

Risks of Introducing Invasive Carp through Transportation of Fish between Water Bodies

Report to the Legislature

February 2013



Minnesota Department of Natural Resources
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Legislative Charge

The statutory requirements for this report, as mandated in Minnesota Laws, H. F. No. 2171, article 1, sec. 89, are:

REPORT TO LEGISLATURE. By February 15, 2013, the commissioner of natural resources, after consultation with the aquaculture industry and other affected parties, shall report to the chairs and ranking minority members of the house of representatives and senate committees with jurisdiction over environment and natural resources on the risks of introducing invasive carp through transportation of fish between water bodies and shall include recommendations for any necessary changes in statutes, rules, or permitting procedures.

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Table of Contents

Section	Page
<u>Executive Summary</u>	2
<u>Introduction</u>	3
<u>Current and Potential Range of Asian Carp</u>	5
<u>Plans to Limit Range of Asian Carp</u>	8
<u>Overview of current fish transportation between waterbodies</u>	8
<u>Assessment of Risk</u>	8
<u>Recommendations for change</u>	13
<u>References</u>	15
<u>Appendix</u>	16
<u>Appendix A: Minnow Movement within MN During a Typical Year</u>	16
<u>Appendix B: Review of Reports, Plans, and Studies</u>	18
<u>Appendix C: Risk Assessment Diagrams</u>	20
<u>Appendix D: Efforts to Prevent Introduction and Range Expansion of Asian Carp in MN</u>	27
<u>Appendix E: Overview of Current Live Fish Transportation</u>	29
<u>Appendix F: Summary of the prevention related strategies and recommendations, by Goal, included in the national plan (Connover, Simmonds, and Whalen 2007) for managing and controlling Asian carp in the United States</u>	33
<u>Appendix G: Review of applicable strategies and actions from draft Minnesota Invasive Species Plan being prepared by the Minnesota Invasive Species Advisory Council</u>	40
<u>Appendix H: July 2012 Questionnaire Results</u>	42
<u>Appendix I: November 2012 Questionnaire Results</u>	75
<u>Appendix J: Neighboring State and Province Questionnaire Results</u>	92

Information contained in this report is available in an alternative format at <http://files.dnr.state.mn.us/aboutdnr/reports/legislative/risks-invasive-carp.pdf>

Pursuant to Minnesota Statutes, § 3.197, the cost of preparing this report was approximately \$15,000.

Executive Summary

There are many carp species native to Asia, including seven that have been introduced into the United States. In this report, the term “Asian carp” means black carp (*Mylopharyngodon piceus*), bighead carp (*Hypophthalmichthys nobilis*), grass carp (*Ctenopharyngodon idella*), and silver carp (*H. molitrix*). Bighead, grass, and silver carp have all established reproducing populations in several major rivers in the United States including the Mississippi and Missouri Rivers. There have been collections of adult black carp by commercial fishermen in the United States and established populations as far north as St. Louis in the Mississippi River (Nico, L.G., and M.E. Neilson, 2012). All four species of Asian carp are designated as prohibited invasive species of fish in the State of Minnesota, making it illegal to possess, import, purchase, transport, or introduce any of these species in Minnesota.

Throughout the process of preparing this report, the Department of Natural Resources (DNR) consulted with affected parties. We mailed out two confidential questionnaires to all 398 potentially affected commercial licensees (commercial netting of fish, minnow dealer, and aquatic farm or private fish hatchery licensees) to ensure that everyone had the opportunity for input. We received 114 responses to the first questionnaire, representing 28.64% of potentially affected commercial licensees (see [appendix H](#)). For the second questionnaire, we received 54 responses, which represented 13.57% of the licensees (see [appendix I](#)). We also invited all potentially affected parties to be a part of a core input group of stakeholders that would meet periodically to provide input on the development of this report. Participants of the core input group included: representatives for aquatic farm/private fish hatchery, minnow dealer, minnow retailer, and commercial netting of fish licensees; Aquatic Invasive Species (AIS) or fisheries officials from neighboring states; representatives of MN Sea Grant and the University of MN Extension; and representatives of the DNR divisions of Fish and Wildlife (Fisheries Section), Ecological and Water Resources, and Enforcement. We also consulted with fisheries agencies in neighboring states through questionnaire to determine how they are dealing with the threat of Asian carp, and received responses from all neighboring states and provinces (see [appendix J](#)). Finally, we provided all potentially affected commercial licensees with the opportunity to review and comment on a draft of this report.

We drew on many past studies and reports (see [appendix B](#)) that identified activities that pose risk for introducing Asian carp, and assessed the level of risk that each of those activities carries. These past reports concluded that the overall risk level for introducing Asian carp is high when live fish transportation between waterbodies is involved. The studies indicated that the high risk level was due to the potential for these species of fish to survive introduction, reproduce, and spread; in combination with the impact the introduction of these species can have on the environment and economy. These reports, and from the core input group, concluded that the highest risk of introduction through live fish transportation comes from wild minnow harvest from rivers and streams and subsequent movement of minnows as bait. The risk for moving and introducing Asian carp through activities associated with wild bait harvest is high because young of the year Asian carp look very similar to several species of native minnows. Current regulations prohibit the harvest of minnows in waters that have been designated infested with prohibited invasive species of fish. In Minnesota bighead, black, grass, and silver carp are all designated as prohibited invasive species of fish. At this time, there are a handful of Minnesota waters designated as infested with bighead and silver carp.

Importation of live minnows for feeding hatchery fish is a high risk potential pathway for Asian carp to be introduced into unconnected waters of the state because young of the year Asian carp could be included in loads of minnows used for feed. As such, Minnesota Statutes, section 97C.515, subdivision 4, was amended during the 2012 legislative session to prohibit the import of live minnows for feeding fish effective July 1, 2013. The DNR and the core input group agreed that this statutory change will reduce the risk of introducing Asian carp into the waters of the state.

Most efforts to limit range expansion of Asian carp have focused on natural movement of fish through connected waterways. This report focuses on intentional anthropogenic movement of fish from waterbody to waterbody through various activities including bait harvest, fish farming, stocking of game fish, and commercial fishing.

Using input from all commercial license holders that have the ability to move live fish between waterbodies (questionnaire) and the core input group (through meetings), the following list of recommendations for immediate change to statute, rule, or permitting procedure has been developed:

- Require all licensed minnow dealers, and their employees who aid in minnow harvest to take online AIS training. (amend Minnesota statutes, section 97C.501)
- Require holding ponds used by licensed minnow dealers and commercial fishermen to be licensed. (amend Minnesota rules, part 6254.0700 and Minnesota statutes, section 97C.821)

Recommendations for research, educational or voluntary cooperative efforts that may reduce the risk of introducing Asian carp into un-infested waters are also included in this report.

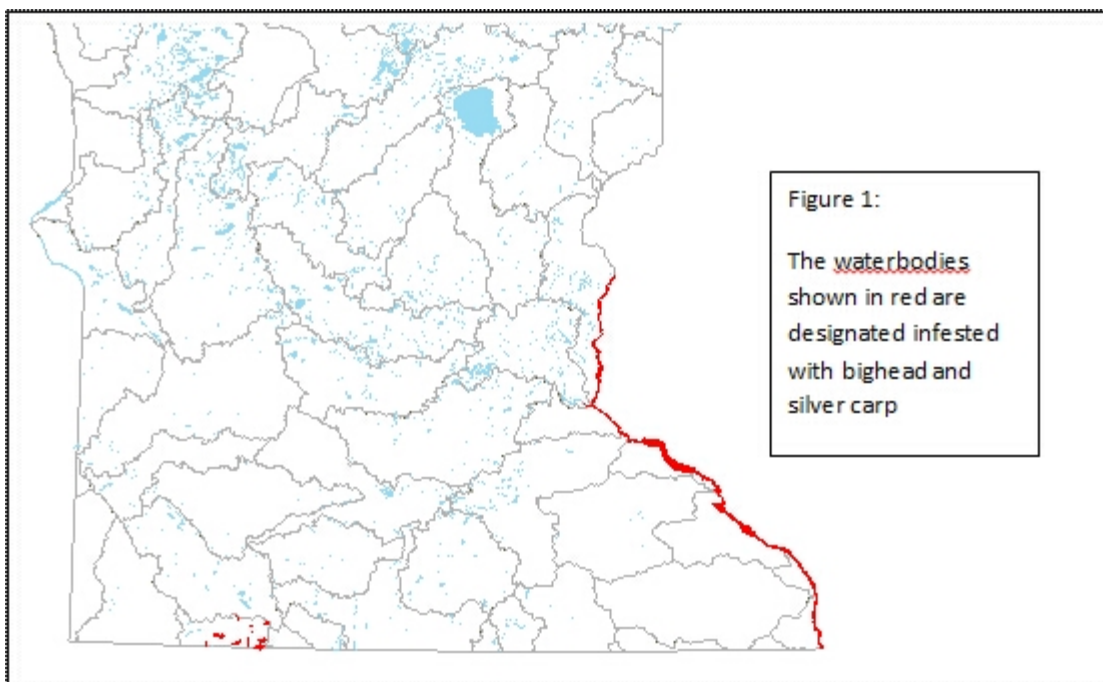
Introduction

Asian carp have recently been documented in limited locations within Minnesota and its neighboring states. Recognizing the impacts the introduction and spread of Asian carp will have on Minnesota's water, fishing, recreational resources, and economy it is crucial for Minnesota to take measures to slow the spread of Asian carp beyond their current range in connected waters, and to prevent these fish from being introduced into unconnected waters of the state. Recognizing that both natural and anthropogenic fish movement occur in Minnesota, this report will focus on the anthropogenic movement that occurs to determine if it poses a risk for increasing the geographic range of these species. Where risk exists, actions will be proposed to reduce the risk to an acceptable level. This report has been created to fulfill the requirements of Minnesota Laws 2012, H.F. No. 2171, article 1: Game and Fish Policy Sec. 89 Report to legislature.

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Importation of live minnows for feeding hatchery fish is another high risk potential pathway for Asian carp to be introduced into unconnected waters of the state. Currently some minnows are being imported from states with known reproducing populations of Asian carp. In addition, most states, including those that minnows are currently being imported from, allow importation of minnows into their state. Because of this practice, the actual source waterbody of these imported minnows is unclear to the DNR. Once these minnows are imported, they are placed into waters of the state that have been licensed for raising private aquatic life (typically shallow lakes or wetlands).

Current and Potential Range of Asian Carp

Current sighting/collection distribution maps for Asian Carp

Figures 2-5 represent the current sighting/distribution maps for each of the four Asian carp species. The collection points located on each of these range maps do not necessarily represent an established population. Most collection points for grass carp represent triploid stockings. However, diploids are established in the Mississippi River, and more and more diploids are being collected in northern states. Most of the black carp collection points represent triploids escapes, but diploids are being found in the lower half of the Mississippi River (personal communication, Amy Benson, USGS).

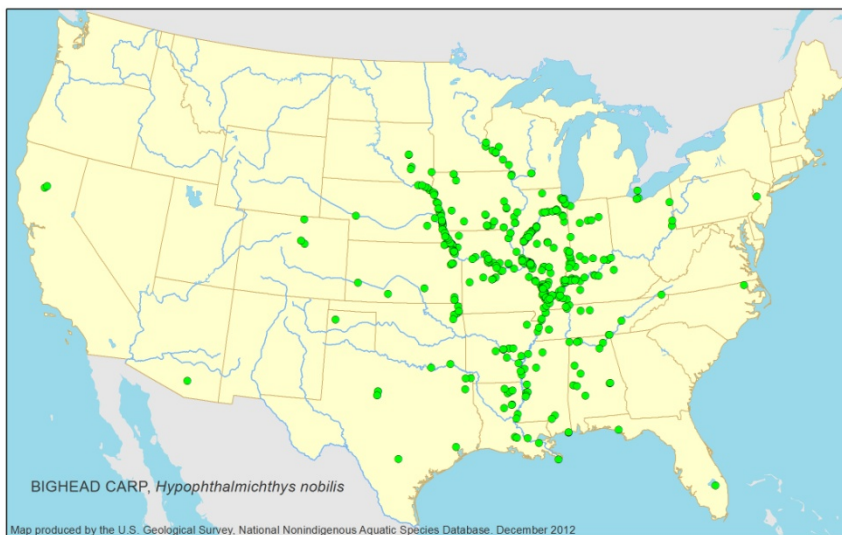


Figure 2: current sighting/collection distribution map for bighead carp
USGS, 2012

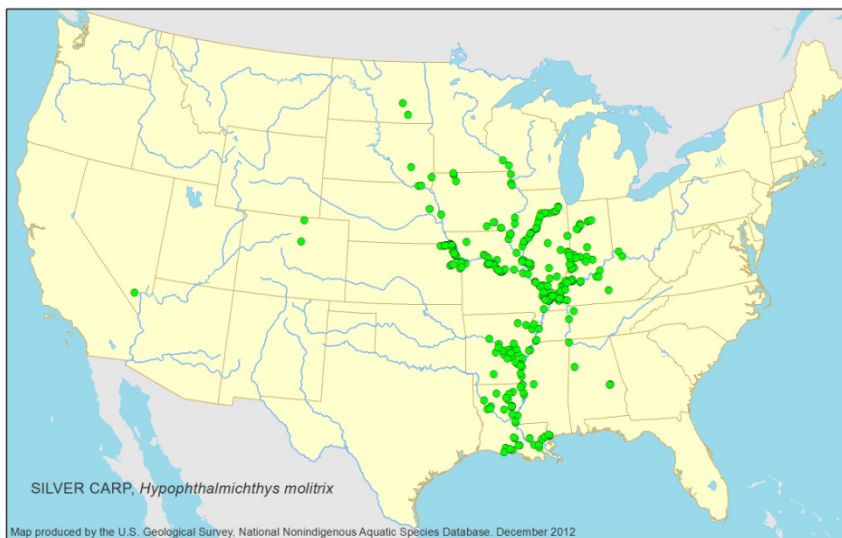


Figure 3: current sighting/collection distribution map for silver carp
USGS, 2012

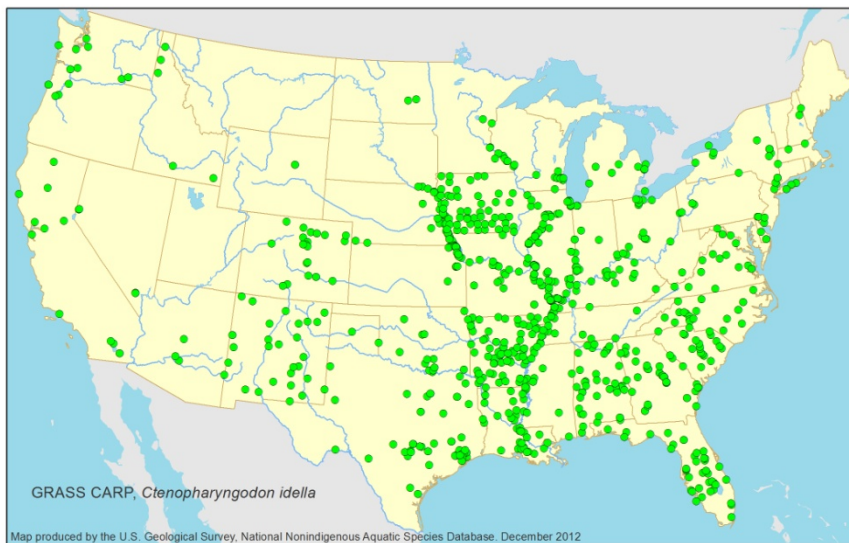


Figure 4: current sighting/collection distribution map for grass carp
USGS, 2012



Figure 5: current sighting/collection distribution map for black carp
USGS, 2012

Potential Range of Asian Carp

Figure 6 represents the potential range for bighead carp in North America. As shown in the figure, Minnesota has a very suitable climate for bighead carp. The higher the habitat match level (red), the more suitable the habitat for bighead carp.

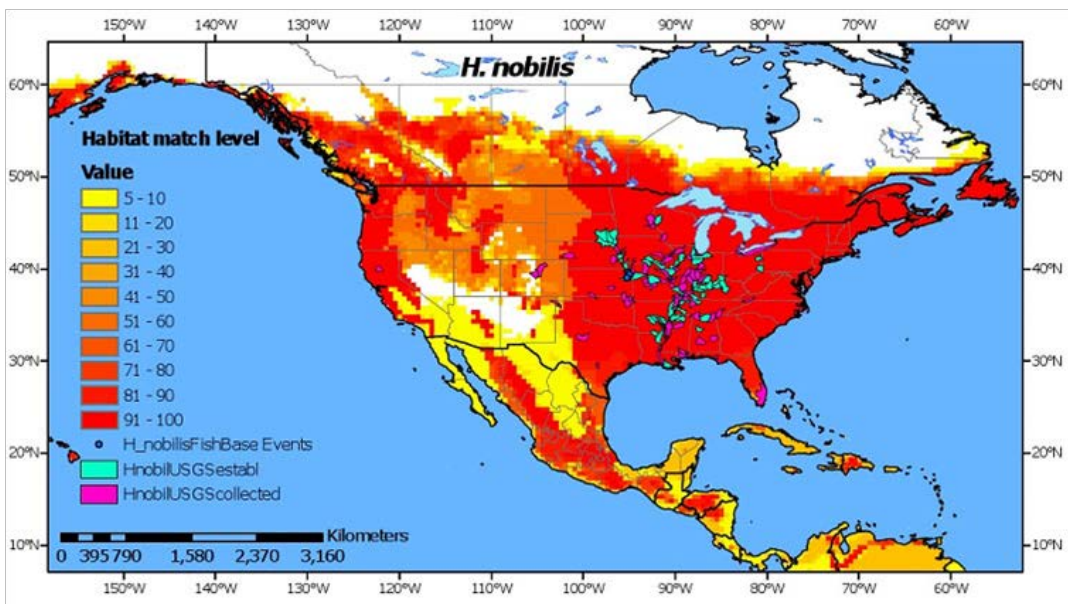


Figure 6: Potential range of bighead carp. Herberg, et.al. 2007

Plans to Limit Range of Asian Carp

National and state plans were used to gather information for this report including: *Preventing the introduction of Asian Carp into Minnesota: A plan prepared by the Minnesota Department of Natural Resource*; *Management and control plan for bighead, black, grass, and silver carps in the United States*; and *Asian Carp Action Plan: A plan to assess the threat posed by Asian carp and actions needed to minimize their impact in Minnesota*. Twenty two pathways for the introduction of Asian carp were identified by the Asian carp working group that created the national plan for the management and control for bighead, black, grass, and silver carps. Listed as one of the highest risks were activities related to wild-caught baitfish. Other high risk activities identified in this report by the work group were domestic live transport and distribution of wild-caught fish and unintentional live transport and distribution by natural resources management agencies. Some of the moderate risk activities listed were the aquarium and hobby industry and incidental inclusion of Asian carps in aquaculture shipments of other farm-raised species. Low risks activities listed included shipments of fish raised for food, incidental inclusion of farm raised baitfish, and incidental release of adult sized fish. See [appendix B](#) for details on both the national and state plans and actions for limiting the spread of Asian carp.

Overview of Current Fish Transportation between Waterbodies

Since dead fish do not pose a risk for introduction of Asian carp through fish transportation between waterbodies, the scope of this report will be limited to live fish transportation. An overview of the types of live fish movement that legally occur in Minnesota is included in [Appendix E](#).

Assessment of Risk

The DNR consulted all licensed commercial fishing, minnow dealer, and aquatic farm, private fish hatchery, or aquarium facility licensees through questionnaire to determine what activities are currently being performed that involve movement of live fish between waterbodies. The core input group met in October of 2012 to assess the current risk levels associated with these activities. Diagrams were developed (see [appendix C](#)) to characterize the activity along with its potential risks and controls. Below is an assessment of current types of fish movement:

[DNR cool/warmwater fish production & stocking](#)

Current Strategies to Reduce the Risk of Introducing Asian Carp or Limit Natural Spread:

- Ponds with no inlets or outlets are selected for use in rearing fish so that non-target organism cannot enter the pond naturally. Both natural and manmade ponds are used. Manmade ponds are drainable.
- After being harvested from rearing ponds, fish are sorted at least twice to prevent non-target organisms from being included in shipments that will be stocked. Fish can be inspected one extra time at the lake just prior to stocking. Some DNR area offices have holding facilities where fish can be inspected, and sorted and graded by size two more times.
- The DNR uses Operational Order 113 and associated division guidelines to define policies and procedures that must be followed by all employees to reduce the risk of introducing or increasing the range of invasive species.

Private aquaculture cool/warmwater fish production & stocking

Current Strategies to Reduce the Risk of Introducing Asian Carp or Limit Natural Spread:

- Ponds with no inlets or outlets are selected for use in rearing fish so that non-target organisms cannot enter the pond naturally. These ponds are licensed and evaluated annually to ensure that they are suitable for continued use. After being harvested from rearing ponds, fish are sorted at least twice to prevent non-target organisms from being included in shipments that will be stocked. Fish can be inspected one extra time at the lake just prior to stocking. Most private aquaculture operations have holding facilities where fish can be inspected, and sorted and graded by size two more times.
- Some private aquaculture operators use risk reduction plans, such as hazard analysis and critical control point (HACCP), which outline procedures to reduce the risk of spreading or introducing invasive species.
- Permits are required before imported or native fish can be stocked. A permit can be denied if the destination waterbody is not appropriate.

Aquarium facility acquisition and sale

Current Strategies to Reduce the Risk of Introducing Asian Carp or Limit Natural Spread:

- Native fish sold at aquarium facilities are purchased from a licensed private aquaculture facility. Fish are hand sorted at the private aquaculture facility prior to delivery.
- If a non-target species was incidentally included in a load, it would likely be discovered at the aquarium facility because fish are held in small display tanks until purchase.
- Once native fish are purchased, the aquarium facility must provide the customer with shipping documents showing that the fish being transported were legally acquired and can legally be transported live to a destination specified on the shipping documents.
- The customer could potentially release live fish into MN waters, but since fish were sorted prior to receipt and monitored at the aquarium facility it is unlikely that an Asian carp would be sold from an aquarium facility.
- Bighead carp, black carp, grass carp, and silver carp are all designated as prohibited invasive species of fish, and so it is illegal to possess, import, purchase, transport, or introduce any of these fish into Minnesota.

Commercial fishermen ponding fish

Current Strategies to Reduce the Risk of Introducing Asian Carp or Limit Natural Spread:

- Commercial fishermen must submit monthly reports on fishing activities.
- Fish are hand sorted by size and species on a sorting table at the waterbody where they are caught, and again by visual screening prior to being placed into the holding pond.
- Commercial fishermen are limited to where they can move live fish and species that can be harvested.
- Commercial fishermen cannot move live fish from areas where Asian carp are established.
- Commercial fishermen are limited to when and where commercial fishing can occur, as well as the type of gear that can be used.

Wild harvest of fathead minnows by minnow dealers from wetlands/ponds for retail sale as live bait

Current Strategies to Reduce the Risk of Introducing Asian Carp or Limit Natural Spread:

- Importation of minnows to be used as bait is prohibited

- Bait harvest is prohibited from waters that are designated infested with a prohibited species of fish (including Asian carp).

Wild harvest of shiners by minnow dealers from rivers/streams for retail sale as live bait

Current Strategies to Reduce the Risk of Introducing Asian Carp or Limit Natural Spread:

- Importation of live minnows to be used as bait is prohibited
- Bait harvest is prohibited from waters that are designated infested with a prohibited species of fish (including Asian carp).
- It is illegal for anglers to release unused minnows into lakes or rivers.

After assessing current fish movement and how each type of movement occurs, it was determined that the highest risks for introducing Asian carp are:

- 1) Wild harvest of minnows from rivers and streams by licensed minnow dealers for wholesale or retail sale;
- 2) Wild harvest of minnows by licensed anglers for personal use; and
- 3) Import of minnows by licensed and permitted private fish hatcheries or aquatic farms for feeding hatchery fish.

As shown in the [review of other reports, plans, and studies section](#), movement of wild-caught baitfish between waterbodies has been determined to be one of the highest risks for introducing Asian carp. The core input group that provided input for this report agreed with that assessment for several reasons. First, minnows are harvested during the same time of year when juvenile Asian carp are present. Second, minnows are harvested from rivers and streams and their backwaters within Minnesota. These are areas where Asian carp are most likely to be found at that life stage. Finally, Minnesota has a broad definition of what a minnow is. The definition includes many species that look similar to juvenile Asian carp (see figures 8-14). Minnow dealers work with large volumes of fish and distribute minnows to many areas of the state. There is a documented case of fingerling bighead carp being mistaken for gizzard shad in another state.



Figure 8: Fingerling Grass Carp
Noel M. Burkhead, USGS



Figure 9: River Shiner
John Lyons, Wisconsin Department of Natural Resources



Figure 10: Common Shiner
John Lyons, Wisconsin Department of Natural Resources



Figure 11: Spottail Shiner
John Lyons, Wisconsin Department of Natural Resources



Figure 12: Fingerling Bighead Carp
Noel M. Burkhead, USGS



Figure 13: Gizzard Shad
John Lyons, Wisconsin Department of Natural Resources



Figure 14: Fingerling Silver Carp
[Michigan Sea Grant](#)

Importation of live minnows for feeding hatchery fish is another high risk potential pathway for Asian carp to be introduced into unconnected waters of the state. Currently some minnows are being imported from states with known reproducing populations of Asian carp. In addition, most states, including those that minnows are currently being imported from, allow importation of minnows into their state. Because of this practice, the actual source waterbody of these imported minnows is unclear to the DNR. Once these minnows are imported, they are placed into waters of the state that have been licensed for raising private aquatic life (typically shallow lakes or wetlands). Because there is risk that young of the year Asian carp could be included in loads of minnows used for feed, Minnesota Statutes, section 97C.515, subdivision 4, was amended during the 2012 legislative session to prohibit the import of live minnows for feeding fish, and will go into effect July 1, 2013. The DNR and the core input group that participated in creating this report agreed that this statutory change reduced the risk of introducing Asian carp into Minnesota.

Recommendations for Change

For over fifteen years, the Minnesota Department of Natural Resources (DNR) has been working to prevent the introduction of Asian carp into the state and has been engaged along with federal and other state agencies, universities, and other partners in prevention efforts in various ways (see [appendix D](#)).

In conjunction with all commercial license holders that have the ability to move live fish between waterbodies (questionnaire), and the core input group (through meetings), the following recommendations for change was developed and put into two categories: 1. Immediate change to statute and rules, and 2) research, educational, or voluntary cooperative efforts.

