

# **Aquatic Invasive Species and Water Gardening**

Script for Master Gardeners presenting PowerPoint slide show (9/17/2005)

Before you give this presentation, please run through the slides and read the script. There is a lot of supporting information in this script and on the notes section of the power point presentation. You may decide that it isn't all necessary for your audience, but we figured it was better to have too much information than not enough. There are no animations in the presentation, the background and font are very basic so it should work on most any system. Barb and Eleanor

Slide

## **1 Title slide**

Your introduction first.

The interest in water gardening continues to grow across the USA. As more people install back yard ponds and other water features, it is important for them to understand the potential danger of introducing non-native plant species into our natural waters (lakes and streams), and steps to take to insure they are not contributing to the problem.

## **2 Purple loosestrife**

In natural areas native plants and animals have a symbiotic relationship – that is, they exist together in an environment in which they rely on each other for food, shelter, pollination, and dispersal. They also compete for nutrients, sunlight and water, and they keep each other in balance so that one species does not dominate the environment.

When non-native plants are introduced they can gain a foothold and become invasive because of an absence of natural controls (predators, disease, climate, etc.) that would keep them in check in their own native habitat. These non-native (called “exotic” by some) plants may become invasive and dominate an area. Natural resource professionals are now calling these non-native invaders, Aquatic Invasive Species, or AIS, for short.

Historically, gardening was, and still is a significant means of introducing non-native plants. Usually non-natives such as annuals and many familiar perennials are not invasive and don't cause ecological problems. However, some terrestrial or aquatic plants can escape our gardens and can survive to become invasive in our climate zone.

This slide shows a stream bank where purple loosestrife has become dominant. Purple loosestrife was introduced as a horticultural favorite in eastern North America in the early 1800s and has since spread westward across much of the U.S. and Canada. It's a hardy perennial that frequently takes over in wetlands, along roadside ditches, and can even spread into drier upland areas.

## **3 Koi**

Non-native animals that are introduced to natural waters may overwhelm natural ecosystems and native species - by taking over spawning or feeding grounds, by eating native species or eating/depleting their normal food sources, through aggressive behavior, by introducing disease, or by habitat destruction.

Examples used in water gardening that may become a problem if introduced to natural water ways

include fish, amphibians, reptiles, or invertebrates like snails or zebra mussels. Koi and goldfish released intentionally or accidentally from water gardens have established viable population in many of Minnesota's lakes. The number of lakes with surviving goldfish or koi populations is not known for sure, but in many lakes you can see schools of the gold-colored invaders and children often catch them while fishing for sunnies.

#### **4 Non-native plants or animals**

Methods for controlling invasive species include mechanical, chemical, and biological alternatives. Mechanical measures include cutting or chopping, and removing vegetation – either by hand or with a machine like this harvester. Controlling established invasives can be very expensive and may offer only limited, or short-term success. They often require repeated applications or long-term commitments and won't solve the problem of invasive species.

Control measures do only that – control or manage invasive populations, but do not eliminate or eradicate them. The best way to ensure that our lakes and streams aren't overrun by invasive plants or animals is to make sure they aren't introduced in the first place.

#### **5 3 pictures: goldfish, yellow iris, Eurasian water milfoil weevil**

At the end of the season when gardeners close up their ponds, they may not want to over-winter fish and choose to release them into a nearby lake or stream. Hardy fish, such as koi or goldfish can survive to become an established population. These goldfish were “harvested” from a small pond in Duluth where they had become the dominant fish species.

Sometimes people who want to revegetate their shoreline or think they can add beauty to a neighborhood stormwater pond or wetland may choose to plant non-native species, like this yellow iris. Many people think yellow iris is native to Minnesota, but it's not and because it is hardy it can become very invasive in our climate zone.

Natural resource professionals may intentionally introduce predators from the original habitat of non-native plants to try and control invasives, such as this weevil (from Eurasia) introduced in Minnesota to try and control Eurasian water milfoil. Usually the introduced predators have been well-studied before they are released.

