

AIS in Pet Stores and Garden Centers - Inspection and Education



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Department of Environment & Energy**

by

Fortin Consulting, Inc.

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AIS in Pet Stores and Garden Centers- Inspection and Education

Executive Summary

Fortin Consulting, Inc. (FCI) was hired by Hennepin County to inspect retail pet stores (aquarium trade) and garden centers for aquatic invasive species (AIS), as a potential pathway for spreading AIS to Minnesota lakes and streams. A similar project conducted in 2015 for Hennepin County showed that AIS are sold in retail pet stores and garden centers. If AIS are accidentally or intentionally released, they may inhabit, infest, and spread in Hennepin County and Minnesota waters. Some of the AIS species sold in stores have been found in Minnesota lakes, ponds, wetlands, or streams.

A list of pet stores and garden centers within Hennepin County was compiled. Stores that carried live plants and/or aquatic fauna were visited to determine if they sold any AIS on Minnesota's list of prohibited and regulated species, proposed prohibited species, or species considered early detection targets. Twenty pet stores and 14 garden centers were visited in 2021. Thirty-one of the stores (91.2%) were found to carry prohibited or regulated AIS. All (100%) of the pet stores and 11 of the 14 (78.6%) garden centers carried prohibited or regulated species. One prohibited AIS, one proposed prohibited AIS, seven regulated AIS, and one early detection species were found during store visits.

None of the garden centers inspected carried Minnesota prohibited species. The prohibited red swamp or Louisiana crayfish (*Procambarus clarkii*) was found at two of the 20 pet stores (10%). Several crayfish were purchased and three were sent to Michigan State University researchers for identification confirmation.

Thirteen of the 20 pet stores (65%) and 11 of the 14 garden centers (78.6%) inspected carried Minnesota regulated aquatic plant species. Regulated plant species included Brazilian waterweed (*Egeria densa*), Carolina fanwort (*Cabomba caroliniana*), and water hyacinth (*Eichhornia crassipes*). All twenty pet stores carried Minnesota regulated aquatic animal species, always including either goldfish (*Carassius auratus*) and/or Koi (*Cyprinus carpio*). Six of the pet stores carried red-eared sliders (*Trachemys scripta elegans*). Water lettuce (*Pistia stratiotes*), a species identified by the Minnesota Department of Natural Resources (DNR) as an early detection target, was found in 2 pet stores and 8 garden centers. Yellow floating heart (*Nymphoides peltata*), a proposed prohibited species, was found at one garden center.

The presence of hitchhiker plants, snails, or other small organisms found with the shipments of aquatic plants and animals received by stores, was noted. Small snails were observed in fish tanks of 12 (60%) of the pet stores and on plants in one (7.1%) of the garden centers.

FCI staff met with store owners/managers or employees and discussed findings and provided them with AIS regulations and prevention information and handouts to help prevent purchase, sale, and customer release of invasive species.

Introduction

Aquatic invasive species (AIS) are a major threat to Minnesota waters. Introduction of AIS through watercraft is the primary focus in Minnesota. Inspections of watercraft are common in Hennepin County and throughout the state. Hennepin County staff recognized the need to track other ways AIS can reach our lakes, streams, and wetlands. According to the DNR, about $\frac{2}{3}$ of Minnesota prohibited invasive species, those that are illegal to possess and sell, and $\frac{3}{4}$ of Minnesota regulated invasive species have been documented in the horticulture, pet, food, bait, and classroom and laboratory biological supply trades.

Fortin Consulting, Inc. (FCI) was hired by Hennepin County to conduct inspections of pet stores and garden centers for AIS. The purpose of this project was to determine if retail pet stores and garden centers continue to be sources of AIS in Hennepin County.

Hennepin County residents and others can purchase AIS through the aquarium trade and local garden centers. Hundreds of species of plants, invertebrates, reptiles, and fish from all over the world are sold through these businesses. These species can be either intentionally or accidentally introduced to Hennepin County and other waters. AIS are a problem in Minnesota waters because they out-compete native species and harm a lake, wetland, or stream's ecosystem. They often have no natural enemies to keep them in check.

Species included on the search list were Minnesota prohibited and regulated species, Minnesota noxious weeds, federal noxious weeds, Minnesota proposed prohibited species and some plant species on a Minnesota Department of Natural Resources (DNR) "Early Detection" list.

AIS Regulations

According to Minnesota Statute 84D.01, "Invasive species" means a nonnative species that:

- (1) causes or may cause economic or environmental harm or harm to human health; or
- (2) threatens or may threaten natural resources or the use of natural resources in the state.

Minnesota further separates AIS into four tiers, prohibited invasive species, regulated invasive species, unlisted non-native species, and unregulated non-native species. This project focuses on the prohibited invasive and regulated invasive species. It is unlawful (a misdemeanor) to possess, import, purchase, transport, or introduce prohibited species except under a permit for disposal, control, research, or education. It is legal to possess, sell, buy, and transport regulated species, but they may not be introduced into a free-living state, such as being released or planted in public waters. Appendix A is a list of Minnesota AIS of concern.

Minnesota has two noxious weeds that grow in shallow water or on the water's edge. Purple loosestrife (*Lythrum salicaria*) is a prohibited noxious weed which, by law, cannot be sold, propagated, or transported without a permit in Minnesota. Common Reed Grass (*Phragmites australis* non-native subspecies) is a restricted noxious weed. The importation, sale, and transport of propagating parts of restricted noxious weeds is prohibited except as allowed by Minnesota Statutes, Section 18.82.

There are also some aquatic plants on the federal noxious weed list, such as *Azolla pinnata* and *Hydrilla verticillata*. A federal noxious weed is a plant which is of foreign origin, is new to or not widely prevalent in the United States, and can directly or indirectly injure crops, other useful plants, livestock, or poultry or other interests of agriculture, including irrigation or navigation, or the fish or wildlife resources of the United States or the public health. Aquatic plants listed on the federal noxious weed list (Code of Federal Regulations, title 7, section 360.200) are incorporated by reference into the Minnesota prohibited species list.

Methods

FCI staff compiled a list of retail pet stores and garden centers within Hennepin County to visit. The list includes stores from the 2015 project that are still in business, as well as new stores in the County that were found via internet search. Stores were called to confirm that they are an operating retail business, and to determine if they carry live aquatic species. Stores that carried live plants and/or aquatic fauna were visited to determine if they sold any AIS on Minnesota's list of prohibited and regulated species, proposed prohibited species, or early detection targets. Based on the final store list, Hennepin County geographic information system staff created two maps: 1.) Pet stores and 2.) Garden centers. See Appendix B and C.

FCI staff compiled a list of AIS to search for while visiting the stores. The list of AIS was derived from the Minnesota invasive species list, state and federal noxious weed lists, Minnesota proposed prohibited invasive species list and the DNR Early Detection list. Input was received from Minnesota DNR staff on species to include. Staff reviewed identification information for those species of which we were not familiar. The list included plants, snails, crayfish, reptiles, and fish. A Minnesota DNR Prohibited Invasive Species Permit was obtained to allow FCI staff to possess prohibited aquatic invasive species, in case they were found and purchased for identification.

Data sheets were developed to mark AIS found in stores. Identification keys were reviewed to review AIS characteristics.

Pet store inspections were done in April and May, including follow-up inspections. The water garden supplier inspections were completed beginning in May and June when the stores were most likely to carry live plants as confirmed via phone calls.

FCI staff visited each store included on the final list. Ten percent of the stores were visited twice as a cross-check verification. In most cases, FCI staff entered the stores anonymously to have a chance to review plants and/or animals present. After, FCI staff would approach store owners, managers, or employees if no manager was present, to present AIS education materials and explain AIS information. Sometimes, a store employee would approach FCI staff to assist with shopping needs. If this happened, FCI would then introduce themselves and explain the project and AIS materials.

AIS educational materials included a current list of Minnesota invasive species, disposal guidelines, Invasive Species and Your Business flyers, and Habitatitude™ bookmarks and magnets. See Appendix D.

FCI staff reviewed aquatic species in the stores and noted when AIS were observed. If necessary, FCI staff would ask store employees about identification of unfamiliar plants and/or animals. If a listed species was suspected and identification not confirmed, it was purchased and brought back to the office for identification. Several suspected crayfish were purchased for identification. Initially, photos of crayfish were sent to an DNR research scientist for identification confirmation. At the request of the DNR, three purchased crayfish were preserved in 70 percent isopropyl alcohol, and shipped to Michigan State University, Department of Fisheries and Wildlife, for identification confirmation.

Pet Stores

Store Selection

The initial search for pet stores resulted in a list 102 potential suppliers. These stores were called to determine if they sold live aquatic plants and/or animals. Many stores were removed from the list after learning that they were no longer in business, were wholesale suppliers only, carried saltwater fish and/or supplies only, or did not carry aquarium supplies at all. Twenty pet stores that were confirmed to sell aquatic freshwater plants and animals were inspected in 2021.

General inventory and labeling



Figure 1. Free standing plants with labels.

Number and type of species of plants and animals varied from store to store. The chain-stores, such as Petco and PetSmart, generally carried similar lists of plants and animals. Inventory in the independent-owned stores varied from carrying just a few plants, fish, invertebrates, and turtles to a wide variety of species.

The aquariums were often labeled with plant and animals names. The chain stores tended to have printed sticker-labels listing common and scientific names. The independent-owned stores

varied in their labeling system. Some used wax pencil to mark the glass, others used printed sticker-labels, sometimes the label didn't match the species contained. Using common names to identify plants and animals was more typical in independent stores.

Fish, invertebrates, and turtles were contained in aquariums, usually separated by type, but often with more than one species in a tank. Aquatic plants were contained in individual plastic containers, free-standing in aquariums, or floating in aquariums. In the independent-owned stores, plants were often free-standing or floating in aquariums with multiple species present in a single tank. Some plants were labeled individually, some were labeled on the glass of the aquarium tank, and some were not labeled at all. It was difficult to identify these plants without removing them from the tank. However, the purpose was to determine if any were the listed invasive species and staff were able to determine this.



Figure 2. Plants in plastic containers.

Results - Pet Stores

One Minnesota prohibited invasive species was noted during the inspections conducted at the 20 pet stores, the red swamp crayfish (*Procambarus clarkii*). *Procambarus clarkii* was found at two stores and listed at a third store, but not present during the visit. The observed crayfish were purchased and shipped to Michigan State University researchers and positively identified as the prohibited AIS, *Procambarus clarkii*. The common name labels displayed for these crayfish were Tangerine Lobster and Tricolor Ghost Lobster. The third store listed Tangerine crayfish on a tank which is suspected to be the species *Procambarus clarkii* but did not have any crayfish in the tank. The store was later called to learn if they would be selling crayfish. The store associate indicated that they will eventually get more crayfish but would review their purchasing order in the future to make sure that they did not receive potential AIS. Though, we cannot confirm that the store has carried invasive crayfish, the label present at time of visit indicates that it is possible.



Figure 3. Red Swamp Crayfish (Prohibited AIS)

The DNR and many agencies list a common name of “red swamp crayfish” for this species. In the pet retail trade, this name is not used but many other common names are used, including, tangerine crayfish, tangerine lobster, fireball crayfish, tricolor ghost crayfish, Louisiana crayfish, neon red crayfish, orange crayfish, snow white lobster, red lobster, scarlet crayfish, ghost crayfish, white specter crayfish, mudbug, red crayfish, black ghost, blue ghost, creamsicle crayfish, ivory crayfish, and vanilla crayfish. It is found in several varieties and colors that do not

resemble the photos of red swamp crayfish found in the wild commonly used for invasive species education.

