

Minnesota Department of Natural Resources AIS CBSM Project

Barriers and Benefits Matrix

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This document is part of the Minnesota Department of Natural Resources (DNR) Invasive Species Program's Community-Based Social Marketing (CBSM) project. The project aims to better promote the adoption of desirable aquatic invasive species (AIS) prevention behaviors and create positive social norms around AIS prevention in Minnesota.

An essential component of developing an effective behavior change program is to identify the barriers and benefits associated with the targeted behavior change. This document summarizes the barriers and benefits associated with the target behaviors, as reported by participants in the quantitative and qualitative research conducted. This list is not exhaustive and does not include every barrier and benefit raised by every participant.

Possible strategies are also identified that could help eliminate real or perceived barriers and promote real or perceived benefits to inform development of the behavior change programs. Full strategies are expected to be fleshed out in greater detail in Phase 2 of the project during detailed program design.



Developed for the Minnesota DNR Invasive Species Program: Barriers and Benefits Matrix

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Anglers Survey

Almost all participants in the survey of anglers identified benefits of performing the behaviors listed, while fewer than half identified barriers.

It is worth noting that survey respondents generally reported high awareness and understanding of AIS and the risks associated with them. This is helpful as it provides a strong foundation for a behavior change program.

Audience: Anglers that use live bait

Behavior: Proper disposal of unused live bait (general)

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some anglers that use live bait report the following barriers to proper disposal of unused bait:</p> <ul style="list-style-type: none"> • They have limited knowledge because they: <ul style="list-style-type: none"> ○ Don't realize bait could be invasive ○ Don't see a clear reason to dispose in the preferred manner • They want other fish to feed on them 	<p>Some anglers that use live bait identified the following benefits of proper disposal of unused bait:</p> <ul style="list-style-type: none"> • They can make a difference through action by: <ul style="list-style-type: none"> ○ Helping to prevent the spread of AIS ○ Having a positive impact on the community and environment • They comply with Minnesota law • They avoid consequences (fines) 	<ul style="list-style-type: none"> • Post information/signage on AIS • Provide clear rules and guidelines on proper and humane disposal techniques • Reinforce that people are doing the right thing through communication and recognition • Seek commitments to engage in proper disposal techniques



Barriers	Benefits	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • They don't want bait to go to waste • They don't want to kill live bait (moral concern) • They perceive it takes less effort to release it than dispose of it properly (ease) • They have a misunderstanding of the risks because they: <ul style="list-style-type: none"> ○ Believe they are releasing it in same body of water that the bait originated ○ They are confident that bait is not invasive • They are skeptical of the risks and the need for regulations 		

Behavior: Dispose of unused live bait in the garbage

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some anglers that use live bait report the following barriers to disposing unused live bait in the garbage:</p> <ul style="list-style-type: none"> • They don't have access to on-site disposal amenities 	<p>Some anglers report the following benefit of disposing of live bait in the garbage:</p> <ul style="list-style-type: none"> • Find it easier to dispose of live bait on site than taking it home to dispose 	<ul style="list-style-type: none"> • Provide garbage containers or other disposal amenities at boat landing areas, fishing piers and access points • Provide designated water drainage locations at boat landing areas



Behavior: Take unused live bait and packaging home for proper disposal

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some anglers that use live bait report the following barriers to taking live bait and packaging home for proper disposal:</p> <ul style="list-style-type: none"> • They have concerns about odor and attracting animals • They find it impractical due to long travel times to get home • They have alternative disposal preferences - such as disposing it before leaving water body or on the way home 	<p>Some anglers that use live bait identified the following benefits of taking live bait and packaging home for proper disposal:</p> <ul style="list-style-type: none"> • It can be used for fertilizer or compost 	<ul style="list-style-type: none"> • Communicate options for taking home (e.g. disposal, fertilizer, save for future use) • Provide tips and prompts for clean and safe transportation of bait

Behavior: Take unused live bait home for future reuse

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some anglers that use live bait report the following barriers to taking unused live bait home for future reuse:</p> <ul style="list-style-type: none"> • They have limited knowledge of proper practices 	<p>Some anglers that use live bait identified the following benefits of taking unused live bait home for future reuse:</p> <ul style="list-style-type: none"> • They save the bait for future use • They avoid purchasing bait next time • The bait is not wasted • They don't kill the bait 	<ul style="list-style-type: none"> • Encourage reuse or giving to someone else as alternative to wasteful disposal • Communicate and provide prompts on proper techniques for draining and refilling bait bucket water for transport • Provide designated water drainage locations at boat landing areas



