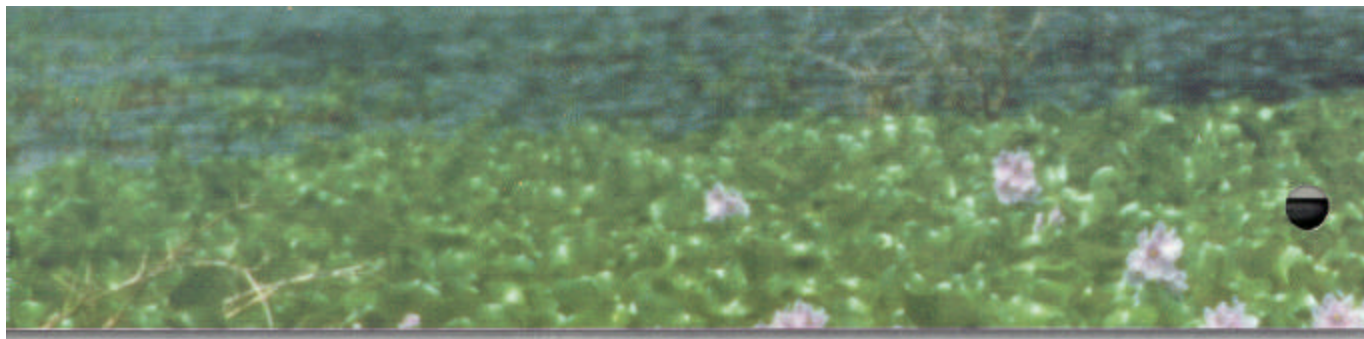


# INVASIVE AQUATIC PLANTS:



D. Spicanti, Great Peace Nursery

*what every  
plant enthusiast  
needs to know*



**Invasive** plants are becoming a widespread problem in aquatic and wetland habitats throughout North America. Once introduced, these noxious or harmful plants can displace native plants, which are important sources of food and shelter for wildlife. Ecological processes, such as oxygen production, may also change because invasive plants can affect water chemistry and flow. Unrestricted invasions can block drainage pipes, impede navigation, and hinder commercial and recreational fishing. For these reasons, state and federal agencies are spending millions of dollars each year to control the spread of invasive plants and reverse their impacts in affected habitats.

In many cases, invasive plants are exotic or non-native. Species native to North America, however, may also become invasive when transported to another region. Regardless of origin, invasive aquatic plants (and invasive fish and invertebrates!) can be accidentally spread by plant enthusiasts such as water gardeners and aquarium hobbyists.

As a plant enthusiast, you can help prevent the spread of invasive species by acting on the information presented in this brochure.

## CHARACTERISTICS OF INVASIVES

Most invasive species have certain traits that make them successful in habitats that they invade. Invasive aquatic and wetland plants generally:

- ◆ tolerate a wide range of environmental conditions including soil and water acidity, water and air temperature, water salinity, water level fluctuations, and dissolved oxygen;
- ◆ reproduce early, often, in large numbers, and in multiple ways (e.g., by fragmentation, seeds, and rhizomes);
- ◆ grow rapidly;
- ◆ resist management control efforts.

## VECTORS OF SPREAD

### Mother Nature

Invasive plants are generally spread to natural waterways accidentally. These unintentional introductions are more likely if a water garden or a retention basin containing invasive plants is built near a natural body of water. The natural waterway may flood into the artificial pond and carry away

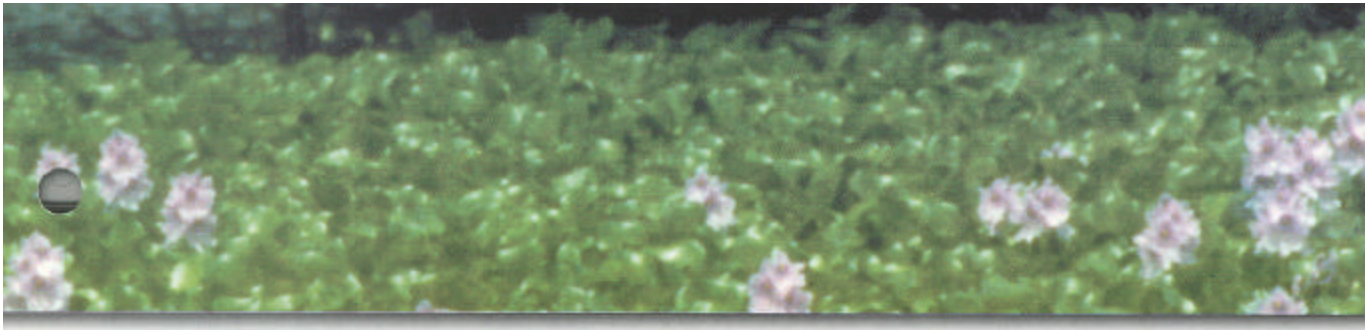
the contents, or the artificial pond may flood and have its contents swept away into the natural waterway. In addition, seeds and plant fragments of invasive plants can be spread by wind or by wildlife traveling between artificial and natural waterways.