#### **6 3 pictures: flowering rush, water garden, potted plant**

This flowering rush produces millions of seeds that are wind-blown, like purple loosestrife. When flowering rush is used in water gardens, the seeds can be easily carried into nearby lakes, streams, or wetlands. Flowering rush was also a horticultural introduction that has become invasive in 16 lakes, mainly in western Minnesota.

During heavy rains or storms, plant fragments may be washed out of residential water gardens or rain gardens and carried by runoff into nearby waters where they may become established.

Recent University research found that 93% of plant orders contain “hitchhikers” – unintended plant fragments, seeds, or rhizomes. Sometimes even regulated invasive species hitch a ride with your plant order. Be sure to check new plants before introducing them to your garden or shoreline.

Many of the new introductions of milfoil, curlyleaf pondweed, and zebra mussels to Minnesota's lakes have resulted from recreation, when people fail to clean their boats or trailers thoroughly, or neglect to empty their bait buckets or live wells. Milfoil is now found in about 160 Minnesota lakes and curlyleaf pondweed is in over 700. Recently zebra mussels were found in Mille Lacs, bringing the number of infested Minnesota lakes to 3 (plus Lake Superior).

## **7 Research on AIS and horticulture trade**

Research by Kristi Maki and Sue Galatowitsch of the University of Minnesota Department of Horticulture in 2002 was designed to assess the risk of importing aquatic plants to Minnesota. They conducted a survey to determine which exotic aquatics are available from commercial sources and whether invasive plants are transported through horticultural trade. They also investigated the cold tolerance of *Hydrilla verticillata* and other aquatic plants.

Kristi found that when she ordered plants that are prohibited in Minnesota (such as loosestrife or flowering rush), she received them 12 of 13 times. This shows that it is easy and common to receive plants that are prohibited in Minnesota, when ordering from out of state.

Next she ordered plants from and examined the deliveries for hitchhikers. A "hitchhiker" is any nonintended plant or plant fragment, seed, moss, or animal that wasn't specifically ordered. Plants were ordered from 30 vendors located more than 80 km from St. Paul and 4 within 80 km of St. Paul. The retailers she ordered from included 22 water garden specialists, 2 aquarium specialists, and 10 general garden businesses. The orders were placed via internet (14), phone (22), or in person (4)

Kristi ordered plants in two categories: plant packages (18) & individual chosen plants (22). She ordered popular, prohibited, and plants recommended by salesperson

## **8 U of MN research showed ...**

When plant orders were received, they were carefully unpacked, cleaned and the presence of any 'extras' was recorded. Those were placed in appropriate containers and grown for 4 weeks, or until they died or flowered.

Almost 93% of the plant orders contained hitchhikers (unintended plants, seeds, mosses, fungi, snails or fish), including species known to be invasive in Minnesota.

Although only 10% of the orders included invasive, prohibited species, if there are a million plant orders placed annually in the U.S. (a reasonable figure given that the water gardening industry is a billion dollar/year industry now), that means that there would be 100,000 opportunities for new introductions each year – across the country, not all in Minnesota. We don't know how many sales of aquatic plants are made each year in Minnesota, but there is certainly a great potential for introducing hitchhiking invasives.

## **9 U of MN research, 2003-2005**

Barb Liukkonen (MN Sea Grant and U of MN Extension) and Eleanor Burkett (U of MN Extension) received funding from the national Sea Grant Program to further assess the potential for introducing new invasive species from water gardening in Minnesota and to develop an

educational campaign to prevent new introductions. The research and outreach is in partnership with the Minnesota Water Garden Society, Department of Natural Resources, Minnesota Nursery and Landscape Association, U of MN Extension Service, and private nursery and landscape businesses, as well as Michigan Sea Grant and the Wisconsin DNR.

In 2004, we conducted interviews with 38 nursery and landscape professionals across Minnesota. The surveys were designed to measure their awareness and knowledge about aquatic invasive species, to identify their source of plants, characterize their sales practices, and assess opportunities for educating customers and nursery employees.