Barriers	Benefits	Potential Barrier Removal Strategies
		<ul style="list-style-type: none"> • Provide tips and prompts for clean and safe transportation of bait

Audience: Anglers that use boats

Behavior: Clean and drain boats and trailers

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some anglers that use boats report the following barriers to cleaning and draining boats and trailers:</p> <ul style="list-style-type: none"> • They do not have the equipment/tools needed • They lack access to running water at launches • They encounter too much boat traffic at launches • There is not enough space at launches • They see no need to clean and drain their boat because it: <ul style="list-style-type: none"> ○ Stays in the water or on a lift and is not trailered ○ Is only ever used on one body of water 	<p>Some anglers that use boats identified the following benefits of cleaning and draining boats and trailers:</p> <ul style="list-style-type: none"> • They make a difference through action to: <ul style="list-style-type: none"> ○ Help prevent the spread of AIS ○ Have a positive impact on the community and environment • They are complying with Minnesota law • They avoid consequences (fines) • By cleaning and draining they are following good maintenance practices for the boat 	<ul style="list-style-type: none"> • Provide access to running water • Having staffed decontamination units (hot water, high pressure) available • Have cleaning tools (sponges, towels, brushes, grabbers) available • Post information/signage on AIS • Reinforce that people are doing the right thing through communication and recognition • Seek commitments to engage in proper cleaning and draining techniques



Shoreline Residents Survey

The participants in the survey of shoreline residents were asked what could prevent them from adopting certain behaviors regarding the movement of water-related equipment, and what would motivate them to adopt the same behaviors.

Similar to the participants in the angler survey, shoreline resident survey respondents generally reported high awareness and understanding of AIS and the risks associated with them. This is helpful as it provides a strong foundation for a behavior change program.

Audience: Shoreline residents that have and move water-related equipment

Behavior: Remove visible debris

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some shoreline residents that have and move water-related equipment report the following barriers to removing visible debris:</p> <ul style="list-style-type: none"> • They lack tools and equipment to clean with • They find it difficult to maneuver or access the equipment • They find it to be a difficult activity to do • They are physically unable to do so 	<p>Some shoreline residents that have and move water-related equipment identified the following benefits of removing visible debris:</p> <ul style="list-style-type: none"> • They make a difference through action by: <ul style="list-style-type: none"> ○ Helping to prevent the spread of AIS ○ Having a positive impact on the community and environment 	<ul style="list-style-type: none"> • Encourage Lake Service Providers (LSPs) to assist with purchase/transfer of equipment as AIS-trained and permitted businesses • Provide clear rules and guidelines on proper techniques (when, how, who) • Target communication to private buyers and sellers of equipment • Reinforce that people are doing the right thing through communication and recognition



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Barriers	Benefits	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • They think that cleaning is not necessary because: <ul style="list-style-type: none"> ○ The equipment is being moved within the same lake ○ The lake it is coming from does not have AIS • They assume that the seller has removed visible debris (when the equipment is purchased from someone else) 	<ul style="list-style-type: none"> • They are part of the social norm by doing what others are doing • They are complying with Minnesota law • They avoid consequences (fines) • They are conducting a good maintenance practice for the equipment 	<ul style="list-style-type: none"> • Seek commitments to engage in proper practices

Behavior: Wash with high pressure

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some shoreline residents that have and move water-related equipment report the following barriers to washing with high pressure:</p> <ul style="list-style-type: none"> • They lack tools and equipment to wash with high pressure • They find it difficult to maneuver or access the equipment • They think that washing with high pressure is not necessary because: 	<p>Some shoreline residents that have and move water-related equipment identified the following benefits of washing with high pressure:</p> <ul style="list-style-type: none"> • They make a difference through action by: <ul style="list-style-type: none"> ○ Helping to prevent the spread of AIS ○ Having a positive impact on the community and environment 	<ul style="list-style-type: none"> • Encourage Lake Service Providers (LSPs) to assist with purchase/transfer of equipment as AIS-trained and permitted businesses • Provide clear rules and guidelines on proper techniques (when, how, who) • Target communication to private buyers and sellers of equipment • Reinforce that people are doing the right thing through communication and recognition