### Plant Enthusiasts

Water gardeners and aquarium hobbyists can unintentionally spread potentially harmful plants when they 1) share specimens among friends, neighbors, and gardening and aquarium clubs, or 2) dispose of aquatic plants by releasing them into a natural waterway. Invasive plants are also spread when gardeners moving to warmer climates take plants with them that would otherwise have been controlled in colder climates (i.e., killed during winter). Instead, these plants thrive and become invasive in their new warmer habitat. Some plant enthusiasts even sneak novel plants into the country illegally. By introducing these exotic plants, they run the risk of causing great harm. (Note: Any plants that are brought into the country should be declared with quarantine officials.)

## HYDRILLA: AN EXAMPLE OF A GOOD PLANT GONE BAD

*Hydrilla (Hydrilla verticillata)*, also known as water thyme, is a well-known aquarium plant native to parts of Asia and Africa. It was first found growing wild in Florida in 1960. Since then, it has spread as far north as Connecticut and as far west as California. Hydrilla tolerates a wide range of nutrient and pH levels, and persists in low sunlight. It also can reproduce through fragmentation, turions (buds that form in leaf axils), and subterranean turions (commonly called "tubers"). These plant parts can take root in the sediments, and provide the beginnings for a whole new plant. As the plant grows toward the surface, it branches more frequently forming dense mats. These mats create inhospitable habitat for other plants and animals, and hinder activities such as boating and swimming. They can also clog water intake pipes and restrict water flow in irrigation canals. Methods to control hydrilla, including mechanical harvesting and herbicides, are costly. Florida alone spends millions annually in hydrilla management.



### Retail Outlets

Retail outlets may also contribute to the spread of invasive species. These outlets can sell invasive plants unless the state or federal governments specifically prohibit their sale. In some cases, even prohibited plants may end up being sold if retailers are 1) unaware of the restrictions, or 2) unfamiliar with a plant's scientific name and only know it by a non-invasive alias. Retailers may also sell plants (or use packing materials!) with "hitchhiking" plant fragments or invertebrates that may themselves be invasive.

### MOST WANTED LIST



**"Outlaw"** invasive aquatic and wetland plants that pose the greatest ecological and economic threat.

- Butomus umbellatus* (flowering rush)
- Cabomba caroliniana* (fanwort, Carolina fanwort)
- Caulerpa taxifolia* (caulerpa)
- Egeria densa* (leafy elodea, Brazilian elodea, Brazilian waterweed)
- Eichhornia crassipes* (water hyacinth, common water hyacinth)
- Hydrilla verticillata* (hydrilla, water thyme)
- Hydrocharis morsus-ranae* (common frogbit)
- Hygrophila polysperma* (hygrophila, Indian swampweed, Miramar weed, hygro)
- Ipomoea aquatica* (water spinach)
- Iris pseudacorus* (pale yellow iris)
- Lagarosiphon major* (African elodea, oxygen weed)
- Limnophila sessiliflora* (ambulia, limnophila, Asian marshweed)
- Lythrum salicaria* (purple loosestrife, spiked loosestrife)
- Melaleuca quinquenervia* (melaleuca, punktree, paperbark, teatree, bottlebrush tree)
- Myriophyllum aquaticum* (parrot feather, Brazilian parrot's feather)
- Myriophyllum spicatum* (Eurasian watermilfoil)
- Nymphoides peltata* (yellow floating heart)
- Pistia stratiotes* (water lettuce)
- Potamogeton crispus* (curly pondweed, curled-leaf pondweed)
- Salvinia molesta* (giant salvinia, aquarium watermoss, kariba weed)
- Spartina alterniflora* (salt marsh cordgrass, smooth cordgrass)
- Trapa natans* (water chestnut)



### YOU CAN HELP PREVENT THE SPREAD OF INVASIVE PLANTS

#### Before building & choosing plants for your water garden.

Build your water garden away from natural waterways.