## **10 Nursery professional research**

Professionals from 14 water garden businesses in the metro and 26 in greater Minnesota were interviewed, including landscape designers, pond installers, retail nurseries, and pet stores that sold aquatic plants. Their primary source of plants is from wholesale outlets here in Minnesota. That's good news because it reduces the potential number of invasive species that are allowed in other states and that might hitchhike on wholesale orders.

Further, the nursery professionals told us:

- \$ 57% think AIS is serious concern
- \$ 75% have received hitchhikers in their plant orders
- \$ 54% have practices to prevent hitchhikers in those plant orders
- \$ 30% have practices to prevent hitchhikers in sales to customers, AND
- \$ 95% willing to provide education to customers and employees

## **11 2004 Consumer survey research**

Water gardeners were invited to provide input through another survey. 77 people responded to this invitation providing information on where they buy their water gardening plants and where they get their information about water gardening. We also asked about their awareness of and attitudes about aquatic invasive species, and whether they would be willing to pay for plants that they could be sure were free of nuisance hitchhikers.

If people want to see or take the survey, it's still available online at [www.shorelandmanagement.org/survey](http://www.shorelandmanagement.org/survey)

## **12 Consumers reported ...**

The surveys provided a wealth of information for planning an educational campaign. Water gardeners primarily buy their plants at local nurseries – very few shop over the Internet.

- \$ 17% exchange plants with friends or other gardeners.
- \$ 30% purchase animals for their water garden (mainly fish, but also snails).
- \$ 80% of the respondents could recognize a picture of purple loosestrife (which is GOOD NEWS!), but only 6% were able to recognize floating yellow heart, which is a potentially very invasive water plant in Minnesota. These pictures show purple loosestrife and floating yellow heart taking over a lake.

Many overwinter plants & animals outdoors. This may mean we're altering the cold-hardiness of

some species, as we provide them with a warm enough winter refuge for survival.

\$ 50% say they compost extra plants. 1 acknowledged releasing extra plants or fish to a lake.

Additionally ...

\$ 91% think aquatic invasive species pose a serious problem to Minnesota's lake or streams.

\$ 40% spend \$50-500 annually on their water gardens.

\$ 90% said they would be willing to pay extra to avoid hitchhikers in plants they buy.

\$ 76% say educational materials would be very useful. Most useful would be guest speakers and displays.

### 13 AIS & water gardening educational materials

Information and perspectives gained from the nursery and landscape professionals, and water garden enthusiasts were used in developing educational materials. We held focus groups, introducing various options and created the materials that seemed to best fit our target audiences. The following materials are available as PDFs on the Sea Grant website. The URL is listed at the end of this power point.

We created both large posters (18 inches by 24 inches) and small posters (8½ inches by 11 inches). There are plant sticks designed to be inserted by nurseries into the pots of potentially invasive plant, and nursery tags that can be hung on the bags of plants that don't come in pots. In addition there are tip cards that outline several steps you can take to prevent new introductions of invasive species. [hand out tip cards, if you have them.]

During the summer of 2005, 40 nurseries in Minnesota piloted these materials. They'll be reprinted and distributed more widely in 2006. (You might want to check whether your favorite nursery retailer has them, and offer to make them aware.)

[3-panel display boards are also available for Master Gardeners to use at meetings. Contact Barb Liukkonen for details. liukk001@umn.edu. 612-625-9256.]

### 14 Never transplant non-native plants into lakes, streams, wetlands, or stormwater ponds.

Even if they look beautiful in your water garden, don't transplant plants (or animals!) into a nearby water body or take them to the cabin to beautify your shoreline. When you buy plants for your water garden, that's where they should stay.

It's illegal to plant anything in Minnesota's natural waters without a permit from the Department of Natural Resource. Even to transplant native plants you need to get a permit.

### 15 Examine plant orders for unwanted and potentially invasive hitchhikers.

Hitchhikers can be extremely small, so rinse floating plants in a bucket and dispose of the rinse water away from your pond. Look carefully at your potted plants and remove everything you didn't intend to buy.

