



# Practice Responsible Water Gardening

Water gardening is popular in California, and many Californians enjoy growing aquatic plants in backyard ponds or home aquaria. Most of the plants used in gardens and landscaping do not invade or harm wildlands and waterways. But a few vigorous non-native species can, and do, escape from cultivation into natural landscapes where they cause a variety of ecological problems. These introductions occur when people dump unwanted plants into local storm drains, streams, or ponds, or when floods or wildlife transport them. Once released, invasive aquatic plants cause serious ecological and economic problems for California's water bodies. They can:

- form dense stands along the shore or thick mats in open water. Sometimes so much of the water surface is covered that migrating water birds cannot land.
- crowd out native plants while providing little benefit to wildlife.
- reduce light and oxygen levels underwater, killing fish and other aquatic life.
- clog intake valves of irrigation systems and power plants.
- reduce access to waterways for recreational and commercial boats.
- use significantly more water than native species. For example, a 10,000 acre infestation of giant reed (*Arundo donax*) on the Santa Ana River in Orange County is estimated to use 57,000 acre feet more water per year than native vegetation.

Because so many waterways are interconnected, one plant dumped in a local storm drain can travel for miles. Federal, state, and local agencies spend millions of dollars each year to remove invasive aquatic plants. Preventing their spread costs much less than removing the plants once they have escaped!

## How You Can Help

It is vital to follow safe gardening practices:

- build your water garden away from natural waterways.
- plant non-invasive alternatives.
- become familiar with the plants discussed in the brochure *Don't Plant a Pest!*, which includes photos of invasive species and suggests alternative plants. Ask your local master gardener for a copy or contact the California Invasive Plant Council 510-843-3902 <http://www.cal-ipc.org>. Consult your local aquatic gardening specialist to determine which plants are best for your setting.

- grow plants in containers to reduce the likelihood that they will spread. This also simplifies pond maintenance.
- dispose of unwanted pond plants by composting or sealing in plastic bags and placing in a trash container.
- prevent introductions - do not purchase plants restricted by California law, especially when shopping on the internet.

## Do Not Plant

**water hyacinth (*Eichhornia crassipes*)** - Reputed to be the fastest-growing plant in the world! Can double in size in a week during hot weather. Forms dense mats that slow water flow. Seeds can live up to 20 years.

**giant salvinia (*Salvinia molesta*)** - Illegal to sell in the U.S. Floating mats up to 3 feet thick reduce light and dissolved oxygen in the water so that few living things can survive. Common salvinia (*Salvinia minima*) may be sold, but species are difficult to tell apart.

**Eurasian watermilfoil (*Myriophyllum spicatum*)** - The most widespread submerged invasive aquatic plant in California and a serious problem in Lake Tahoe. Stems break easily, starting new infestations when spread by boats or birds.

**hydrilla (*Hydrilla verticillata*)** - Illegal to sell or possess in California. Has arrived in California mixed with shipments of water lilies and as a mislabeled aquarium plant. Fragments quickly start new colonies.

**Brazilian waterweed, anacharis (*Egeria densa*)** - Infests 7,000 acres in the Sacramento-San Joaquin Delta. Aggressively invades natural waterways, forming dense mats that impede water flow.

**giant reed (*Arundo donax*)** - A serious problem along rivers and streams. Dense growth damages habitat while creating a fire and flood hazard. Variegated varieties may also be problematic and are not recommended.

**purple loosestrife (*Lythrum salicaria*)** - Invades streambanks and wetlands throughout the U.S. One plant can produce over two million seeds. Has the potential to infest rice fields.

**Uruguayan water-primrose or creeping water-primrose (*Ludwigia hexapetala*, *L. uruguayensis*, *L. peploides*)** - Crowds out native plants and reduces water

quality. Dense mats slow water movement and may create habitat for mosquito larvae, which can carry West Nile virus. Although there are native *Ludwigia* species, do not collect them from the wild.

**parrotfeather (*Myriophyllum aquaticum*)** - Forms dense mats that impede water flow. Stems are brittle and break easily. Spread by boats or migrating water birds.

Occasional problem in California with great potential to spread.

**yellowflag iris (*Iris pseudacorus*)** - Forms colonies along stream and pond margins. Listed as a noxious weed in Nevada, expanding in Pacific Northwest. Increasingly common in California, a serious problem in regions with similar climates.