Recommendations for immediate change in statutes or rules:

- Require all licensed minnow dealers, and their employees who aid in minnow harvest to take online AIS training. Amend Minnesota statutes, section 97C.501, subdivision 2.
Justification: Aquatic invasive species training is free, available online, and would educate trainees about the risk of introducing Asian carp through live fish movement between waterbodies.
- Require holding ponds used by licensed minnow dealers and commercial fishermen to be licensed. Amend Minnesota rules, part 6254.0700 and Minnesota statutes, section 97C.821.
Justification: Currently minnow dealers are allowed to use up to three unlicensed holding ponds that are 1 acre or less in size. Commercial fishermen are allowed to use unlicensed holding ponds that they have exclusive control over. These ponds are not licensed, so there is no oversight as to where the ponds are located, or if they have connections to other waters. Requiring these ponds to be licensed would ensure that ponds are unconnected.

Recommendations: for research, education, or voluntary cooperative efforts:

- Continue to support the development of an effective eDNA test, and adopt testing protocols once it has been developed
Justification: At this point in time, eDNA testing is not well enough developed to be used effectively in ensuring that no Asian carp are being transported between waterbodies. As this technology develops and becomes refined, it will be a valuable tool in preventing incidental introduction of Asian carp along with target species.
- Partner with other agencies to provide training for developing and using risk reduction plans (such as HACCP) for commercial licensees and anglers harvesting minnows for personal use
Justification: Risk reduction plans will help licensees to identify activities that pose a risk for transporting Asian carp along with target species of fish, and help ensure that they are taking steps to reduce the risk of accidental introduction.
- Partner with other agencies to support development of plans for infrastructure that would allow for propagation of minnows in aquatic farms/private fish hatcheries to reduce or eliminate the need to harvest minnows from the wild
Justification: Asian carp may be found in rivers and streams because of natural movement, however they are unlikely to be found in licensed private aquaculture facilities.
- Educate commercial license holders, anglers, and the general public on: 1) the biology and negative impacts of Asian carp; 2) activities that increase the likelihood of range expansion; and 3) how to prevent spread.
Justification: Education would teach individuals how to do their part to prevent Asian carp from spreading, as well as inform them of the negative consequences that would occur if Asian carp do become established and reproducing in Minnesota.
- Partner with other agencies to support research to develop methods for harvesting minnows that would exclude Asian carp.
Justification: Methods of harvesting minnows that would exclude Asian carp would take much of the risk for introducing Asian carp out of wild minnow harvest in rivers and streams.
- Market the AIS on line training so that anglers who harvest minnows for personal use are encouraged to take it.
Justification: Aquatic invasive species training is free, available online, and would educate trainees about the risk of introducing Asian carp through live fish movement between waterbodies.
- Continue to work with enforcement to make them more effective in enforcing the existing laws by targeting their efforts in areas of most non-compliance around AIS movement, such as anglers moving bait.
Justification: The commercial licensees in the core input group largely felt that anglers are illegally importing minnows from neighboring states. Because this would occur in small quantities, and in unmarked vehicles, it would be hard to find these occurrences, except by chance.

- Partner with other agencies to assess ways to further reduce the risk of moving Asian carp that can occur through recreational boating, angling, aquatic related hobbies, and other potential pathways that were identified in the above plans as being a risk.
Justification: It is everyone's responsibility to make sure they do not transport AIS. The more people know about risks AIS pose, and pathways of spread, the more likely they are to take action.

References

- Conover, G., R. Simmonds, and M. Whalen, editors. 2007. Management and control plan for bighead, black, grass, and silver carps in the United States. Asian Carp Working Group, Aquatic Nuisance Task Force, Washington, D.C. 223p.
- FishPro. 2004. Feasibility study to limit the invasion of Asian carp into the Upper Mississippi River. Prepared for the Minnesota Department of Natural Resources in cooperation with the Wisconsin Department of Natural Resources and the U.S. Fish and Wildlife Service (Region 3). FishPro Consulting Engineers and Scientists, Final Report, March 15, 2004, Springfield, Illinois. 253 pp.
- Herberg, L-M., N.E. Mandrak, B. Cudmore, and H.J. MacIssac. 2007. Comparative distribution and invasion risk of snakehead and Asian carp species in North America. Canadian Journal of Fisheries and Aquatic Sciences 64: 1723-1735.
- Kolar, C.S., D.C. Chapman, W.R. Courtenay, C.M. Housel, J.D. Williams, and D.P. Jennings. 2007.
- Bigheaded carps: a biological synopsis and environmental risk assessment. American Fisheries Society, Special Publication 33, Bethesda, Maryland.
- Mandrak, N.E. and B. Cudmore. 2004. Risk Assessment for Asian Carps in Canada. Great Lakes. Laboratory for Fisheries and Aquatic Department of Fisheries and Oceans Canada.
- Nedwell, J.R. 2005. Measurement of audiograms of Silver Carp (*Hypophthalmichthys molitrix*) and Bighead Carp (*Aristichthys nobilis*) for Chicago Canal acoustic barrier optimization. 18pp.
- Nico, L.G., and M.E. Neilson. 2012. *Mylopharyngodon piceus*. USGS Nonindigenous Aquatic Species. Database, Gainesville, FL.
<http://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=573> Revision Date: 3/15/2012.
- Risk Assessment and Management Committee. 1996. Generic nonindigenous aquatic organisms risk analysis review process (for estimating risk associated with the introduction of nonindigenous aquatic organisms and how to manage for that risk). Report to the Aquatic Nuisance Species Task Force. Government Printing Office, Washington, D.C. 32pp.

Appendix

Appendix A: Minnow Movement Within MN During a Typical Year

Table 1: 2011 Minnesota Minnow Harvest			
Species	Number harvested from the wild	Number harvested from licensed waters	Total minnow harvest in 2011
fathead minnows	102,954.75 gallons	78,618 gallons	181,572.75 gallons
white suckers	2,469.25 gallons	54,258 gallons	56,727.25 gallons
creek chubs	1,010 gallons	2 gallons	1,012 gallons
horneyhead chubs	1,956 gallons	73 gallons	2,029 gallons
spottail shiners	6,223 gallons	414 gallons	6,637 gallons
golden shiners	2,427.50 gallons	7,070 gallons	9,497.50 gallons
common shiners	1,739.75 gallons	26 gallons	1,765.75 gallons
emerald shiners	6,473 gallons	0	6,473 gallons
bluntnose minnows	10 gallons	0	10 gallons
tadpole madtoms	30 gallons	0	30 gallons
dace	4,278 gallons	24 gallons	4,302 gallons
other	837 gallons	55 gallons	892 gallons
leeches	161,591.50 pounds	23,490 pounds	185,081.50 pounds

Table 2: 2011 Minnesota Minnow Sales			
Species	Number sold (wild harvest or resale)	Number sold (licensed waters)	Total minnow sales in 2011
fathead minnows	65,885.25 gallons	78,618 gallons	144,503.25 gallons
white suckers	9,076.25 gallons	54,258 gallons	63,334.25 gallons
creek chubs	1,112.50 gallons	2 gallons	1,114.50 gallons
horneyhead chubs	1,436.50 gallons	73 gallons	1,509.50 gallons
spottail shiners	5,931.75 gallons	414 gallons	6,345.75 gallons
golden shiners	4,320.50 gallons	7,070 gallons	11,390.50 gallons
common shiners	1,317.25 gallons	26 gallons	1,343.25 gallons
emerald shiners	3,423 gallons	0	3,423 gallons
bluntnose minnows	12 gallons	0	12 gallons
tadpole madtoms	98.5 gallons	0	98.5 gallons
dace	4,181.50 gallons	24 gallons	4,205.50 gallons
other	640 gallons	55 gallons	695 gallons
leeches	171,800 pounds	23,490 pounds	195,290 pounds

Table 3: 2011 Minnow Exports		
Species	Number exported (MN origin)	Number exported (outstate origin)
fathead minnows	107,431 gallons	94,399
white suckers	16,921.50 gallons	0
creek chubs	0	0
horneyhead chubs	30 gallons	0
spottail shiners	0	0
golden shiners	0	0
common shiners	0	0
emerald shiners	0	0
bluntnose minnows	0	0
tadpole madtoms	0	0
dace	0	0
other	0	0
leeches	95,685 pounds	0

Table 4: 2011 Minnow Imports		
Species	Number imported for later export	Number imported for feeding hatchery fish
fathead minnows	94,877 gallons	4,038 gallons

Appendix B: Review of Reports, Plans, and Studies

Other plans and reports were used to gather information for this report including: 1) *Preventing the introduction of Asian Carp into Minnesota: A plan prepared by the Minnesota Department of Natural Resources*; 2) *Management and control plan for bighead, black, grass, and silver carps in the United States*; and 3) *Asian Carp Action Plan: A plan to assess the threat posed by Asian carp and actions needed to minimize their impact in Minnesota*.

National Asian Carp Plan - The Aquatic Nuisance Species Task Force (ANS Task Force) is an intergovernmental entity established under the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 (Act, 16 U.S.C. 4701-4741). In 2002, the ANS Task Force requested the USFWS develop a *national* management and control plan for Asian carps. In early 2004, the USFWS and ANS Task Force organized an Asian Carp Working Group with broad and diverse representation from partners and stakeholders to participate in the collaborative development of the national management and control plan.

The *Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States* is divided into 7 sections based on goals necessary to comprehensively address Asian carp issues: 1) prevent accidental and deliberate unauthorized introductions; 2) contain and control; 3) reduce abundance of feral populations; 4) minimize potential adverse effects; 5) education and outreach; 6) research; and 7) implementation. Strategies were developed by an Asian Carp Working Group to address each goal and numerous recommendations were developed to address each strategy.

For prevention, the working group identified 22 pathways of potential introduction. These pathways had their national priority ranked by the working group's prevention team and the subsequently by the full working group. Upon review of the pathways for this prevention plan, five high-priority pathways were selected.

The table in [Appendix F](#), which was adapted from the national plan and created for and included in the plan for preventing the introduction of Asian carp into Minnesota prepared by the DNR, reviews each recommendation from the national plan that relates to introduction and spread of Asian carp and indicates whether that recommendation is: relevant to Minnesota; whether the state has already taken action to address that recommendation, and whether the recommendation should be addressed in Minnesota. Similar to the review of pathways/issues, this review of the national recommendations acts as a triage to identify the most pressing recommendations that the state should address in terms of prevention.

State Invasive Species Plan - The Minnesota Invasive Species Advisory Council has developed a draft Minnesota State Plan for Invasive Species. The Minnesota Asian carp prevention plan addresses the following desired outcome in the state invasive species plan — "*Participants will actively seek to prevent the introduction of new invasive species in Minnesota.*" A table in [Appendix G](#), taken from the plan for preventing the introduction of Asian carp into Minnesota prepared by the DNR, reviews each strategy and action from the state plan that relates to introduction of Asian carp into Minnesota and indicates whether the state has already taken action to address that action and whether the action should be addressed to help prevent introduction of Asian carp into Minnesota.

Evaluating Risk

Although most if not all of the plans that address the risk of introducing Asian carp into Minnesota and management of Asian carp mention human movement of fish from waterbody to waterbody most focus mainly on the natural movement of Asian carp through major rivers and connected waterways and the potential barriers that will prevent this movement. Preventing the introduction of Asian carp into Minnesota through various barriers is very important, but once these fish reach the barriers, preventing (mechanical) movement overland into unconnected, uninfested waters becomes the primary concern.

At this time the risk of introducing Asian carp through the intrastate transportation of fish between waterbodies is perceived to be low, but the overall risk potential is high. The environmental risk assessment done in 2007 using methods described by the Risk Assessment and Management Committee (1996) concluded that the overall risk potential associated with Asian carp is high based mainly on the consequences if Asian carp become established. The probability of Asian carp establishment if released was determined using the following factors: probability of being within the pathway, probability of surviving transit, probability of successfully colonizing and maintaining a population where introduced, and probability of spread beyond the colonized area. The consequences of Asian carp establishment were determined using the following factors: estimation of economic effect if established, estimation of environmental effect if established, and estimation of effect from social and/or political influences. The risk of establishment in Minnesota is high, the potential Asian carp range is well into Canada. The consequences of establishment would also be high; if Asian carp became established in Minnesota the economic and ecological impacts would be unacceptable. Twenty two pathways for the introduction of Asian carp were identified by the Asian carp working group that created the national plan for the management and control for bighead, black, grass, and silver carps. Listed as one of the highest risks were activities related to wild-caught baitfish. The plan stated the reason for this risk assessment as:

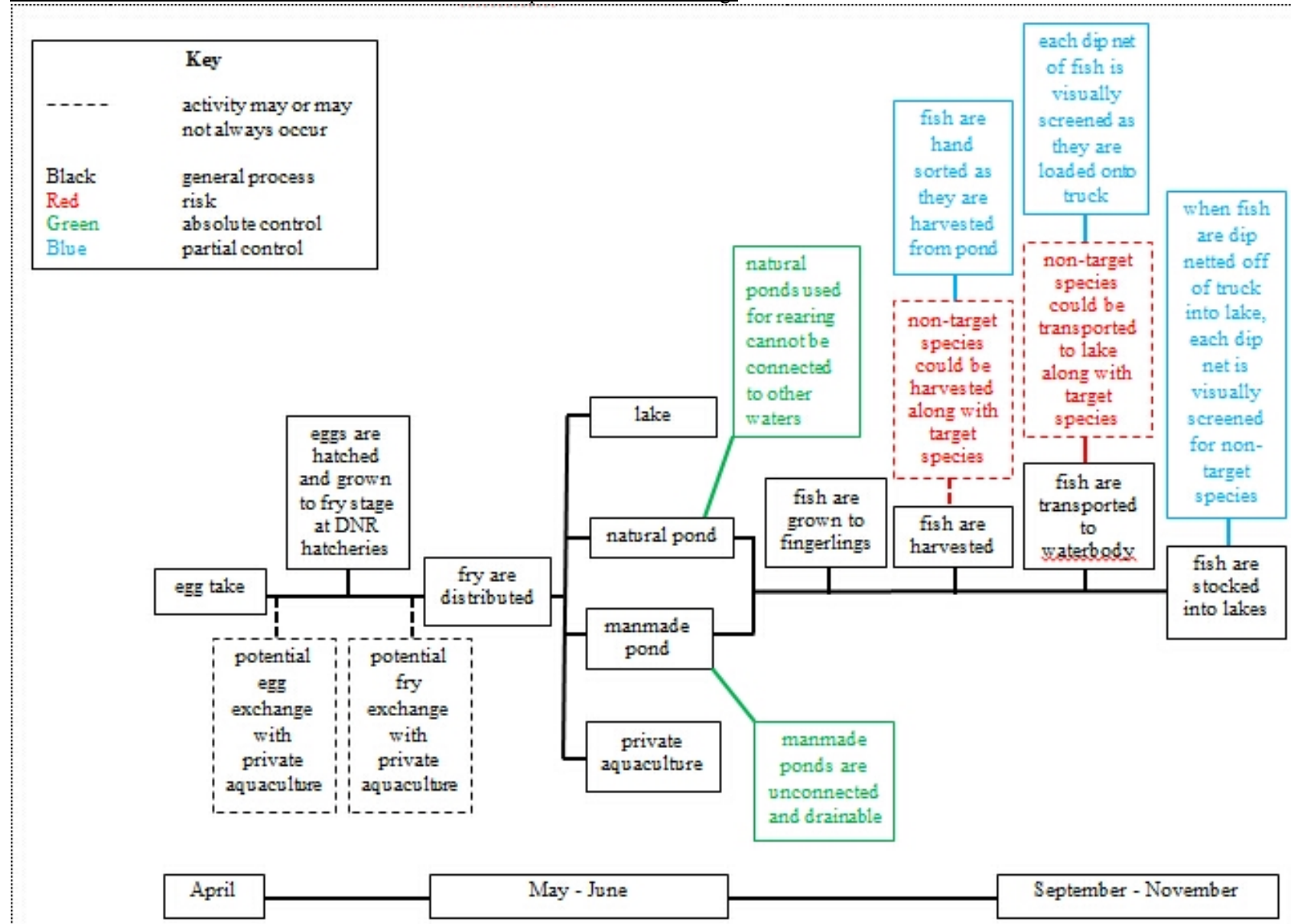
The transport and release of wild-caught baitfish by anglers and commercial dealers represents one of the highest risk pathways for introduction of Asian carps because live fish can easily be released into new waters. To the untrained eye, juvenile bighead and silver carps can be difficult to distinguish from some species of native baitfish (e.g., gizzard shad). These species have been documented in high abundances in some locations throughout the Mississippi River Basin (e.g., tailwaters and backwaters). Because of their abundance and natural behavior, juvenile bighead and silver carps may be collected with, or in place of, native bait fish. Although less likely to be collected than bighead and silver carps, juvenile grass carp may be collected with wild-harvested native baitfish. Dumping or releasing unwanted, unused live baitfish is a pathway of concern for any aquatic nuisance species. Effective information programs, regulations, and enforcement are all essential components for controlling this pathway.

Other high risk activities identified in this report by the work group were domestic live transport and distribution of wild-caught fish and unintentional live transport and distribution by natural resources management agencies. Some of the moderate risk activities listed were the aquarium and hobby industry and incidental inclusion of Asian carps in aquaculture shipments of other farm-raised species. Low risks activities listed included shipments of fish raised for food, incidental inclusion of farm raised baitfish, and incidental release of adult sized fish.

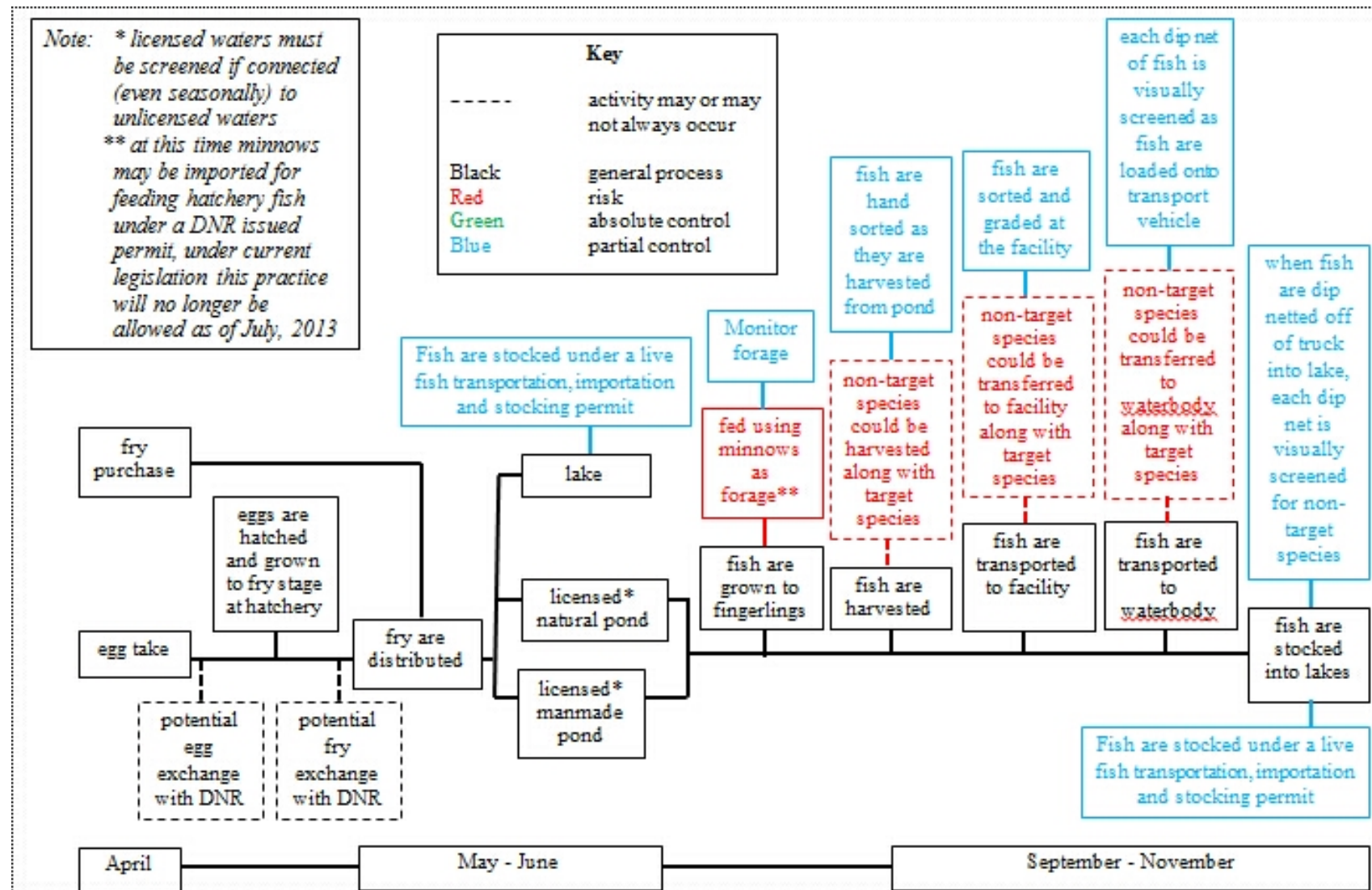
Appendix C: Risk Assessment Diagrams

The DNR consulted all licensed commercial fishing, minnow dealer, and aquatic farm, private fish hatchery, or aquarium facility licensees through questionnaire to determine what activities are currently being performed that involve movement of live fish between waterbodies. The core input group met in October of 2012 to assess the current risk levels associated with these activities. Diagrams were developed to characterize the activity along with its potential risks and controls. In all cases, the general process is listed in black, while risks are listed in red, absolute controls are listed in green, and partial controls are listed in blue. Wherever dashed lines appear, the activity or risk may or may not always occur.

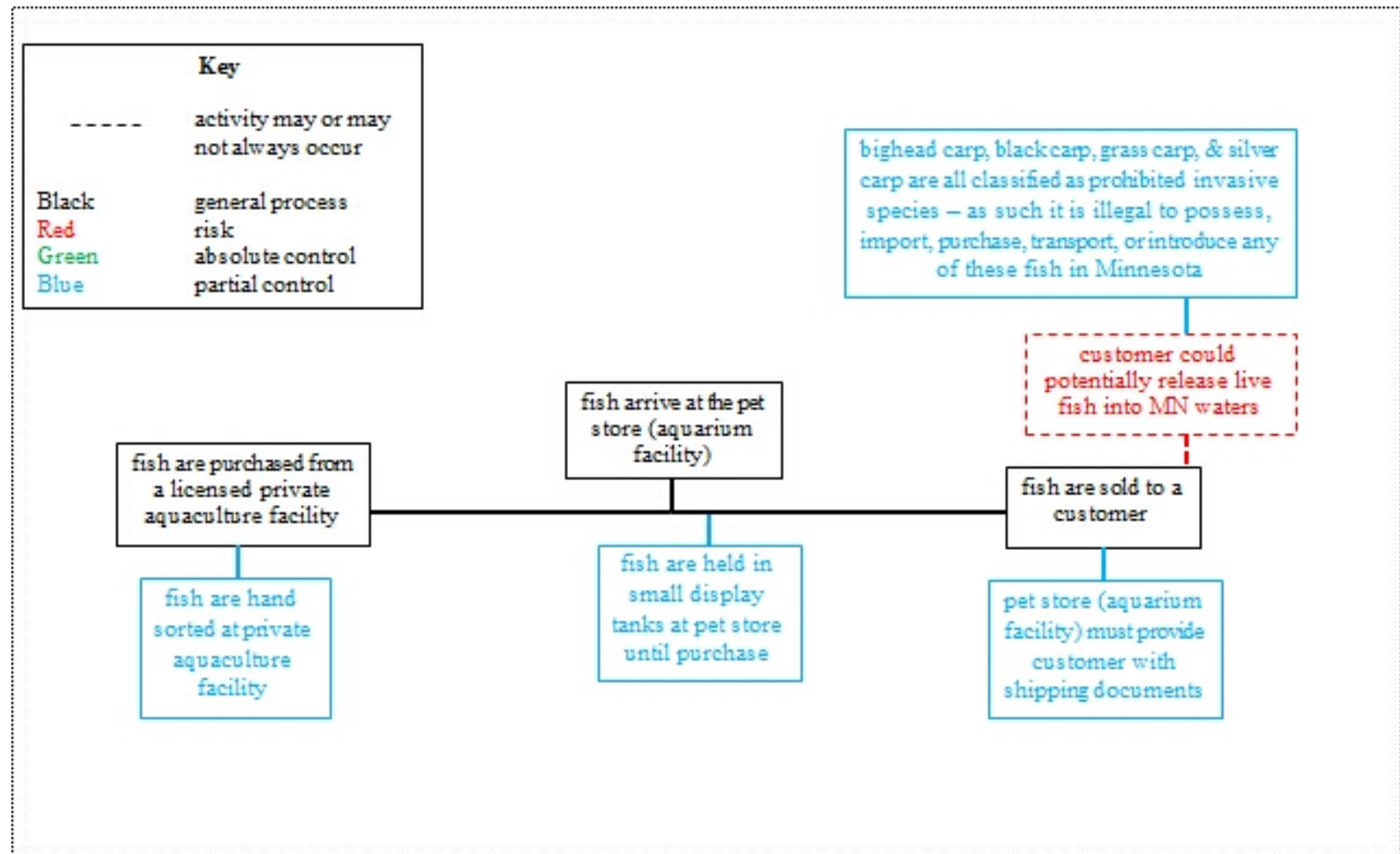
Risk assessment flowchart for DNR cool/warmwater fish production & stocking:



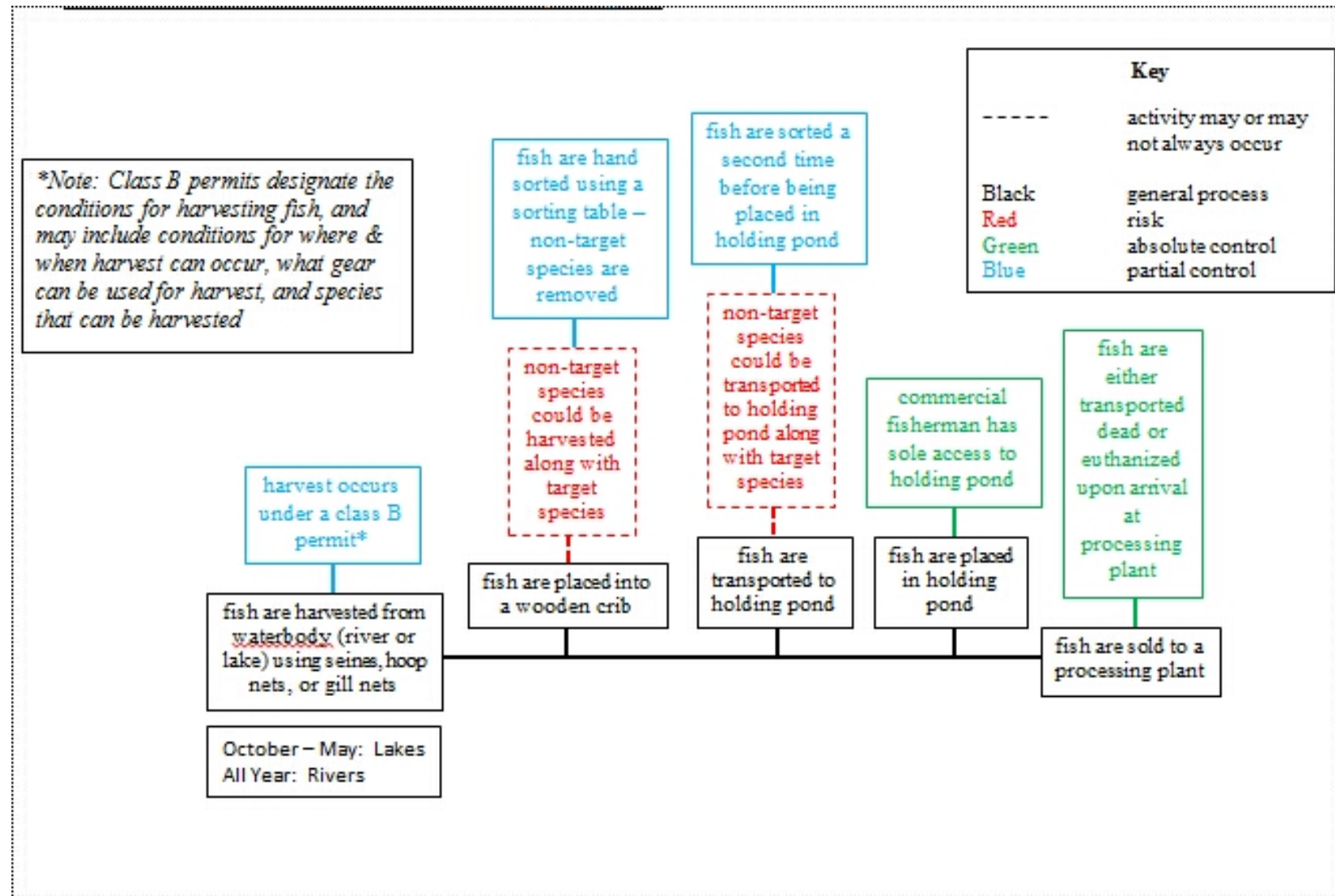
Risk assessment flowchart for private aquaculture cool/warmwater fish production & stocking:



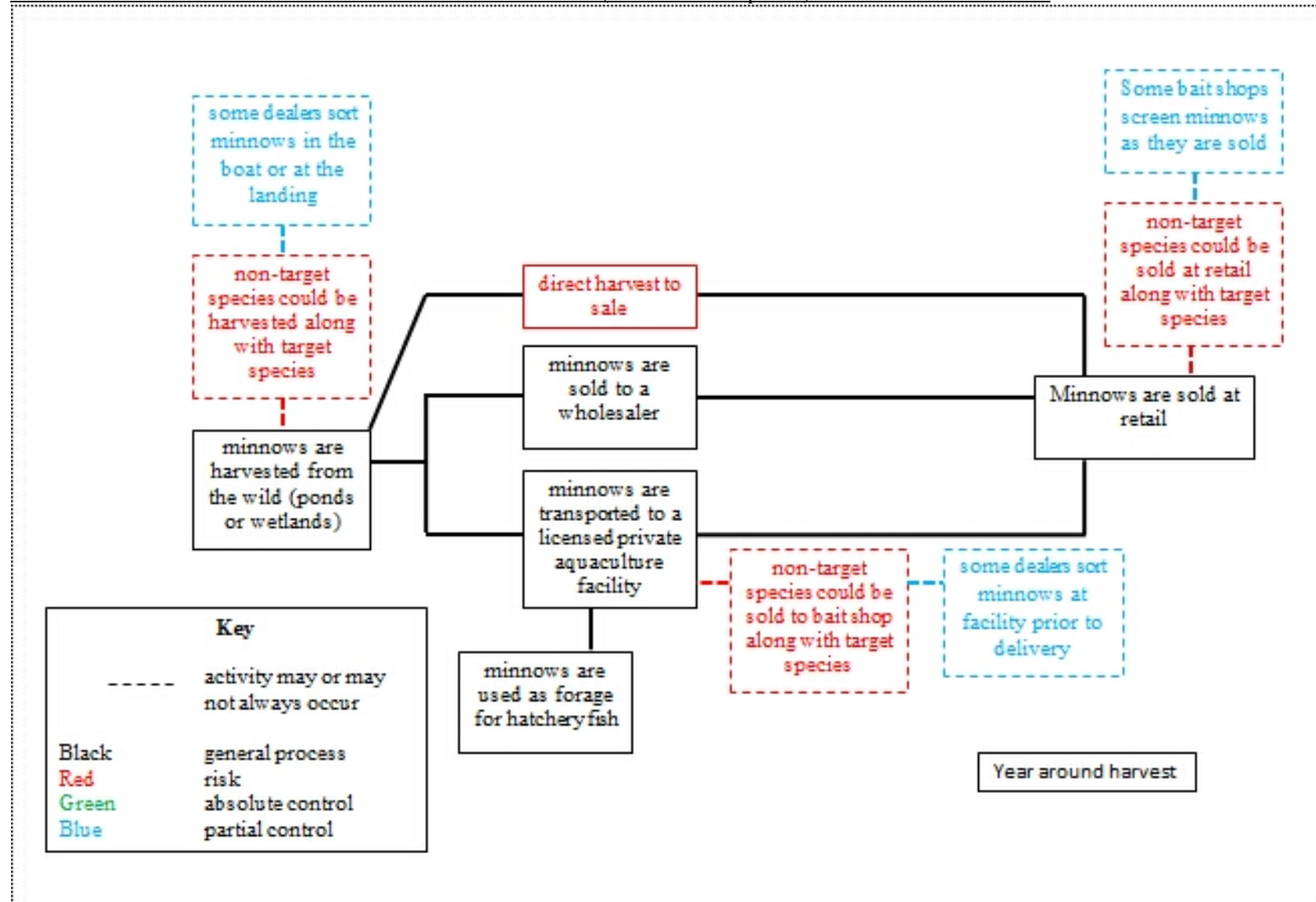
Risk assessment flowchart for aquarium facility acquisition and sale:



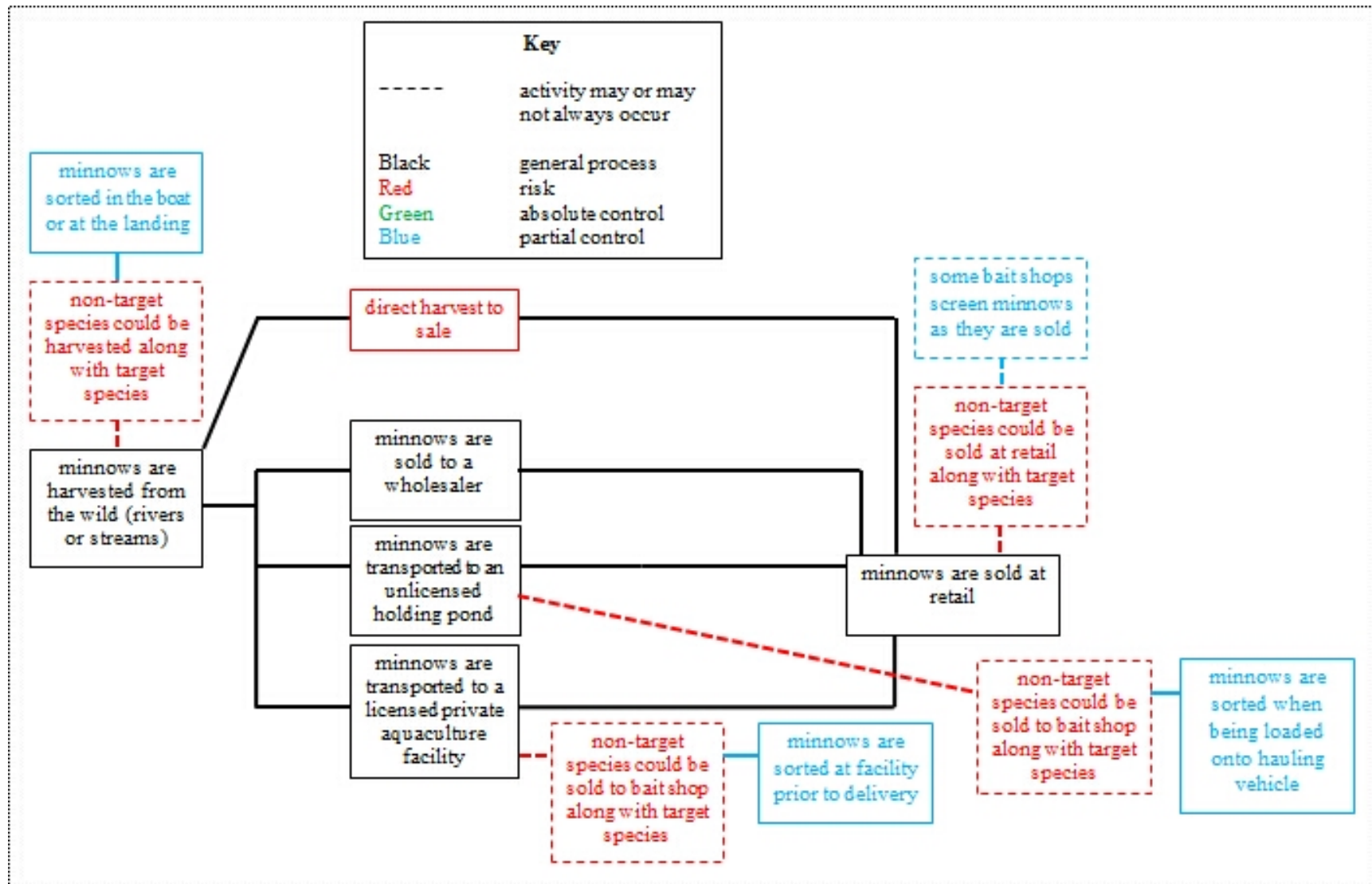
Risk assessment flowchart for commercial fishermen ponding fish:



Risk assessment flowchart for wild harvest of fathead minnows (from wetlands/ponds) for retail sale as live bait:



Risk assessment flowchart for wild harvest of shiners (from rivers/streams) for retail sale as live bait:



Appendix D: Efforts to Prevent Introduction and Range Expansion of Asian Carp in MN

For over fifteen years, the Minnesota Department of Natural Resources (DNR) has been working to prevent the introduction of Asian carp into the state and has been engaged along with federal and other state agencies, universities, and other partners in prevention efforts in various ways. The following are some of the actions taken:

To date efforts to prevent Asian carp Introduction or range expansion

1996

- The DNR designated four Asian carp as prohibited invasive species
- Described the treat of Asian carp in annual reports

2003

- DNR formed an interagency work group to review the issue. The group included the Minnesota, Wisconsin and Iowa DNRs, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, the National Park Service, and Wisconsin Sea Grant.
- the interagency work group recommended a feasibility study be conducted.
- DNR funded a *Preliminary Conceptual Report on the Feasibility of an Electrical Fish Barrier on The Mississippi River* (Smith-Root Inc. 2003)

2004

- DNR co-funded a *Feasibility Study to Limit the Invasion of Asian Carp into the Upper Mississippi River Basin* (FishPro 2004);
- DNR provided funds to Illinois DNR to support a barrier to keep Asian carp from entering the Great Lakes;
- DNR produced a DVD *Taking a Stand Against the Invasion of Asian Carp* with a message from Governor Pawlenty and distributed it to Congressional members and other natural resources agencies in other states.

2005

- funded audiograms of native paddlefish and lake sturgeon to determine the potential for acoustic fish barriers to be selective. This effort as described in *The inner ear morphology and hearing abilities of the Mississippi Paddlefish (Polyodon spathula) and the Lake Sturgeon (Acipenser fulvescens)* (Nedwell and Pegg 2005b) was intended to compliment the similar effort *Measurement of audiograms of Silver Carp (Hypophthalmichthys molitrix) and Bighead Carp (Aristichthys nobilis) for Chicago Canal acoustic barrier optimization* (Nedwell and Pegg 2005) funded by other agencies.

2007

- DNR worked with the Governor's Office, several Minnesota Congressional members, and others to get a federal mandate in the Water Resources Development Act of 2007 (WRDA) to install a behavior barrier in the Mississippi River to delay northward movement of Asian carp;
- Developed a state plan for preventing Asian carp from entering the state
- Silver carp listed as injurious species by the United States Fish and Wildlife Service (USFWS)

- DNR staff participated in working groups to develop the national *Management and Control Plan for Bighead, Black, Grass, and Silver Carps* (Conover, Simmonds, and Whalen 2007);

2011

- The USFWS designated bighead carp as injurious wildlife;
- MN Asian carp task force was developed and is implementing the Minnesota Asian Carp Action plan
- investigated the potential and cost for installing a bio-acoustic barrier at the mouth of the St. Croix River as an alternative to a barrier in the Mississippi River;
- commercial fishing operators have assisted with monitoring the Mississippi and St. Croix Rivers for the presence of Asian carp;
- eDNA testing on the St. Croix and Mississippi Rivers has been performed to detect the presence of Asian carp;
- funding secured for upgrades of the Coon Rapids Dam to provide an improved barrier to upstream movement;
- research is underway around the U.S., led by the U.S. Geological Survey, to develop methods to control or kill Asian carp;

2012

- Secured funding to install a deterrent barrier in the Mississippi River to delay northward movement of Asian carp;
- Secured funding to block fish passage at several locations in the Little Sioux River watershed in SW MN to prevent Asian carp movements from the Missouri River basin;
- Cost shared electric barrier project with IA to prevent Asian carp from entering MN waters;
- An Aquatic Invasive Species Research Center is being established at the University of Minnesota with Asian carp research a priority;
- Habitat and water quality improvement projects funded to help native species to better compete with Asian carp; and
- DNR is identifying natural and manmade barriers or where barriers can be installed around the state that may slow or prevent infestations of Asian carp. The map of existing barriers is available at: <http://nationalatlas.gov/mapmaker?AppCmd=CUSTOM&LayerList=dams&visCats=CAT-hydro,CAT-hydro>).
- Minnesota Statutes, section 97C.515, subdivision 4, has been amended (effective July 1) to prohibit the import of live minnows to be used for feeding hatchery fish.

Appendix E: Overview of Current Fish Transportation

The following charts summarize who can currently legally move live fish and when. The DNR recognizes that illegal live fish movement between waterbodies does occur. Three types of aquatic life can legally be transported live in limited situations, they include: public aquatic life, private aquatic life; and minnows. Public aquatic life is aquatic life that lives in waters of the state; it belongs to the citizens of the state, and can be harvested under specific commercial or non-commercial licenses. Private aquatic life is aquatic life that belongs to businesses or individuals. This aquatic life is raised in licensed waters or licensed indoor facilities. Minnows are generally a type of public aquatic life (but can be private aquatic life if raised in licensed waters or licensed indoor facilities). Minnesota Statutes, section 97A.015, subdivision 29 defines minnows as: “(1) members of the minnow family, Cyprinidae, except carp and goldfish; (2) members of the mudminnow family, Umbridae; (3) members of the sucker family, Catostomidae, not over 12 inches in length; (4) bullheads, ciscoes, lake whitefish, goldeyes, and mooneyes, not over seven inches long; (5) leeches; and (6) tadpole madtoms (willow cats) and stonecats”.

Who can move public aquatic life live and when?	
MN DNR, Division of Fish & Wildlife, Fisheries Section Employees	from a hatchery or rearing pond to a public waterbody for stocking
	between public waterbodies for winterkill lakes or Fishing in the Neighborhood (FiN) kid's fishing ponds
	from public waterbody to hatchery for use as brood fish
Aquatic Farm/Private Fish Hatchery Licensees	from public waters to hatchery under a broodstock angling permit
Commercial Fishing Licensees	from a public source waterbody to a holding pond they have exclusive control over
	from a public source waterbody to a processing plant
	from a public source waterbody to a market (for sale in a fresh dead state)

Who can move private aquatic life live and when?	
Aquatic Farm/Private Fish Hatchery Licensees	between licensed waters listed on the same license (no permit necessary)
	can transport, import, or stock private aquatic life under a live fish transportation, importation, and stocking permit
	from a hatchery or rearing pond into a public waterbody if fish were purchased by the state for the purpose of stocking
	from a licensed private aquaculture facility to a processing plant
	from a licensed private aquaculture facility to an aquarium facility
Aquarium Facility Licensees	from a licensed private aquaculture facility to the aquarium facility

Who can move minnows live and when?	
Aquatic Farm/Private Fish Hatchery Licensees	can harvest minnows from the wild to feed their hatchery fish
	can import minnows for later export under a permit to import minnows for later export
	can import minnows for feeding their hatchery fish under a permit to import minnows for feeding hatchery fish [Minnesota Statutes, section 97C.515, subdivision 4, has been amended (effective July 1, 2013) to prohibit the import of live minnows to be used for feeding hatchery fish]
	from a licensed private aquaculture facility to a bait shop
	from public waters to hatchery under a broodstock angling permit
Minnow Dealer Licensees	from a source waterbody to a retail bait shop
	from a source waterbody to an unlicensed holding pond (less than 1 acre in size) to a bait shop
	from a source waterbody to a licensed private aquaculture facility to a baitshop
Licensed Anglers	from a baitshop to a waterbody for angling
	between waterbodies for angling
	can harvest up to 24 dozen minnows from a waterbody for personal use and use them in the same or different waterbodies

Types of fish movement

- Intrastate fish movement of private or public aquatic life
Activities associated with intrastate movement of fish are similar for the DNR and private aquaculture. Game fish are reared in either natural shallow lakes or ponds or in drainable man-made ponds. The fish are harvested in the fall and stocked into lakes. The greatest risk for moving non-target species is during fall harvest operations; however fish are moved during the spring, summer, and fall. Most natural ponds used for rearing fish have no inlets or outlets, but are generally not secured. High-water events can quickly create connections to adjacent waters in many areas. Ponds can have some sort of public access which could be a vector for introduction of non-target organisms such as Asian carp. The DNR utilizes over 24,000 acres of shallow natural water bodies to produce an average of 90,000 pounds of walleye fingerlings each fall. The walleyes produced are stocked into over 300 lakes each year. Private aquaculture licenses approximately another 24,000 acres of ponds and produces 60 to 70 thousand pounds of walleyes and other game species which are stocked into water bodies around the state. Non target organisms including bullheads, minnows, crayfish, tadpoles, and other aquatic organisms are often found in ponds used for fish production and have been found in loads of fish, both from private aquaculture and DNR.
- Importation of private aquatic life
Currently fish are imported as brood fish for aquaculture, and to stock into lakes and ponds. The DNR purchases channel catfish raised at a private aquaculture facility in the southern United States. These fish are brought to a regional office, hand sorted, fin clipped, loaded onto a DNR vehicle and stocked into isolated small lakes. Other fish imported into Minnesota are trout and fish imported as brood stock used by private

aquaculture. On average the DNR issues 40 permits per year to import fish into Minnesota most are for the importation of trout. There is risk that Asian carp may be included in loads of catfish and other game cool water games fish and unintentionally released. There is very little risk that Asian carp will be included in loads of trout.

- Importation of minnows

Currently live minnow can only be imported by licensed and permitted private fish hatcheries or aquatic farms for later export and for feeding hatchery fish. An average of 9 permits are issued each year, accounting for a yearly average of 709,528 pounds of minnows (fathead minnows and white suckers) being imported, and an average of 625,344 pounds subsequently being exported. The remaining 84,184 pounds are used for feeding of hatchery fish. These imported minnows are placed, at least temporarily, into waters of the state which have been licensed for aquaculture use by the permit holder.

The vast majority of live minnows imported for later export or feeding of hatchery fish come from North and South Dakota. The DNR does not have the ability to determine source water bodies where minnows imported into MN were harvested. On average, 3,444,988 pounds of minnows are harvested each year in Minnesota. Of those, an average of 1,289,506 pounds are exported. The 84,184 pounds of minnows which are imported into MN each year for feeding hatchery fish represent 2.4% of the total number of minnows harvested in this state on a yearly basis.

Minnows imported for later export are held in secure facilities, and subsequently leave the state, so they pose little risk for the introduction of Asian carp into Minnesota waters, however minnows imported for feeding hatchery fish are placed into waters of the state. Since their exact source waterbody is unknown to the DNR, and some come from states with reproducing Asian carp populations, this practice poses a high risk for Asian carp introduction.

- Wild harvested Minnows

Minnows are harvested by several groups of people within MN for several reasons, including:

- 1) licensed anglers for personal use;
- 2) minnow dealers for wholesale;
- 3) minnow dealers for retail sale;
- 4) private aquaculture licensees for feeding their hatchery fish;
- 5) private aquaculture licensees who have minnow dealer endorsements for wholesale
- 6) private aquaculture licensees who have minnow dealer endorsements for retail sale

Licensed minnow dealers can harvest minnows for wholesale or retail sale from most waters of the state, as long as they have legal access (some exceptions do exist).

Currently there are around 250 licensed minnow dealers (the five-year average is 272). Each year, a significant number of minnows are harvested from waters of the state and subsequently sold at wholesale or retail or exported (as tables 1-4 of [Appendix A](#), 2011 represents a typical year). According to the questionnaire sent out to commercial license holders in September to inform this report (see [appendix H](#)), minnow dealers harvest from all types of waters of the state and transport live fish within MN throughout the year. The core input group identified wild-caught shiner harvest as the highest risk activity that minnow dealers perform, because: 1) minnow dealers are harvesting from streams and rivers; 2) many dealers go straight from the harvest site to the bait shop with

no sorting or grading; and 3) juvenile Asian carp look very similar to some species of native minnows.

Licensed anglers can harvest up to 24 dozen minnows for personal use from most waters of the state, as long as they have legal access (some exceptions do exist). Those minnows can be transported live between waterbodies. The core input group identified minnow harvest by licensed anglers as one of the highest risks for introducing Asian carp because juvenile Asian carp can be difficult to distinguish from some species of native minnows, and, while this practice is illegal, some anglers release live bait either intentionally or unintentionally into lakes and streams. It is unknown how many people harvest minnows for personal use, but the use of live bait is a popular method for angling. Finally, although importation of live minnows for bait is not legal in Minnesota, the core input group speculated that this occurs, and could be a potential pathway for introduction of Asian carp.

- **Commercial Fish**

Commercial fishing in Minnesota occurs in Lake Superior, inland lakes, the Minnesota, Mississippi, and St. Croix Rivers. Commercial fishing on Lake Superior is done mainly with gill nets and targets cisco and lake whitefish, hauling of live fish is rare or nonexistent and therefore there is a very low risk that commercial fishermen would introduce Asian carp into a new waterbody. Commercial fishermen on inland lakes and the rivers mentioned above are targeting larger fish to sell. Commercial fishermen haul live fish directly to market to be processed or to a holding pond where they have exclusive control of access and where they can harvest fish for processing. Commercial fishermen target common carp and buffalo and will be also targeting Asian carp if they become established in Minnesota. The risk posed by commercial fishermen will be the live hauling of yearling and adult Asian carp.

Appendix F: Summary of the prevention related strategies and recommendations, by Goal, included in the national plan (Connover, Simmonds, and Whalen 2007) for managing and controlling Asian carp in the United States.

Note: In the column titled Applicability to Minnesota, several of the recommendations in the national plan are listed as "not applicable" because Minnesota already prohibits the import, possession, sale, purchase, transport, and propagation of grass carp.

Goal 1: Prevent accidental and deliberate unauthorized introductions of bighead, black, grass, and silver carps in the United States.	
National Strategies and Recommendations	Applicability to Minnesota
Strategy 3.1.1. Take actions to prevent the collection, transport, release, and improper disposal of Asian carps that may be intermixed with live wild-harvested baitfish.	
3.1.1.1. Assist states to develop, promulgate, and enforce regulations that manage the harvest, transport, import, trade, and release of live wild- harvested aquatic bait.	<ul style="list-style-type: none"> • Import banned in MN • Harvest banned from infested waters in MN
3.1.1.2. Explore the use of baitfish grown in monoculture, and certified to be disease-free and uncontaminated by other aquatic species.	<ul style="list-style-type: none"> • Import into Minnesota is prohibited • Only one minnow dealer is conducting trials with monoculture of baitfish
3.1.1.3. Develop and provide information to commercial and recreational baitfish harvesters that will help prevent accidental and deliberate unauthorized introductions of Asian carps.	<ul style="list-style-type: none"> • Signs, brochures, and fish regulations booklet, contain the message to dispose of bait in trash
Strategy 3.1.2. Take actions to prevent the stocking of diploid Asian carps into non-aquaculture waters for biological control.	
3.1.2.1. Encourage states to develop regulations that prohibit the stocking of any diploid Asian carps into non-aquaculture waters for biological control.	<ul style="list-style-type: none"> • Import and stocking is prohibited in MN
3.1.2.2. Remove or contain diploid Asian carps that have been previously stocked into non-aquaculture waters for biological control.	<ul style="list-style-type: none"> • Not applicable - no known populations in MN
Strategy 3.1.3. Take actions to prevent illegal sale, shipping, and stocking of diploid grass carp as triploid grass carp.	
3.1.3.1. Encourage states that allow the legal importation of grass carp to adopt consistent, uniform regulations that allow only certified triploid grass carp to be shipped or stocked.	<ul style="list-style-type: none"> • Not applicable; all grass carp are already prohibited in MN (M.R. 6216)
3.1.3.2. Encourage states to conduct routine and random inspections of all live grass carp shipments within the state.	<ul style="list-style-type: none"> • Not applicable in MN
3.1.3.3. Encourage the USFWS to provide ploidy determination for states conducting inspections of grass carp shipments.	<ul style="list-style-type: none"> • Not applicable in MN

Strategy 3.1.4. Take actions to prevent the shipment of live black carp in grass carp shipments.	• Not applicable; grass and black carp are prohibited in MN (M.R. 6216)
Strategy 3.1.5. Take actions to address stocking triploid Asian carps into non-aquaculture waters for biological control.	
3.1.5.1. Encourage states to prohibit stocking triploid bighead, black, and silver carps for biological control in non-aquaculture waters.	• Not applicable; these carp are already prohibited in MN (M.R. 6216)
3.1.5.2. Encourage states to allow stocking triploid grass carp for biological control in non-aquaculture waters only within watersheds where grass carp are already present in the wild.	• Not applicable; all grass carp are already prohibited in MN (M.R. 6216)
3.1.5.3. Remove or contain triploid Asian carps that have been previously stocked in non-aquaculture waters within watersheds where the fish are not currently self-sustaining in the wild.	• Not applicable in MN; no populations are known to exist in MN
Strategy 3.1.6. Take actions to ensure that stocking triploid grass carp for biological control does not result in accidental or deliberate unauthorized introductions of diploid grass carp.	
3.1.6.1. The USFWS should seek an independent scientific review and evaluation of the Triploid Grass Carp Inspection and Certification Program.	• Not applicable in MN
3.1.6.2. Develop and provide information on the USFWS Triploid Grass Carp Inspection and Certification Program.	• Not applicable in MN
Strategy 3.1.7. Take actions to prevent the transport and release of Asian carps by commercial vessels and recreational watercraft.	
3.1.7.1. Investigate fully the risks associated with ballast water transfers or other means of water transfer by commercial vessels and recreational watercraft.	• Low probability and priority for MN
3.1.7.2. Inform boaters, barge operators, and others of the risks of moving infested water and encourage voluntary actions to reduce this risk.	• Low priority for MN
Strategy 3.1.8. Take actions to prevent the unintentional transport, release, or disposal of Asian carps by natural resources managers during management activities.	
3.1.8.1. Natural resources managers should employ pathway management tools, such as Hazard Analysis and Critical Control Point planning in the review of Standard Operating Procedures, to prevent introductions of Asian carps through natural resources management related pathways.	• DNR Operational Order is on invasive species in process
3.1.8.2. Develop and provide information to natural resources managers and field staff that will help prevent unintentional introductions and spread of feral Asian carps.	• Not applicable; no feral populations in MN
Strategy 3.1.9. Take actions to prevent the illegal importation and prohibit the legal importation of live bighead, black, grass, and silver carps into the United States.	