Barriers	Benefits	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> ○ The equipment being moved within the same lake ○ They believe the lake it is moving from does not have AIS 	<ul style="list-style-type: none"> ● Being part of the social norm by doing what others are doing ● They are complying with Minnesota law ● They avoid consequences (fines) ● They are conducting a good maintenance practice for the equipment 	<ul style="list-style-type: none"> ● Seek commitments to engage in proper practices

Behavior: Rinse with hot water

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some shoreline residents that have and move water-related equipment report the following barriers to rinsing with hot water:</p> <ul style="list-style-type: none"> ● They lack tools and equipment to rinse with hot water ● They don't have access to hot water at the shoreline ● They find it a difficult activity to do ● They find it difficult to maneuver or access the equipment 	<p>Some shoreline residents that have and move water-related equipment identified the following benefits of rinsing with hot water:</p> <ul style="list-style-type: none"> ● They make a difference through action by: <ul style="list-style-type: none"> ○ Helping to prevent the spread of AIS ○ Having a positive impact on the community and environment ● They are part of the social norm by doing what others are doing 	<ul style="list-style-type: none"> ● Encourage Lake Service Providers (LSPs) to assist with purchase/transfer of equipment as AIS-trained and permitted ● Provide clear rules and guidelines on proper techniques (when, how, who) ● Target communication to private buyers and sellers of equipment ● Reinforce that people are doing the right thing through communication and recognition ● Seek commitments to engage in proper practices



Barriers	Benefits	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • They believe that it is unnecessary - air drying will address the problem instead • They think that rinsing with hot water will not help stop AIS • They believe that the buyer is responsible for this, not the seller 	<ul style="list-style-type: none"> • They are complying with Minnesota law • They avoid consequences (fines) • They are conducting a good maintenance practice for the equipment 	

Behavior: Air dry for 21 days

Barriers	Benefits	Potential Barrier Removal Strategies
<p>Some shoreline residents that have and move water-related equipment report the following barriers to air drying the equipment for 21 days before moving it:</p> <ul style="list-style-type: none"> • Feel pressured during the transaction because: <ul style="list-style-type: none"> ○ Sellers want it gone ○ Buyers want it right away • Find the time commitment challenging because: <ul style="list-style-type: none"> ○ Time period of 21 days is too long ○ Buyers want to use right away 	<p>Some shoreline residents that have and move water-related equipment identified the following benefits of air drying the equipment for 21 days:</p> <ul style="list-style-type: none"> • They make a difference through action: <ul style="list-style-type: none"> ○ Helping to prevent the spread of AIS ○ Having a positive impact on the community and environment • They are part of the social norm by doing what others are doing • They are complying with Minnesota law 	<ul style="list-style-type: none"> • Encourage Lake Service Providers (LSPs) to assist with purchase/transfer of equipment as AIS-trained and permitted businesses • Provide clear rules and guidelines on proper techniques (when, how, who) • Target communication to private buyers and sellers of equipment • Reinforce that people are doing the right thing through communication and recognition • Seek commitments to engage in proper practices



Barriers	Benefits	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • Lack space to store equipment on land for 21 days • Think that it is unnecessary 	<ul style="list-style-type: none"> • They avoid consequences (fines) • They are conducting a good maintenance practice for the equipment 	

Aquarium and Retail Plant Trade

The behaviors below were explored with a group of 13 representatives of the aquarium and aquatic plant retail trade in a facilitated session. The group was convened to explore the following objectives:

- Better understand the practices, perspectives and motivators of the retail aquarium/aquatic plant industry related to aquatic invasive species movement in Minnesota;
- Understand the policies, practices and education/information dissemination necessary to guide industry social norms; and
- Build connections with and support from retail trade stakeholders to initiate partnerships with the DNR on AIS programs.

The table below does not include a benefits column. Generally, participants in the facilitated session reported a strong desire to protect the local environment and communities from aquatic invasive species, and to comply with applicable regulations.