<b>Do Not Plant</b>	<b>Try These Non-Invasive Alternatives Instead</b>
<b>Use/type – Floating or Rooted Emergent</b>	
<ul style="list-style-type: none"> <li>• water hyacinth (<i>Eichhornia crassipes</i>)</li> <li>• giant salvinia (<i>Salvinia molesta</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Cape pondweed (<i>Aponogeton distachyon</i>)</li> <li>• Pacific fairy fern (<i>Azolla filiculoides</i>)</li> <li>• Yellow pondlily (<i>Nuphar polysepalum</i>)</li> </ul>
<b>Use/type – Submerged</b>	
<ul style="list-style-type: none"> <li>• Eurasian watermilfoil (<i>Myriophyllum spicatum</i>)</li> <li>• hydrilla (<i>Hydrilla verticillata</i>)</li> <li>• Brazilian waterweed, anacharis (<i>Egeria densa</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Coontail or hornwort (<i>Ceratophyllum demersum</i>)</li> <li>• <b>Note:</b> There are few safe alternatives to submerged plants. These plants spread freely, especially those that are not rooted.</li> </ul>
<b>Use/type – Pond Margin or Bog</b>	
<ul style="list-style-type: none"> <li>• giant reed (<i>Arundo donax</i>)</li> <li>• purple loosestrife (<i>Lythrum salicaria</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• redbud dogwood (<i>Cornus sericea</i>), yellowtwig dogwood (<i>C. s. 'Flaviramea'</i>)</li> <li>• clumping bamboos (<i>Bambusa multiplex</i> 'Alphonso-Karr', 'Golden Goddess')</li> <li>• Cape thatching reed (<i>Chondropetalum tectorum</i>)</li> <li>• pickerelweed (<i>Pontederia cordata</i>)</li> </ul>
<ul style="list-style-type: none"> <li>• Uruguayan water-primrose or creeping water-primrose (<i>Ludwigia hexapetala</i>, <i>L. uruguayensis</i>, <i>L. peploides</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• lobelias (<i>Lobelia cardinalis</i>, <i>L. fulgens</i>, <i>L. siphilica</i>)</li> <li>• Wilson's ligularia (<i>Ligularia wilsoniana</i>)</li> <li>• arrowheads (<i>Sagittaria latifolia</i>, <i>S. montevidensis</i>)</li> </ul>
<ul style="list-style-type: none"> <li>• parrotfeather (<i>Myriophyllum aquaticum</i>)</li> <li>• yellowflag iris (<i>Iris pseudacorus</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• common yellow monkey flower (<i>Mimulus guttatus</i>)</li> <li>• western blueflag iris (<i>Iris missouriensis</i>, <i>I. longipetala</i>)</li> <li>• laevigata iris (<i>Iris laevigata</i> &amp; cultivars)</li> <li>• mulefat (<i>Baccharis salicifolia</i>)</li> <li>• common waterplantain (<i>Alisma plantago-aquatica</i>)</li> <li>• soft rush (<i>Juncus effusus</i>)</li> <li>• Japanese iris (<i>Iris ensata</i> 'Variegata' &amp; cultivars)</li> <li>• Siberian iris (<i>Iris sibirica</i> 'Butter-&amp;-Sugar')</li> </ul>



Please contact your local master gardener for more information <http://camastergardeners.ucdavis.edu>

We gratefully acknowledge support for this project from the Elvenia J. Slosson Research Endowment for Ornamental Horticulture and the Alexander and Elizabeth Swantz Watershed Science Endowment.

- Content for this publication was excerpted, with permission, from: *Don't Plant a Pest – Suggested Alternatives for Invasive Aquatic Plants in California* by the California Invasive Plant Council. Contributors: Pat Akers, Cal. Dept. of Food & Agriculture; Lars Anderson, USDA ARS Western Regional Research Center; Dave Allen, Shore Road Nursery (Port Angeles, WA); Carl

Bell, UC Cooperative Extension (San Diego); Neil Bobo, Pond Revival (Berkeley); Holly Crosson, UC Davis Arboretum & UC Sea Grant Extension Program; Joseph DiTomaso, UC Davis Weed Research & Information Center; Jan Enderle, Orchard Nursery & Florist (Lafayette); Jeff Hart, Hartland Nursery (Walnut Grove); Randy McDonald, McDonald's Aquatic Nurseries (Reseda); Mary Pfeiffer, Shasta County Dept. of Agriculture; Don Shor, Redwood Barn Nursery (Davis); Rick Storre, Freshwater Farms (Eureka).

- Project management: Pamela M. Geisel; Donna C. Seaver; Holly Crosson (UC Davis Department of Environmental Science and Policy). Spanish translation: Myriam Grajales-Hall. Poster design: Will Suckow Illustration.

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