

Don't plant a pest!

Give them an inch and they'll take an acre...



Suggested alternatives for invasive

Aquatic Plants in California

Responsible Water Gardening

California is home to many beautiful bodies of water, from Lake Tahoe to the Owens River, from Humboldt Bay to the Tijuana Estuary. These water bodies support native plants, fish, and other wildlife. They also irrigate agricultural crops, provide drinking water for cities, and offer recreational swimming, fishing, and boating opportunities.

Water gardening is popular in California, and many Californians enjoy growing aquatic plants in backyard ponds or home aquaria. Unfortunately, a few horticultural plant species have escaped into natural waterways and become a significant problem. This happens when people dump unwanted plants in 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, harming fish and other aquatic life.
- Clog intake valves of irrigation systems and power plants.
- Block access for recreational and commercial boats.

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!

Cover photo: Water hyacinth (*Eichhornia crassipes*) in Sevenmile Slough, Sacramento County. Bob Case.

How You Can Help:

This brochure presents attractive alternatives to ornamental pond plants that cause problems in California waterways. While the suggested plants may not be exact substitutes for the invasive species, we have tried to list plants that will fulfill water gardeners' needs. Consult your local aquatic gardening specialist to determine which plants are best for your setting.

It is also vital to follow safe gardening practices:

- Build your water garden away from natural waterways.
- Plant non-invasive alternatives.
- Place plants in containers to reduce the likelihood that they will spread. This also simplifies pond maintenance.
- Dispose of unwanted pond plants by composting or placing in plastic bags in a trash container.
- Become familiar with California's laws regarding invasive aquatic plants so you do not purchase something that is restricted. This is especially important when shopping on the internet. (See the websites on the back panel of this brochure.)

Symbols Used:

- ☀ Full sun
- ☀☾ Part sun
- Full shade
- 🌿 California native

A Note for Aquarium Owners:

Some of the invasive plants listed here are also sold for use in aquaria. They can cause environmental problems when aquarium water is not disposed of properly. While the alternatives we list are designed for freshwater aquatic gardens, similar suggestions for aquarium enthusiasts can be found at habitattitude.net.

FLOATING OR ROOTED EMERGENT

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 impede water flow. Seeds can live up to 20 years. The State of California has spent \$45 million over the last 15 years to control water hyacinth in the Sacramento-San Joaquin Delta.



David Chang

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.



Joseph M. DiTomaso

Try These Instead

Cape pondweed ☀☀ (Aponogeton distachyon)

Crisp white flowers with a vanilla scent are held on the water surface. Prefers cool water. May overwhelm a small pond.



Vince Scheidt

yellow pondlily ☀🌿 (Nuphar polysepalum)

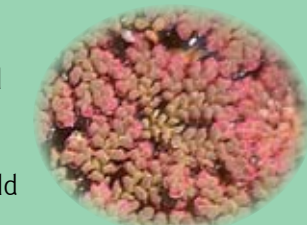
A native plant with a dramatic yellow flower and round leaves up to a foot in diameter. Foliage is submerged in winter and emerges in spring. May take more effort to find for sale.



Joseph M. DiTomaso

Pacific fairy fern ☀☾🌿 (Azolla filiculoides)

Tiny, free-floating, perennial fern. Turns reddish-purple in the fall. To 1/2 inch high, with a spreading habit. Could overwhelm a small pond.



Joseph M. DiTomaso

Also try:

water clover (*Marsilea* spp.) 🌿

SUBMERGED

Do Not Plant

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.



Jack Kelly Clark



Jack Kelly Clark

Brazilian waterweed, anacharis (*Egeria densa*)

Infests 7000 acres in the Sacramento-San Joaquin Delta. Aggressively invades natural waterways, forming dense mats that impede water flow.



Barry Rice/ The Nature Conservancy

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.

Try These Instead

coontail or hornwort 🌿☀☾ (Ceratophyllum demersum)

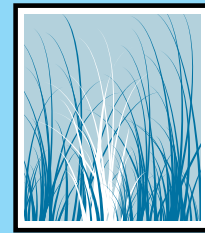
Rootless, deciduous perennial with slender stems and forked leaves. Tolerates shade and hard water. Good oxygenator.



Jack Kelly Clark

NOTE: While the alternatives recommended here are not known to be invasive in California waterways, water gardeners should take care to prevent all plants from spreading out of aquatic gardens and into streams, ponds, or storm drains.