The prohibited species, *Misgurnus anguillicaudatus* was listed on a tank at one independent-owned store (same store with confirmed red swamp crayfish). The tank was labeled “gold dojo loach”, but the fish was not present during the initial or follow-up inspection. FCI staff confirmed that they have not ordered this fish in some time. During a follow-up to the 2015 study, the oriental weatherfish, aka gold dojo loach, was found at a chain store in Dakota and Hennepin Counties. After being contacted by MN DNR staff, the entire chain of stores removed this species.

Additional crayfish, including, the electric blue crayfish (*Procambarus alleni*) was observed at two pet stores and listed at a third pet store. It is not a prohibited or regulated species, but a permit is required for the import of non-native crayfish into Minnesota. However, this would be the responsibility of the supplier if a Minnesota supplier.

Nineteen (95%) of the pet stores sell goldfish (*Carassius auratus*) and seventeen (85%) of the stores sell koi (*Cyprinus carpio*), which is a type of carp. Goldfish and koi are both on the list of regulated invasive species. They have been found in Minnesota waters, sometimes in very high numbers, and can cause water quality degradation. No other regulated fish were observed; however, the red-eared slider (*Trachemys scripto elegans*), a regulated turtle species, was observed at seven (35%) pet stores.



Figure 4. Goldfish

Several types of snails were found, but none on the AIS list. Some were labeled “Mystery Snails” but were varieties such as black or gold and the shells were colored as indicated. These snails are from the genus *Pomacea*. The invasive mystery snails are different genera, *Viviparus* and *Cipangopaludina*. Small snails were sometimes observed in tanks. These snails are easily transported in aquarium plants and may not be visible until the plant is removed from the tank and inspected more closely or rinsed. None were identified as AIS. However, it is difficult to identify the tiny snails. Several store employees commented that they rinse the plants to remove snails and/or allow aquarium species to eat them.

Thirteen of the 20 stores (65%) carried Minnesota regulated aquatic plant invasive species, including Brazilian waterweed (*Egeria densa*), Carolina fanwort (*Cabomba caroliniana*), and a variety of water lilies (*Nymphaea* spp.). The *Egeria densa* and *Cabomba caroliniana* were only found in independent-owned stores.



Figure 5. Brazilian waterweed

Egeria densa, also known as Brazilian waterweed, was found in 2 of 20 (10%) pet stores. It is a



Figure 4. Carolina fanwort

very common aquarium plant and is often sold under the common name “Anacharis”. This plant was also found to be listed as “Elodea” or called “Elodea” by store clerks.

Cabomba caroliniana also known as Carolina fanwort was found in 2 of 20 (10%) pet stores. Green and/or purple *Cabomba* were found, both of which are varieties of *C. caroliniana*.

Nymphaea species were found in 12 of 20 (60%) pet stores. Waterlilies were commonly sold as bulbs in plastic packaging. Two of the

stores had live, floating lily pads in tanks. The species were not identified. Since the species were not labeled, we do not know how many different species or varieties of water lilies are being sold.

In addition, water lettuce (*Pistia stratiotes*), an early detection species, was observed at two pet stores.



ic plant

Figure 5. Water lily bulbs

Table 1. Pet stores selling AIS

Site #	Store Type	Prohibited	Regulated	Early Detection
1	Chain		x	
2	Chain		x	
3	Chain		x	
4	Chain		x	
5	Chain		x	
6	Chain		x	
7	Chain		x	
8	Chain		x	
9	Chain		x	
10	Chain		x	
11	Chain		x	
14	Independent	x	x	
15	Independent	x	x	x
16	Independent		x	x
19	Independent		x	
20	Independent		x	
21	Franchise		x	
22	Franchise		x	
23	Franchise		x	
24	Chain		x	
20	# Stores	2	20	2

Two stores (10% of total) were revisited as a check to see if additional AIS might be found. Nothing new was found during the revisits. Table 1 lists the number of stores selling AIS. Appendix E is the complete list of AIS species found during the inspections.

Garden Centers

Store Selection

The initial search for garden centers resulted in 59 potential suppliers. These stores were called to determine if they sold live aquatic plants and/or animals. Many stores were removed from the list after learning that they were no longer in business or did not carry aquatic plants and/or animals. Fourteen garden centers confirmed to sell aquatic freshwater plants were inspected in 2021. Thirteen of the locations are within Hennepin County. One additional location just outside of the County border was also inspected.



Figure 6. Inspecting aquatic plants at garden center

General inventory and labeling

Number and type of species of plants varied from store to store. The chain-stores, such as Lowes and Menards, only carried dry bulbs in packaging. In general, inventory seemed low in 2021 compared to 2015. Most plants were individually labeled with plastic tags. Floating plants like water lettuce and water hyacinth were often floating in tanks and labeled with a sign on the tank.

Water lilies were stored as dry bulbs, in plastic containers, or floating live plants. Water lilies were labeled as a variety of *Nymphaea*.

Results – Garden Centers

There were no prohibited AIS found at any of the garden centers visited. Two regulated AIS were found at a total of 11 of the 14 (79%) garden centers. A proposed prohibited AIS was observed at one garden center, and one early detection species was observed at eight garden centers.

The regulated AIS found included water hyacinth (*Eichhornia crassipes*) and water lilies (*Nymphaea* spp.). Water hyacinth was found at 8 of 14 garden centers (57%). Water lilies were found in 7 of 14 garden centers (50%). There were possibly 13 different species or varieties of water lilies seen in total. Three chain stores carried water lily bulbs in packaging. The other stores kept the water

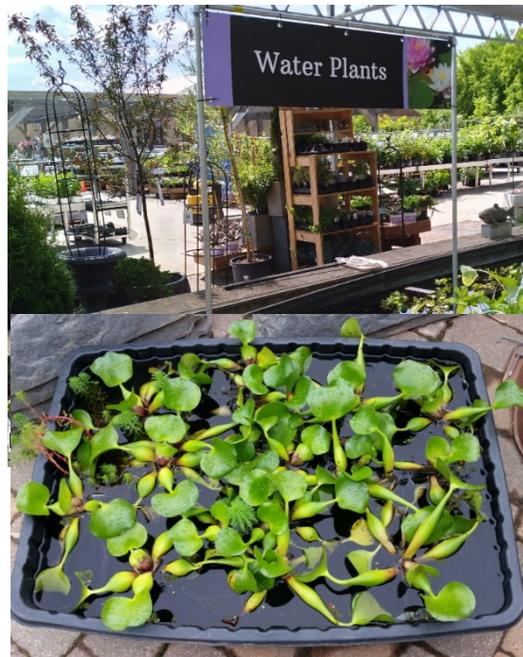


Figure 8. Water hyacinth

hyacinth and water lilies free floating in large open tanks. The chain stores only carried water lily bulbs, but no other species of concern.

Water lettuce (*Pistia stratiotes*), an early detection target species, was found in eight garden centers (57%). Yellow floating-heart (*Nymphoides peltata*), a proposed prohibited species was found in one garden center (7%). Since the 2015 inspection, yellow floating-heart was reclassified from an early detection species to a proposed prohibited species.



Figure 9. Water lettuce and yellow floating heart

Another pathway for invasive species is as hitchhikers on plants or in the water. Hitchhiker snails on plants were found at one store. No observable floating plant hitchhikers were present during the inspections.

Of the 14 locations inspected, 12 had aquatic plants in stock at the time of inspection. Two of the chain stores did not carry aquatic plants. Two garden centers were revisited as a check to see if additional AIS might be found. Nothing new was found during the revisits. Table 2 lists the number of stores selling AIS. Appendix F is the complete list of AIS species found during the inspections.

Table 2. Garden centers selling AIS

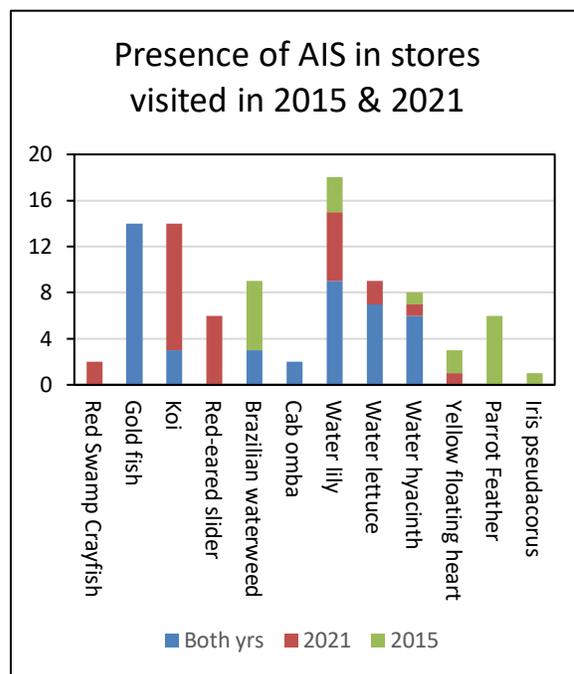
Site #	Store Type	Prohibited	Regulated	Early Detection	Proposed Prohibited
1	Independent multi-store		x	x	
2	Independent multi-store		x	x	x
3	Independent multi-store		x	x	
6	Independent		x	x	
15	Independent		x	x	
16	Chain		x		
17	Chain		x		
19	Independent		x	x	
20	Chain				
22	Chain				
23	Chain		x		
27	Independent			x	
29	Independent multi-store		x		
31	Independent		x	x	
14	# Stores	0	11	8	1

Discussion

In total, 34 stores were inspected for AIS (20 pet stores and 14 garden centers). Thirty-one of the stores (91.2%) were found to carry AIS. One prohibited AIS, one proposed prohibited AIS, seven regulated AIS, and one early detection species were found during store visits. This project confirmed that both pet stores and garden centers are a potential source of invasive species. It is important to note that this report includes a snapshot of what was present in the store at the time of inspection. See Appendices E and F for full lists of AIS observed in stores. The inspections indicated species that were present at the time of the visit. Many stores may carry additional species that were not available at the time of the inspection. We revisited at least 10% (4) of the stores to try to determine differences in species carried. The proposed and regulated species found were the same as the first visit but a proposed prohibited species, yellow floating heart, was found during the second visit at a garden center, but not found during the first visit.

During the pet store visits, it was discovered that the prohibited species found all came from the same supplier. The supplier was contacted by the DNR and notified of the prohibited species they were selling and the regulations that apply.

Nine of the garden centers and 14 of the pet stores visited in 2021 were originally visited in 2015; however, the inventory of these stores was different between the two project years. The exception being that goldfish and Carolina fanwort were found in each of the same stores visited in 2021 as in 2015. The prohibited red swamp crayfish was found in two stores in 2021 but were not observed at these same stores in 2015. A sign for the prohibited gold dojo loach was found in one store in 2021, indicating it had been sold previously, but was not observed in the same store in 2015. The regulated red-eared slider turtle was found in six stores in 2021 but was not observed at these same stores in 2015, although reptiles were not part of the search in 2015. The regulated Koi was found in 14 of these stores in 2021, but only in three of the same stores in 2015. Some stores inspected in 2021 did not carry AIS found in these same stores in 2015, including Brazilian waterweed, yellow floating heart, iris, and parrot feather. Parrot feather (*Myriophyllum aquaticum*) was not found at all in 2021, though very common in 2015.



Water lilies and water hyacinth varied amongst the same stores visited in 2015 and 2021. Appendices G and H shows the AIS comparison found between years.

Aquatic invasive species can be easily obtained either online or at local pet stores and nurseries. Some of the plants found during the inspections have been reported in Minnesota lakes or rivers, including Brazilian waterweed, parrot feather, and water lettuce. Some plants, such as water lettuce, may not survive Minnesota winters, but others have been able to survive in Minnesota waters. Koi and goldfish have also been found in Minnesota waters, sometimes in large numbers negatively impacting water quality of lakes, streams, and wetlands.

