₂O quality which will of course affect fish, etc. & on up the trophic chain. AIS is important but if our H₂O is poisoned, that's it for <u>every</u> living thing in our waters. Hyperbole, but what survives/thrives will be a major difference from what our ecosystem looks like today. Please stop precious metal mining on the doorstep of BWCAW! Not against mining in general—but shouldn't be done in BWCA H₂O shed area. (especially not <u>this</u> kind of mining!)
- Not related to AIS, but a potential massive issue is the probability of a copper mine in this area. I am a chemist by trade and have been a scientist for 33 years. This will completely <u>destroy</u> this watershed as well as the southern BWCA, and possibly contaminate Lake Superior.
- I think we also need to focus greatly on the effects of mining on our watersheds throughout MN.
- <u>WATER QUALITY</u> = No More MINES, and <u>not</u> to lower water quality regulation for adding mines...THE MORE MINES, WORSE THE WATER.
- Do not allow mining that will damage our beautiful natural resource for generations to come. Mining will come and go—but once our waters are destroyed and gone, they will not come back. Ely's overall economy will be hurt for years.

Appendix J Comments about Mining

- <u>VERY</u> worried about the mining—start a petition to require personal guarantees of CES, President & all other officers.
- The biggest invasive species in our area is Twin Metals.
- [Public officials] Permissive for mining...[response to question 1 Public officials 1: big problem]

Appendix K Comments about Lake Associations AND Kudos and Thank-Yous

Lake Associations

General

- Lake associations (for small/large lakes) need to be encouraged & educated so they can help spread the word & help their members recognize the importance of maintaining & repairing/restoring water quality.
- Local lake association: Becker County (Buffalo, Rice, Rock Lakes Association) [mentioned as a source of AIS information]
- Lake associations [mentioned as a source of AIS information]

White Iron Chain of Lakes Association

- Are you monitoring? If so, results/trends/recommendations—what happens to the eco-system if not maintained. [WICOLA member]
- I look forward to learning more about AIS in upcoming Newsletters. [WICOLA member]
- Keep up the WICOLA effort on educating public & our members.
- WICOLA [mentioned twice as source of information regarding AIS]
- WICOLA marine store [mentioned as source of information regarding AIS]
- WICOLA Newsletter [mentioned as source of information regarding AIS]
- WICOLA meetings [mentioned as only source of information regarding AIS
- <u>Thank you</u>, WICOLA Board members, for your work! <u>Much appreciated!</u>
- Thanks to WICOLA for your initiative!!

Appendix K Comments about Lake Associations AND Kudos and Thank-Yous

Kudos and Thank-Yous

- ...thank you for all your efforts on AIS.
- Doing a great job—keep going!!
- Good Job.
- Good Luck! (three mentions)
- Great job in sending this out.
- I am a new resident of Ely-White Iron, although I have vacationed 1-2 weeks here for 20 yrs. I support what you are doing to further educate us.
- I applaud the efforts to prevent the spread of aquatic invasive species.
- I do support your work.
- Keep up the good work! (three mentions)
- Keep up the good work! We own land in the area, on a lake, but have not been able to visit in 4 years! (due to work commitments).
- Keep up the WICOLA effort on educating public & our members.
- Thank you for all your efforts to keep AIS under control in our watershed. (signed)
- Thank you for doing this research. It is important to spread the word.
- Thank you for raising awareness.
- Thank you for this service you are providing. Never too early to take care!
- Thank you for your efforts
- Thank you for your service to our environment.
- Thank you, WICOLA Board members, for your work! Much appreciated!
- THANKS.
- Thanks for all your hard work to keep this from becoming an issue and monitoring the lakes.
- Thanks for doing this!
- Thanks for what you do!
- Thanks to WICOLA for your initiative!!
- Thanks!
- This survey is a great awareness tool. Thank you for your efforts!