3.1.9.1. Prohibit international importation of Asian carps under federal and state regulations, except for research purposes under a controlled permit.	<ul style="list-style-type: none"> • Black, silver and large-scale silver carp are designated as federal injurious wildlife • All bighead, black, grass, and silver are prohibited invasive species in MN (M.R. 6216)
3.1.9.2. Inform USFWS Law Enforcement Officers, other federal inspectors, and state conservation law enforcement officers about laws that apply to the import of live Asian carps, the importance of preventing the illegal import of Asian carps, and Asian carp identification.	<ul style="list-style-type: none"> • DNR Conservation Officers received training in 2007 • More DNR enforcement capacity will be added in 2008
3.1.9.3. Inform potential importers of applicable state and federal laws and associated risks with international shipments of live Asian carps.	• Applicable; include in new recommendations
3.1.9.4. Increase the numbers of trained USFWS Law Enforcement Officers and increase physical inspections of international shipments of live fish and eggs at designated or non-designated ports of entry.	• Not applicable to states
Strategy 3.1.10. Take action to prevent the incidental inclusion of live Asian carps in international imports with other fishes.	• Low probability and priority for MN
Strategy 3.1.11. Take actions to prevent the unintentional escape, release, or improper disposal of Asian carps from aquaculture facilities at poorly sited locations.	
3.1.11.1. Urge the development and enforcement of state regulations that prohibit the production of Asian carps at poorly sited facilities.	• Not applicable in MN, Asian carp are not allowed in the state
3.1.11.2. Develop and provide information to Asian carp producers and growers that will help upgrade poorly sited facilities such that they are no longer high-risk to contain farm-raised carps and prevent accidental introductions.	• Not applicable in MN; all species are prohibited
Strategy 3.1.12. Develop an active research initiative to identify alternatives to the use of Asian carps.	
3.1.12.1. Form a coordinating research group that includes representatives from the aquaculture industry, the ethnic retail grocery industry, marketing scientists and developers, and aquaculture scientists to focus research efforts on the highest priority alternatives to the use of Asian carps.	• Not applicable in MN; they are not used here
3.1.12.2. Develop an information module on economic and effective alternatives to replace the use of bighead and black carps on aquaculture facilities.	• Not applicable in MN; they are not used here
Strategy 3.1.13. Take actions to prevent the incidental inclusion of Asian carps in aquaculture shipments of other farm-raised species to non- aquaculture waters.	
3.1.13.1. Review Standard Operating Procedures and recommend Best Management Practices that include requirements for suppliers and purchasers to conduct inspections of fish prior to shipment and release.	• Applicable; include in MN prevention plan

3.1.13.2. Encourage states to develop regulations that allow for random inspections of live fish shipments into and within the state.	• In place for shipments to or within the state; not in place for interstate shipments through the state.
3.1.13.3. Encourage states to develop, coordinate, and make available on- line databases of aquaculture facilities that culture bighead, black, grass, or silver carps.	• Not applicable in MN
3.1.13.4. Prohibit the use of surface waters containing Asian carps from being used in aquaculture facilities unless effective treatment is in place with a monitoring program.	• Not applicable in MN
Strategy 3.1.14. Reduce potential risks of continued use of Asian carps on properly sited aquaculture facilities to the environment.	
3.1.14.1. Review Standard Operating Procedures and develop Best Management Practices for properly sited aquaculture facilities.	• Not applicable in MN
3.1.14.2. Encourage states to prohibit the use of grass carp on aquaculture facilities within watersheds where grass carp are not present in the wild.	• Not applicable in MN, grass carp are prohibited
3.1.14.3. Encourage states to restrict the use of grass carp to certified triploids only on aquaculture facilities within watersheds where grass carp are present but not reproducing.	• Not applicable in MN, all grass carp are prohibited
3.1.14.4. States should encourage the use of only certified triploid grass carp on aquaculture facilities within watersheds where grass carp are self- sustaining in the wild.	• Not applicable in MN
3.1.14.5. Verify functional sterility of triploid bighead carp and develop a triploid certification program for bighead carp.	• Not applicable in MN
3.1.14.6. Encourage states to prohibit the use of bighead carp on aquaculture facilities within watersheds where bighead carp are not self-sustaining in the wild.	• Not applicable in MN
3.1.14.7. Encourage states to restrict the use of bighead carp on aquaculture facilities within watersheds with self-sustaining populations to certified triploids only.	• Not applicable in MN
3.1.14.8. Encourage states to prohibit the use and production of silver carp on aquaculture facilities.	• Not applicable in MN
3.1.14.9. Encourage states to prohibit the use and production of diploid black carp on aquaculture facilities.	• Not applicable in MN, black carp are prohibited
Strategy 3.1.15. Take actions to prevent the live transport of wild-caught Asian carps and potential introduction through release, improper disposal, or escape.	
3.1.15.1. Where legal for commercial or recreational fishers to possess Asian carps, encourage states to prohibit the possession of live wild-caught Asian carps.	• Not applicable in MN
3.1.15.2. Review Standard Operating Procedures and actions of commercial fishers to identify Best Management Practices that reduce risks of live transport and introduction.	• Not applicable in MN

3.1.15.3. Develop an information module and provide materials to commercial and recreational fishers and commercial live haulers that will help prevent accidental and deliberate unauthorized introductions of Asian carps.	• Not applicable in MN
Strategy 3.1.16. Take actions to prevent the release, escape, or improper disposal of domestic commercial shipments of live Asian carps.	
3.1.16.1. Require informational labeling of truck and invoice for shipments of Asian carps to avoid improper handling and potential introduction of fish that may be involved in an accident (e.g., "Nonnative fish: Unauthorized release prohibited").	• A national issue
3.1.16.2. Review Standard Operating Procedures and develop Best Management Practices for fish haulers regarding containment and water transfer.	• Not applicable in MN
3.1.16.3. Prohibit the use of water from natural water bodies for water exchange during transport.	• Important, but difficult to implement with intrastate shipments
3.1.16.4. Investigate improvements for containment methods on trucks carrying Asian carps.	• Not applicable in MN
3.1.16.5. Encourage states to require the approval of pre-planned routes for commercial shipments of live Asian carps.	• Somewhat applicable; unclear how to implement
3.1.16.6. Develop an information module and provide materials to commercial transporters of live farm-raised Asian carps that will help prevent accidental and deliberate unauthorized introductions.	• Not applicable in MN
Strategy 3.1.17. Reduce the potential risk to the environment from continued commercial, domestic transport of live farm-raised Asian carps.	• Not applicable in MN
Strategy 3.1.18. Take actions to prevent the accidental and deliberate unauthorized release of Asian carps by individuals.	
3.1.18.1. Encourage states to prohibit the sale, live transport, and unauthorized release of live Asian carps for non-commercial uses.	• Applicable; already prohibited invasive species in MN
3.1.18.2. Encourage states that allow sales of live Asian carps for human consumption to require retail grocers to kill the fish using prescribed humane methods, immediately upon sale.	• Not applicable in MN
3.1.18.3. Use educational campaigns such as Habitattitude™ to convey messages to the public that they should not release live Asian carps.	• Applicable; Minnesota DNR and Sea Grant have become Habitattitude™ partners and are spreading its message in Minnesota, but a comprehensive campaign is needed
3.1.18.4. Develop an information module and provide materials to producers, growers, marketers, and foodfish consumers of live Asian carps that will help prevent accidental and deliberate unauthorized introductions.	• Applicable; include in MN prevention plan
3.1.18.5. Promote the national Aquatic Nuisance Species Hotline and encourage the general public to report illegal possession or stocking of Asian carps and other activity that could affect an introduction or rapid response.	• DNR will look into this recommendation

Strategy 3.1.19. Take actions to prevent the release, escape, or improper disposal of Asian carps by aquarium/hobby industry importers, wholesalers, and retailers.	
3.1.19.1. Encourage states to prohibit the trade of Asian carps for aquaria and hobby purposes.	• Already prohibited invasive species in MN
Strategy 3.1.20. Prevent the release, escape, or improper disposal of live Asian carps via education facilities and projects, including schools, public aquaria, and research facilities.	
3.1.20.1. Urge states to develop and enforce regulations to reduce risks associated with the possession and disposal of Asian carps for research and exhibition purposes.	• Already prohibited invasive species in MN; permits are required for research and education
3.1.20.2. Develop an information module and provide materials to the academic and research communities that will help prevent accidental and deliberate unauthorized introductions of Asian carps.	• DNR permits are required and would include conditions that address this.
3.1.20.3. Encourage states to prohibit the trade of live Asian carps by commercial biological supply companies.	• Already prohibited invasive species in MN
Strategy 3.1.21. Take action to prevent the transport and release of adult sized (non-baitfish) Asian carps by boaters, anglers, and bow fishers.	
3.1.21.1. Develop an information module and provide materials to recreational fishers and boaters that will help prevent accidental and deliberate unauthorized introductions of Asian carps.	• Applicable; ongoing effort can be expanded
Goal 2: Contain and control the expansion of feral populations of bighead, black, grass, and silver carps in the United States.	
Strategy 3.2.1. Develop a national strategy and guidelines for science- based decision making concerning the need for continued and additional containment measures.	
3.2.1.2. Evaluate the effectiveness afforded by alternative technical containment measures (i.e., physical and behavioral barriers).	• Applicable; include in MN prevention plan
3.2.1.3. Promote, support, and provide technical analysis and comment for the field testing of novel containment methods.	• Applicable; include in MN prevention plan
3.2.1.4. Anticipate and address consequences of specific containment actions on native biological communities.	• Applicable; ongoing need to include in MN prevention plan
Strategy 3.2.2. Take immediate actions to prevent interbasin transfers and limit intrabasin movements of feral Asian carp populations.	
3.2.2.1. Develop and implement redundant barrier systems within the Chicago Sanitary and Ship Canal to limit the unrestricted access of Asian carps to Lake Michigan.	• Applicable; MN has supported this and provided some funds; include in MN prevention plan
3.2.2.2. Develop and implement reasonable and effective measures that prevent the spread of Asian carps via canals, waterways, or other water diversions between basins.	• Applicable; include in Minnesota prevention plan

3.2.2.3. Construct and operate a Sound Projector Array-based acoustic bubble curtain fish deterrent at two locks and dams on the Upper Mississippi River to prevent the spread of Asian carps throughout the basin.	• Applicable; MN Governor's office, MN Congressional members, and DNR have sought federal funding for this; include in Minnesota prevention plan
3.2.2.4. Identify additional containment measures needed to limit intrabasin movements of feral populations of Asian carps within the Mississippi River and other basins where established.	• Applicable; include in MN prevention plan
Strategy 3.2.3. Minimize the range expansion and ecological effects of feral populations of Asian carps in conjunction with management actions to enhance aquatic environments for the sustainability of native biological communities.	
3.2.3.1. The USFWS and other natural resources management agencies should provide technical assistance and biological information to the USACE and participate in collaborative planning of fish passage and habitat restoration projects.	• Applicable; MN supports this; include in MN prevention plan
3.2.3.2. Require federal and state agencies to consider the potential range expansion and ecological effects of Asian carps when designing or reviewing water control structure projects and permits.	• Applicable
Goal 6: Conduct research to provide accurate and scientifically valid information necessary for the effective management and control of bighead, black, grass, and silver carps in the United States.	
Strategy 3.6.3. Develop effective methods to contain feral Asian carp populations and prevent their further spread.	
3.6.3.1. Develop effective physical and behavioral barriers for controlling the movement of Asian carps.	• Applicable; include in MN prevention plan

Appendix G: Review of applicable strategies and actions from draft Minnesota Invasive Species Plan being prepared by the Minnesota Invasive Species Advisory Council.

Strategies and Recommendations from State Invasive Species Plan		Status
Strategy I-1. Improve understanding of the potential risks associated with nonnative species and pathways.		
Action I-1a. Identify known and additional nonnative species of concern, evaluate their level of risk, and rank/classify the species.		• Asian carp have been evaluated, ranked as severe threats and classified as prohibited invasive species
Action I-1c. Identify known and additional pathways of introduction, evaluate their level of risk, and rank the relative level of risk of pathways on a continuing basis.		• This was done in the national Asian carp plan. It has been reviewed from the MN perspective for the MN prevention plan.
Strategy I-3. State Regulations - Review state regulations to optimize legal authority for prevention of the import and introduction of invasive species, while recognizing that regulations reflect unique agency approaches and needs.		
Action I-3b. Review existing state regulations to identify gaps and needs.		• Applicable; state prevention regulations in place
Action I-3c. Explore the need for new approaches or change in legal approach.		• New approaches could be considered, but are not apparent
Action I-3d. Adopt effective rules or approaches as appropriate within each responsible agency to augment statutory approach.		• Applicable; Asian carp have been designated as prohibited invasive species in MN (M.R. 6216).
Strategy I-4. Federal Regulations - Seek and support more comprehensive and improved federal/international regulations regarding invasive species.		
Action I-4a. State and non-governmental entities pursue and support passage of more comprehensive federal regulations through congressional members.		• Applicable; DNR has encouraged Congressional members and the USFWS to list black, bighead and silver as Injurious Wildlife Species; include in MN prevention plan
Strategy I-5. Federal and State Inspections and Enforcement - Continue inspections and enforcement of invasive species regulations and quarantines by state and federal agencies.		

Action I-5b. Monitor markets for prohibited products and when found, conduct investigation to determine and close source	• Applicable; DNR has done some monitoring; more could be done; include in MN prevention plan
Action I-5d. Investigate incidents when invasive species are found related to interstate shipments with trace back and trace forward actions to follow distribution chain and take appropriate safeguarding measures.	• Applicable; DNR and USFWS responsibility
Action I-5e. Use DNR Conservation Officers to enforce M.S. 8.4D and M.R. 6216 and other applicable regulations according to an annual statewide Invasive Species Enforcement Plan.	• Ongoing
Strategy I-7. Research and Technologies - Improve technological options and strategic approaches, and work to implement appropriate standards that will help prevent introductions of invasive species into the state or connected watersheds (e.g., innovative ballast water management technology and technology for barriers in waterways, or alternatives to linking watersheds)	
Action I-7a. Conduct, fund, or support research to develop new technologies to prevent/reduce the risks of new introductions of invasive species.	• Applicable; include in Minnesota prevention plan
Action I-7b. Support the evaluation of available technology to prevent/reduce the risks of new introductions of invasive species.	• Applicable; include in MN prevention plan
Action I-7c. Support use of best available technologies that could prevent the introduction of invasive species into the state. (e.g., development of technological standards)	• Applicable; include in MN prevention plan
Action I-7d. Use methods such as Hazard Analysis and Critical Control Points (HACCP) to reduce risk of invasive species introduction through business and government operations.	• DNR is using similar approach; USFWS is using HACCP
Strategy I-8. Public Awareness - Conduct effective outreach programs targeting people who could potentially introduce invasive species into the state.	
Action I-8a. Develop specific messages and actions for priority audiences (e.g., commercial horticultural trade, recreational boaters, commercial barge industry, biological supply houses, and the pet trade especially, in aquatic organisms).	• Applicable; Bighead and Silver Carp Watch cards have been developed and distributed; more messages for selected audiences should be developed and dispersed; include in MN prevention plan
Action I-8c. Use enforcement according to the MN DNR statewide invasive species enforcement plan and watercraft inspectors to inform boaters entering state waters about invasive species, state regulations, and precautions for boaters.	• Ongoing
Strategy I-9. Regional Approaches - Seek interjurisdictional and watershed-wide cooperation and approaches to prevent introductions of potentially invasive species into watersheds that include Minnesota (e.g., Asian carp in other states, barriers in Illinois waterways).	• Ongoing; some interstate cooperative efforts have occurred

Appendix H: July 2012 Questionnaire Results

Survey Participation

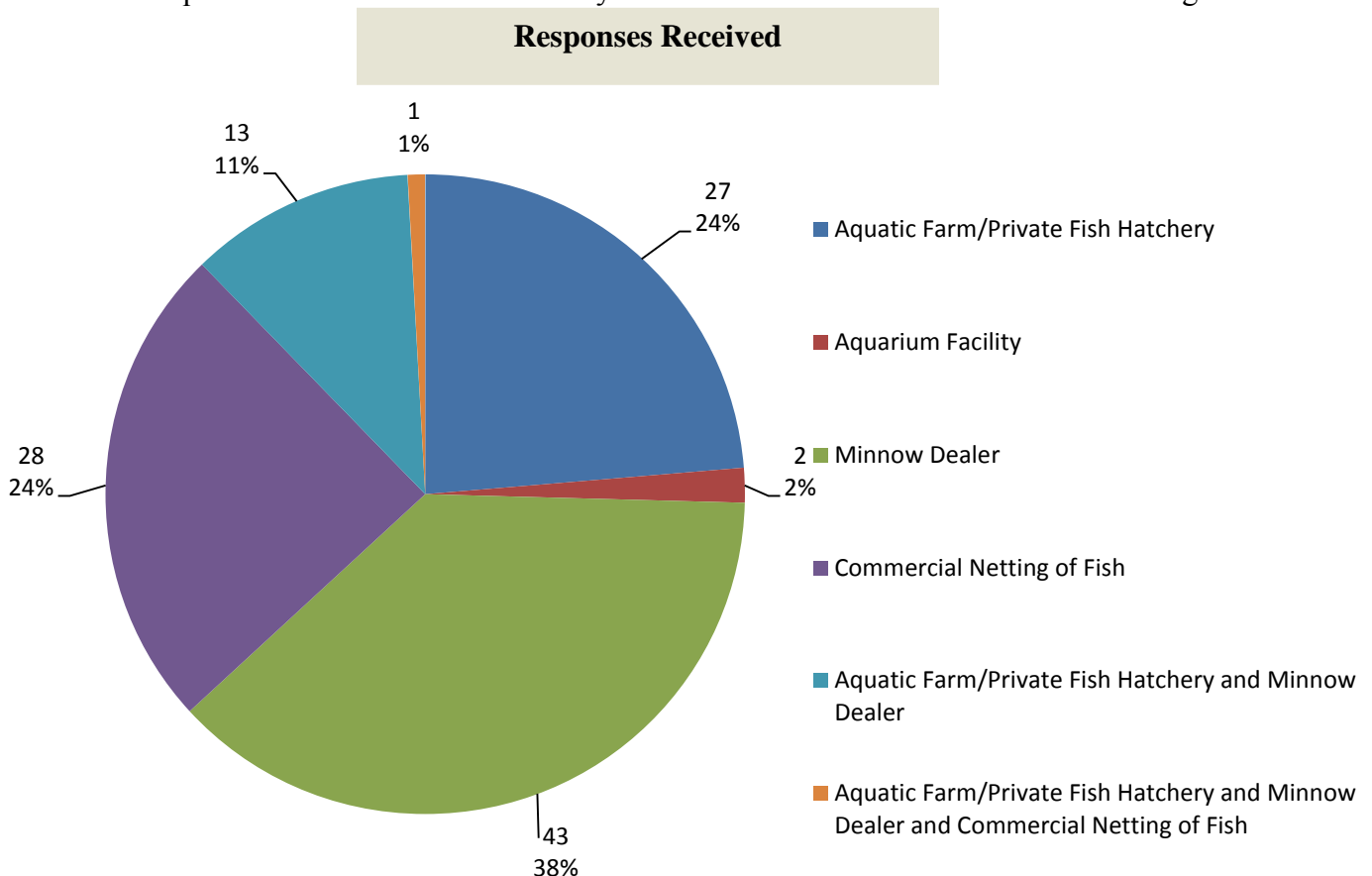
On July 3, 2012, a questionnaire was sent to all current aquatic farm, private fish hatchery, aquarium facility, minnow dealer, and commercial netting of fish licensees. This questionnaire was meant to aid in the creation of the final report to the legislature, as well as to invite participation from affected parties.

2012 License Holder Totals:

- 398 Total Licensees
 - 86 Aquatic Farm/Private Fish Hatchery
 - 2 Aquarium Facility
 - 202 Minnow Dealer
 - 56 Commercial Netting of Fish
 - 49 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer
 - 3 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer *and* Commercial Netting of Fish

Responses Recieved:

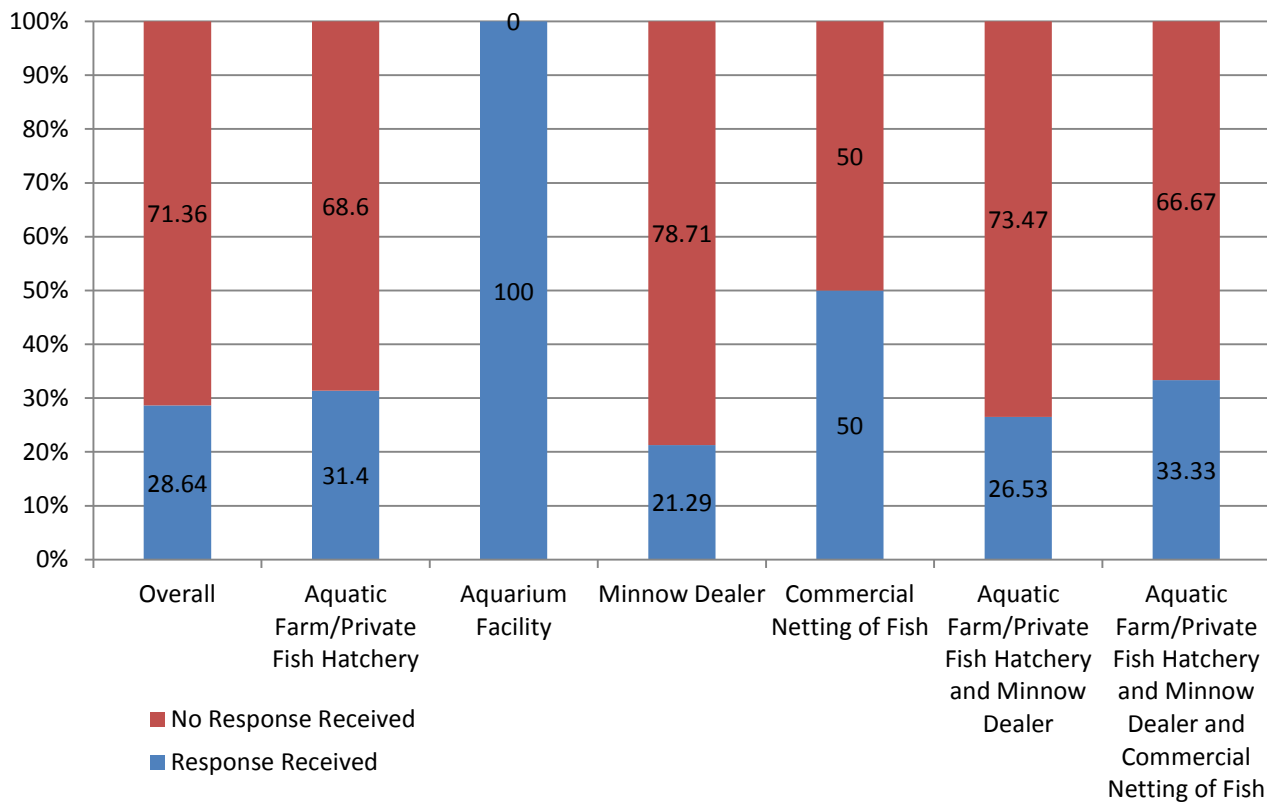
- 114 Total Responses:
 - 27 Aquatic Farm/Private Fish Hatchery
 - 2 Aquarium Facility
 - 43 Minnow Dealer
 - 28 Commercial Netting of Fish
 - 13 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer
 - 1 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer *and* Commercial Netting of Fish



Rate of Response by License Type:

Rate	License Type
28.64%	Overall Rate of Response
31.40%	Aquatic Farm/Private Fish Hatchery
100%	Aquarium Facility
21.29%	Minnow Dealer
50.00%	Commercial Netting of Fish
26.53%	Aquatic Farm/Private Fish Hatchery and Minnow Dealer
33.33%	Aquatic Farm/Private Fish Hatchery and Minnow Dealer and Commercial Netting of Fish

Rate of Response by License Type



Response Summary and Trends

Overall Response Summary

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	27	23.68%
b.	Aquarium Facility	2	1.75%
c.	Minnow Dealer	43	37.72%
d.	Commercial Fishing	28	24.56%
a and c		13	11.40%
a, c, and d		1	0.88%