Very little is being done to educate businesses and the public on the dangers of invasive plants and animals purchased through pet stores and garden centers. The AIS education focus is more on public accesses and transport of AIS on boats and equipment. This project provided educational handouts to each store visited, including AIS disposal guidelines developed in a previous Hennepin County project. In addition, store staff were engaged in a brief discussion about aquatic invasive species during each store visit. Some store staff were very knowledgeable about AIS, and others were not. Most trust their suppliers provide only legal species. However, as this study showed, that doesn't always work. Breeding creates specimens that are not like the photos of known AIS and may result in misidentification of organisms. Pet store owners and managers should request that the supplier list include both common and scientific names that they can compare to the current DNR list of AIS. They should also check the DNR website to make sure they have the most current invasive species list. It is their responsibility to not sell prohibited species.

Some stores will take unwanted pets back and either resell them or euthanize them. Stores providing this service are helping to prevent customers from releasing these pets to Hennepin County or other waters. The [Minnesota Aquarium Society](#) will take unwanted pets and plants in events held a couple times each year. They auction them off to members and others interested.

The Minnesota DNR recently added a temporary position to work with AIS in trade. They are conducting a similar search of pet stores on a statewide basis, as well as looking at seafood markets as a source of AIS. Some educational information is available on the DNR web site, <https://www.dnr.state.mn.us/invasives/trade-pathways.html>. Additional ongoing education of vendors about AIS and the dangers of releasing AIS to Hennepin County waters may help to reduce this pathway of AIS infestations. The education should include how vendors can pass this information on to their customers. There are some educational resources available to help with this task. Since this position is temporary, it is now known if the DNR will be able to provide ongoing assistance with AIS sold in retail stores.

The Pet Industry Joint Advisory Council and the Habitattitude™ program has information on their web site(www.habitattitude.net) for pet store owners. The national Habitattitude™ program encourages consumers to help avoid accidental or intentional release of AIS by promoting simple actions when faced with an unwanted aquatic plant or fish. These include:

- Contact a retailer for proper handling advice or for possible returns.
- Give/trade with another aquarist, pond owner or water gardener.
- Donate to a local aquarium society, school, or aquatic business.
- Seal aquatic plants in plastic bags and dispose in the trash.
- Contact a veterinarian or pet retailer for humane disposal of animals.
- Pet stores could purchase labeled bags and handouts to provide to customers. However, these educational materials do not appear to be available any longer.

Minnesota Sea Grant is a local partner and educational information is available through their office in Duluth or online (<https://seagrants.umn.edu/programs/healthy-coastal-ecosystems-program/aquatic-invasive-species-campaigns>). They offer plant tags, stakes, posters, small cards, stickers, bookmarks, and fliers that could be displayed at nurseries. There is a bookmark for citizens that includes information on not releasing fish and other pets. Some information is from the Habitattitude™ program and limited supplies are available, and some is from Sea Grant. Samples and smaller supplies are free. Larger amounts are available for a small fee. They also sell an AIS

display that could be loaned to local nurseries to help educate the public.

The new DNR program to address retail sources of AIS will help to promote education to pet stores, garden centers and other retail markets. DNR



hopes to establish a list and contact information for businesses around the state that sell live plants and animals so that they can keep them updated on the invasive species laws and help them avoid selling invasive species. Ongoing education is needed as the laws may change. Availability of free or inexpensive handouts to provide to stores that they can give to customers or display in their store may help to prevent the accidental or intentional release of AIS to Hennepin County and other waters. Prohibited species were found at pet stores during this project and a previous one. As the laws change, new prohibited species will be listed. Periodic inspections of pet stores and garden centers in the future would help to prevent businesses from carrying these invasive and harmful species.

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Appendix A. List of Minnesota prohibited, regulated, unregulated, unregulated nonnative, and early detection target species

The most current laws and list of species are posted at <http://www.MNDNR.state.mn.us/invasives/laws.html>.

Note: This only includes species regulated by the Minnesota Department of Natural Resources. Visit the links on the other side of this page for more information.

PROHIBITED INVASIVE SPECIES

Certain invasive species that can threaten natural resources are prohibited in Minnesota. It is unlawful to possess, import, purchase, transport or introduce these species without a permit. Prohibited aquatic invasive species in Minnesota include the following, and any hybrids, cultivars, or varieties of the species listed below:

Aquatic Plants

- African elodea (*Lagarosiphon major*)^{^*}
- aquarium watermoss or giant salvinia (*Salvinia molesta*)
- Australian stone crop (*Crassula helmsii*)
- brittle naiad (*Najas minor*)^{*}
- curly-leaf pondweed (*Potamogeton crispus*)[^]
- Eurasian watermilfoil (*Myriophyllum spicatum*)[^]
- European frog-bit (*Hydrocharis morsus-ranae*)[^]
- flowering rush (*Butomus umbellatus*)[^]
- hydrilla (*Hydrilla verticillata*)^{^*}
- Indian swampweed (*Hygrophila polysperma*)^{*}
- purple loosestrife (*Lythrum salicaria*, *Lythrum virgatum*, or any variety, hybrid, or cultivar)[^]
- starry stonewort (*Nitellopsis obtusa*)
- water soldier (*Stratiotes aloides*)^{^*}
- water chestnut (*Trapa natans*)[^]

Plus the aquatic plants listed in Code of Federal Regulations, title 7, section 360.200 (Noxious Weeds). Note: only the aquatic and wetland weeds are listed here. There are additional federal noxious weeds.

- arrowhead (*Sagittaria sagittifolia*)
- ambulia (*Limnophila sessiflora*)
- broadleaf paperbark tree (*Melaleuca quinquinervia*)
- burreed, exotic (*Sparganium erectum*)
- giant Salvinia (*Salvinia auriculata*, *S. biloba*, *S. herzogii* and *S. molesta*)^{^*}
- killer algae *Caulerpa taxifolia* (Mediterranean strain)
- *Monochoria hastata* and *M. vaginalis*
- mosquito fern (*Azolla pinnata*)
- nightshade, wetland (*Solanum tampicense*)
- *Ottelia alismoides*
- water hyacinth, rooted (*Eichornia azurea*)

Fish

- Amur sleeper (*Percottus glenii*)
- bighead carp (*Hypophthalmichthys nobilis*)[†]
- black carp (*Mylopharyngodon piceus*)
- crucian carp (*Carassius carassius*)[†]
- Eurasian minnow (*Phoxinus phoxinus*)[^]
- European perch (*Perca fluviatilis*)
- grass carp (*Ctenopharyngodon idella*)^{^†}
- largescale silver carp (*Hypophthalmichthys harmandi*)
- northern snakehead fish (*Channa argus*)[†]
- Oriental weatherfish (*Misgurnus anguillicaudatus*)^{*}
- Prussian carp (*Carassius gibelio*)
- roach (*Rutilus rutilus*)
- round goby (*Neogobius melanostomus*)
- rudd (*Scardinius erythrophthalmus*)
- ruffe (*Gymnocephalus cernuus*)
- sea lamprey (*Petromyzon marinus*)
- silver carp (*Hypophthalmichthys molitrix*)[†]
- stone moroko (*Pseudorasbora parva*)
- tubenose goby (*Proterorhinus marmoratus*)
- wels catfish (*Siluris glanis*)^{*†}
- western mosquitofish (*Gambusia affinis*)^{^*}
- white perch (*Morone americana*)[†]
- zander (*Stizostedion lucioperca*)[†]

Invertebrates

- faucet snail (*Bithynia tentaculata*)
- New Zealand mud snail (*Potamopyrgus antipodarum*)
- quagga mussel (*Dreissena bugensis*)
- red swamp crayfish (*Procambarus clarkii*)^{^*†}
- yabby (*Cherax destructor*)^{*†}
- zebra mussel (*Dreissena spp.*)^{*}

REGULATED INVASIVE SPECIES

It is legal to possess, sell, buy, and transport regulated invasive species, but they and most other organisms may not be introduced into a free-living state, such as being released or planted in public waters.

Aquatic plants

- Brazilian waterweed (*Egeria densa*)
- Carolina fanwort or fanwort (*Cabomba caroliniana*)
- Chinese water spinach (*Ipomoea aquatica*)
- nonnative waterlilies (*Nymphaea spp.*)
- parrot's feather (*Myriophyllum aquaticum*)
- water hyacinth (*Eichhornia crassipes*)
- yellow iris or yellow flag (*Iris pseudacoris*)

Fish

- alewife (*Alosa pseudoharengus*)
- koi, common carp (*Cyprinus carpio*)
- goldfish (*Carassius auratus*)
- rainbow smelt (*Osmerus mordax*)
- tilapia (*Oreochromis, Sartheradon & Tilapia spp.*)

Invertebrates

- banded mystery snail (*Viviparus georgianus*)
- Chinese mystery snail, Japanese trap door snail (*Cipangopaludina spp.*)†
- rusty crayfish (*Orconectes rusticus*)
- spiny waterflea (*Bythotrephes longimanus*)

Reptiles

- red-eared slider turtle (*Trachemys scripta elegans*)

PROPOSED PROHIBITED SPECIES

These species are proposed for listing as Minnesota prohibited invasive species and some are federally regulated.

- common or giant reed grass, phragmites (*Phragmites australis subsp. Australis*)^
- yellow floating heart (*Nymphoides peltata*)
- Eastern mosquitofish (*Gambusia holbrooki*)^*
- golden freshwater clam (*Corbicula fluminea*)^*
- golden mussel (*Limnoperna fortunei*)
- jumping worms (*Amyntas & Metaphire spp.*)
- Nile perch (*Lates niloticus*)*†
- marmorkreb or marbled crayfish (*Procambarus virginalis* or *P. fallax forma virginalis*)*
- mitten crabs (*Eriocheir spp.*)†
- Tench (*Tinca tinca*)†
- tubenose goby (*Proterorhinus spp.*)
- snakehead fishes (*Channa & Parachanna spp.*)*†
- walking catfish (Clariidae family)*†

Early detection targets

These species are not regulated but have the potential to infest Minnesota surface waters if released.

- Asian clam (*Corbicula fluminea*)
- pond water starwort (*Callitriche stagnalis*)
- water lettuce (*Pistia stratiotes*)