Audience: Aquarium and Aquatic Plant Retailers

Behavior: Accurately identify and only sell non/low-risk species

Barriers	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • Fragmented industry comprising different interests and concerns (e.g. water garden retailers and aquarium retailers) - no unified approach to AIS prevention 	<ul style="list-style-type: none"> • Provide clear and concise information about AIS and regulations



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Barriers	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • Limited knowledge: <ul style="list-style-type: none"> ○ Limited awareness and knowledge amongst some ○ Unclear understanding of best practices for compliance with regulations and for preventing the spread of AIS ○ Limited knowledge of alternatives to desirable but prohibited AIS ○ Inadequate training of sales people in chain stores • Regulation challenges: <ul style="list-style-type: none"> ○ Difficult to access and interpret information about regulations ○ Regulations are (or appear to be) complex with multiple tiers ○ Difficult to know if out-of-state suppliers are complying with Minnesota regulations ○ Online retailers may not be aware of/complying with regulations in customers' state ○ Enforcement not strict enough to achieve compliance • Difficult to identify AIS • AIS contamination <ul style="list-style-type: none"> ○ AIS sometimes present with other species (e.g. hitchhikers) ○ AIS sometimes unlabeled or mislabeled in orders received from suppliers • Limited sources for good alternatives to AIS <ul style="list-style-type: none"> ○ Lack of local water garden plant suppliers • Lack of concern about AIS by some 	<ul style="list-style-type: none"> • Increase communication to retailers and trade associations • Publish a simple and clear list of AIS (in collaboration with other/surrounding states) • Implement voluntary certification program ("Certified Invasive Free") to implement best practices and provide recognition • Industry could promote certified suppliers and retailers to reward and encourage others to certify • Seek commitments from retailers to ensure they do not buy prohibited species • Send information on Minnesota regulations to suppliers • Purchase from suppliers and test for compliance, let industry know the results • Promote regulations and best practices

Behavior: Accept unwanted animals to rehome or dispose of

Barriers	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> Surrender and takeback programs are not practical for all retailers to support 	<ul style="list-style-type: none"> Identify specific retailers that operate takeback programs Partner with and promote the Habitattitude program (responsible pet care and environmental stewardship)

Audience: Aquarium and Aquatic Plant Trade Suppliers to Retail Outlets

Behavior: Accurately identify and only sell non/low-risk species

Barriers	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> Local retailers sometimes source their species from out-of-state suppliers, in places like Florida. For instance, there is no current supplier of water garden plants in Minnesota. It is challenging for the suppliers to track and meet the different regulatory requirements for each state. Different regulations and species of concern in different states make it burdensome for wholesalers to ensure they are compliant on every order they fill to retailers across the country. 	<ul style="list-style-type: none"> Publish a simple and clear list of AIS (in collaboration with other/surrounding states) Place burden on retailers to ensure they do not place orders that are not compliant Make retailers more aware of Minnesota regulatory requirements and the Lacey Act.



Audience: Aquarium and Aquatic Plant Customers

Behavior: Recognize and purchase of only non/low-risk species

Barriers	Potential Barrier Removal Strategies
<p>Customers may:</p> <ul style="list-style-type: none"> • Assume that a species is legal if it is available for purchase • Have limited knowledge, such as: <ul style="list-style-type: none"> ○ Limited understanding of AIS ○ Limited awareness of AIS regulations ○ Limited knowledge of alternatives to desirable but prohibited AIS • Lack concern about AIS • Have difficulty identifying AIS • Desire prohibited species, because: <ul style="list-style-type: none"> ○ Some plants/animals are interesting to customers despite their status as an AIS ○ Prohibited species are available (e.g. online, out-of-state retailers, etc.) • Conduct personal exchanges (e.g. between friends, private sales, etc.), which are not easily regulated 	<ul style="list-style-type: none"> • Provide clear and concise information about AIS and regulations • Build awareness of aquarium/plant pathway, leveraging success of boater and angler AIS programs • Post in-store information/signage on AIS • Seek customer commitments



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Behavior: Euthanize and dispose of unwanted animals

Barriers	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • Proper disposal techniques not well understood • Moral concerns with euthanizing 	<ul style="list-style-type: none"> • Establish central sites where species can be dropped off for rehoming or proper disposal • Provide clear guidelines on proper and humane disposal techniques • Post in-store information/signage on disposal

Behavior: Return unwanted animals to pet stores

Barriers	Potential Barrier Removal Strategies
<ul style="list-style-type: none"> • Many retailers do not accept unwanted animals 	<ul style="list-style-type: none"> • Establish central sites where species can be dropped off for rehoming or proper disposal • Post in-store information/signage on disposal