2. Do you think that invasive carp species could be introduced into Minnesota waters through live fish movement?

a.	Yes	61	53.51%
	<ul style="list-style-type: none"> not very likely if people know the reasons not to by mother nature but very unlikely by commercial fish operations 		
	<ul style="list-style-type: none"> I do think they could be in with bait fish, but not in with game fish. And I would say that it would only be during certain times of the year (in the fall). At the same time I do not think that it would go unnoticed. Or be worth it at all to trap the infected waters due to the devastation caused by these fish. naturally by a non-commercial trapper 		
b.	No	29	25.44%
	<ul style="list-style-type: none"> not likely, someone would have to intentionally do it, as we all know what to look for 		
c.	Don't know	24	21.05%

3. Do you believe that you perform any activities under your license or a permit that could be a risk for introducing invasive carp species into Minnesota waters?

a.	Yes	1	0.88%
	<ul style="list-style-type: none"> but very unlikely by commercial fish operations 		
b.	No	112	98.25%
c.	Don't know	1	0.88%

4. Do you know what a Hazard Analysis and Critical Control Point (HACCP) plan is?

a.	Yes	49	42.98%
	<ul style="list-style-type: none"> Somewhat 		
b.	No	48	42.11%
c.	Don't know	17	14.91%

5. If you answered yes to question 4, do you have a HACCP plan, or another type of plan, in place to reduce the risk of invasive carp introductions?

a.	Yes	29	59.18%
	<ul style="list-style-type: none"> If I were to find them in with my fish, I would kill the whole culture pond and start over. 		
b.	No	18	36.73%
	<ul style="list-style-type: none"> we are a closed system They are not within 200 miles of me. I do not raise fish or transport. 		
c.	Don't know	1	2.04%
	Question not answered	1	2.04%
	<ul style="list-style-type: none"> N/A 		

6. Are you generally aware of Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	95	83.33%
	<ul style="list-style-type: none"> somewhat 		
b.	No	11	9.65%
c.	Don't know	8	7.02%

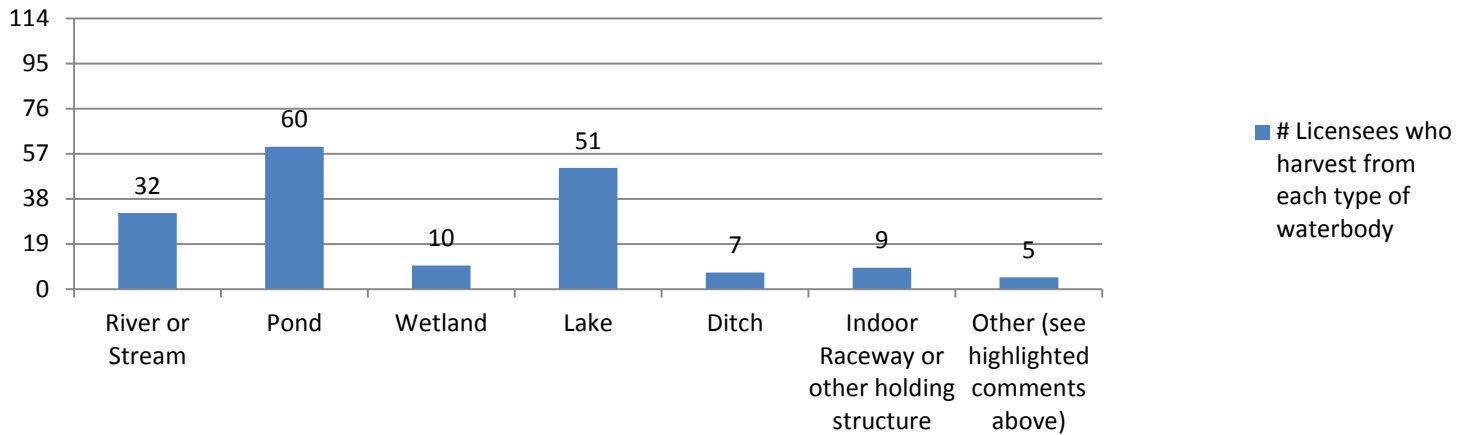
7. Do you know how to find Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	92	80.70%
b.	No	14	12.28%
c.	Don't know	8	7.02%
<ul style="list-style-type: none"> I keep up on info that DNR encloses in our license each year 			

8. From what type of water body do you harvest fish (choose all that apply)?

a.	River or stream	32
<ul style="list-style-type: none"> Minnows St. Louis River and Lake Superior (would like to fish Isle Royale with park permission) 		
b.	Pond	60
<ul style="list-style-type: none"> Minnows 		
c.	Wetland	10
d.	Lake	51
<ul style="list-style-type: none"> carp, buffalo, bullhead, and some minnows Lake Superior St. Louis River and Lake Superior (would like to fish Isle Royale with park permission) <i>*Duplicate comment*</i> 		
e.	Ditch	7
f.	Indoor raceway or other holding structure	9
g.	Other – please define:	17
<ul style="list-style-type: none"> licensed hatchery I only purchase - No trapping Recreational Private Hatchery - I purchase fish from other hatcheries for recreation. Ponds do not have outlets and cannot flood. don't harvest only purchase fish from MN fish farmers I don't harvest my own. I buy from other suppliers. I only sell leeches. leech trapper trout farm – supplier only minnows private hatchery ponds (man-made) indoor holding tanks – minnows By fish, does this mean minnows? Aquarium I do not deal in fish, I deal in small live bait. None I do not harvest minnows. I only harvest leeches, I don't harvest fish. 		

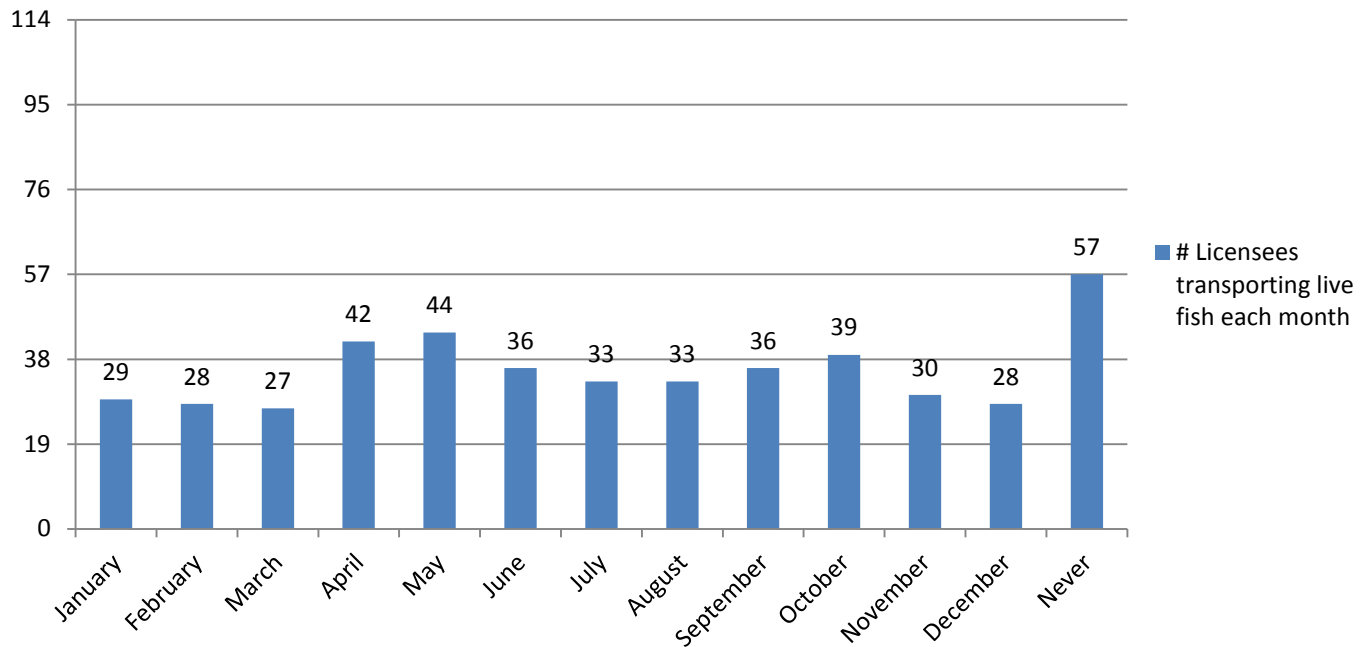
Harvest Sites



9. If you transport live fish within Minnesota, during what months do you transport live fish?

a.	January	29	50.00%
b.	February	28	
c.	March	27	
d.	April	42	
e.	May	44	
f.	June	36	
g.	July	33	
h.	August	33	
i.	September	36	
j.	October	39	
k.	November	30	
l.	December	28	
m.	I do not transport live fish within Minnesota.	57	50.00%
• Minnows only			
• Minnows only			
• Minnows only			
Comments:			
• Average retail season (April – October)			

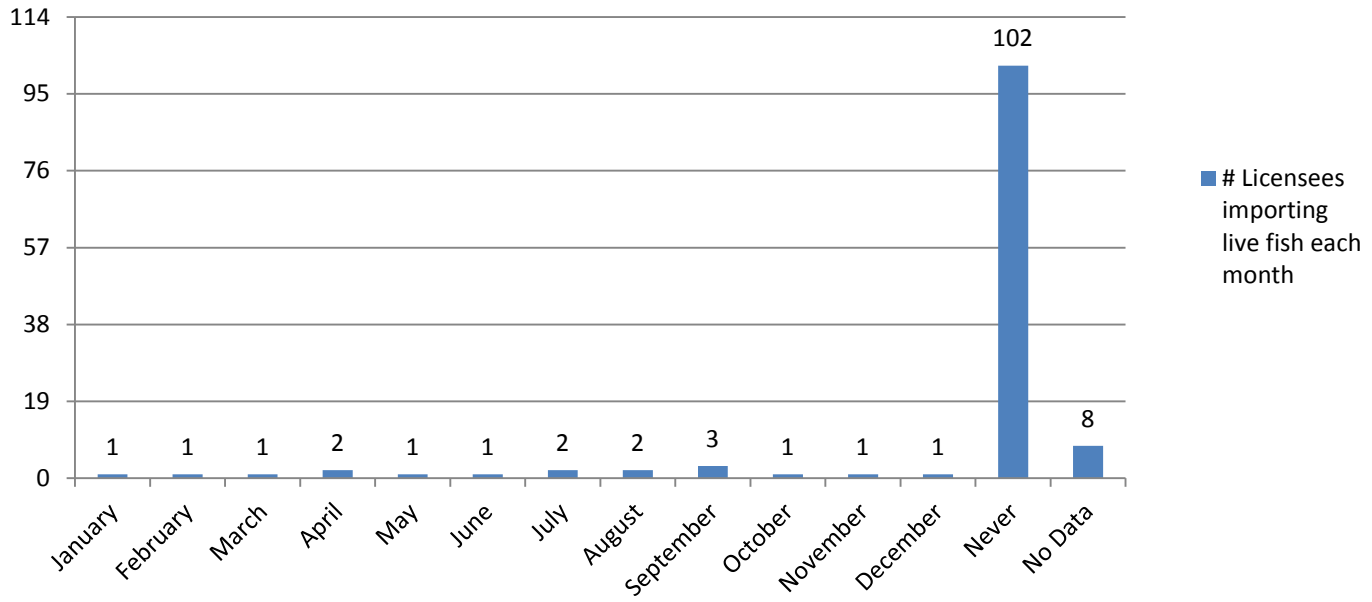
Live Fish Transportation



10. If you import live fish into Minnesota, during what months do you import live fish (only comment on fish that are held or placed in Minnesota waters)?

a.	January	1	3.51%
b.	February	1	
c.	March	1	
d.	April	2	
e.	May	1	
f.	June	1	
g.	July	2	
h.	August	2	
i.	September	3	
• Purchase fish usually in			
j.	October	1	89.47%
k.	November	1	
l.	December	1	
m.	I do not import live fish into Minnesota.	102	
• Very rarely			
Question not answered		8	7.02%
Comments:			
• fry or eggs are flown in (all months).			
• random, once every two years (no month selected)			

Live Fish Importation



11. Do you sort your fish?

a.	Yes	72	62.28%
	<ul style="list-style-type: none"> and all fish that are caught in seine are big to be able to tell what each kind are minnows 		
b.	No	26	23.68%
	Question not answered	16	14.04%
	<ul style="list-style-type: none"> don't sell fish N/A Purchase certain species N/A 		

12. If you sort fish, how are fish sorted?

a.	Species	14	12.28%
b.	Size	4	3.51%
c.	Both size and species	52	45.61%
	<ul style="list-style-type: none"> at times we will hand sort and on the health status of fish (general condition) and health of fish/minnow If there are more than one species in the water we hand sort before loading and also recheck while putting in tank and again before selling also discard unwanted species Minnows are graded, and river minnows hand sorted as well. Carp and rough fish are hand sorted. They are put on sorting table and sorted out: carp put in boxes, buffalo put in boxes. We have no invasive carp yet. minnows I sort my minnows (not fish) by hand and sorters 		
d.	Other – please describe:	2	1.75%
	<ul style="list-style-type: none"> only walleye Size and quality of flesh/fillets 		

12. If you sort fish, how are fish sorted?

Question not answered	42	36.84%
• purchase by species		
• leeches only		
• N/A		
• request supplier = size and species		
• sorted at farm from where the fish are purchased		
• only minnows – no fish		
• catch hook and line – catch and release		
• none		

13. What activity or activities do you see as having the highest risk for invasive carp introductions?

- transporting from rivers or streams with carp in them
- not sure
- natural river movement
- Great Lakes cargo ships
- none, don't transport live fish
- Flooding. We do not use any form of carp or rough fish.
- live bait not inspected by an informed person
- movement of boats from one lake to another
- commercial fishing in the rivers by Minneapolis area
- minnow transport
- Natural River Streams
- Water skiing, wet Jets, and bass tournaments
- Taking bait minnows out of rivers and streams and then selling them. Notify the public about seining rivers and streams for invasive carp.
- Locks
- aquatic pets turned loose and fishermen moving fish to other waterbodies
- minnow sales
- none
- moving boats up and down the Mississippi
- the locks on the Mississippi River
- Salties coming into the Great Lakes.
- Rivers and streams seem to be where these carp would travel. Catching minnows in rivers would be a very high risk.
- don't know
- commercial seining - transporting and cribbing fish
- moving minnows around
- wild fathead trapping
- transporting live fish/eggs
- Transporting fish into the state.
- none
- bait dealers
- The cat is out of the bag "on carp." You cannot and will not stop it, sadly.
- importation of forage for aquaculture
- commercial and recreational traffic on rivers
- general public

- natural waterways
- opening dams and locks
- cormorant and pelican migrations
- rivers and migration
- Fish coming out of rivers and streams are at highest risk. Large public lakes would be second, especially lakes connected by river systems. Smaller ponds and wetlands are much safer. They are much more protected from the public and nature's natural ability to spread species.
- If brought in by supplier truck/tank. Farm site management and proximity to open water that could have carp.
- Little is done in waters that contain invasive carp. Waters that contain these species should require HACCP certification and special permitting.
- not being careful
- Netting fish in bodies of water that have invasive carp. Not properly sorting fish by species.
- sport fishing
- I would have to say anything to do with rough fish. Suckers, chubs, but only if those are trapped wild. If cultured they would be harmless. I would also have to say that shaping the land to divert any type of runoff from a body of water into a tributary would also be a high risk - and possibly damming up any body of water.
- High water, pelicans & cormorants
- locks and dams on the river
- flooding
- Harvesting minnows in waters containing invasive carp or importation - these are the only way.
- minnow dealers
- interstate bait transfer, commercial holds/tanks
- Having live fish or minnows brought in across state lines. I believe there should be no out of state commerce in minnows or fish (live that is).
- Birds, flooding, or fishermen trying to catch own bait.
- Live fish transportation. Locks that connect to the Mississippi River.
- I know by shooting cormorants and pelicans it will greatly reduce this risk. Eggs and small fish get trapped in the folds of the pelican's mouth; they go to another body of water, scoop in, and everything washes out.
- Hard on native fish
- sale of live Asian carp
- Rivers
- not sure, flooding, dam and lock activities
- flood conditions
- the spawning of invasive carp, other than that I don't believe they will be a problem
- If they can make it up the Mississippi in high water or the great lakes and get into MN. Although we don't know if they can survive in this cold climate or what oxygen requirements they need. They might be susceptible to winterkill in low oxygen.
- Flooding
- Having game fish ponds setup in a flood plain. People taking bait without a license or training and introducing their catch into other lakes.
- commercial fishing
- High water flooding, not sorting products
- minnow dealers that get there minnows from people that get there minnows from areas where there are invasive carp

- transportation of non-sorted fish from lake to lake
- Transporting minnows from one lake to another.
- People that regard them as desirable intentionally relocating them
- Bilge water from shipping boats on lake superior
- Great Lakes shipping
- 1) Buying fish from outside of state dealers. 2) Trapping and transport from known invasive waterways. 3) Should not be allowed to raise them for any reason.
- minnow dealers

14. Do you have any comments regarding the rules and statutes in place that govern fish movement, or any suggestions for how they should be changed to reduce the risk of introducing invasive carp?

- Do not impose more restrictions on private licensed hatcheries.
- Make and enforce good logical rules - for instance not being able to take water from Rainy Lake to Rainy River is a foolish regulation. Those types of poor rule-making lend good people to disrespect good regulations.
- OK the way it is
- have a barrier on Minnesota River to stop carp coming out of Mississippi River
- I think it's too late. We need dams or fish traps.
- inform the fishermen and general public of the different species and reasons they shouldn't be planting them in different water bodies
- There needs to be some sort of barrier placed above streams and rivers to where traces of DNA from carp are found or wherever carp are known to be.
- All fish should be sorted by species.
- Even the best regulations will only delay the spread. If humans don't spread these fish, nature will. I have seen this more than once.
- Will address issues as a core member if added to group!
- I think the DNR is in general doing a good job. But this has in the process created red tape, uncertainty, worry, and headaches for me. Especially with spottail shiners in the spring. Too many ducks to get in a row. I personally would like to see spottail shiners banned completely for commercial use. Then I would not have to carry them simply because my competitor does. I would rather sell a pond minnow that I raised out of a safer, non-infested water. And no VHS to worry about. And as far as these Carp, it just adds to the worry. I in general would like to just stay out of large public lakes and rivers. That's where most exotics are going to come from.
- No importation (even for export). Special training for harvest in infested waters. Special license for harvest in infested waters.
- Require all persons who import or take fish from infested or potentially infested water to ensure no carp are present in their catch by sorting all fish.
- I think that the whole thing with the VHS is going way too overboard. But these carp on the other hand are a big deal and must be stopped. Intensive trapping should be set in play.
- Drop the rules and statutes. No one is reckless enough to pollute their own water or the state's water.
- Cracking down on guys like [name removed] who brings minnows in from Dakota or across state lines.
- I don't believe a commercial dealer would risk ruining their livelihood; all that I have seen take very good care of the waters they use. But every dealer has experienced a cabin being built or lake shore being bought up and then fish showing up in the traps by someone that thinks they're going to start the next greatest fishing hole. There also seem to be more and more fishermen

trying to get their own bait as we are forced to raise our prices because of the new laws every year. They check their trap or pull their seine, dump it in cooler or bucket, and away they go, not knowing what kind of minnows they've got. It's just free bait to them.

- too many laws
- use stops and blocks
- live well transfer, ban on any invasive species movement
- I don't know enough about Asian carp, can they survive our winters? Will they spawn this far north? I believe we should try and keep our rivers and streams stocked with enough predators to keep invasive number contained, if they become a problem.
- We have to damn many restrictions now, just keeping people educated is best. All restrictions do is create more gov. jobs and less private sector opportunities.
- Don't change the laws on lic. Dealers, just enforce laws in place. Put 300% of enforcement in catching the non lic. that transport fish, bait etc. in unmarked vehicles with tanks in back of pickups, enclosed vans, box trucks etc. I believe more illegal bait and fish brought in and out of the state than legal.
- none, good luck with this one
- all fish must run over sorting table, fish movement log books, state approved holding ponds
- Education is key. Most people can learn to be careful with practical methods of control.

15. Other Comments:

- It seems the greatest risk is natural fish movement in our river systems. Not sure that can be controlled. Maybe DNR, etc. are over reacting to an uncontrollable risk.
- I think it is important that the invasive element is monitored closely.
- I haven't bought any new trout (or any other kind of fish) for 5 years. The hatchery was destroyed in a flood. The trout were an interest to my husband; who has since passed away, and so has my interest.
- Stop birds bring eggs under their feathers to our lakes and streams too.
- My input might not be the best as we only have one pond with sunfish and largemouth bass.
- Instead of making new rules that make life harder for all of us, and are impossible to enforce, we should try to educate everybody that might be likely to move the fish either on purpose or accidentally, and tell them why it's not a good idea. The laws don't seem to make much difference to a lot of people. I lose one or two minnow ponds to people moving game fish around every year (there's not many left).
- Unless you close down the locks on the river, Asian Carp will invade Minnesota! The St. Anthony lock in particular!
- I, [name removed], currently work for St. Louis County Public Works and will be retiring next year (2012) and am currently a VIP at Isle Royale National Park in Michigan. If I could be of any assistance in providing information by assessment fishing (with park approval) at Isle Royale, I would be happy to assist in any way. Thank you for your concerns, [name removed].
- recreational Fish Hatchery License - my own ponds for fishing
- My golden shiner business absolutely requires that I am able to move golden shiners from licensed water body to licensed water body under my bait dealer's license. If this would change the golden shiner business will cease to be in the state of Minnesota. Also we move our suckers from our licensed grow out ponds to our aerated wintering ponds for sales the following year. I will enclose my card if you would feel the need to talk to me about these two points. Thank you, [name removed]
- I trap leeches only in area ponds so I don't have a lot of input.

- The live bait laws governing my area of the Mississippi are foolish and without merit. If you want to stop moving invasive species, issue boating permits for specific waterways period. Let people catch bait where they will use it and not transport it by vehicles and land. Outlaw livewells in sport fishing boats that will move more invasive species than anything else. Good luck!
- My waters don't have rough fish in them.
- I and several MN bait dealers would like to set up a committee to implement procedures and practices and "work with DNR" to plan for the future of bait and commercial harvest in the future. This industry needs to become proactive in this. While I realize this is an extreme change from how the industry has acted in the past. I mean to see this change in the industry and see the MN Aquaculture Association return to where it was in the 90s. As a learning and teaching organization.
- I would love to help get rid of these carp and would use any resources I have to assist you. Give me a call if there is anything I can do [phone number removed].
- If you allow the harvest of baitfish in the waters that contain invasive carp you will not stop the introduction of the species to unwanted areas - period. There are plenty of places to harvest bait fish. I wasn't going to send this in but I changed my mind.
- If carp are going to move naturally into waterbodies via streams and rivers, I know no one is going to stop them or control them.
- People rearing fish do a good job. Look at minnow dealers.
- Live hauling Asian carp is illegal. None of our buyers will accept these fish, It is impossible to mistake an Asian carp for the species now allowed to be transported
- Bounty? Or discount on game/fishing license for those who reduce the numbers of invasive species
- More restrictions won't prevent the spread as with other invasives. It is shown that the bait people and commercial fishermen aren't spreading these species, but more so general public, as they aren't nearly as informed as commercial people. All restrictions do is kill the economy as people quit fishing as they are sick of all the B.S. and also it puts lots of private business out of business. Several bait stores have closed this year or quit selling minnows and only handling leeches and crawlers and wax worms now, no minnows. As the sale for minnows is gone due to all your damn regulations. You are destroying our economy. As we all go out of business, who is going to pay your damn salary, as nobody left to pay taxes. Only gov. employees left.
- The DNR should test the lakes that us minnow men collect minnows (free) end of story.
- I strongly believe that commercial fishermen that seine river systems such as the Mississippi and other rivers that have zebra mussels and milfoil in them should not be allowed to fish in other inland lakes that don't have it. If they want to fish rivers then fine, then only let them fish river or lakes that have it in. Don't let them go from one lake then back to the river. We don't have exotics yet in my lakes but have 2 border water lakes that I have seined for many years, but in the last 10-15 years the Iowa side was seined by both from Iowa both seine the Mississippi and neither one live here or around here and thus probably kill game fish especially since they both jump from lake to lake. I just think that if they both want to seine the rivers they shouldn't be allowed to go to area inland lakes that don't have any exotic species in them. I have my own inland lake area and only do them. I live here and know how to manage control my lakes. These other fishermen that come and fish my border waters could care less if they kill any gamefish or bring something like milfoil or zebra mussels to my lakes. I say if you want to fish don't let people who fish in known exotic lakes and rivers go into other lakes that don't have it. I believe anyone who fish the Mississippi or river shouldn't be allowed to fish inland lakes. MN fishermen have their own areas or zones they each are allowed to fish and that works well. I

don't go to other fishermen's areas and they stay in theirs. This helps in not transferring exotics into other areas. WI and Iowa fishermen go everywhere and thus increase the risk of carrying things such as milfoil and zebra mussels on their nets. They don't live here and could care less what they do. I crossed names of the fishermen out but I'm sure you know who they are. A fisherman that don't live in the area he seines doesn't care as much about the lakes as one who lives in his area.