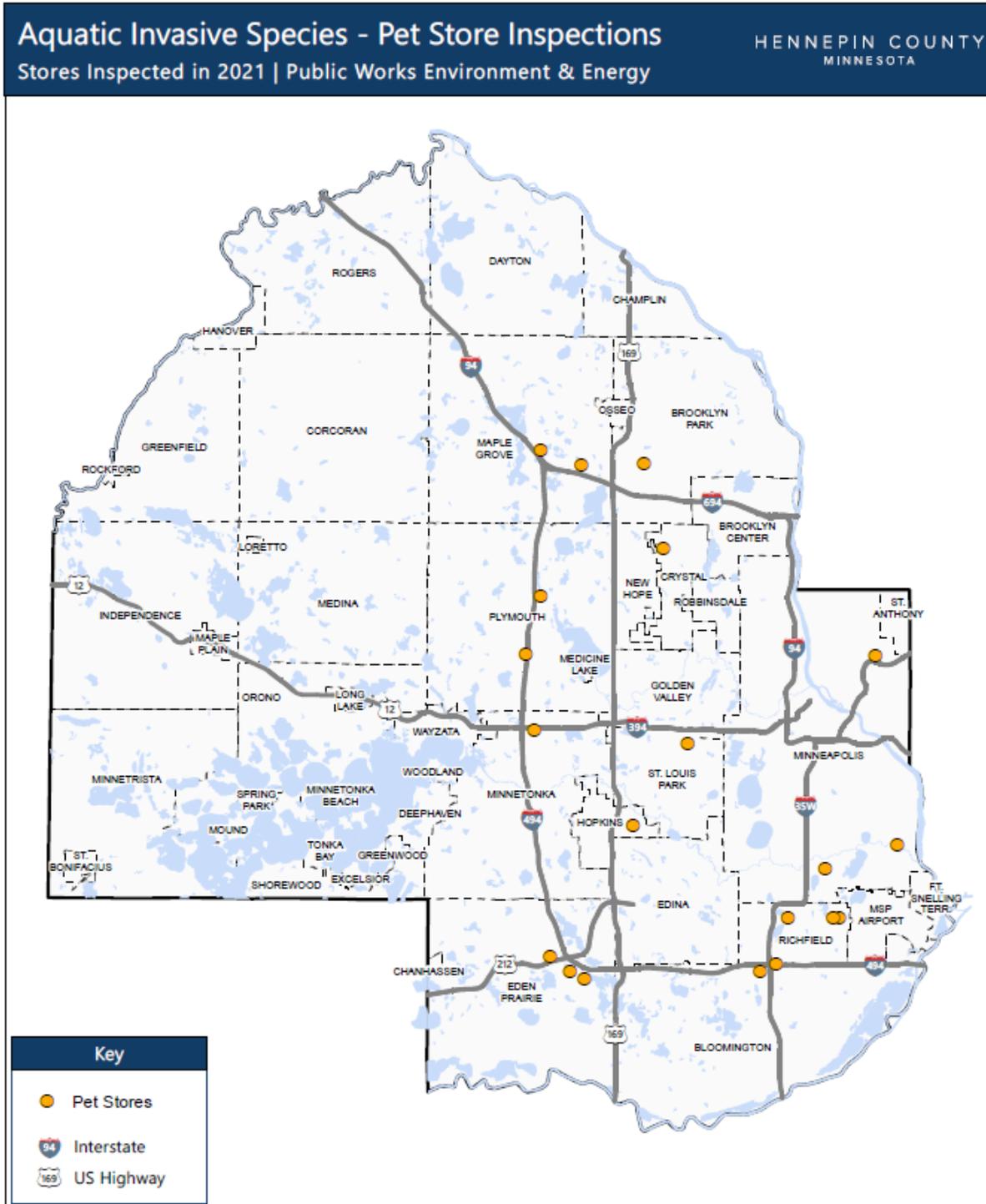
Additional species are prohibited or regulated at the state and national levels including 1) non-native crayfish† 2) State-listed noxious weeds: www.mda.state.mn.us/plants-insects/minnesota-noxious-weed-list 3) Federally-listed noxious weeds: <https://plants.usda.gov/java/noxious> 4) Federally-listed injurious wildlife: <https://www.fws.gov/injuriouswildlife/>

* Species documented in the pet and aquarium trade

† Species documented in the seafood trade

^ Species documented in the horticulture trade

Appendix B. Map of pet stores inspected



Appendix D. AIS handouts presented to pet stores and garden centers

Pet store disposal guidelines for aquatic plants and animals



Aquatic Invasive Species (AIS) infestations can occur as a result of the accidental release of aquarium plants and animals. Introducing animals and plants from your business into the ecosystems in Minnesota can cause harm to our lakes, streams and wetlands.



Guidelines to help prevent the introduction and spread of AIS:

- Filter out plant fragments, snails, eggs or other small living species from aquarium water using a strainer or small mesh net before disposing of water down the drain.
- Prevent plants and plant parts, seeds, animals and aquarium or rinse water, from reaching storm drains.
- Inspect and rinse new aquatic plants into a sink with a strainer, to rid them of seeds, fragments, snails and fish.
- Freeze unwanted plants for 24 hours in a plastic bag, or heat in a microwave and then place in the trash. Composting should be avoided, as seeds and fragments may still grow.
- Make sure plants and animals cannot escape or are not released into the environment.
- Provide information to your customers on proper disposal of unwanted plants and animals.
- Follow guidelines for humanely euthanizing unwanted live fish and animals. Guidelines are available through the American Veterinary Medical Association. Disposal of live organisms should be considered as the last resort

Find the current prohibited species list by searching: "MN DNR AIS laws" or directly at: www.dnr.state.mn.us/invasives/laws.html

If you suspect you may have received a prohibited species in a shipment or a customer brings one in, please contact the Minnesota Department of Natural Resources AIS specialist, Keegan Lund, at 651-259-5828 for additional instructions.

Examples of aquatic plants and animals that are invasive in Minnesota's ecosystems:



Goldfish



Crayfish



Red-eared Slider



Chinese mystery snail*



Aquarium plant

*Image courtesy of the Wisconsin Department of Natural Resources

Hennepin County
Environment and Energy
environment@hennepin.us
hennepin.us/aisprevention

34-405-12-21



Garden center and nursery disposal guidelines for water garden plants and animals



Aquatic Invasive Species (AIS) infestations can occur as a result of the accidental release of water garden plants and animals. Introducing animals and plants from your business into the ecosystems in Minnesota can cause harm to our lakes, streams and wetlands.



Guidelines to help prevent the introduction and spread of AIS:

- Inspect and rinse new water garden plants to rid them of seeds, plant fragments, snails and small animals. Rinse into sink, on a vegetated area, or into container where water can't drain to storm sewers. Strain out any sediment, plant fragments and small animals and seal in a plastic bag, freeze for 24 hours and dispose of in the trash.
- Make sure that display water gardens are isolated from natural waterways, wetlands and areas that flood.
- Drain water in the sink through a strainer or on dry land where water can't flow to storm drains, ditches, wetlands, streams, or other surface waters when cleaning or emptying display water gardens and aquatic plant containers.
- Over-winter plants for next season if possible.
- Freeze unwanted plants for 24 hours in a sealed plastic bag, or heat in a microwave and then dispose in trash. Composting should be avoided, as seeds and fragments may still grow.
- Dispose of nonviable prohibited invasive species and aquatic plants at a legal site at least 300 feet from any water body or seasonally flooded land.
- Provide information to your customers on proper disposal of unwanted plants.

Find the current prohibited species list by searching: "MN DNR AIS laws" or directly at: www.dnr.state.mn.us/invasives/laws.html

If you suspect you may have received a prohibited species in a shipment or a customer brings one in, please contact the Minnesota Department of Natural Resources AIS specialist, Keegan Lund, at 651-259-5828 for additional instructions.

Examples of aquatic plants and animals that are invasive in Minnesota's ecosystems



Koi and goldfish



Water hyacinth



Water lettuce



Parrot feather



Yellow iris



Water lilies

Hennepin County
Environment and Energy
environment@hennepin.us
hennepin.us/aisprevention

34-405-13-21



INVASIVE SPECIES AND YOUR BUSINESS

JOIN US IN PROTECTING MINNESOTA WATERS | SELL ONLY LOW-RISK SPECIES AND HELP TO PREVENT RELEASES AND ESCAPES

The **invasive plants and animals pictured here** have been documented in the pet and aquarium trades and are illegal to possess or sell in Minnesota. Invasive species are non-native species that present risks to Minnesota's fish, wildlife and plant communities, water quality and recreation or human health. Please note, this is not a complete list of species that are illegal to possess or sell.

DO NOT OFFER THESE SPECIES FOR SALE AT YOUR BUSINESS!

AQUATIC PLANTS ▶ Visit dnr.state.mn.us/invasives/pet-and-aquarium-businesses.html for a complete list.

Indian swampweed, dwarf hygrophila
(*Hygrophila polysperma*)



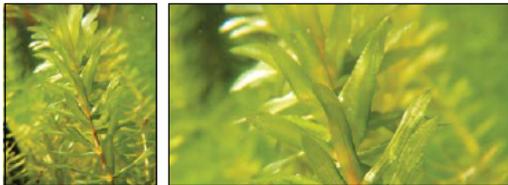
Giant salvinia
(*Salvinia molesta*)



Brittle naiad
(*Najas minor*)



Hydrilla
(*Hydrilla verticillata*)



Water soldier, water aloe
(*Stratiotes aloides*)



Please remind your customers not to release aquarium pets and plants into the wild!

Remember: It is illegal to release most non-native animals and plants into a free-living state in Minnesota.



PHOTO CREDITS
Indian swampweed, dwarf hygrophila – U.S. Geological Survey
Giant salvinia – Vic Ramey, UF/IFAS Center for Aquatic and Invasive Plants
Brittle naiad – Mark Warman
Hydrilla – L. Gettys, UF/IFAS Center for Aquatic and Invasive Plants

DO NOT OFFER THESE SPECIES FOR SALE AT YOUR BUSINESS!

FISH, CRAYFISH AND INVERTEBRATES ▶ Visit dnr.state.mn.us/invasives/pet-and-aquarium-businesses.html for a complete list.

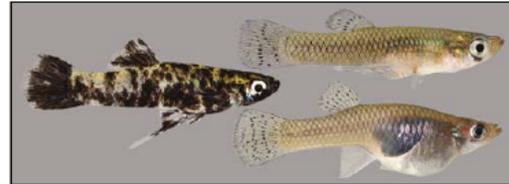
Oriental weatherfish, pond loach, dojo loach
(*Misgurnus anguillicaudatus*)



Western mosquitofish
(*Gambusia affinis*)



*Eastern mosquitofish
(*Gambusia holbrooki*)



Stone moroko
(*Pseudorasbora parva*)



Northern snakehead
(*Channa argus*), **Channa* spp. and *Parachanna* spp.



*Nile perch, Victoria perch, African snook
(*Lates niloticus*)



Wels catfish, sheatfish (*Silurus glanis*)



*Walking catfish (*Clarias batrachus*)



Yabby, yabbie (*Cherax destructor*)



*Marbled crayfish, marmokrebs (*Procambarus virginalis* or *Procambarus fallax* forma *virginalis*)



Red swamp crayfish, Louisiana crawfish
(*Procambarus clarkii*)



*Golden clam
(*Corbicula fluminea*)



*While eastern mosquitofish, snakehead fishes in addition to northern snakehead (*Channa* and *Parachanna* spp.), Nile perch/Victoria perch/African snook, walking catfish, marbled crayfish/marmokrebs and golden clam are not yet illegal to possess and sell, the Minnesota Department of Natural Resources is proposing to classify them as such.

PHOTO CREDITS

Oriental weatherfish, pond loach, dojo loach – Zachary Randall, Florida Museum, UF 236274 | Western mosquitofish – Brian Zimmerman
Eastern mosquitofish – Zachary Randall, Florida Museum, UF 238434, 235876, 238435 | Northern snakehead – U.S. Fish and Wildlife Service | Nile perch, Victoria perch, African snook – © Andrew Nightingale
Walking catfish – Zachary Randall, Florida Museum, UF 238365 | Red swamp crayfish, Louisiana crawfish – Minnesota Aquatic Invasive Species Research Center

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INVASIVE SPECIES AND YOUR BUSINESS

JOIN US IN PROTECTING MINNESOTA WATERS | SELL ONLY LOW-RISK SPECIES AND HELP TO PREVENT RELEASES AND ESCAPES

The invasive plants and animals pictured here have been documented in the horticulture trade and are illegal to possess or sell in Minnesota. Invasive species are non-native species that present risks to Minnesota's fish, wildlife and plant communities, water quality and recreation or human health. Please note, this is not a complete list of species that are illegal to possess or sell.

DO NOT OFFER THESE SPECIES FOR SALE AT YOUR BUSINESS!

FISH, CRAYFISH AND INVERTEBRATES ► Visit dnr.state.mn.us/invasives/horticultural-businesses.html for a complete list.

Grass carp, white amur
(*Ctenopharyngodon idella*)



Western mosquitofish
(*Gambusia affinis*)



*Eastern mosquitofish
(*Gambusia holbrooki*)



Eurasian minnow
(*Phoxinus phoxinus*)



*Golden clam
(*Corbicula fluminea*)



*Jumping worms
(*Amyntas* spp. and *Metaphire* spp.)



Red swamp crayfish, Louisiana
crayfish (*Procambarus clarkii*)



Please remind your customers not to release non-native plants and animals into the wild!

Remember: It is illegal to release most non-native plants and animals into a free-living state in Minnesota.



*While eastern mosquitofish, golden clam and jumping worms are not yet illegal to possess and sell, the Minnesota Department of Natural Resources is proposing to classify them as such.