- ▼ *When planning your water garden, choose a site that is isolated from any potential flooding situations (i.e., a lowland area adjacent to a river is likely to flood). Remember, use of invasive plants in a water garden that is near a lake, river, stream, or even a retention basin could increase the risk for spread of those species.*

Familiarize yourself with invasive plants of regional and national concern.

- ▼ *Most Wanted (see left) and The Federal Noxious Weed ([http://plants.usda.gov/plants/cgi\\_bin/topics.cgi?earl=noxious.cgi](http://plants.usda.gov/plants/cgi_bin/topics.cgi?earl=noxious.cgi)) lists are good starting points. The web sites listed on the back and your state natural resource agency are also valuable information resources.*

Consider using regionally native or non-invasive exotic plants.

- ▼ *There are many non-invasive plants that can be used in place of an invasive species to achieve the same effect—whether balancing pH, providing vertical interest, or adding a particular color.*

Use invasive plants **only** outside of their hardiness zone.

- ▼ *Those plants whose temperature and precipitation requirements are far outside the limits of your agricultural zone are less likely to become invasive if they escape to natural waterways.*

## YOU CAN HELP PREVENT THE SPREAD OF INVASIVE PLANTS *(cont'd)*

### When buying aquatic plants.

Choose a reputable nursery (whether you shop at a store, through a catalogue, or via the Internet).

- ▼ Ask if the vendor is aware of what species are regionally and federally restricted.
- ▼ Verify that the plant identifications and their scientific names (i.e., genus and species) are correct. Common names are sometimes used interchangeably for several different species, so you could accidentally buy an invasive species labeled with a harmless pseudonym.

Ensure that your purchases are free of any hitchhikers.

- ▼ Rinse plants in a bucket of tap water until they are clean. The dirtier the plant, the more likely it is to have hitchhikers. Be on the lookout for snails and plant fragments. Use a light colored bucket to help you see the hitchhikers.
- ▼ If it seems likely that your plant has hitchhikers, use a chlorine dip. Dip the plant in a 10% chlorine solution, swish it around, and then shake it off. After 30 seconds, rinse the plant with tap water. This method will not harm emergent plants such as *Sagittaria* spp. (arrowhead), but is not recommended for submerged plants such as *Vallisneria americana* (wild celery).

### By disposing of aquatic plants.

Dispose of aquatic plants if they are 1) in a habitat where they could spread into nearby waterways, or 2) in a water garden that is being emptied for the winter.

- ▼ Completely dry or freeze the plants, and then add them to the household garbage that **does not** get composted. Composting should be avoided because many seeds can withstand drying and freezing. An alternative method of disposal is to burn the plants if backyard burning or trash incineration is an option.



### By expanding your efforts.

Inform others about the problems of invasive aquatic plants and the methods to prevent their spread.

Report sightings of invasive plants in natural waterways to your local or state agricultural agent, extension office, or natural resource management agency.

Volunteer to help remove invasive plants from vulnerable natural areas. Call your state natural resource agency about volunteer opportunities.

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## Information

### FOR MORE

University of Florida—Center for Aquatic and Invasive Plants

<http://plants.ifas.ufl.edu>

U.S. Geological Survey—Nonindigenous (Non-native) Aquatic Species

<http://nas.er.usgs.gov>

U.S. Department of Agriculture—Invasive and Noxious Plants

[http://plants.usda.gov/plants/cgi\\_bin/top-ics.cgi?earl=noxious.cgi](http://plants.usda.gov/plants/cgi_bin/top-ics.cgi?earl=noxious.cgi)

National Sea Grant College Program—Nonindigenous Species

<http://www.sgnis.org>

National Invasive Species Council

<http://www.invasivespecies.gov>

Aquatic Nuisance Species Task Force

<http://www.anstaskforce.gov>