- As we know invasive carp are here and where they are established we must control them. They are aggressive, commercial fishing Do not regulate the very means we have to control them to the point we cannot aggressively fish these carp. Let's educate and closely monitor fish transportation. Within our state and we can control fish populations in inland lakes. Nobody including commercial fishermen want to see invasive carp spread, let's work together to control and prevent spreading these carp.
- The invasive carp issue is, as you know, a terrible problem with extreme containment challenges. Please, make no mistake I agree we need to do everything we can to prevent the spread of all invasives and or VHS type threats. With that said, I also believe we need to communicate and present our approach to fight these invasives in an encouraging way. I think we have really become a state that discourages fishing. Especially to people that only fish 3-5 times a year. I believe 21 pages of lakes and streams with special regulations can be very intimidating. What I am trying to say is we really don't welcome fishing, we say, boy you better read the reg. book and every access sign and oh by the way you better hope your boat and everything is perfect when you try to leave or it is going to cost you big! Thanks for coming to Minnesota. It seems like the fishing community are the bad guys. At least the way we are presenting things with regard to invasives, what about hunters and leaky decoys? What about swimmers and wet swim suits? Waterfowl, etc.?
- HACCP has been used by the live bait industry since the beginning. Unwanted species and materials are removed each time the product is handled. At each level of sale the volume is reduced making it easier to remove undesirable items. The smallest unit is at retail point of sale. That is the best place to make sure the product is clean. I would suggest that everyone dispensing live bait at retail should at a minimum have the same training the whole sale bait community has received.
- stop all importation of minnows

Overall Response Trends

- Most licensees believe that invasive carp species could be introduced into Minnesota through live fish movement. Almost none of them believe that they perform activities under their license or permit that could be a risk for introducing invasive carp species into Minnesota waters.
- About ½ of the licensees who responded know what a HACCP plan is.
- Of those who know what a HACCP plan is, just over ½ of them have a HACCP plan in place.
- Almost everyone is aware of and knows how to find Minnesota Rules and Statutes that pertain to fish movement.
- Half of the licensees who responded transport live fish (May is the primary month).
- Very few licensees import live fish into Minnesota.
- Most licensees sort their fish. Of those who sort their fish, most sort by both size and species.
- The activities that licensees see as having the highest risk for invasive carp introductions are as follows (in order of priority):
 - Mechanical movement by commercial means
 - Natural movement

- Mechanical movement by minnow dealers
- Mechanical movement by non-commercial means
- Locks and dams
- Live minnow importation
- Great Lakes
- The comments provided for how Rules and Statutes governing live fish movement should be changed to reduce the risk of introducing invasive carp species included (in order of priority):
 - No change is necessary
 - Build barriers to prevent upstream fish movement, or trap fish that are already here
 - Educate the public about invasive carp species and the risks of moving fish
 - Suggestion for a Rule or Statute change provided:
 - ban spottail shiners
 - no minnow harvest in public lakes and rivers
 - no live minnow importation (even for export)
 - special license for infested waters
 - only state approved holding ponds can be used
 - Require all fish to be sorted
 - Enforce current Rules and Statutes
- The other comments received included (in order of priority):
 - Suggestions for changes:
 - Close down locks on rivers
 - Issue waterbody specific boating permits
 - Only allow bait harvest on same lake where it will be used, and no transportation of bait off the source waterbody
 - Offer a bounty or discount on a fishing license to those who catch invasive carp species
 - Restrict minnow harvest to zones with one dealer/zone like commercial system
 - Require HACCP training for all commercial license holders
 - Minnow movement or import will spread invasive carp species
 - Invasive carp species will get here via natural movement and we can't stop it
 - We should educate the public to keep them from moving fish

Response Summary by License Type

A. Aquatic Farm/Private Fish Hatchery

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	27
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2. Do you think that invasive carp species could be introduced into Minnesota waters through live fish movement?

a.	Yes	17	62.96%
b.	No	5	18.52%
c.	Don't know	5	18.52%

3. Do you believe that you perform any activities under your license or a permit that could be a risk for introducing invasive carp species into Minnesota waters?

a.	Yes	0	0
b.	No	26	96.30%
c.	Don't know	1	3.70%

4. Do you know what a Hazard Analysis and Critical Control Point (HACCP) plan is?

a.	Yes	10	37.04%
b.	No	13	48.15%
c.	Don't know	4	14.81%

5. If you answered yes to question 4, do you have a HACCP plan, or another type of plan, in place to reduce the risk of invasive carp introductions?

a.	Yes	4	40.00%
b.	No	5	50.00%
<ul style="list-style-type: none"> • we are a closed system • They are not within 200 miles of me. 			
c.	Don't know	1	10.00%

6. Are you generally aware of Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	25	92.59%
b.	No	1	3.70%
c.	Don't know	1	3.70%

7. Do you know how to find Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	25	92.59%
b.	No	1	3.70%
c.	Don't know	1	3.70%

8. From what type of water body do you harvest fish (choose all that apply)?

a.	River or stream	0
b.	Pond	19
c.	Wetland	0
d.	Lake	2
e.	Ditch	0
f.	Indoor raceway or other holding structure	7
g.	Other – please define:	5
	• licensed hatchery	
	• Recreational private hatchery – I purchase fish from other hatcheries for recreation. Ponds do not have outlets and cannot flood.	
	• don't harvest	
	• only purchase fish from MN fish farms	
	• trout farm - supplier	

9. If you transport live fish within Minnesota, during what months do you transport live fish?

a.	January	3	22.22%
b.	February	3	
c.	March	3	
d.	April	5	
e.	May	4	
f.	June	4	
g.	July	3	
h.	August	3	
i.	September	4	
j.	October	5	
k.	November	4	
l.	December	3	
m.	I do not transport live fish within Minnesota.	21	77.78%

10. If you import live fish into Minnesota, during what months do you import live fish (only comment on fish that are held or placed in Minnesota waters)?

a.	January	1	11.11%
b.	February	1	
c.	March	1	
d.	April	2	
e.	May	1	
f.	June	1	
g.	July	1	
h.	August	1	
i.	September	2	
	• Purchase fish usually in		
j.	October	1	81.48%
k.	November	1	
l.	December	1	
m.	I do not import live fish into Minnesota.	22	
	• Very rarely		
	Question not answered	2	7.41%
	Comments:		
	• fry or eggs are flown in (all months)		
	• random, once every two years (no month selected)		

11. Do you sort your fish

a.	Yes	12	44.44%
b.	No	11	40.74%
Question not answered		4	14.81%
• don't sell fish			
• N/A purchase certain species			
• N/A			

12. If you sort fish, how are fish sorted?

a.	Species	2	16.67%
b.	Size	2	16.67%
c.	Both size and species	8	66.67%
• also discard unwanted species			
d.	Other – please describe:	0	0
comments left to explain why fish are not sorted:			
• Purchase by species			
• N/A			
• catch hook and line – catch and release			
• request supplier = size and species			

13. What activity or activities do you see as having the highest risk for invasive carp introductions?

- transporting from rivers or streams with carp in them
- not sure
- natural river movement
- Flooding. We do not use any form of carp or rough fish.
- live bait not inspected by an informed person
- minnow transport
- Natural River Streams
- Locks
- minnow sales
- the locks on the Mississippi River
- moving minnows around
- transporting live fish/eggs
- bait dealers
- cormorant and pelican migrations
- If brought in by supplier truck/tank. Farm site management and proximity to open water that could have carp.
- locks and dams on the river
- Rivers
- the spawning of invasive carp other than that I don't believe they will be a problem
- Transporting minnows from one lake to another.

14. Do you have any comments regarding the rules and statutes in place that govern fish movement, or any suggestions for how they should be changed to reduce the risk of introducing invasive carp?

- Do not impose more restrictions on private licensed hatcheries.
- OK the way it is
- I think it's too late. We need dams or fish traps.

- All fish should be sorted by species.
- Drop the rules and statutes. No one is reckless enough to pollute their own water or the state's water.
- use stops and blocks
- I don't know enough about Asian carp, can they survive our winters? Will they spawn this far north? I believe we should try and keep our rivers and streams stocked with enough predators to keep invasive number contained, if they become a problem.

15. Other Comments:

- It seems the greatest risk is natural fish movement in our river systems. Not sure that can be controlled. Maybe DNR, etc. are over reacting to an uncontrollable risk.
- I think it is important that the invasive element is monitored closely.
- I haven't bought any new trout (or any other kind of fish) for 5 years. The hatchery was destroyed in a flood. The trout were a interest to my husband; who has since passed away, and so has my interest.
- My input might not be the best as we only have one pond with sunfish and largemouth bass.
- Unless you close down the locks on the river, Asian Carp will invade Minnesota! The St. Anthony lock in particular!
- recreational Fish Hatchery License - my own ponds for fishing

B. Aquarium Facility

1. Please indicate the type of commercial license you currently hold (choose all the apply):

b.	Aquarium Facility	2
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2. Do you think that invasive carp species could be introduced into Minnesota waters through live fish movement?

a.	Yes	0	0
b.	No	2	100%
c.	Don't know	0	0

3. Do you believe that you perform any activities under your license or a permit that could be a risk for introducing invasive carp species into Minnesota waters?

a.	Yes	0	0
b.	No	2	100%
c.	Don't know	0	0

4. Do you know what a Hazard Analysis and Critical Control Point (HACCP) plan is?

a.	Yes	0	0
b.	No	2	100%
c.	Don't know	0	0

5. If you answered yes to question 4, do you have a HACCP plan, or another type of plan, in place to reduce the risk of invasive carp introductions?

a.	Yes	0	0
b.	No	0	0
c.	Don't know	0	0

6. Are you generally aware of Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	2	100%
b.	No	0	0
c.	Don't know	0	0

7. Do you know how to find Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	2	100%
b.	No	0	0
c.	Don't know	0	0

8. From what type of water body do you harvest fish (choose all that apply)?

a.	River or stream	0
b.	Pond	1
c.	Wetland	0
d.	Lake	0
e.	Ditch	0
f.	Indoor raceway or other holding structure	0
g.	Other – please define:	1
	• aquarium	

9. If you transport live fish within Minnesota, during what months do you transport live fish?

a.	January	0	100%
b.	February	0	
c.	March	0	
d.	April	1	
e.	May	1	
f.	June	1	
g.	July	1	
h.	August	2	
i.	September	2	
j.	October	1	
k.	November	0	
l.	December	0	
m.	I do not transport live fish within Minnesota.	0	0
Comments:			
	• Average retail season (April – October)		

10. If you import live fish into Minnesota, during what months do you import live fish (only comment on fish that are held or placed in Minnesota waters)?

a.	January	0	0
b.	February	0	
c.	March	0	
d.	April	0	
e.	May	0	
f.	June	0	
g.	July	0	
h.	August	0	
i.	September	0	
j.	October	0	
k.	November	0	
l.	December	0	
m.	I do not import live fish into Minnesota.	2	100%

11. Do you sort your fish?

a.	Yes	1	50.00%
b.	No	1	50.00%

12. If you sort fish, how are fish sorted?

a.	Species	0	0
b.	Size	0	0
c.	Both size and species	0	0
d.	Other – please describe:	1	100%
<ul style="list-style-type: none"> Only Walleye 			
comments left to explain why fish are not sorted:			
<ul style="list-style-type: none"> Sorted at farm from where the fish are purchased 			

13. What activity or activities do you see as having the highest risk for invasive carp introductions?

- Hard on Native fish
- not sure, flooding, dam and lock activities

14. Do you have any comments regarding the rules and statutes in place that govern fish movement, or any suggestions for how they should be changed to reduce the risk of introducing invasive carp?

- too many laws
- live well transfer, ban on any invasive species movement

15. Other Comments:

- People rearing fish do a good job. Look at minnow dealers.
- Bounty? Or discount on game/fishing license for those who reduce the numbers of invasive species

C. Minnow Dealer

1. Please indicate the type of commercial license you currently hold (choose all the apply):

c.	Minnow Dealer	43
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2. Do you think that invasive carp species could be introduced into Minnesota waters through live fish movement?

a.	Yes	22	51.16%
<ul style="list-style-type: none"> by a non-commercial trapper 			
b.	No	10	23.26%
c.	Don't know	11	25.58%

3. Do you believe that you perform any activities under your license or a permit that could be a risk for introducing invasive carp species into Minnesota waters?

a.	Yes	0	0
b.	No	43	100%
c.	Don't know	0	0

4. Do you know what a Hazard Analysis and Critical Control Point (HACCP) plan is?

a.	Yes	14	32.56%
b.	No	21	48.84%
c.	Don't know	8	18.60%

5. If you answered yes to question 4, do you have a HACCP plan, or another type of plan, in place to reduce the risk of invasive carp introductions?

a.	Yes	9	62.29%
b.	No	4	28.57%
c.	Don't know	0	0
Question not answered		1	7.14%
• N/A			

6. Are you generally aware of Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	34	79.07%
b.	No	7	16.28%
c.	Don't know	2	4.65%

7. Do you know how to find Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	33	76.74%
b.	No	8	18.60%
c.	Don't know	2	4.65%

8. From what type of water body do you harvest fish (choose all that apply)?

a.	River or stream	16
b.	Pond	25
c.	Wetland	6
d.	Lake	17
e.	Ditch	5
f.	Indoor raceway or other holding structure	0
g.	Other – please define:	9
• I only purchase – no trapping		
• I don't harvest my own. I buy from other suppliers. I only sell leeches.		
• leech trapper		
• only minnows		
• indoor holding tanks - minnows		
• By fish, does this mean minnows?		
• none		
• I do not harvest minnows.		
• I only harvest leeches, I don't harvest fish.		

9. If you transport live fish within Minnesota, during what months do you transport live fish?

a.	January	11	60.47%
b.	February	9	
c.	March	9	
d.	April	15	
e.	May	19	
f.	June	19	
g.	July	17	
h.	August	16	
i.	September	13	
j.	October	13	
k.	November	10	
l.	December	11	
m.	I do not transport live fish within Minnesota.	17	39.53%

10. If you import live fish into Minnesota, during what months do you import live fish (only comment on fish that are held or placed in Minnesota waters)?

a.	January	0	0
b.	February	0	
c.	March	0	
d.	April	0	
e.	May	0	
f.	June	0	
g.	July	0	
h.	August	0	
i.	September	0	
j.	October	0	
k.	November	0	
l.	December	0	
m.	I do not import live fish into Minnesota.	39	90.70%
Question not answered		4	9.30%

11. Do you sort your fish

a.	Yes	22	51.16%
	• minnows		
b.	No	12	27.91%
Question not answered		9	20.93%

12. If you sort fish, how are fish sorted?

a.	Species	1	4.55%
b.	Size	2	9.09%
c.	Both size and species	19	86.36%
	• and health of fish/minnow		
	• If there are more than one species in the water we hand sort before loading and also recheck while putting in tank and again before selling.		
	• minnows		
d.	Other – please describe:	0	0
comments left to explain why fish are not sorted:			
	• leeches only		
	• only minnows – no fish		
	• none		

13. What activity or activities do you see as having the highest risk for invasive carp introductions?

- Great Lakes cargo ships
- movement of boats from one lake to another
- commercial fishing in the rivers by Minneapolis area
- Water skiing, wet Jets, and bass tournaments
- Taking bait minnows out of rivers and streams and then selling them. Notify the public about seining rivers and streams for invasive carp.
- moving boats up and down the Mississippi
- Salties coming into the Great Lakes.
- commercial seining - transporting and cribbing fish
- Transporting fish into the state.

- None
- importation of forage for aquaculture
- commercial and recreational traffic on rivers
- rivers and migration
- not being careful
- Netting fish in bodies of water that have invasive carp. Not properly sorting fish by species.
- Harvesting minnows in waters containing invasive carp or importation - these are the only way.
- interstate bait transfer, commercial holds/tanks
- Having live fish or minnows brought in across state lines. I believe there should be no out of state commerce in minnows or fish (live that is).
- Birds, flooding, or fishermen trying to catch own bait.
- I know by shooting cormorants and pelicans it will greatly reduce this risk. Eggs and small fish get trapped in the folds of the pelican's mouth; they go to another body of water, scoop in, and everything washes out.
- commercial fishing
- High water flooding, not sorting products
- People that regard them as desirable intentionally relocating them
- Great Lakes shipping
- 1) Buying fish from outside of state dealers. 2) Trapping and transport from known invasive waterways. 3) Should not be allowed to raise them for any reason.

14. Do you have any comments regarding the rules and statutes in place that govern fish movement, or any suggestions for how they should be changed to reduce the risk of introducing invasive carp?

- Make and enforce good logical rules - for instance not being able to take water from Rainy Lake to Rainy River is a foolish regulation. Those types of poor rule making lend good people to disrespect good regulations.
- have a barrier on Minnesota River to stop carp coming out of Mississippi River
- There needs to be some sort of barrier placed above streams and rivers to where traces of DNA from carp are found or wherever carp are known to be.
- Require all persons who import or take fish from infested or potentially infested water to ensure no carp are present in their catch by sorting all fish.
- Cracking down on guys like [name removed] who brings minnows in from Dakota or across state lines.
- I don't believe a commercial dealer would risk ruining their livelihood; all that I have seen take very good care of the waters they use. But every dealer has experienced a cabin being built or lake shore being bought up and then fish showing up in the traps by someone that thinks they're going to start the next greatest fishing hole. There also seem to be more and more fishermen trying to get their own bait as we are forced to raise our prices because of the new laws every year. They check their trap or pull their seine, dump it in cooler or bucket, and away they go not knowing what kind of minnows they've got. It's just free bait to them.
- none, good luck with this one
- Education is key. Most people can learn to be careful with practical methods of control.

15. Other Comments:

- Stop birds bring eggs under their feathers to our lakes and streams too.
- I trap leeches only in area ponds so I don't have a lot of input.
- My waters don't have rough fish in them.

- If you allow the harvest of baitfish in the waters that contain invasive carp you will not stop the introduction of the species to unwanted areas - period. There are plenty of places to harvest bait fish. I wasn't going to send this in but I changed my mind.
- If carp are going to move naturally into waterbodies via streams and rivers, I know no one is going to stop them or control them.
- The DNR should test the lakes that use minnow men collect minnows (free) end of story.
- The invasive carp issue is, as you know, a terrible problem with extreme containment challenges. Please, make no mistake I agree we need to do everything we can to prevent the spread of all invasives and or VHS type threats. With that said, I also believe we need to communicate and present our approach to fight these invasives in an encouraging way. I think we have really become a state that discourages fishing. Especially to people that only fish 3-5 times a year. I believe 21 pages of lakes and streams with special regulations can be very intimidating. What I am trying to say is we really don't welcome fishing, we say, boy you better read the reg. book and every access sign and oh by the way you better hope your boat and everything is perfect when you try to leave or it is going to cost you big! Thanks for coming to Minnesota. It seems like the fishing community are the bad guys. At least the way we are presenting things with regard to invasives, what about hunters and leaky decoys? What about swimmers and wet swim suits? Waterfowl, etc.?
- HACCP has been used by the live bait industry since the beginning. Unwanted species and materials are removed each time the product is handled. At each level of sale the volume is reduced making it easier to remove undesirable items. The smallest unit is at retail point of sale. That is the best place to make sure the product is clean. I would suggest that everyone dispensing live bait at retail should at a minimum have the same training the whole sale bait community has received

D. Commercial Netting of Fish

1. Please indicate the type of commercial license you currently hold (choose all the apply):

d.	Commercial Fishing	28
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2. Do you think that invasive carp species could be introduced into Minnesota waters through live fish movement?

a.	Yes	13	46.43%
	• by mother nature		
	• naturally		
b.	No	10	35.71%
c.	Don't know	5	17.86%

3. Do you believe that you perform any activities under your license or a permit that could be a risk for introducing invasive carp species into Minnesota waters?

a.	Yes	0	0
b.	No	28	100%
c.	Don't know	0	0

4. Do you know what a Hazard Analysis and Critical Control Point (HACCP) plan is?

a.	Yes	13	46.43%
	• Somewhat		
b.	No	10	35.71%
c.	Don't know	5	17.86%

5. If you answered yes to question 4, do you have a HACCP plan, or another type of plan, in place to reduce the risk of invasive carp introductions?

a.	Yes	5	38.46%
b.	No	8	61.54%
c.	Don't know	0	0

6. Are you generally aware of Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	20	71.43%
b.	No	3	10.71%
c.	Don't know	5	17.86%

7. Do you know how to find Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	19	67.86%
b.	No	5	17.86%
c.	Don't know	4	14.29%

8. From what type of water body do you harvest fish (choose all that apply)?

a.	River or stream	12
	• St. Louis River and Lake Superior (would like to fish Isle Royale with park permission)	
b.	Pond	3
c.	Wetland	0
d.	Lake	25
	• Lake Superior	
	• St. Louis River and Lake Superior (would like to fish Isle Royale with park permission) <i>*Duplicate comment*</i>	
e.	Ditch	1
f.	Indoor raceway or other holding structure	0
g.	Other – please define:	0

9. If you transport live fish within Minnesota, during what months do you transport live fish?

a.	January	6	46.43%
b.	February	6	
c.	March	5	
d.	April	11	
e.	May	10	
f.	June	2	
g.	July	2	
h.	August	2	
i.	September	7	
j.	October	10	
k.	November	6	
l.	December	4	
m.	I do not transport live fish within Minnesota.	15	53.57%

10. If you import live fish into Minnesota, during what months do you import live fish (only comment on fish that are held or placed in Minnesota waters)?

a.	January	0	0
b.	February	0	
c.	March	0	
d.	April	0	
e.	May	0	
f.	June	0	
g.	July	0	
h.	August	0	
i.	September	0	
j.	October	0	
k.	November	0	
l.	December	0	
m.	I do not import live fish into Minnesota.	24	92.31%
Question not answered		2	7.69%

11. Do you sort your fish

a.	Yes	26	92.86%
• and all fish that are caught in seine are big to be able to tell what each kind are			
b.	No	2	7.14%

12. If you sort fish, how are fish sorted?

a.	Species	11	42.31%
b.	Size	0	0
c.	Both size and species	14	53.85%
• They are put on sorting table and sorted out: carp put in boxes, buffalo put in boxes. We have no invasive carp yet.			
d.	Other – please describe:	1	3.85%
• size and quality of flesh/fillets			

13. What activity or activities do you see as having the highest risk for invasive carp introductions?

- none, don't transport live fish
- none
- don't know
- The cat is out of the bag "on carp." You cannot and will not stop it, sadly.
- general public
- opening dams and locks
- sport fishing
- flooding
- minnow dealers
- Live fish transportation. Locks that connect to the Mississippi River.
- sale of live Asian carp
- flood conditions
- flooding
- minnow dealers that get there minnows from people that get there minnows from areas where there are invasive carp
- transportation of non-sorted fish from lake to lake
- Bilge water from shipping boats on lake superior
- minnow dealers

14. Do you have any comments regarding the rules and statutes in place that govern fish movement, or any suggestions for how they should be changed to reduce the risk of introducing invasive carp?

- all fish must run over sorting table, fish movement log books, state approved holding ponds

15. Other Comments:

- I, [name removed], currently work for St. Louis County Public Works and will be retiring next year (2012) and am currently a VIP at Isle Royale National Park in Michigan. If I could be of any assistance in providing information by assessment fishing (with park approval) at Isle Royale, I would be happy to assist in any way. Thank you for your concerns, [name removed].
- The live bait laws governing my area of the Mississippi are foolish and without merit. If you want to stop moving invasive species, issue boating permits for specific waterways period. Let people catch bait where they will use it and not transport it by vehicles and land. Outlaw livewells in sport fishing boats that will move more invasive species than anything else. Good luck!
- Live hauling Asian carp is illegal. None of our buyers will accept these fish, It is impossible to mistake an Asian carp for the species now allowed to be transported
- I strongly believe that commercial fishermen that seine river systems such as the Mississippi and other rivers that have zebra mussels and milfoil in them should not be allowed to fish in other inland lakes that don't have it. If they want to fish rivers then fine, then only let them fish river or lakes that have it in. Don't let them go from one lake then back to the river. We don't have exotics yet in my lakes but have 2 border water lakes that I have seined for many years, but in the last 10-15 years the Iowa side was seined by both from Iowa both seine the Mississippi and neither one live here or around here and thus probably kill game fish especially since they both jump from lake to lake. I just think that if they both want to seine the rivers they shouldn't be allowed to go to areas inland lakes that don't have any exotic species in them. I have my own inland lake area and only do them. I live here and know how to manage control my lakes. These other fishermen that come and fish my border waters could care less if they kill any gamefish or bring something like milfoil or zebra mussels to my lakes. I say if you want to fish don't let people who fish in known exotic lakes and rivers go into other lakes that don't have it. I believe anyone who fish the Mississippi or river shouldn't be allowed to fish inland lakes. MN fishermen have their own areas or zones they each are allowed to fish and that works well. I don't go to other fishermen's areas and they stay in theirs. This helps in not transferring exotics into other areas. WI and Iowa fishermen go everywhere and thus increase the risk of carrying things such as milfoil and zebra mussels on their nets. They don't live here and could care less what they do. I crossed names of the fishermen out but I'm sure you know who they are. A fisherman that don't live in the area he seines doesn't care as much about the lakes as one who lives in his area.
- As we know invasive carp are here and where they are established we must control them. They are aggressive, commercial fishing Do not regulate the very means we have to control them to the point we cannot aggressively fish these carp. Let's educate and closely monitor fish transportation. Within our state and we can control fish populations in inland lakes. Nobody including commercial fishermen want to see invasive carp spread, let's work together to control and prevent spreading these carp.
- stop all importation of minnows

E. Aquatic Farm/Private Fish Hatchery and Minnow Dealer

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	13
c.	Minnow Dealer	

2. Do you think that invasive carp species could be introduced into Minnesota waters through live fish movement?

a.	Yes	9	69.23%
	<ul style="list-style-type: none">not very likely if people know reasons not tobut very unlikely by commercial fish operationsI do think they could be in with bait fish, but not in with game fish. And I would say that it would only be during certain times of the year (in the fall). At the same time I do not think that it would go unnoticed. Or be worth it at all to trap the infected waters due to the devastation caused by these fish.		
b.	No	1	7.69%
c.	Don't know	3	23.08%

3. Do you believe that you perform any activities under your license or a permit that could be a risk for introducing invasive carp species into Minnesota waters?

a.	Yes	1	7.69%
	<ul style="list-style-type: none">but very unlikely by commercial fish operations		
b.	No	12	92.31%
c.	Don't know	0	0

4. Do you know what a Hazard Analysis and Critical Control Point (HACCP) plan is?

a.	Yes	11	84.62%
b.	No	2	15.38%
c.	Don't know	0	0

5. If you answered yes to question 4, do you have a HACCP plan, or another type of plan, in place to reduce the risk of invasive carp introductions?

a.	Yes	10	90.91%
	<ul style="list-style-type: none">If I were to find them in with my fish, I would kill the whole culture pond and start over.		
b.	No	1	9.09%
	<ul style="list-style-type: none">I do not raise fish or transport.		
c.	Don't know	0	0

6. Are you generally aware of Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	13	100%
b.	No	0	0
c.	Don't know	0	0

7. Do you know how to find Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	13	100%
b.	No	0	0
c.	Don't know	0	0

8. From what type of water body do you harvest fish (choose all that apply)?

a.	River or stream	3
b.	Pond	11
c.	Wetland	4
d.	Lake	6
e.	Ditch	1
f.	Indoor raceway or other holding structure	2
g.	Other – please define:	2
	• private hatchery ponds (man-made)	
	• I do not deal in fish, I deal in small live bait.	