PHOTO CREDITS

Grass carp, white amur – U.S. Geological Survey
 Western mosquitofish – Brian Zimmerman
 Eastern mosquitofish – Zachary Randall, Florida Museum, UF 238434, 235876, 238435
 Jumping worms – University of Wisconsin-Madison Arboretum
 Red swamp crayfish, Louisiana crayfish – Minnesota Aquatic Invasive Species Research Center

DO NOT OFFER THESE SPECIES FOR SALE AT YOUR BUSINESS!

AQUATIC PLANTS ▶ Visit dnr.state.mn.us/invasives/horticultural-businesses.html for a complete list.

African oxygen weed, African elodea
(*Lagarosiphon major*)



Curly-leaf pondweed
(*Potamogeton crispus*)



Eurasian watermilfoil
(*Myriophyllum spicatum*)



European frog-bit
(*Hydrocharis morsus-ranae*)



Giant salvinia
(*Salvinia molesta*)



*Yellow floating heart, fringed water lily
(*Nymphoides peltata*)



Hydrilla (*Hydrilla verticillata*)



Water soldier, water aloe (*Stratiotes aloides*)



Water chestnut, water caltrop (*Trapa natans*)



Flowering rush, water gladiolus
(*Butomus umbellatus*)



Purple loosestrife (*Lythrum salicaria*, *Lythrum virgatum*, or any variety, hybrid, or cultivar thereof)



*Common reed
(*Phragmites australis* subsp. *australis*)



*While yellow floating heart and common reed are not yet illegal to possess and sell, the Minnesota Department of Natural Resources is proposing to classify them as such.

PHOTO CREDITS African oxygen weed, African elodea - Vic Ramey, UF/IFAS Center for Aquatic and Invasive Plants | Curly-leaf pondweed - Chris J. Benson | European frog-bit - Alexandria Walker
Giant salvinia - Vic Ramey, UF/IFAS Center for Aquatic and Invasive Plants | Hydrilla - Lyn Gettys, UF/IFAS Center for Aquatic and Invasive Plants | Water chestnut, water caltrop - B. Smorgans
Yellow floating heart, fringed water lily - Lyn Gettys, UF/IFAS Center for Aquatic and Invasive Plants | Flowering rush, water gladiolus - Peter Dziuk
Purple loosestrife - Megan M. Weber, Minnesota Aquatic Invasive Species Research Center | Common reed - Minnesota Aquatic Invasive Species Research Center

EWR_0007_21 / August 2020

Enjoy your **WATER GARDENS** responsibly

Protect Our Environment
Do Not Release
Fish and
Aquatic Plants



**Get
Habitattitude™**

Fish, snails and plants that escape from water gardens can harm our lakes, rivers, and wetlands. They are costly to control and nearly impossible to eradicate. Take action by not allowing plants to escape and by not releasing unwanted fish or other animals.

www.Habitattitude.net

PLIAC • U.S. FISH & WILDLIFE SERVICE • NOAA • MN SEA GRANT
GREAT LAKES RESTORATION INITIATIVE • WILDLIFE FOREVER
MN DEPARTMENT OF NATURAL RESOURCES • NATIONAL PARK SERVICE
GREAT LAKES AQUARIUM • UMN EXTENSION
MN NURSERY AND LANDSCAPE ASSOCIATION • U.S. FOREST SERVICE

**Do Not Allow
Escape of Plants
or Release of
Unwanted Fish**



Get Habitattitude™

- ✓ **Build** water gardens away from other waters and areas prone to flooding.
- ✓ **Inspect and rinse** aquatic plant orders to remove hitchhiking seeds, plant fragments, snails, insects or fish.
- ✓ **Give or trade** with another water gardener, pond owner or aquarist.
- ✓ **Seal** aquatic plants in a plastic bag and place in the trash. **Do not compost.**
- ✓ **Contact** a veterinarian or pet retailer for guidance on humane disposal of animals.

Ensure that pets and plants are chosen wisely and are well cared for. Be aware of which plants, fish and other animals are potentially invasive in your climate zone. Never release fish or transplant plants into lakes, streams, wetlands and stormwater ponds. State regulations prohibit possession, transport, or sale of invasive plants and animals.

For more information, call the University of Minnesota Sea Grant Program (218) 726-8712; or a Minnesota DNR Invasive Species Specialist (see www.mdnr.gov/invasives/contacts.html), 1-888-MINNDNR or (651) 259-5100.

www.Habitattitude.net

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Fish, snails and plants that escape from water gardens can harm our lakes, rivers, and wetlands. They are costly to control and nearly impossible to eradicate. Take action by not allowing plants to escape and by not releasing unwanted fish or other animals.

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Habitattitude™
PROTECT OUR ENVIRONMENT
DO NOT RELEASE FISH AND AQUATIC PLANTS

**Do Right By Your Pet.
Do Right By Our
Environment.**

Non-native species can harm native species, recreation and the economy. It is illegal to release fish and plants from water gardens and aquariums into Minnesota waters.



www.Habitattitude.net

FREE CHILD ADMISSION

Great Lakes Aquarium
At Lake Superior

Valid for one free child (ages 3-12) admission to the Great Lakes Aquarium with the box office purchase of a full-price adult admission.

Appendix E. Inspection results for pet stores

Species Name		<i>Procambarus clarkii</i>	<i>Carassius auratus</i>	<i>Cyprinus carpio</i>	<i>Trachemys scripta elegans</i>	<i>Egeria densa</i>	<i>Cabomba caroliniana</i>	<i>Nymphaea spp.</i>	<i>Pistia stratiotes</i>
Common Name		Red Swamp Crayfish	Goldfish	Koi	Red-eared slider	Brazilian waterweed	Carolina fanwort	Water lily	Water Lettuce
Site #	Store Type	Prohibited AIS	Regulated AIS	Regulated AIS	Regulated AIS	Regulated AIS	Regulated AIS	Regulated AIS	Early Detection
1	Chain		x	x				x Bulbs	
2	Chain		x	x				x Bulbs	
3	Chain		x	x	x			x Bulbs	
4	Chain		x	x				x Bulbs	
5	Chain		x	x	x			x Bulbs	
6	Chain		x	x				x Bulbs	
7	Chain		x	x	x			x Bulbs	
8	Chain		x	x					
9	Chain		x	x	x			x Bulbs	
10	Chain		x	x				x Bulbs	
11	Chain		x	x	x				
14	Independent	x	x	x		x	x		
15	Independent	x	x	x		x	x	x	x
16	Independent		x	x	x	x		x	x
19	Independent			x					
20	Independent		x						
21	Franchise		x						
22	Franchise		x	x					
23	Franchise		x						
24	Chain		x	x	x			x Bulbs	
Total	20	2	19	17	7	3	2	12	2
Percent		15	95	85	35	15	10	60	10

Appendix F. Inspection results for garden centers

Species Name		<i>Eichhornia crassipes</i>	<i>Nymphaea spp.</i>	<i>Pistia stratiotes</i>	<i>Nymphoides peltata</i>
Common Name		<i>Water hyacinth</i>	<i>Water lily</i>	<i>Water lettuce</i>	<i>Yellow floating heart</i>
Site #	Store Type	<i>Regulated AIS</i>	<i>Regulated AIS</i>	<i>Early Detection</i>	<i>Proposed Prohibited</i>
1	Independent multi-store	x		x	
2	Independent multi-store	x	x	x	x
3	Independent multi-store	x		x	
6	Independent	x	x	x	
15	Independent	x		x	
16	Chain		x Bulbs		
17	Chain		x Bulbs		
19	Independent	x	x	x	
20	Chain				
22	Chain				
23	Chain		x Bulbs		
27	Independent			x	
29	Independent multi-store	x			
31	Independent	x	x	x	
Total	14	8	4	8	1
Percent		57.1	28.6	57.1	7.1

Appendix G. AIS presence at pet stores visited in both 2015 and 2021

PET STORES visited in both 2015 and 2021		<i>Procambarus clarkii</i>	<i>Carassius auratus</i>	<i>Cyprinus carpio</i>	<i>Trachemys scripta elegans</i>	<i>Egeria densa</i>	<i>Cabomba caroliniana</i>	<i>Nymphaea spp.</i>	<i>Pistia stratiotes</i>
Site #	Store Type	<i>Prohibited AIS</i>	<i>Regulated AIS</i>	<i>Regulated AIS</i>	<i>Regulated AIS</i>	<i>Regulated AIS</i>	<i>Regulated AIS</i>	<i>Regulated AIS</i>	<i>Early Detection</i>
		Red Swamp Crayfish	Goldfish	Koi	Red-eared slider	Brazilian waterweed	Carolina fanwort	Water lily	Water lettuce
1	Chain		both	2021				both	
2	Chain		both	2021				both	
3	Chain		both	2021	2021	2015		both	
4	Chain		both	2021		2015		2021	
5	Chain		both	2021	2021	2015		both	
6	Chain		both	2021		2015		2021	
7	Chain		both	2021	2021			both	
8	Chain		both	2021					
9	Chain		both	2021	2021	2015		2021	
10	Chain		both	2021		2015		both	
11	Chain		both	2021	2021				
14	Independent	2021	both	both		both	both		
15	Independent	2021	both	both		both	both	2021	2021
16	Independent		both	both	2021	both		2021	2021

Appendix H. AIS presence at garden centers visited in both 2015 and 2021

GARDEN CENTERS visited in both 2015 and 2021		<i>Nymphaea spp.</i>	<i>Pistia stratiotes</i>	<i>Eichhornia crassipes</i>	<i>Nymphoides peltata</i>	Myriophyllum aquaticum	Iris pseudacorus
		<i>Water lily</i>	<i>Water lettuce</i>	<i>Water hyacinth</i>	<i>Yellow floating heart</i>	Parrot Feather	Yellow Iris
Site #	Store Type	<i>Regulated AIS</i>	<i>Early Detection</i>	<i>Regulated AIS</i>	<i>Proposed Prohibited</i>	<i>Regulated AIS</i>	<i>Regulated AIS</i>
1	Independent multi- locations		both	both	2015	2015	
2	Independent multi- locations	2021	both	both	2021	2015	
3	Independent multi- locations	2015	both	both		2015	
6	Independent	both	both	2021		2015	
15	Independent		both	both		2015	2015
16	Chain	both					
27	Independent	2015	both	2015			
29	Independent multi- locations	2015		both			
31	Independent	both	both	both	2015	2015	