### 16 Learn how invasive plants spread - by seed, rhizome, or tiny plant fragments.

Plants use a multitude of strategies for reproduction. If you recognize how they spread, you'll be better prepared to prevent potentially invasive plants from escaping from your water garden. For

example, you may choose not to buy an invasive plant that spreads by seed if you live near a water body. Loosestrife and flowering rush are examples of plants whose small seeds can be spread by wind or flowing water. Buckthorn, for example, spreads when birds eat the berries and deposit seeds away from the plant source. Some of our most noxious invasive plants, Eurasian water milfoil and curlyleaf pondweed are spread by small plant fragments.

- 17 Recognize** which plants and fish are potentially invasive in our climate zone.  
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- 18 Properly compost** or dispose of unwanted plants or fish.  
At the end of the season compost, burn, or dispose of plants that you do not plan to over-winter, or no long want to keep. Alternatives for dealing with unwanted fish include giving them to another water gardener or someone who has an aquarium, or returning them to the store where you purchased them. A school, library, nursing home or other community center may take them. If you can't find someone who will take them, your veterinarian can offer suggestion for humane disposal.
- 19 Keep non-native plants contained** in your water garden.  
While most water gardens or garden ponds are completely separated from any sort of natural lake, stream, or wetland, some have been constructed to take advantage of water flowing in and out of natural waters. In your water garden you may choose to enjoy non-native plants and animals, but IF your garden is connected, even if it's only during times of high water or storm runoff, then you cannot use anything except plants native to Minnesota.
- 20 Be aware of regulations** regarding the possession, transport, or sale of non-native plants or animals.  
Regulated plants can be used in water gardens, but not released into natural waters – keep them contained! Prohibited plants are illegal to possess, buy, transport or sell – destroy them!

Yellow iris has been commonly planted along lakeshores, but it is not native to Minnesota, so it is a regulated species. That means you can have it in your garden, but not along the shoreline.
- 21 Regulated plants in Minnesota** - floating yellow heart, parrot feather, hybrid water lilies  
When plants or fish are regulated that means you can have them in your water garden or pond, but you can't release them to natural waters in Minnesota. You can not have these species in a pond or water garden that is connected to a natural water like a stream, wetland, or storm water pond.
- 22 (more) Regulated species in Minnesota** - goldfish, water hyacinth, fanwort  
Gold fish and koi are regulated species - you can have them in your garden pond, but not if it's

connected to a lake or stream.

**23 Prohibited species in Minnesota**

It's illegal to have any of these plants in your garden, because they are so invasive. Most people are familiar with purple loosestrife which now has invaded nearly all of Minnesota's 87 counties. Flowering rush has become invasive in 16 lakes in west central Minnesota. So far, we haven't seen any lakes infested with Indian swampweed.

**24 (more) Prohibited species in Minnesota**

These species have become invasive in other states with climates similar to Minnesota, so although we haven't found them in Minnesota, natural resource professionals recognize that if they arrive in our lakes or rivers, they are likely to be hardy here.

**25 White water lily**

Now you'll see some pictures of beautiful native alternatives to those potentially invasive non-native plants. Native plants are often good alternatives because they are hardy in our cold climate. You may recognize many of these, although some may be unfamiliar. I'll just let you enjoy these as we go through the slides.

26-32 Plants native to Minnesota that are appropriate for water gardening. [Each is labeled on the slide.]

**33 This project is a partnership** with the Minnesota Water Garden Society, Minnesota Nursery and Landscape Association, Minnesota Department of Natural Resources, University of Minnesota Extension Service, Michigan and Wisconsin Sea Grant Programs. 38 nurseries, garden centers and landscape designers in Minnesota have contributed their time and expertise to the survey research and pilot projects.

**34 For more information** or PDFs of the educational materials visit the Minnesota Sea Grant Program web site at: [www.seagrant.umn.edu/exotics/ais\\_wg\\_materials.html](http://www.seagrant.umn.edu/exotics/ais_wg_materials.html)

For more information on using the PowerPoint presentation, borrowing displays, or getting copies of the educational materials referred to above, please contact:

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