9. If you transport live fish within Minnesota, during what months do you transport live fish?

a.	January	8	69.23%
b.	February	9	
c.	March	9	
d.	April	9	
e.	May	9	
f.	June	9	
g.	July	9	
h.	August	9	
i.	September	9	
j.	October	9	
k.	November	9	
l.	December	9	
m.	I do not transport live fish within Minnesota.	4	30.77%
	• Minnows only		
	• Minnows only		
	• Minnows only		

10. If you import live fish into Minnesota, during what months do you import live fish (only comment on fish that are held or placed in Minnesota waters)?

a.	January	0	7.69%
b.	February	0	
c.	March	0	
d.	April	0	
e.	May	0	
f.	June	0	
g.	July	1	
h.	August	1	
i.	September	1	
j.	October	0	
k.	November	0	
l.	December	0	
m.	I do not import live fish into Minnesota.	12	92.31%

11. Do you sort your fish

a.	Yes	10	76.92%
b.	No	0	0
	Question not answered	3	23.08%

12. If you sort fish, how are fish sorted?

a.	Species	0	0
b.	Size	0	0
c.	Both size and species	10	100%
	• at times we will hand sort		
	• and on the health status of fish (general condition)		
	• I sort my minnows (not fish) by hand and sorters		
d.	Other – please describe:	0	0

13. What activity or activities do you see as having the highest risk for invasive carp introductions?

- aquatic pets turned loose and fishermen moving fish to other waterbodies
- Rivers and streams seem to be where these carp would travel. Catching minnows in rivers would be a very high risk.
- wild fathead trapping
- natural waterways
- Fish coming out of rivers and streams are at highest risk. Large public lakes would be second, especially lakes connected by river systems. Smaller ponds and wetlands are much safer. They are much more protected from the public and nature's natural ability to spread species.
- Little is done in waters that contain invasive carp. Waters that contain these species should require HAACP certification and special permitting.
- I would have to say anything to do with rough fish. Suckers, chubs, but only if those are trapped wild. If cultured they would be harmless. I would also have to say that shaping the land to divert any type of runoff from a body of water into a tributary would also be a high risk - and possibly damming up any body of water.
- High water, pelicans and cormorants
- Having game fish ponds setup in a flood plain. People taking bait without a license or training and introducing their catch into other lakes.

14. Do you have any comments regarding the rules and statutes in place that govern fish movement, or any suggestions for how they should be changed to reduce the risk of introducing invasive carp?

- inform the fishermen and general public of the different species and reasons they shouldn't be planting them in different waterbodies
- Even the best regulations will only delay the spread. If humans don't spread these fish, nature will. I have seen this more than once.
- Will address issues as a core member if added to group!
- I think the DNR is in general doing a good job. But this has in the process created red tape, uncertainty, worry, and headaches for me. Especially with spottail shiners in the spring. Too many ducks to get in a row. I personally would like to see spottail shiners banned completely for commercial use. Then I would not have to carry them simply because my competitor does. I would rather sell a pond minnow that I raised out of a safer, non-infested water. And no VHS to worry about. And as far as these Carp, it just adds to the worry. I in general would like to just stay out of large public lakes and rivers. That's where most exotics are going to come from.
- No importation (even for export). Special training for harvest in infested waters. Special license for harvest in infested waters.
- I think that the whole thing with the VHS is going way to overboard. But these carp on the other hand are a big deal and must be stopped. Intensive trapping should be set in play.
- Don't change the laws on lic. Dealers, just enforce laws in place. Put 300% of enforcement in catching the non lic. that transport fish, bait etc. in unmarked vehicles with tanks in back of

pickups, enclosed vans, box trucks etc. I believe more illegal bait and fish brought in and out of the state than legal.

15. Other Comments:

- Instead of making new rules that make life harder for all of us, and are impossible to enforce, we should try to educate everybody that might be likely to move the fish either on purpose or accidentally, and tell them why it's not a good idea. The laws don't seem to make much difference to a lot of people. I lose one or two minnow ponds to people moving game fish around every year (there's not many left).
- My golden shiner business absolutely requires that I am able to move golden shiners from licensed water body to licensed water body under my bait dealers license. If this would change the golden shiner business will cease to be in the state of Minnesota. Also we move our suckers from our licensed grow out ponds to our aerated wintering ponds for sales the following year. I will enclose my card if you would feel the need to talk to me about these two points. Thank you, [name removed]
- I and several MN bait dealers would like to set up a committee to implement procedures and practices and "work with DNR" to plan for the future of bait and commercial harvest in the future. This industry needs to become proactive in this. While I realize this is an extreme change from how the industry has acted in the past. I mean to see this change in the industry and see the MN Aquaculture Association return to where it was in the 90's. As a learning and teaching organization.
- I would love to help get rid of these carp and would use any resources I have to assist you. Give me a call if there is anything I can do [phone number removed].

F. Aquatic Farm/Private Fish Hatchery and Minnow Dealer and Commercial Netting of Fish

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	1
c.	Minnow Dealer	
d.	Commercial Fishing	

2. Do you think that invasive carp species could be introduced into Minnesota waters through live fish movement?

a.	Yes	0	0
b.	No	1	100%
• Not likely, someone would have to intentionally do it, as we all know what to look for.			
c.	Don't know	0	0

3. Do you believe that you perform any activities under your license or a permit that could be a risk for introducing invasive carp species into Minnesota waters?

a.	Yes	0	0
b.	No	1	100%
c.	Don't know	0	0

4. Do you know what a Hazard Analysis and Critical Control Point (HACCP) plan is?

a.	Yes	1	100%
b.	No	0	0
c.	Don't know	0	0

5. If you answered yes to question 4, do you have a HACCP plan, or another type of plan, in place to reduce the risk of invasive carp introductions?

a.	Yes	1	100%
b.	No	0	0
c.	Don't know	0	0

6. Are you generally aware of Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	1	100%
	• somewhat		
b.	No	0	0
c.	Don't know	0	0

7. Do you know how to find Minnesota Rules and Statutes that apply to fish movement?

a.	Yes	0	0
b.	No	0	0
c.	Don't know	1	100%
	• I keep up on info that DNR encloses in our license each year.		

8. From what type of water body do you harvest fish (choose all that apply)?

a.	River or stream	1
	• minnows	
b.	Pond	1
	• minnows	
c.	Wetland	0
d.	Lake	1
	• carp, buffalo, bullheads, and some minnows	
e.	Ditch	0
f.	Indoor raceway or other holding structure	0
g.	Other – please define:	0

9. If you transport live fish within Minnesota, during what months do you transport live fish?

a.	January	1	100%
b.	February	1	
c.	March	1	
d.	April	1	
e.	May	1	
f.	June	1	
g.	July	1	
h.	August	1	
i.	September	1	
j.	October	1	
k.	November	1	
l.	December	1	
m.	I do not transport live fish within Minnesota.	0	0

10. If you import live fish into Minnesota, during what months do you import live fish (only comment on fish that are held or placed in Minnesota waters)?

a.	January	0	0
b.	February	0	
c.	March	0	
d.	April	0	
e.	May	0	
f.	June	0	
g.	July	0	
h.	August	0	
i.	September	0	
j.	October	0	
k.	November	0	
l.	December	0	
m.	I do not import live fish into Minnesota.	1	100%

11. Do you sort your fish

a.	Yes	1	100%
b.	No	0	0

12. If you sort fish, how are fish sorted?

a.	Species	0	0
b.	Size	0	0
c.	Both size and species	1	100%
<ul style="list-style-type: none"> Minnows are graded, and river minnows hand sorted as well. Carp and rough fish are hand sorted. 			
d.	Other – please describe:	0	0

13. What activity or activities do you see as having the highest risk for invasive carp introductions?

- If they can make it up the Mississippi in high water or the great lakes and get into MN. Although we don't know if they can survive in this cold climate or what oxygen requirements they need. They might be susceptible to winterkill in low oxygen.

14. Do you have any comments regarding the rules and statutes in place that govern fish movement, or any suggestions for how they should be changed to reduce the risk of introducing invasive carp?

- We have to dam many restrictions now, just keeping people educated is best. All restrictions do is create more gov. jobs and less private sector opportunities.

15. Other Comments:

- More restrictions won't prevent the spread as with other invasives. It is shown that the bait people and commercial fishermen aren't spreading these species, but more so general public, as they aren't nearly as informed as commercial people. All restrictions do is kill the economy as people quit fishing as they are sick of all the B.S. and also it puts lots of private business out of business. Several bait stores have closed this year or quit selling minnows and only handling leeches and crawlers and waxworms now, no minnows. As the sale for minnows is gone due to all your damn regulations. You are destroying our economy. As we all go out of business, who is going to pay your damn salary, as nobody left to pay taxes. Only gov. employees left.

Appendix I: November 2012 Questionnaire Results

Survey Participation

In July 2012, an initial questionnaire was sent to all current aquatic farm, private fish hatchery, aquarium facility, minnow dealer, and commercial netting of fish licensees. This questionnaire was meant to aid in the creation of the final report to the legislature, as well as to invite participation from affected parties, and included questions to determine what types of fish movement currently occur, and when, as well as risk management practices.

As a follow up to this questionnaire, a core group of stakeholders was established to determine risks and recommend potential changes that would reduce risk while still maintaining industry. On November 5, 2012, a second questionnaire was sent out to all current aquatic farm, private fish hatchery, aquarium facility, minnow dealer, and commercial netting of fish licensees. This second questionnaire was meant to ensure that commercial license holders were in agreement with the core group.

Survey response rate was poor, and as a result the responses cannot be considered to represent the entire group of commercial licensees.

2012 License Holder Totals:

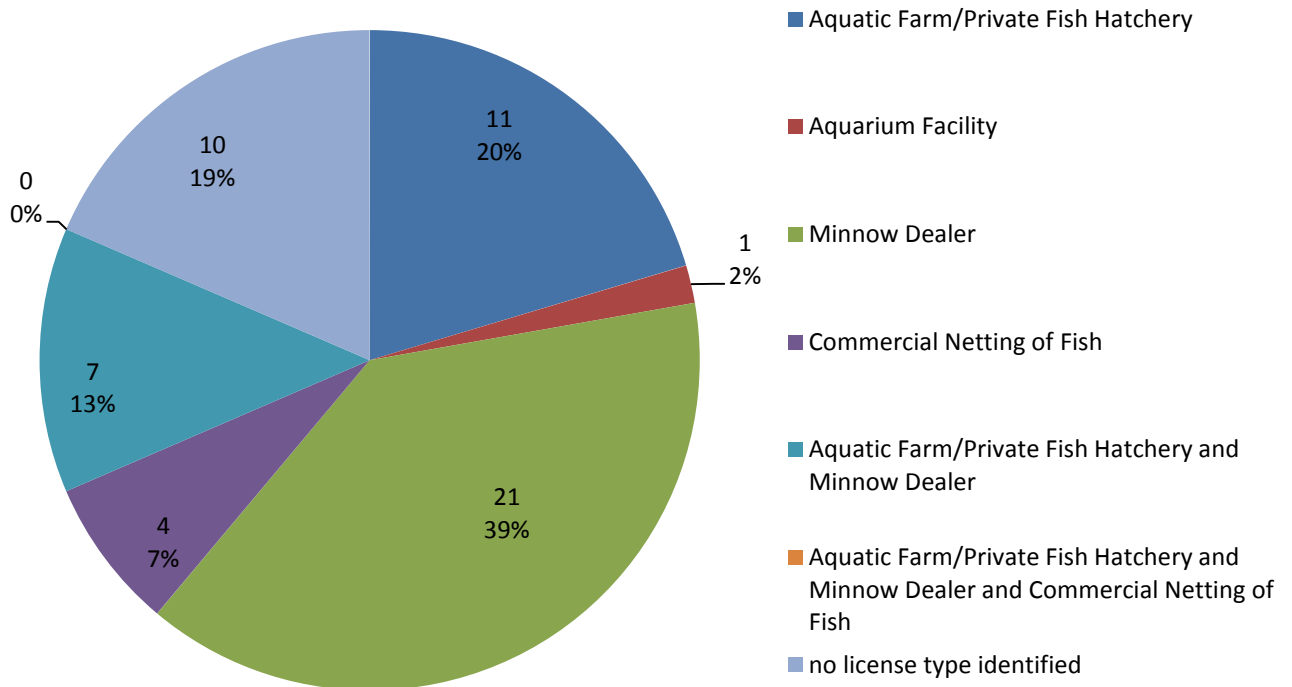
- 398 Total Licensees
 - 86 Aquatic Farm/Private Fish Hatchery
 - 2 Aquarium Facility
 - 202 Minnow Dealer
 - 56 Commercial Netting of Fish
 - 49 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer
 - 3 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer *and* Commercial Netting of Fish

Responses Recieved:

Responses Recieved:

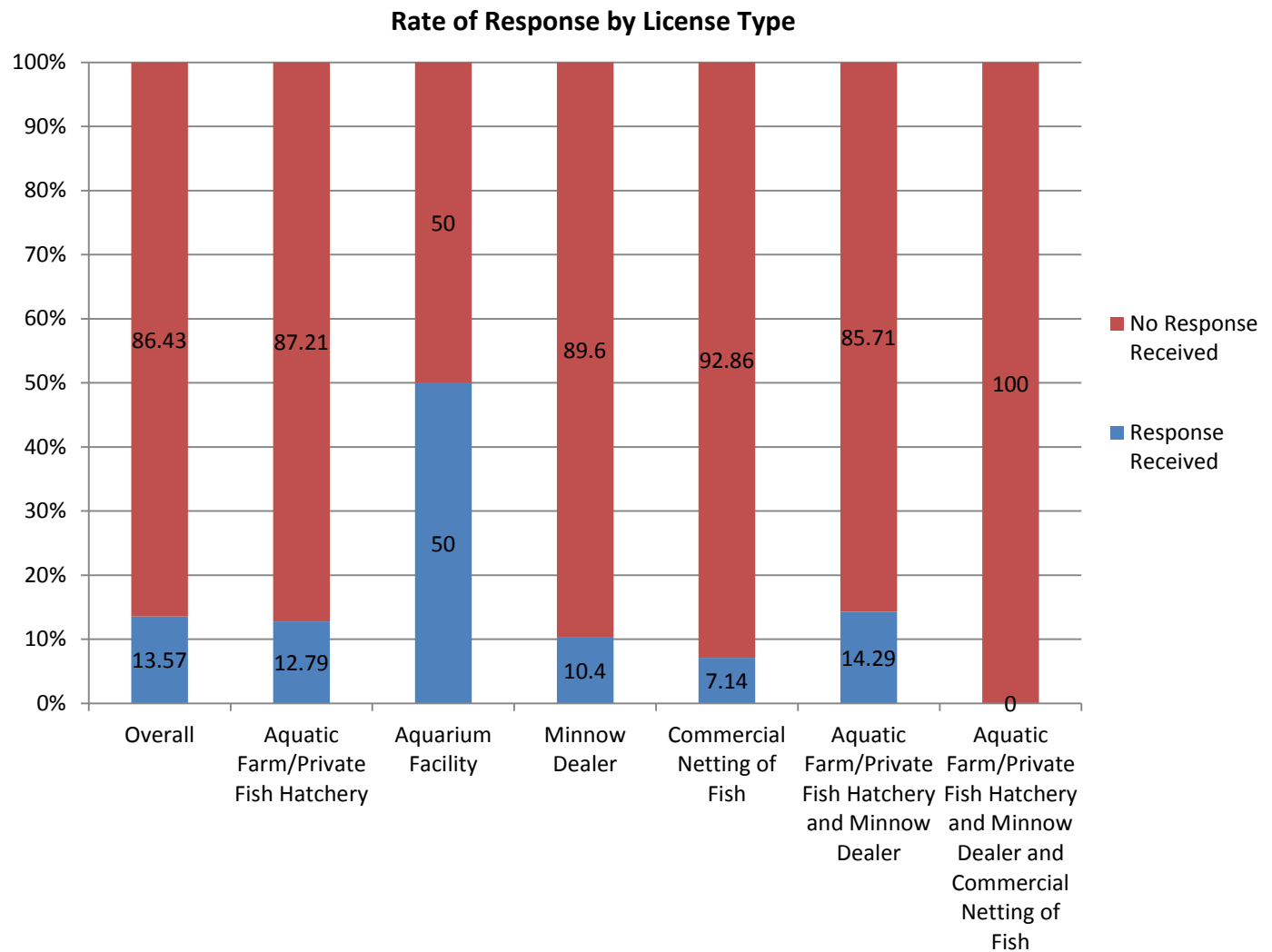
- 54 Total Responses:
 - 11 Aquatic Farm/Private Fish Hatchery
 - 1 Aquarium Facility
 - 21 Minnow Dealer
 - 4 Commercial Netting of Fish
 - 7 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer
 - 0 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer *and* Commercial Netting of Fish
 - 10 no license type identified
 - 4 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer
 - 0 Aquatic Farm/Private Fish Hatchery *and* Minnow Dealer *and* Commercial Netting of Fish
 - 5 no license type identified

Responses Received



Rate of Response by License Type:

13.57%	Overall Rate of Response
12.79%	Aquatic Farm/Private Fish Hatchery
50.00%	Aquarium Facility
10.40%	Minnow Dealer
7.14%	Commercial Netting of Fish
14.29%	Aquatic Farm/Private Fish Hatchery <i>and</i> Minnow Dealer
0	Aquatic Farm/Private Fish Hatchery <i>and</i> Minnow Dealer <i>and</i> Commercial Netting of Fish



Response Summary and Trends

Overall Response Summary

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	11
b.	Aquarium Facility	1
c.	Minnow Dealer	21
d.	Commercial Fishing	4
A and C		7
No license type identified		10

2. Please take a look at the attached list of identified risks and potential solutions developed by the core group (taking into account all responses received from the July 2012 questionnaire). Each potential solution is numbered. Please place numbers from the list into the categories listed below to indicate when (if ever) you think a potential solution should go into effect. Please note that at this time the DNR has no plans to pursue any of these potential solutions, we are simply looking for feedback to aid us in making recommendations to the legislature.

Potential solution	Never implement	Implement now (as soon as possible)	Implement if reproducing populations of Asian carp become established in MN
required education for minnow retailers, potential penalties for selling AIS	5	14	4
required training and re-certification on AIS for all commercial license holders	5	7	9
required HACCP training and plans for all commercial license holders	7	2	9
required HACCP training and plans for commercial license holders who work in affected areas of the state	2	11	11
set up a system for fisheries to do spot checks to ensure HACCP plans are being followed	5	6	9
develop commercial operations to limit invasive species (or pay for their removal)	3	10	10
mandatory reporting of source locations for minnows	6	11	5
shift to in-state bait for feeding hatchery fish	6	10	4
eDNA tests on waters harvested and stocked	5	4	10
eDNA testing on loads of minnows	9	5	5
public education campaign (i.e. aquarium displays, schools, fairs, etc.)	1	19	4
reduce limit of minnows harvested for personal use	7	14	3
separate rivers and streams from lakes, ponds, and unconnected wetlands in minnow harvest regulations	2	8	9
Develop a specific list of species that can be used as bait in Minnesota (exclude species that look similar to juvenile Asian carp)	6	9	7
do not allow license holders who have had their license revoked for violation to have a family member purchase the license then work under the family member's license	7	14	3
increased penalties for violation of current laws related to this topic (i.e. importing live bait)	4	12	5
obtain funding to oversee/coordinate risk reduction measures	1	17	4
increased research to develop better sorting methods that would separate out Asian carp	1	14	6

3. Do you have suggestions for potential solutions that are not addressed on this list?
- Develop a reward system (rebate) for returning live minnows to dealer.
 - Stop all personal use of minnows in the state. Only licensed dealers allowed to trap.
 - No bait or fish harvest from water with Asian carp
 - Get rid of these carp ASAP. Any person taking fish (carps) from infested waters needs strict compliance with rules and strict enforcement.
 - Don't impose additional regulations unless absolutely required. Don't overreact.
 - Stop all minnow trapping without a minnow dealer license.
 - It's too late. Should've worried about it 10 years ago. You have to kill off all the lake to correct the problem.
 - Stop raising Asian carp in Arkansas. Stop importation of shiners from Arkansas ASAP. Stop importation of minnows even for export ASAP. Close down lock on rivers if reproducing population of Asian carp become established in Minnesota.
 - Persons from out state MN should not be allowed to seine for shiners. People who are not specifically licensed, i.e. minnow dealers, commercial fisheries, etc. should only be allowed to trap, not seine, and use these minnows only on the lake where they were trapped.
 - Major river barriers should be the very first action taken (Mississippi, Minnesota, and St. Croix).
 - I only trap leeches and I sort them so I don't have a whole lot of input on the problem.
 - Most minnow dealers use private ponds not connected to rivers or outlets
 - Harvest of minnows for personal use will have to be banned in areas as they become infested.
 - Focus on those who commercially move from one public water to another place.
 - 1) Stop illegal stocking! 2) Train retailers. 3) Learn to live with a natural process.
 - Close lock at St. Anthony.
 - Yes, get away from PC and find out where source of minnows are, talk to people that trap minnows.
 - None- I have a recreational private fish hatchery. Tough problem - good luck. Do not sell, not an expert on these issues.
 - Kill all cormorants and pelicans now (as soon as possible). If reproducing populations of Asian carp become established in Minnesota blame the DNR the people in charge. The cormorants and pelican's spread all problem's = zebra mussels, VHS, all kinds of carp, aquatic veg., they feed on all the states fish we try to raise for the future of our kids.
 - Border waters are potentially the highest risk of introduction of Asian carp into Minnesota. To eliminate this risk the DNR does not transport or give permission to any MN DNR licensed permittee interstate or in-state. Also, all bait harvested on border water does not come to inland waters to be sold as fishing bait or food for fish farms. It stays at the border. This means that spot tails caught in border waters stay in border waters; emerald shiners stay in border waters, not sold inland. Inland bait stays inland.

4. Other Comments:

- I have a private pond with no public access. I do not allow any live bait fishing except night crawlers. We use only artificial lures. I don't harvest minnows so I don't think any of these apply to me. However, I have put a few numbers in the boxes.
- Our operation only deals with rainbow trout and salmon. They are imported as eggs and only leave as processed fish on ice, never alive. Please do not make our operating expenses or regulations increase by lumping us together with the minnow dealers.
- Make licenses specific to a watershed, or give dealer option to have a license that is only for a certain watershed and then not have to do as much tagging.
- Educate the public on the carp problem.
- Bait or fish from clean water is no risk.
- It's hard to understand why state Minnesota trying to make a law and DNR has pass a permit and attached a memo to it that DNR does not have to follow the law they passed of state of Minnesota. This permit makes a free pass to transport other species to other lakes. DNR does not have to obey the law that they passed in the legislature. Why should the DNR Department has a free pass to transport other species to different lakes. And they blame the public. The public will gets fines and get harassed to the point that they can get arrested. But it OK the DNR Department does not have to follow the law they made to correct this problem. We have a big problem in the legislature. Need to be corrected before you start arresting the public.
- Who allow Asian carp to be raised in the US and Arkansas?
- Although reasonable measures of regulations would be acceptable, anything that would severely limit the ability of fisher people, especially kids, to utilize bait will be catastrophic for our state. Industries from tourism, to bait, to fishing need to be strongly considered, as damage to these industries could be worse than the threat of invasive species. Continuous education should be pursued.
- I have seen many local as well as outstate people seining shiners and keep all fish, minnows without sorting any. This should be controlled by only allowing limited trapping (by non-commercial people) of minnows and stop wide spread seining by those not commercially licensed and trained.
- Until established populations become present and the major river systems have locks and dams closed or other barriers in place it is pointless to restrict the industry.
- I wouldn't be opposed to implementing a system where you buy rights to trap certain ponds and all those ponds are tested and you can have certain rules for each pond so when you are pulled over you have your ponds listed and rules you need to follow for that pond.
- Education of the general public! Individual fisherman cannot harvest any bait from ponds or rivers without the proper license or education.
- No sorting methods for removing Asian carp would be fool proof. Safest state to get minnows without risk of Asian carp is North Dakota not Minnesota. Penalties currently used are stiff enough but more enforcement of current laws are needed.
- You will never be able to stop this completely. We will only be able to slow this down. However - too strict of restrictions will result in people not fishing because they won't be able to use live bait which will result in lost revenue for the state cuz they just won't fish.

- Correspondence with Amy Klobuchar indicated that federal money was made available to preserve a way of life and to keep 40,000 fishing related jobs in place. That money isn't there to put us out of business.
- In any case I hope that the bait industry is considered to be a great asset to MN and that its future is not put in jeopardy by too many regulations.
- I believe the limit on personal use for bait should not only be reduced but monitored more strict. I've seen it many times, taking over there amount. And also going lake to lake with the same equipment. These people doing this aren't educated enough and are probably going to be the ones who move all these invasive species.
- If these fish swim up the Mississippi and Minnesota rivers and spawn eventually they will spread to all water bodies connected to them. It is unlikely you will develop successful control methods, so please don't pass a bunch of laws which will only make life miserable for people involved in aquaculture.
- Looks like live bait harvesters are being put in the spotlight as the biggest threat for Asian carp being introduced into MN waters from the last survey results as these listed: According to the last survey: 1. Ban spot tail shiners 2. No live minnows harvested in public lakes or rivers 3. Only allow bait harvested on same lake it will be used 4. Restrict minnow harvest to zones with one dealer/zone like commercial systems. In regard to #4, who would be that dealer? A fish farmer? Remember how it all started? A fish farmer's pond close to a river - the river floods - Asian carp was introduced in to the river. Why was Asian carp even in the United States?

Response Summary by License Type

A. Aquatic Farm/Private Fish Hatchery

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	11
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2. Please take a look at the attached list of identified risks and potential solutions developed by the core group (taking into account all responses received from the July 2012 questionnaire). Each potential solution is numbered. Please place numbers from the list into the categories listed below to indicate when (if ever) you think a potential solution should go into effect. Please note that at this time the DNR has no plans to pursue any of these potential solutions, we are simply looking for feedback to aid us in making recommendations to the legislature.