Appendix I. List of fish and plant species and varieties found in pet stores

Common Name	Scientific Name	Class
Goldfish- fantail, oranda, black moor, telescope, comet, bubble eye	<i>Carassius auratus</i>	Regulated
Koi, Common carp	<i>Cyprinus carpio</i>	Regulated
gold dojo loach (label only- no fish)	<i>Misgurnus anguillicaudatus</i>	Prohibited
orange congo puffer	<i>Tetraodon miurus</i>	
horseface loach	<i>Acantopsis dialuzona</i>	
royal acara	<i>Aequidens diadema</i>	
spotted raphael catfish	<i>Agamyxis pectinifrons</i>	
lamp calvus 'congo black'	<i>Altolamprologus calvus</i>	
balloon body/ bandit/ black convict/ blue balloon/ mixed breed/ pin blotched convict/ pink dalmation convict cichlid	<i>Amatitlania nigrofasciata</i>	
dwarf siam botia	<i>Ambastaia sidthimunki</i>	
blood parrot cichlid	<i>Amphilophus</i>	
purple parrot/ super blood/ parrot panda/ parrot persimmon cichlid	<i>Amphilophus citrinellus</i>	
red devil	<i>Amphilophus labiatus</i>	
albino bristle nose, ancistrus/ blue eye lemon/ bushnose blue eye le super red/ albino temminicki/ temminickii plecostomus	<i>Ancistrus sp</i>	
longfish bushynose	<i>Ancistrus cf.</i>	
blue/ electric blue acara	<i>Andinoacara pulcher</i>	
green terror	<i>Andinoacara rivulatus</i>	
striped headstander	<i>anostomus</i>	
bloodfin tetra	<i>Aphyocharax anisitsi</i>	
green fire tetra	<i>Aphyocharax rathbuni</i>	
Agassiz's dwarf cichlid	<i>apistogramma agassizii</i>	
umbrella cichlid	<i>apistogramma borelli</i>	
cockatoo dwarf cichlid/ apistogramma	<i>Apistogramma cacatuoides</i>	
robust dwarf cichlid	<i>apistogramma maemasteri sp tame</i>	
pucallpense apistogramma	<i>Apistogrammoides pucallpaensis</i>	
golden/ golden wonder killfish	<i>Aplocheilus lineatus</i>	
black ghost knife	<i>Apteronotus albifrons</i>	
banjo cats	<i>Aspredinidae</i>	
albino/ assorted/ mixed/ oscar cich longfin/ red oscar/ red tiger skin, tiger/ oscar	<i>Astronotus ocellatus</i>	
zamora catfish (wood)	<i>Auchenipterichthys coracoideus</i>	
aul peacock/ peacock sunburst/ assorted peacock / O.B. peacock	<i>Aulonocara</i>	
aul orange jacob/ eureka peacock cichlid/ jacobfreibergi cichlid	<i>Aulonocara jacobfreibergi</i>	
blue peacock/ mixed peacock cichlid	<i>Aulonocara nyassae</i>	
strawberry peacock	<i>Aulonocara SP.</i>	
aul german red/ aul sunshine maleri	<i>Aulonocara stuartgranti</i>	
aul maylandi sulferhead	<i>Aulonocara maylandi</i>	

badis	<i>Badidae</i>	
bala shark	<i>Balantiocheilos melanopterus</i>	
hillstream loach	<i>Balitoridae</i>	
spanner barb	<i>Barbodes lateristriga</i>	
gold barb	<i>Barbodes semifasciolatus</i>	
tinfoil barb	<i>Barbonymus schwanenfeldii</i>	
madagascar rainbow	<i>Bedotia geayi</i>	
palangkaraya betta	<i>Betta Hendra</i>	
female betta	<i>Betta splendens</i>	
blue/ king tetra	<i>Boehlkea fredcochui</i>	
botia lohachata (yo yo)	<i>Botia</i>	
yo-yo loach	<i>Botia almorhae</i>	
burmese spotted botia/ kubotia botai	<i>Botia kubotai</i>	
striata botia	<i>Botia striata</i>	
queen botia	<i>Botia dario</i>	
boulengerella gar	<i>Boulengerella</i>	
veiltail leopard danio	<i>Brachydanio froskei</i>	
bumble bee goby	<i>Brachygobius xanthozonus</i>	
juvense cat	<i>Brachyplatystoma juvense</i>	
emerald green brochus	<i>Brochis splendens</i>	
green aeneaus corydoras	<i>Callichthyidae</i>	
samssa comet	<i>Calloplelesops altivelis</i>	
white tip shark catfish	<i>Carcharhinus longimanus</i>	
red eye puffer	<i>Carinotetraodon lorteti</i>	
dwarf pea puffer	<i>Carinotetraodon travancoricus</i>	
marbled hatchfish	<i>Carnegiella strigata</i>	
honeycomb catfish/ oil cat	<i>Centromochlus perugiae</i>	
spotted punctatus headstander	<i>Chilodus punctatus</i>	
clown knife	<i>Chitala ornata</i>	
clown loach/ tiger botia/ green tiger botia	<i>Chromobotia macracanthus</i>	
flowerhorn cichlid	<i>Cichlasoma</i>	
Black acara	<i>Cichlasoma bimaculatum</i>	
salvini cichlid	<i>Cichlasoma salvini</i>	
dyed pink parrot cichlid	<i>Cichlidae</i>	
black ninja cat	<i>Clarias gariepinus</i>	
assassin snail	<i>Clea helena</i>	
keyhole cichlid	<i>Cleithracara maronii</i>	
flame gourami	<i>Colisa Lalia</i>	
red pacu	<i>Colossoma macropomum</i>	
mixed albino/ mixed cory	<i>Corydoras</i>	
punctatus cory	<i>Corydoras</i>	
aeneus/ albino/ bronze cory	<i>Corydoras aeneus</i>	

corydoras agassizii	<i>corydoras agassizii</i>	
spotted cory	<i>Corydoras ambiacus</i>	
cory axelrodi	<i>Corydoras axelrodi</i>	
slate corydora	<i>Corydoras concolor</i>	
corydoras elegans	<i>corydoras elegans</i>	
pygmy habrosus corydora	<i>Corydoras hastatus</i>	
corydoras julii/ julii cory	<i>corydoras julii</i>	
leopard cory	<i>Corydoras leopardus</i>	
corydoras melanistus	<i>corydoras melanistus</i>	
green/ gold cory	<i>Corydoras melanotaenia</i>	
corydoras metae	<i>corydoras metae</i>	
nanus cory	<i>Corydoras nanus</i>	
corydoras paleatus/ paleatus cory	<i>corydoras paleatus</i>	
panda cory	<i>Corydoras panda</i>	
corydoras punctatus	<i>corydoras punctatus</i>	
pygmaeus cory	<i>Corydoras pygmaeus</i>	
cory rabauti	<i>Corydoras rabauti</i>	
reticulatus cory	<i>Corydoras reticulatus</i>	
corydoras schwartzii	<i>corydoras schwartzii</i>	
corydoras sterbai/ sterbai cory	<i>corydoras sterbai</i>	
corydorus melini	<i>corydorus melini</i>	
corydorus sterbai	<i>corydorus sterbai</i>	
pike-common cichlid	<i>Crenicichla</i>	
algae eating shark/ Saimese algae eater/ true siamese algae eater	<i>Crossocheilus oblongus</i>	
frontosa cichlid	<i>Cyphotilapia frontosa</i>	
albino blue dolphin moori/ blue dolphin moori/ haplochromis moorii	<i>Cyrtocara moorii</i>	
assorted danio	<i>Danio</i>	
pearl danio	<i>Danio albolineatus</i>	
Glo danio	<i>Danio choprai</i>	
kyathit danio/ kyathit spotted danio	<i>Danio kyathit</i>	
galaxy rasbora	<i>Danio margaritatus</i>	
nigrofasciatus danio	<i>Danio nigrofasciatus</i>	
Glofish Cosmic blue/ Glofish electric green/ Glofish galatic purple/ Glofish starfire red/ Glofish sunburst orange/ Veiltail gold/ veiltail zebra/ zebra danio	<i>Danio rerio</i>	
gold ring burmese danio	<i>Danio tinwini</i>	
scarlet badis	<i>Dario</i>	
loricaria whip tail cat	<i>Dasylicaria filamentosa</i>	
Rohan's Teardrop barb	<i>Dawkinsia rohani</i>	
five branded barb/ five stripe barb	<i>Desmopuntius pentazona johorensis</i>	
snakeskin barb	<i>Desmopuntius rhomboocellatus</i>	
giant danio	<i>Devario aequipinnatus</i>	

flagtail porthole cat	<i>Dianema urostriatum</i>	
lungfish	<i>Dipnoi</i>	
distichodus	<i>Distichodus sexfasciatus</i>	
amazon swords	<i>Echinodorus grisebachii</i>	
red tail black shark	<i>Epalzeorhynchos bicolor</i>	
albino rainbow shark/ rainbow shark/ glo shark/ cosmic blue glo shark	<i>Epalzeorhynchos frenatum</i>	
True Flying Fox	<i>Epalzeorhynchos kalopterus</i>	
reed fish/ rope fish	<i>Erpetoichthys calabaricus</i>	
exodon paradoxus	<i>Exodon paradoxus</i>	
farlowella	<i>Farlowella acus</i>	
banded burmese algae eater	<i>Garra flavatra</i>	
garra rufa	<i>Garra rufa</i>	
hatchet-silver wild tetra/ silver hatchet	<i>Gasteropelecus sternicla</i>	
borneo sucker loach	<i>Gastromyzon punctulatus</i>	
geophagus braziliensis	<i>geophagus braziliensis</i>	
geophagus jurupari	<i>geophagus jurupari</i>	
geophagous eartheater cichlid/ geophagus steindachneri	<i>Geophagus steindachneri</i>	
surinamensis cichlid	<i>Geophagus surinamensis</i>	
yellow tail violet cichlid	<i>Gephyrochromis moorii</i>	
glossolepis incisus/ red Irian rainbow	<i>glossolepis incisus</i>	
millennium rainbow	<i>Glossolepis pseudoincisus</i>	
glossolepis wanamonsis	<i>glossolepis wanamonsis</i>	
spotted sailfin pleco	<i>Glyptoperichthys gibbiceps</i>	
elephant nose	<i>Gnathonemus petersii</i>	
dragon goby	<i>Gobioides broussonnetii</i>	
goodeid	<i>Goodeidae</i>	
blood gourami	<i>Gourami Trichogaster lalius</i>	
black skirt tetra/ blueberry tetra dyed/ glo tetras/ white skirt tetra	<i>Gymnocorymbus ternetzi</i>	
algae eater/ gold algae eater/ gold chinese algae eater/ gold barb	<i>Gyrinocheilus aymonieri</i>	
haplochromis mixed cichlid	<i>Haplochromini</i>	
hap ruby green	<i>Haplochromis</i>	
haplochromis ericotaemia	<i>haplochromis ericotaenia</i>	
hap obliquidens	<i>Haplochromis obliquidens</i>	
silvertip tetra	<i>Hasemania nana</i>	
kissing gourami/ kissing pink gourami	<i>Helostoma temminckii</i>	
green phantom pleco	<i>Hemiancistrus subviridis</i>	
jewel cichlid	<i>Hemichromis</i>	
albino growlight tetra	<i>Hemigrammus erythrozonus</i>	
head and taillight tetra	<i>Hemigrammus ocellifer</i>	
rumynose tetra	<i>Hemigrammus rhodostomus</i>	
retail hemiodus	<i>Hemiodus gracilis</i>	

electric blue texas cichlid	<i>Herichthys carpintis</i>	
texas cichlid	<i>Herichthys cyanoguttatus</i>	
Turquoise severum cichlid	<i>Heros efasciatus</i>	
gold red streak severum cichlid/ gold severum/ green severum	<i>Heros severus</i>	
eclipse catfish/ sun cat	<i>Horabagrus brachysoma</i>	
false zebra pleco	<i>Hypancistrus debilittera</i>	
gold belo monte pleco/ hypanc snowball pleco/ Tiger gold belo monte/ yellow king tiger pleco	<i>Hypancistrus sp</i>	
ember tetra	<i>Hyphessobrycon amandae</i>	
buenos aires tetra	<i>Hyphessobrycon anisitsi</i>	
columbian red/ blue tetra	<i>Hyphessobrycon columbianus</i>	
hifin serpae tetra/ neon serpae tetra/ red blotch tetra/ serpae hifin/ serpae tetra	<i>Hyphessobrycon eques</i>	
bleeding heart tetra	<i>Hyphessobrycon erythrostigma</i>	
orange von rio tetra	<i>Hyphessobrycon flameus</i>	
blue flame tetra/ flame tetra	<i>Hyphessobrycon flammeus</i>	
kitty tetra	<i>Hyphessobrycon heliacus</i>	
black neon tetra	<i>Hyphessobrycon herbertaxelrodi</i>	
lemon tetra	<i>Hyphessobrycon pulchripinnis</i>	
candy cane tetra/ white fin rosy tetra	<i>Hyphessobrycon rosaceus</i>	
red phantom tetra/ red tail phantom tetra	<i>Hyphessobrycon sweglesi</i>	
emperors line pleco/ Trinidad pleco	<i>Hypostomus plecostomus</i>	
iria weneri threadfin	<i>Iriatherina weneri</i>	
american flagfish/ florida flagship	<i>Jordanella floridae</i>	
juli ornatus	<i>Julidochromis ornatus</i>	
juli transcriptus	<i>Julidochromis transcriptus</i>	
ghost glass cat	<i>Kryptopterus vitreolus</i>	
black shark	<i>Labeo chrysophekadion</i>	
yellow labidochromis	<i>Labidochromis caeruleus</i>	
longnose gar	<i>Lepisosteus osseus</i>	
arrow shark	<i>Irg labiobarbus festivus</i>	
yellowtail spiny eel	<i>Macrogathus pancalus</i>	
albino paradise fish/ blue paradise	<i>Macropodus opercularis</i>	
octocinclus	<i>Macrotocinclus affinis</i>	
celebes rainbow	<i>Marosatherina ladigesii</i>	
tire track eel/ zig zag eel	<i>Mastacembelus armatus</i>	
fire eel	<i>Mastacembelus erythrotaenia</i>	
ps zebra red cherry	<i>Maylandia</i>	
cobalt blue cichlid/ cobalt blue zebra	<i>Maylandia callainos</i>	
bumble bee cichlid	<i>Maylandia crabro</i>	
blotched cherry zebra	<i>Maylandia estherae</i>	
ice blue cichlid	<i>Maylandia greshakei</i>	

kenyi cichlid	<i>Maylandia lombardoi</i>	
melano maingano electric blue	<i>Melanochromis cyaneorhabdos</i>	
johanni cichlid	<i>Melanochromis johannii</i>	
melano auratus	<i>Melanochromis auratus</i>	
melanotaenia lacustris (blue)	<i>Melanotaenia</i>	
boesmani rainbowfish/ melanotaenia boesemani	<i>Melanotaenia boesemani</i>	
australian rainbow	<i>Melanotaenia fluviatilis</i>	
kamaka rainbow	<i>Melanotaenia kamaka</i>	
turquoise raibowfish	<i>Melanotaenia lacustris</i>	
parkinsoni rainbow	<i>Melanotaenia parkinsoni</i>	
dwarf neon rainbow/ neon blue rainbow/ praecox rainbow fish	<i>Melanotaenia praecox</i>	
yellow rainbowfish	<i>Melantaenia herbertaxelrodi</i>	
Festivum (flag) cichlid	<i>Mesonauta festivus</i>	
ps zebra red top/ zebra red top cichlid	<i>Metriaclima pyrsonotos</i>	
ps elongatus chilosi	<i>Metriaclima sp.</i>	
silver dollar/ silver dollar metyn/ spotted silver dollar	<i>Metynnis argenteus</i>	
bolivian ram	<i>Microgeophagus altispinosa</i>	
bumble bee cat	<i>Microglanis iheringi</i>	
blue stiphodon goby	<i>Microsicydium atropurpureum</i>	
balloon ram	<i>Mikrogeophagus</i>	
bolivian altispinosa ram	<i>Mikrogeophagus altispinosus</i>	
angel ram/ blue ram cichlid/ gold ram/ german ram cichlid	<i>Mikrogeophagus ramirezi</i>	
Diamond tetra	<i>Moenkhausia pittieri</i>	
red eye balloon tetra	<i>Moenkhausia sanctaefilomenae</i>	
silver angel/ silver halfback	<i>Monodactylus argenteus</i>	
red hook/ red hook metynnis/ silver dollar red hook	<i>Myloplus rubripinnis</i>	
cuban cichlid	<i>Nandopsis tetracanthus</i>	
beckford's pencilfish	<i>Nannostomus beckfordi</i>	
diptail pencil	<i>Nannostomus eques</i>	
emperor tetra	<i>Nematobrycon palmeri</i>	
lamp boulangereii	<i>Neolamprologus</i>	
brichardi/ lamp brichardi	<i>Neolamprologus brichardi</i>	
neo multifaciatus shelli	<i>Neolamprologus multifasciatus</i>	
mixed zebra snail	<i>Neritina</i>	
mixed tiger snail	<i>Neritina natalensis</i>	
haplochromis livingstoni	<i>Nimbochromis livingstonii</i>	
venustus cichlid	<i>Nimbochromis venustus</i>	
venustus	<i>Nimbochromis venustus</i>	
albino temaniki/ longfin temaniki	<i>Nipponocypris temminckii</i>	
featherfin knife	<i>Notopteridae</i>	
checkerboard barb/ checkered barb	<i>Oliotius oligolepis</i>	
daisy blue rice fish	<i>Oryzias woworae</i>	

silver arrowana	<i>Osteoglossum bicirrhosum</i>	
zimbabwe rock cichlid	<i>Otopharynx lithobates</i>	
turushuqui cat	<i>Oxydoras niger</i>	
mixed sailfin molly	<i>P. latipinna</i>	
spotted mustard pleco	<i>Panaqolus albomaculatus</i>	
clown plecostomus	<i>Panaque maccus</i>	
Royal Pleco	<i>Panaque nigrolineatus</i>	
Albino Iridessent shark	<i>Pangasianodon</i>	
irredescent shark	<i>Pangasianodon hypophthalmus</i>	
Common kuhli loach/ gold banded kuhli loach/ kuhli loach	<i>Pangio kuhlii</i>	
black kuhli loach	<i>Pangio oblonga</i>	
pantadon butterfly fish	<i>Pantodon buchholzi</i>	
cardinal tetra	<i>Paracheirodon axelrodi</i>	
green neon tetra/ neon tetra/ neon tetra jumbo breeder	<i>Paracheirodon innesi</i>	
Jaguar cichlid/ managuense	<i>Parachromis managuensis</i>	
indian glass fish	<i>Parambassis ranga</i>	
debawi cat	<i>Pareutropius debauwi</i>	
albino kribensis/ kribensis cichlid	<i>Pelvicachromis pulcher</i>	
leopard hybrid cat	<i>Perrunichthys perruno</i>	
rosy barb/ starburst rosy barb	<i>Pethia conchonius</i>	
gold dwarf barb	<i>Pethia gelius</i>	
black ruby barb/ ruby barb	<i>Pethia nigrofasciata</i>	
odessa barb/ odessa fire barb	<i>Pethia padamya</i>	
congo tetra	<i>Phenacogrammus</i>	
redtail catfish	<i>Phractocephalus hemiliopterus</i>	
pictus four-line catfish	<i>Pimelodus blochii</i>	
pimelodella pictus cat	<i>Pimelodus pictus</i>	
rosy red minnow	<i>Pimephales promelas</i>	
pink ramshorn snail	<i>Planorbis rubrum</i>	
zebra raphael catfish	<i>Platydoras armatulus</i>	
albino eye red guppy/ assorted molly/ lyretail gold dust molly/ lyretail panda molly/ lyretail silver molly	<i>Poecilia</i>	
lyretail dalmation molly/ red leopard molly/ sailfin molly	<i>Poecilia latipinna</i>	
guppies/ multi colored guppy/ tiger guppy	<i>Poecilia reticulata</i>	
moscow black guppy/ moscow guppy	<i>Poecilia reticulata var</i>	
24K molly/ mixed sphenop molly/ lyretail molly/ lyretail black molly/ panda molly/ gold nugget molly/ Cremecicle Molly/ black molly	<i>Poecilia sphenops</i>	
black endler male guppy/ endler livebearers/ mixed elder livebearer	<i>Poecilia wingei</i>	
polypterus bichir	<i>Polypteridae</i>	
saddled bichir/ endligheri	<i>Polypterus endligheri</i>	
ornate bichir/ ornate polypterus (bichir)	<i>Polypterus ornatipinnis</i>	
teugelsi bichir	<i>Polypterus teugelsi</i>	

black mystery snail/ mystery snail	<i>Pomacea bridgesii</i>	
glass bloodfin tetra	<i>Prionobrama filigera</i>	
pristella tetra/ x-ray tetra/ gold pristella tetra/ gold tetra	<i>Pristella maxillaris</i>	
taiwan reef cichlid	<i>Protomelas</i>	
african lung fish	<i>Protopterus</i>	
blue eyed rainbowfish	<i>Pseudomugil gertrudae</i>	
signifer rainbowfish	<i>Pseudomugil signifer</i>	
tiger shovelnose cat	<i>Pseudoplatystoma fasciatum</i>	
mbuna mixed cichlid/ ps socolofi snow white	<i>Pseudotropheus</i>	
acei	<i>Pseudotropheus acei</i>	
snow white cichlid/ socolofi cichlid	<i>Pseudotropheus socolofi</i>	
mixed african cichlids/ assorted african cichlid	<i>Pseudotropheus sp.</i>	
angelfish/ blue angel/ green acara/ orange koi angelfish/	<i>Pterophyllum</i>	
blue blushing angel/ large black angels/ peruvian angels/ platinum angel fish	<i>Pterophyllum scalare</i>	
blushing angel/ marble angels	<i>Pterophyllum sp</i>	
gibbicep plecostomus/ marble sailfin pleco/ yellow spotted pleco	<i>Pterygoplichthys gibbiceps</i>	
Sailfin Plecostomus	<i>Pterygoplichthys multiradiatus</i>	
chocolate albino pleco	<i>Pterygoplichthys pardalis</i>	
rhino plecostomus	<i>Pterygoplichthys scrophi</i>	
green tiger barb/ orange tiger barb/ tiger albino barb/ tiger barb	<i>Puntigrus tetrazona</i>	
neon rosy barb	<i>Puntius conchonius</i>	
clown barb	<i>Puntius everetti</i>	
albino tiger barb/ electric green longfin barb/ Glo barb/ tiger green platinum/ albino cherry barb/ cherry barb/ cherry barb veiltail	<i>Puntius tetrazona</i>	
piranha/ red bearded piranha/ red belly piranha	<i>Pygocentrus</i>	
brilliant rasbora	<i>Rasbora einthovenii</i>	
red striped burmese rasbora	<i>Rasbora pauciperforata</i>	
scissortail rasbora	<i>Rasbora trilineata</i>	
red lizard cat	<i>Rineloricaria sp.</i>	
electric blue jack dempsey/ jack dempsey cichlid	<i>Rocio octofasciata</i>	
parrotfish	<i>Scaridae</i>	
blue tiger parrot	<i>Scarus coeruleus</i>	
hap ahli	<i>Sciaenochromis ahli</i>	
prochilodus red fin	<i>Semaprochilodus taeniuru</i>	
rock (fan) shrimp	<i>Sicyonia brevirostris</i>	
red lip goby	<i>Sicyopus jonklaasi</i>	
lima shovelnose	<i>Sorubim lima</i>	
steatocranus casuaruis (buffalo head)	<i>Steatocranus casuarius</i>	
knight goby	<i>Stigmatogobius sadanundio</i>	
mixed discus	<i>Symphysodon</i>	
pigeon blood discus	<i>Symphysodon sp</i>	