Potential solution	Never implement	Implement now (as soon as possible)	Implement if reproducing populations of Asian carp become established in MN
Required education for minnow retailers, potential penalties for selling AIS	1	5	1
Required training and re-certification on AIS for all commercial license holders	2	2	2
Required HACCP training and plans for all commercial license holders	3	0	2
Required HACCP training and plans for commercial license holders who work in	0	1	4

affected areas of the state			
Set up a system for fisheries to do spot checks to ensure HACCP plans are being followed	0	1	4
Develop commercial operations to limit invasive species (or pay for their removal)	0	1	4
Mandatory reporting of source locations for minnows	0	5	1
Shift to in-state bait for feeding hatchery fish	0	2	3
eDNA tests on waters harvested and stocked	0	2	3
eDNA testing on loads of minnows	1	2	3
Public education campaign (i.e. aquarium displays, schools, fairs, etc.)	0	7	0
Reduce limit of minnows harvested for personal use	2	2	1
Separate rivers and streams from lakes, ponds, and unconnected wetlands in minnow harvest regulations	0	3	3
Develop a specific list of species that can be used as bait in Minnesota (exclude species that look similar to juvenile Asian carp)	0	2	3
Do not allow license holders who have had their license revoked for violation to have a family member purchase the license then work under the family member's license	1	4	1
Increased penalties for violation of current laws related to this topic (i.e. importing live bait)	0	5	1
Obtain funding to oversee/coordinate risk reduction measures	0	3	2
Increased research to develop better sorting methods that would separate out Asian carp	0	7	1

3. Do you have suggestions for potential solutions that are not addressed on this list?

- Develop a reward system (rebate) for returning live minnows to dealer.
- No bait or fish harvest from water with Asian carp
- Get rid of these carp ASAP. Any person taking fish (carps) from infested waters needs strict compliance with rules and strict enforcement.
- Don't impose additional regulations unless absolutely required. Don't overreact.
- None- I have a recreational private fish hatchery. Tough problem - good luck. Do not sell, not an expert on these issues.

4. Other Comments:

- I have a private pond with no public access. I do not allow any live bait fishing except night crawlers. We use only artificial lures. I don't harvest minnows so I don't think any of these apply to me. However, I have put a few numbers in the boxes.
- Our operation only deals with rainbow trout and salmon. They are imported as eggs and only leave as processed fish on ice, never alive. Please do not make our

operating expenses or regulations increase by lumping us together with the minnow dealers.

- Bait or fish from clean water is no risk.

B. Aquarium Facility

1. Please indicate the type of commercial license you currently hold (choose all the apply):

b.	Aquarium Facility	1
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2. Please take a look at the attached list of identified risks and potential solutions developed by the core group (taking into account all responses received from the July 2012 questionnaire). Each potential solution is numbered. Please place numbers from the list into the categories listed below to indicate when (if ever) you think a potential solution should go into effect. Please note that at this time the DNR has no plans to pursue any of these potential solutions, we are simply looking for feedback to aid us in making recommendations to the legislature.

Potential solution	Never implement	Implement now (as soon as possible)	Implement if reproducing populations of Asian carp become established in MN
Required education for minnow retailers, potential penalties for selling AIS	1	0	0
Required training and re-certification on AIS for all commercial license holders	1	0	0
Required HACCP training and plans for all commercial license holders	1	0	0
Required HACCP training and plans for commercial license holders who work in affected areas of the state	1	0	0
Set up a system for fisheries to do spot checks to ensure HACCP plans are being followed	1	0	0
Develop commercial operations to limit invasive species (or pay for their removal)	0	0	1
Mandatory reporting of source locations for minnows	1	0	0
Shift to in-state bait for feeding hatchery fish	1	0	0
eDNA tests on waters harvested and stocked	1	0	0
eDNA testing on loads of minnows	1	0	0
Public education campaign (i.e. aquarium displays, schools, fairs, etc.)	0	0	1
Reduce limit of minnows harvested for personal use	1	0	0
Separate rivers and streams from lakes, ponds, and unconnected wetlands in minnow harvest regulations	1	0	0
Develop a specific list of species that can be used as bait in Minnesota (exclude species that look similar to juvenile Asian carp)	1	0	0
Do not allow license holders who have had their license revoked for violation to have a family member purchase the license then work	1	0	0

under the family member's license			
Increased penalties for violation of current laws related to this topic (i.e. importing live bait)	1	0	0
Obtain funding to oversee/coordinate risk reduction measures	0	0	1
Increased research to develop better sorting methods that would separate out Asian carp	0	0	1

3. Do you have suggestions for potential solutions that are not addressed on this list?

- Close lock at St. Anthony.

4. Other Comments:

- If these fish swim up the Mississippi and Minnesota rivers and spawn, eventually they will spread to all water bodies connected to them. It is unlikely you will develop successful control methods, so please don't pass a bunch of laws which will only make life miserable for people involved in aquaculture.

C. Minnow Dealer

1. Please indicate the type of commercial license you currently hold (choose all the apply):

c.	Minnow Dealer	21
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2. Please take a look at the attached list of identified risks and potential solutions developed by the core group (taking into account all responses received from the July 2012 questionnaire). Each potential solution is numbered. Please place numbers from the list into the categories listed below to indicate when (if ever) you think a potential solution should go into effect. Please note that at this time the DNR has no plans to pursue any of these potential solutions, we are simply looking for feedback to aid us in making recommendations to the legislature.

Potential solution	Never implement	Implement now (as soon as possible)	Implement if reproducing populations of Asian carp become established in MN
Required education for minnow retailers, potential penalties for selling AIS	4	4	7
Required training and re-certification on AIS for all commercial license holders	3	3	8
Required HACCP training and plans for all commercial license holders	5	1	6
Required HACCP training and plans for commercial license holders who work in affected areas of the state	3	5	8
Set up a system for fisheries to do spot checks to ensure HACCP plans are being followed	6	3	7
Develop commercial operations to limit invasive species (or pay for their removal)	7	6	3
Mandatory reporting of source locations for minnows	6	4	3

Shift to in-state bait for feeding hatchery fish	2	8	2
eDNA tests on waters harvested and stocked	7	1	5
eDNA testing on loads of minnows	7	1	4
Public education campaign (i.e. aquarium displays, schools, fairs, etc.)	1	14	3
Reduce limit of minnows harvested for personal use	6	10	2
Separate rivers and streams from lakes, ponds, and unconnected wetlands in minnow harvest regulations	5	4	4
Develop a specific list of species that can be used as bait in Minnesota (exclude species that look similar to juvenile Asian carp)	6	4	4
Do not allow license holders who have had their license revoked for violation to have a family member purchase the license, then work under the family member's license	4	10	1
Increased penalties for violation of current laws related to this topic (i.e. importing live bait)	3	8	3
Obtain funding to oversee/coordinate risk reduction measures	3	11	2
Increased research to develop better sorting methods that would separate out Asian carp	2	7	4

3. Do you have suggestions for potential solutions that are not addressed on this list?

- Stop all personal use of minnows in the state. Only licensed dealers allowed to trap.
- Stop all minnow trapping without a minnow dealer license.
- It's too late. Should've worried about it 10 years ago. You have to kill off all the lakes to correct the problem.
- Persons from out state MN should not be allowed to seine for shiners. People who are not specifically licensed, i.e. minnow dealers, commercial fisheries, etc. should only be allowed to trap, not seine, and use these minnows only on the lake where they were trapped.
- Most minnow dealers use private ponds not connected to rivers or outlets
- 1) Stop illegal stocking! 2) Train retailers. 3) Learn to live with a natural process.
- Yes, get away from PC and find out where source of minnows are, talk to people that trap minnows.
- Kill all cormorants & pelicans now (as soon as possible). If reproducing populations of Asian carp become established in Minnesota blame the DNR the people in charge. The cormorants and pelican's spread all problem's = zebra mussels, VHS, all kinds of carp, aquatic veg., they feed on all the states fish we try to raise for the future of our kids.

4. Other Comments:

- Make licenses specific to a watershed, or give dealer option to have a license that is only for a certain watershed and then not have to do as much tagging.
- Educate the public on the carp problem.

- It's hard to understand why state Minnesota trying to make a law and DNR has pass a permit and attached a memo to it that DNR does not have to follow the law they passed of state of Minnesota. This permit makes a free pass to transport other species to other lakes. DNR does not have to obey the law that they passed in the legislature. Why should the DNR Department has a free pass to transport other species to different lakes. And they blame the public. The public will get fines and get harassed to the point that they can get arrested. But it OK the DNR Department does not have to follow the law they made to correct this problem. We have a big problem in the legislature. Need to be corrected before you start arresting the public.
- Although reasonable measures of regulations would be acceptable, anything that would severely limit the ability of fisher people, especially kids, to utilize bait will be catastrophic for our state. Industries from tourism, to bait, to fishing need to be strongly considered, as damage to these industries could be worse than the threat of invasive species. Continuous education should be pursued.
- I have seen many local as well as outstate people seining shiners and keep all fish, minnows without sorting any. This should be controlled by only allowing limited trapping (by non-commercial people) of minnows and stop wide spread seining by those not commercially licensed and trained.
- Education of the general public! Individual fisherman cannot harvest any bait from ponds or rivers without the proper license or education.
- You will never be able to stop this completely. We will only be able to slow this down. However - to strict of restrictions will result in people not fishing because they won't be able to use live bait which will result in lost revenue for the state cuz they just won't fish.
- Correspondence with Amy Klobuchar indicated that federal money was made available to preserve a way of life and to keep 40,000 fishing related jobs in place. That money isn't there to put us out of business.

D. Commercial Netting of Fish

1. Please indicate the type of commercial license you currently hold (choose all the apply):

d.	Commercial Fishing	4
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2. Please take a look at the attached list of identified risks and potential solutions developed by the core group (taking into account all responses received from the July 2012 questionnaire). Each potential solution is numbered. Please place numbers from the list into the categories listed below to indicate when (if ever) you think a potential solution should go into effect. Please note that at this time the DNR has no plans to pursue any of these potential solutions, we are simply looking for feedback to aid us in making recommendations to the legislature.

Potential solution	Never implement	Implement now (as soon as possible)	Implement if reproducing populations of Asian carp become established in MN
Required education for minnow retailers, potential penalties for selling AIS	0	2	0
Required training and re-certification on AIS for all commercial license holders	1	1	0
Required HACCP training and plans for all	1	0	0

commercial license holders			
Required HACCP training and plans for commercial license holders who work in affected areas of the state	1	1	0
Set up a system for fisheries to do spot checks to ensure HACCP plans are being followed	1	0	0
Develop commercial operations to limit invasive species (or pay for their removal)	0	2	2
Mandatory reporting of source locations for minnows	0	1	0
Shift to in-state bait for feeding hatchery fish	0	2	0
eDNA tests on waters harvested and stocked	0	1	0
eDNA testing on loads of minnows	0	2	0
Public education campaign (i.e. aquarium displays, schools, fairs, etc.)	0	2	0
Reduce limit of minnows harvested for personal use	0	2	0
Separate rivers and streams from lakes, ponds, and unconnected wetlands in minnow harvest regulations	0	1	0
Develop a specific list of species that can be used as bait in Minnesota (exclude species that look similar to juvenile Asian carp)	0	3	0
Do not allow license holders who have had their license revoked for violation to have a family member purchase the license then work under the family member's license	0	3	0
Increased penalties for violation of current laws related to this topic (i.e. importing live bait)	0	2	0
Obtain funding to oversee/coordinate risk reduction measures	0	2	0
Increased research to develop better sorting methods that would separate out Asian carp	0	1	0

3. Do you have suggestions for potential solutions that are not addressed on this list?

- none

4. Other Comments:

- none

E. Aquatic Farm/Private Fish Hatchery and Minnow Dealer

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	7
c.	Minnow Dealer	

2. Please take a look at the attached list of identified risks and potential solutions developed by the core group (taking into account all responses received from the July 2012 questionnaire). Each potential solution is numbered. Please place numbers from the list into the categories listed below to indicate when (if ever) you think a potential solution should go into effect. Please note that at this time the DNR has no plans to pursue any of these potential solutions, we are simply looking for feedback to aid us in making recommendations to the legislature.

Potential solution	Never implement	Implement now (as soon as possible)	Implement if reproducing populations of Asian carp become established in MN
Required education for minnow retailers, potential penalties for selling AIS	3	3	0
Required training and re-certification on AIS for all commercial license holders	2	3	1
Required HACCP training and plans for all commercial license holders	2	0	3
Required HACCP training and plans for commercial license holders who work in affected areas of the state	2	2	4
Set up a system for fisheries to do spot checks to ensure HACCP plans are being followed	2	1	2
Develop commercial operations to limit invasive species (or pay for their removal)	3	2	1
Mandatory reporting of source locations for minnows	6	0	0
Shift to in-state bait for feeding hatchery fish	4	1	1
eDNA tests on waters harvested and stocked	3	1	2
eDNA testing on loads of minnows	4	0	0
Public education campaign (i.e. aquarium displays, schools, fairs, etc.)	2	1	2
Reduce limit of minnows harvested for personal use	3	3	0
Separate rivers and streams from lakes, ponds, and unconnected wetlands in minnow harvest regulations	3	2	1
Develop a specific list of species that can be used as bait in Minnesota (exclude species that look similar to juvenile Asian carp)	5	0	0
Do not allow license holders who have had their license revoked for violation to have a family member purchase the license then work under the family member's license	6	1	0
Increased penalties for violation of current laws related to this topic (i.e. importing live bait)	4	1	0
Obtain funding to oversee/coordinate risk reduction measures	3	1	1
Increased research to develop better sorting methods that would separate out Asian carp	2	2	1

3. Do you have suggestions for potential solutions that are not addressed on this list?
 - Stop raising Asian carp in Arkansas. Stop importation of shiners from Arkansas ASAP. Stop importation of minnows even for export ASAP. Close down lock on rivers if reproducing population of Asian carp become established in Minnesota.
 - Major river barriers should be the very first action taken (Mississippi, Minnesota, & St. Croix).
 - Border waters are potentially the highest risk of introduction of Asian carp into Minnesota. To eliminate this risk the DNR does not transport or give permission to any MN DNR licensed permittee interstate or in-state. Also, all bait harvested on border water does not come to inland waters to be sold as fishing bait or food for fish farms. It stays at the border. This means that spot tails caught in border waters stay in border waters; emerald shiners stay in border waters, not sold inland. Inland bait stays inland.
4. Other Comments:
 - Who allowed Asian carp to be raised in the US & Arkansas?
 - Until established populations become present and the major river systems have locks and dams closed or other barriers in place it is pointless to restrict the industry.
 - I believe the limit on personal use for bait should not only be reduced but monitored more strict. I've seen it many times, taking over there amount. And also going lake to lake with the same equipment. These people doing this aren't educated enough and are probably going to be the ones who move all these invasive species.
 - Looks like live bait harvesters are being put in the spotlight as the biggest threat for Asian carp being introduced into MN waters from the last survey results as these listed: According to the last survey: 1. Ban spot tail shiners 2. No live minnows harvested in public lakes or rivers 3. Only allow bait harvested on same lake it will be used 4. Restrict minnow harvest to zones with one dealer/zone like commercial systems. In regard to #4, who would be that dealer? A fish farmer? Remember how it all started? A fish farmer's pond close to a river - the river floods - Asian carp was introduced in to the river. Why was Asian carp even in the United States?

F. Aquatic Farm/Private Fish Hatchery and Minnow Dealer and Commercial Netting of Fish

1. Please indicate the type of commercial license you currently hold (choose all the apply):

a.	Aquatic Farm/Private Fish Hatchery	0
c.	Minnow Dealer	
d.	Commercial Fishing	

F. No license type identified

1. Please indicate the type of commercial license you currently hold (choose all the apply):

	No license type identified	10
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2. Please take a look at the attached list of identified risks and potential solutions developed by the core group (taking into account all responses received from the July 2012 questionnaire). Each potential solution is numbered. Please place numbers from the list into the categories listed below to indicate when (if ever) you think a potential solution should go into effect. Please note that at this time the DNR has no plans to pursue any of these potential solutions, we are simply looking for feedback to aid us in making recommendations to the legislature.

Potential solution	Never implement	Implement now (as soon as possible)	Implement if reproducing populations of Asian carp become established in MN
Required education for minnow retailers, potential penalties for selling AIS	2	4	1
Required training and re-certification on AIS for all commercial license holders	3	1	3
Required HACCP training and plans for all commercial license holders	4	1	2
Required HACCP training and plans for commercial license holders who work in affected areas of the state	1	4	2
Set up a system for fisheries to do spot checks to ensure HACCP plans are being followed	5	2	0
Develop commercial operations to limit invasive species (or pay for their removal)	1	3	6
Mandatory reporting of source locations for minnows	2	3	3
Shift to in-state bait for feeding hatchery fish	4	3	1
eDNA tests on waters harvested and stocked	4	0	4
eDNA testing on loads of minnows	5	1	1
Public education campaign (i.e. aquarium displays, schools, fairs, etc.)	0	6	1
Reduce limit of minnows harvested for personal use	1	5	1
Separate rivers and streams from lakes, ponds, and unconnected wetlands in minnow harvest regulations	0	6	2
Develop a specific list of species that can be used as bait in Minnesota (exclude species that look similar to juvenile Asian carp)	1	4	2
Do not allow license holders who have had their license revoked for violation to have a family member purchase the license then work under the family member's license	2	4	1
Increased penalties for violation of current laws related to this topic (i.e. importing live bait)	2	2	3
Obtain funding to oversee/coordinate risk reduction measures	2	4	1
Increased research to develop better sorting methods that would separate out Asian carp	2	4	3

3. Do you have suggestions for potential solutions that are not addressed on this list?
 - I only trap leeches and I sort them so I don't have a whole lot of input on the problem.
 - Harvest of minnows for personal use will have to be banned in areas as they become infested.
 - Focus on those who commercially move from one public water to another place.
4. Other Comments:
 - I wouldn't be opposed to implementing a system where you buy rights to trap certain ponds and all those ponds are tested and you can have certain rules for each pond so when you are pulled over you have your ponds listed and rules you need to follow for that pond.
 - No sorting methods for removing Asian carp would be fool proof. Safest state to get minnows without risk of Asian carp is North Dakota not Minnesota. Penalties currently used are stiff enough but more enforcement of current laws are needed.
 - In any case I hope that the bait industry is considered to be a great asset to MN and that its future is not put in jeopardy by too many regulations.

• **Appendix J: Neighboring State and Province Questionnaire Results**

1. Please indicate the state/province you represent:

a.	Iowa	1
b.	North Dakota	1
c.	South Dakota	1
d.	Wisconsin	1
e.	Ontario	1

2. Are Asian carp (bighead, black, grass, or silver carp) currently present in your state/province?

a.	Yes	4
	• Iowa	
	• North Dakota	
	• South Dakota	
	• Wisconsin	
b.	No	1
	• Ontario	

3. Which species of Asian carp are present in your state/province, and what is their current status?

	bighead carp	black carp	grass carp	silver carp
Established	2	0	2	2
	Iowa		Iowa	Iowa
	South Dakota		South Dakota	South Dakota
Collected	1	0	2	2
	Wisconsin		North Dakota	North Dakota
			Wisconsin	Wisconsin
Not present	2	5	1	1
	North Dakota	Iowa	Ontario	Ontario
	Ontario	North Dakota		
		Ontario		
		South Dakota		
		Wisconsin		

4. Does your state/province allow importation of genetically modified (diploid or triploid) Asian carp?

a.	Yes	2
	• Iowa	
	• South Dakota	
b.	No	3
	• North Dakota	
	• Ontario	
	• Wisconsin	

5. If you answered yes to question 4, which species do you allow and for what purpose?

	diploid	triploid	purpose (include who is allowed to import)
Bighead carp	0	0	
Black carp	0	0	
Grass carp	1	2	
	Iowa	Iowa	<ul style="list-style-type: none"> No permits are currently required to import, sell, or purchase grass carp in Iowa. No aquaculture facilities produce their own grass carp. All are purchased from out of state and grown and/or sold in Iowa.
		South Dakota	<ul style="list-style-type: none"> Vegetation control on small private waters
Silver carp	0	0	

6. Does your state/province allow the importation of bait by anglers?

a.	Yes	1
	<ul style="list-style-type: none"> Iowa 	
b.	No	4
	<ul style="list-style-type: none"> North Dakota Ontario South Dakota Wisconsin 	

7. Does your state/province allow the importation of bait for commercial retail sale?

a.	Yes	4
	<ul style="list-style-type: none"> Iowa North Dakota South Dakota Wisconsin 	
b.	No	1
	<ul style="list-style-type: none"> Ontario 	

8. Does your state/province have restrictions on what species can be used as bait?

a.	Yes	4
	<ul style="list-style-type: none"> Iowa North Dakota Ontario South Dakota 	
b.	No	1
	<ul style="list-style-type: none"> Wisconsin 	

9. If you answered yes to question 8, what species are allowed?

Iowa	<ul style="list-style-type: none"> Iowa Administrative Code 571-89.1 lists the approved aquaculture species that can be propagated and sold, Iowa Code 481A defines species that can be used as bait.
North Dakota	<ul style="list-style-type: none"> fathead minnow, brook stickleback, creek chub, white sucker
Ontario	<ul style="list-style-type: none"> <u>Minnows</u>: Blacknose shiner; blackchin shiner; brassy minnow; bluntnose minnow; central stoneroller; common shiner; creek chub; eastern blacknose dace; emerald shiner; fallfish; fathead minnow; finescale dace; golden shiner; lake chub; hornyhead chub; longnose dace; mimic shiner; redbelly dace; pearl dace; redbelly shiner; river chub; roseface shiner; sand shiner; spotfin shiner; spottail shiner; striped shiner; <u>Suckers</u>: longnose sucker; white sucker; silver redhorse; shorthorn redhorse; northern hogsucker; <u>Other</u>: central mudminnow; lake herring (cisco); troutperch; <u>Sticklebacks</u>: threespine stickleback; ninespine stickleback; brook stickleback; <u>Sculpins</u>: slimy sculpin; mottled sculpin; <u>Darters</u>: blackside; fantail; Iowa; Johnny; least; rainbow; river; tessellated; logperch
South Dakota	<ul style="list-style-type: none"> fathead minnow, white sucker, creek chub, flathead chub, Western silvery minnow, plains minnow, golden shiner, emerald shiner, spottail shiner, gizzard shad, tiger salamander, leopard frog, native crayfish, freshwater shrimp, leeches

10. Are Asian carp species regulated in your state/province to make activities such as possession, sale, and introduction illegal? If so, how are they categorized (i.e. prohibited, regulated, unlisted, etc.)?

	regulated		category
	yes	no	
Bighead carp	5	0	
	Iowa		prohibited
	North Dakota		prohibited
	Ontario		regulated*
	South Dakota		prohibited
	Wisconsin		prohibited
Black carp	5	0	
	Iowa		prohibited
	North Dakota		prohibited
	Ontario		regulated*
	South Dakota		prohibited
	Wisconsin		prohibited
Grass carp	4	1	
		Iowa	
	North Dakota		prohibited
	Ontario		regulated*
	South Dakota		prohibited
	Wisconsin		prohibited

Silver carp	5	0	
	Iowa		prohibited
	North Dakota		prohibited
	Ontario		regulated*
	South Dakota		prohibited
	Wisconsin		prohibited

* regulated = possession, sale, and introduction of live fish prohibited

11. Does your state/province currently have specific regulations in place to prevent the spread of Asian carp?

a.	Yes	5
	• Iowa	
	• North Dakota	
	• Ontario	
	• South Dakota	
	• Wisconsin	
b.	No	0

12. If you answered yes to question 11, please briefly describe these regulations.

Iowa	<ul style="list-style-type: none"> Bighead, silver, and black carp are prohibited from being possessed, sold, imported, propagated, traded. Permits are given to commercial fishermen to collect and sell bighead and silver carp, but they must be transported dead. A person can also keep any bighead or silver carp caught if killed on site and transported dead. All Asian carp are also not legal bait.
North Dakota	<ul style="list-style-type: none"> Illegal to possess or transport any of these 4 species of Asian carp. Also illegal to collect live bait fish from the James River because of the presence of silver carp, since their first detection in this river in 2011.
Ontario	<ul style="list-style-type: none"> importation, possession and sale of live fish prohibited
South Dakota	<ul style="list-style-type: none"> SD Admin Rule 41:10:04:02---No person may possess, transport, sell, purchase, or propagate an aquatic nuisance species SD Admin Rule 41:09:04:03. Waters open to taking of bait: Waters where Asian carp have been found are closed to both commercial and non-commercial bait harvest.
Wisconsin	<ul style="list-style-type: none"> Wisconsin Admin. Rule NR 40 regulates the possession, transportation, transfer and introduction of regulated species (Asian Carp - Prohibited).

13. Is your state/province **currently considering** modifying regulations in response to Asian carp?

a.	Yes	3
	• Iowa	
	• Ontario	
	• South Dakota	
b.	No	2
	• North Dakota	
	• Wisconsin	

14. Is your state/province **currently in the process of** modifying regulations in response to Asian carp?

a.	Yes	1
	• South Dakota	
b.	No	4
	• Iowa	
	• North Dakota	
	• Ontario	
	• Wisconsin	

15. What steps has your state/province taken to respond to the threat of Asian carp introduction (choose all that apply)?

a.	formed a task force	1
	• Ontario	
b.	created an action plan	1
	• Ontario	
c.	made regulatory changes	4
	• Iowa	
	• North Dakota	
	• Ontario	
	• South Dakota	
d.	classified Asian carp as an regulated species	5
	• Iowa	
	• North Dakota	
	• Ontario	
	• South Dakota	
	• Wisconsin	
e.	other	1
	• South Dakota: Worked with bait industry to improve communication	

16. If your state/province has made any regulatory changes in response to the threat of Asian carp introduction, what were those changes meant to effect (choose all that apply)?

a.	bait harvest for personal use	5
	• Iowa	
	• North Dakota	
	• Ontario	
	• South Dakota	
	• Iowa	
b.	bait harvest for commercial use	4
	• North Dakota	
	• Ontario	
	• South Dakota	
	• Wisconsin	
c.	importation of live fish	5
	• Iowa	
	• North Dakota	
	• Ontario	
	• South Dakota	
	• Iowa	
d.	importation of live minnows for bait	3
	• North Dakota	
	• Ontario	
	• Wisconsin	
e.	importation of live minnows for forage	2
	• Ontario	
	• Wisconsin	
f.	general knowledge of license holders transporting live fish	4
	• Iowa	
	• North Dakota	
	• Ontario	
	• Wisconsin	
g.	other	1
	• Ontario: illegal to dispose of bait and water in bait bucket back into the water or within 30 m of a water body	

17. Comments?

Iowa	<ul style="list-style-type: none"> We hope to add diploid grass carp to the list of prohibited aquatic invasive species in the new future.
North Dakota	<ul style="list-style-type: none"> Grass carp were documented as formerly being found in ND, but are not known to currently be present. Silver carp adults have been confirmed as present in the James River, but to date no indication of reproduction or recruitment. Most regulation changes in ND were implemented in response to overall ANS concerns and threats, not necessarily just to address concerns about Asian carp.