synodontis catfish	<i>Synodontis</i>	
syno eupterus	<i>Synodontis eupterus</i>	
gold nigrita synodontis/ lace catfish/ lace synodontis	<i>Synodontis nigrita</i>	
dwarf penricola catfish	<i>Synodontis petricola</i>	
golden white cloud	<i>Tanichthys</i>	
Tanichthys albonubes/ white cloud minnow	<i>Tanichthys albonubes</i>	
gudgeon peacock	<i>Tateurndina acellicauda</i>	
peacock gudgeon	<i>Tateurndina ocellicauda</i>	
von rio tetra	<i>Tetra Hyphessobrycon flammeus</i>	
figure eight puffer	<i>Tetraodon biocellatus</i>	
fahaka puffer	<i>Tetraodon lineatus</i>	
penguin tetra	<i>Thayeria boehlkei</i>	
firemouth cichlid	<i>Thorichthys meeki</i>	
dwarf gourami/ dwarf gourami neon red	<i>Trichogaster</i>	
honey dwarf gourami/ honey flame dwarf gourami/ red honey gourami	<i>Trichogaster china</i>	
dwarf gourami powder blue/ powder blue gourami/ red flame dwarf gourami	<i>Trichogaster lalius</i>	
pearl gourami	<i>Trichopodus leerii</i>	
moonlight gourami	<i>Trichopodus microlepis</i>	
blue gourami/ gold gourami/ opaline gourami	<i>Trichopodus trichopterus</i>	
sparkling gourami	<i>Trichopsis pumila</i>	
cichlasoma salvini	<i>Trichromis salvini</i>	
lambchop rasbora/ pork chop rasbora	<i>Trigonostigma espei</i>	
glowlight rasbora	<i>Trigonostigma hengeli</i>	
harlequin rasbora/ rasbora het/ rasbora heteromorpha	<i>Trigonostigma heteromorpha</i>	
purple rasbora het	<i>Trigonostigma heteromorpha</i>	
duboisii cichlid	<i>Tropheus duboisi</i>	
tropheus moorii bemba	<i>Tropheus moorii</i>	
chocolate cichlid	<i>Uaru amphiacanthoides</i>	
Blackbelt cichlid	<i>Vieja maculicauda</i>	
african knifefish	<i>Xenomystus nigri</i>	
mixed platy/ swordtail	<i>Xiphophorus</i>	
black swordtail/ pineapple sword/ assorted swordtail/ koi swordtail/ snake swordtail	<i>Xiphophorus helleri</i>	
blue spotted play/ bumble bee platy/ coral red platy/ crystal red platy/ hifin platy/ jumbo platy/ red platy	<i>Xiphophorus maculatus</i>	
hi fin variatus	<i>Xiphophorus variatu</i>	
banged red tail loach	<i>Yasuhikotakia</i>	
blue passion botia/ red tailed botia	<i>Yasuhikotakia modesta</i>	
skunk botia	<i>Yasuhikotakia morleti</i>	
inle loach	<i>Yunnanilus brevis</i>	

Plants

Common Name	Scientific Name	Class
Carolina fanwort/ fanwort	<i>Cabomba carliniana</i>	Regulated
Brazilian waterweed	<i>Egeria densa</i>	Regulated
nonnative water lily	<i>Nymphaea albida</i>	Regulated
nonnative water lily	<i>Nymphaea attraction</i>	Regulated
nonnative water lily	<i>Nymphaea chromatella</i>	Regulated
nonnative water lily	<i>Nymphaea sioux</i>	Regulated
nonnative water lily	<i>Nymphaea stellata</i>	Regulated
water lettuce	<i>Pistia stratiotes</i>	Early detection
Cherry hedge	<i>Alternanthera ficoidea</i>	
Alternanthera reineckii	<i>Alternanthera reineckii</i>	
Ammania sp bonsai	<i>Ammania sp bonsai</i>	
Anubias afzelii	<i>Anubias afzelii</i>	
Anubias barteri	<i>Anubias barteri</i>	
Anubias nana	<i>Anubias barteri var. nana</i>	
Anubias congensis	<i>Anubias congensis</i>	
Frazeri anubias	<i>Anubias Frazeri</i>	
Anubias gigantea	<i>Anubias gigantea</i>	
Aponogeton bulbs	<i>Aponogeton bioviniana</i>	
Aponogeton bulbs	<i>Aponogeton capuronii</i>	
Aponogeton bulbs	<i>Aponogeton madagascariensis</i>	
Aponogeton bulbs	<i>Aponogeton sp.</i>	
Aponogeton bulbs	<i>Aponogeton ulvaceus</i>	
Assorted species	<i>Asstd. spp.</i>	
Bacopa	<i>Bacopa caroliniana</i>	
Moneywort	<i>Bacopa monnieri</i>	
Barclaya longifolia	<i>Barclaya longifolia</i>	
Asian water fern/ El Nino Fern	<i>Bolbitis heteroclita</i>	
African water fern	<i>Bolbitis heudelotii</i>	
Wavy Green	<i>Bucephalandra sp.</i>	
Bucephalandra sp.	<i>Bucephalandra sp.</i>	
Hornwort plant	<i>Ceratophyllum demersum</i>	
Water sprite	<i>Ceratopteris thalictroides</i>	
Japanese marimo ball	<i>Cladophora aegagropila</i>	
water onion bulb	<i>Crinum thaianum</i>	
Balansae plant	<i>Cryptocoryne balansae</i>	
Cryptocoryne beckettii	<i>Cryptocoryne beckettii</i>	
Cryptocoryne flamingo	<i>Cryptocoryne flamingo</i>	
Cryptocoryne Lucens	<i>Cryptocoryne Lucens</i>	
Lutea	<i>Cryptocoryne lutea</i>	

Cryptocoryne parva	<i>Cryptocoryne parva</i>	
Red Undulata	<i>Cryptocoryne undulata</i>	
Cryptocoryne usteriana	<i>Cryptocoryne usteriana</i>	
Cryptocoryne wendtii	<i>Cryptocoryne wendtii</i>	
Cyperus Helferi	<i>Cyperus Helferi</i>	
Anacharis plant/ White ribbon	<i>Dracaena sanderiana</i>	
Gold Ribbon	<i>Dracaena variegatus</i>	
Amazon Sword	<i>Echinodorus amazonicus</i>	
Argentine sword	<i>Echinodorus argentinensis</i>	
Compacta amazon	<i>Echinodorus grisebachii</i>	
Red Pearl Sword	<i>Echinodorus Hadi Red Pearl</i>	
Oriental sword	<i>Echinodorus oriental</i>	
Gold mellow sword	<i>Echinodorus osiris</i>	
Green ozelot	<i>Echinodorus Ozelot Green</i>	
Rosette sword	<i>Echinodorus parviflorus</i>	
Red Flame Sword	<i>Echinodorus schlueteri</i>	
Echinodorus tennellus	<i>Echinodorus tennellus</i>	
Miniature Dwarf Hairgrass/ Eleocharis acicularis	<i>Eleocharis acicularis</i>	
Dwarf Hairgrass/ Eleocharis parvula	<i>Eleocharis parvula</i>	
Eriocaulon cinereum	<i>Eriocaulon cinereum</i>	
Fiddidens Fontanus golfball	<i>Fiddidens fontanus</i>	
Glossostigma	<i>Glossostigma elatinoides</i>	
Dwarf baby tears	<i>Hemianthus callitrichoides</i>	
Temple Plant	<i>Hydrophila corymbosa "stricta"</i>	
Wisteria	<i>Hydrophila difformis</i>	
Hydrophila pinnatifida	<i>Hydrophila pinnatifida</i>	
duckweed	<i>Lemnoideae minor</i>	
Lilaeopsis brasiliensis	<i>Lilaeopsis brasiliensis</i>	
Limnophila heterophylla	<i>Limnophila heterophylla</i>	
Lindernia rotundifolia	<i>Lindernia rotundifolia</i>	
Littorella uniflora	<i>Littorella uniflora</i>	
Cardinal Plant/ Cardinalis/ Lobelia cardinalis	<i>Lobelia cardinalis</i>	
Ludwigia arcuata	<i>Ludwigia arcuata</i>	
Ludwigia repens/ Repens	<i>Ludwigia repens</i>	
Microcarpaea minima	<i>Microcarpaea minima</i>	
Java Fern/ Crested java fern/ narrow leaf/ Windelov java fern	<i>Microsorium pteropus</i>	
Narrow leaf fern	<i>Microsorium sp.</i>	
Myriophyllum	<i>Myriophyllum propinum</i>	
Banana plant	<i>Nymphoides aquatica</i>	
Mondo grass plant	<i>Ophipogon japonicus</i>	
Bamboo	<i>Oracaena reflexa</i>	
Pogostermon erectus	<i>Pogostermon erectus</i>	

Pogostermon helferi	<i>Pogostermon helferi</i>	
Marsh mermaidweed	<i>Proserpinaca palustris</i>	
Rotala indica	<i>Rotala indica</i>	
Rotala macrandra	<i>Rotala macrandra</i>	
Rotala/ Rotala rotundifolia	<i>Rotala rotundifolia</i>	
Rotala wallichii	<i>Rotala wallichii</i>	
Sagittaria subulata	<i>Sagittaria subulata</i>	
Sekadau bukit betung	<i>Sekadau bukit betung</i>	
Umbrella plant	<i>Spathiphyllum wallisii</i>	
Staurogyne repens	<i>Staurogyne repens</i>	
Valisneria Grasses	<i>Vallisneria spiralis</i>	
Aquatic moss ball/ java moss	<i>Vesicularia dubyana</i>	
Christmas moss	<i>Vesicularia montagnei</i>	

Appendix J. List of aquatic plant species and varieties found in garden centers

Common Name	Scientific Name/variety	Class
Water hyacinth	<i>Eichhornia crassipes</i>	Regulated
nonnative water lily	<i>Nymphaea spp.</i>	Regulated
nonnative water lily	<i>alba</i>	Regulated
nonnative water lily	<i>sioux</i>	Regulated
nonnative water lily	<i>aurora</i>	Regulated
nonnative water lily	attraction	Regulated
nonnative water lily	<i>chromatella</i>	Regulated
nonnative water lily	<i>sulphorea</i>	Regulated
nonnative water lily	<i>marliacea rosea</i>	Regulated
nonnative water lily	<i>marliacea albida</i>	Regulated
nonnative water lily	<i>nero</i>	Regulated
nonnative water lily	<i>venusta</i>	Regulated
nonnative water lily	James Brydon	Regulated
nonnative water lily	Almost Black	Regulated
nonnative water lily	Madame Wilfron Gonnere	Regulated
water lettuce	<i>Pistia stratiotes</i>	Early detection
Creeping Jenny	<i>Lysimachia nummularia</i>	WI regulates
Forget-me-not	<i>Myosotis scorpiodes</i>	WI regulates
Variiegated Sweet Flag	<i>Acorus cal. Variegatus</i>	
Acorus	<i>Calamus variegatus</i>	
Black Magic Taro	<i>Colocasia esculenta 'Black Magic'</i>	
Yellow Taro	<i>Colocasia esculenta Elena PP17887</i>	
Elephant Ear	<i>Colocasia esculenta 'Jack's Giant'</i>	
Red Bog Lilly	<i>Crinum 'Menehune'</i>	
Dwarf Umbrella palm	<i>Cyperus alternif. Gracilis</i>	
Prince Tut	<i>Cyperus papyrus</i>	
Horsetail	<i>Equisetum hyemale</i>	
Dwarf Horsetail	<i>Equisetum scirpoides</i>	
Mare's Tail	<i>Hippuris vulgaris</i>	
Dwarf pennywort	<i>Hydrocotyle nova Zealandiae</i>	
Iris- pink	<i>Iris ensata</i>	
Iris ensata	<i>Iris ensata 'Royal Banner'</i>	
Louisiana water Iris	<i>Iris louisiana</i>	
Corkscrew rush	<i>Juncus effusus Spiralis</i>	
Fuzzy water Clover	<i>Marsilea drummondii</i>	

Maggie Belle Slocum Lotus	<i>Nelumbo</i>	
Yellow floating heart	<i>Nymphoides peltata</i>	Proposed prohibited
Purple pickerelweed	<i>Pontederia cordata</i>	
Pickerel Rush	<i>Pontederia cordata</i>	
Pickerel Rush, Pink	<i>Pontederia cordata (Native)</i>	
Bloody dock	<i>Rumex sanguineus</i>	
Broadleaf Arrowhead	<i>Sagittaria latifolia</i>	
Scarlet Belle pitcher plant	<i>Sarracenia Scarlet Belle</i>	
Black magic taro	<i>Taro Colocasia esculenta</i>	
Mini cattail	<i>Typha minima</i>	