It is difficult to find safe alternatives for submerged plants, especially those without roots.



Cal-IPC

California Invasive Plant Council
1442-A Walnut St. #462, Berkeley, CA 94709
(510) 843-3902
www.cal-ipc.org

The California Invasive Plant Council is a nonprofit organization working to protect California's wildlands from invasive plants through research, restoration, and education.



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For more information:

- California Dept. of Boating & Waterways, Aquatic Pest Control: www.dbw.ca.gov/aquatic.asp.
- Habitattitude.net for aquarium owners.
- The Nature Conservancy's wildland weeds information: tncweeds.ucdavis.edu.
- University of California program for "Reducing the Introduction & Distribution of Aquatic Non-Native Invasive Species": www.ridnis.ucdavis.edu.

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POND MARGIN OR BOG

Do Not Plant

giant reed
(*Arundo donax*)

A serious problem in coastal streams. Dense growth damages habitat, while creating a fire and flood hazard. Variegated varieties may also be problematic and are not recommended.



Joseph M. DiTomaso

purple loosestrife
(*Lythrum salicaria*)

Invades streambanks and wetlands throughout the U.S. One plant can produce 2.7 million seeds. Has the potential to infest rice fields.



Bob Case

Uruguayan water-primrose or creeping water-primrose
(*Ludwigia hexapetala*, *L. uruguayensis*, *L. peploides*)



Julian Meisler, Laguna de Santa Rosa Foundation. Flower: Bob Case

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

POND MARGIN OR BOG

Do Not Plant

parrotfeather
(*Myriophyllum aquaticum*)

Forms dense mats that impede water flow. Stems are brittle and break easily. Spread by boats or migrating water birds. Uncommon in California but has the potential to spread.



Jack Kelly Clark

yellowflag iris
(*Iris pseudacorus*)

Forms colonies along stream and pond margins. Listed as a noxious weed in Nevada, expanding in the Pacific Northwest. Uncommon in California, but causes serious problems in regions with similar climates.



Mandy Tu/The Nature Conservancy

Try These Instead

redtwig dogwood (*Cornus sericea*),
yellowtwig dogwood (*C. s. 'Flaviramea'*)



Brilliant red or yellow foliage and colorful winter twigs. Provide good screens where water is present. To 8 feet tall and 10 feet wide. Cut roots to control spread.



Bob Case

Monrovia

clumping bamboos ☀️ 🌿
(*Bambusa multiplex* 'Alphonso-Karr',
'Golden Goddess')

Useful as a hedge or screen. Rhizomes of clumping species stay close to the plant and will not invade surrounding soil. Height varies by cultivar, up to 35 feet. Do not plant running bamboos, which spread aggressively.



Monrovia

cape thatching reed ☀️ 🌿
(*Chondropetalum tectorum*)

This decorative, grass-like plant produces attractive flowers that are ideal in cut flower arrangements. Grows 3 to 4 feet tall.



Monrovia

lobelias ☀️ 🌿
(*Lobelia cardinalis*, *L. fulgens*, *L. siphilica*)

A spectacular blooming bog plant. Tubular flowers resemble honeysuckle or salvia and attract hummingbirds. *L. cardinalis* and *L. fulgens* to 6 feet with red flowers; *L. siphilica* 2 to 3 feet with blue flowers.



Larry Smith, US Forest Service

Wilson's ligularia ☀️ 🌿
(*Ligularia wilsoniana*)

A tall and showy perennial with spikes of bright yellow, daisy-like flowers. Stems grow to six feet tall.



Allison Mayer

arrowheads ☀️ 🌿
(*Sagittaria latifolia*, *S. montevidensis*)



Striking arrow-shaped leaves and white flowers. Grows in moist soil or water 6 inches or more deep. *S. latifolia* grows 12 to 20 inches; *S. montevidensis* to 4 feet.



Joseph M. DiTomaso

Also try *S. lancifolia* (white swan or red swan) for a specimen plant with green or red stems and a 7-foot flower spike. May need maintenance to prevent spread in smaller ponds.

pickerelweed ☀️ 🌿
(*Pontederia cordata*)

Heart-shaped leaves surround dramatic flower spikes. Excellent filtration ability. Place in containers in 1 foot of water. 3 to 4 feet tall, 2 to 2½ feet wide.



Joseph M. DiTomaso

common yellow monkey flower ☀️ 🌿
(*Mimulus guttatus*)

Annual or perennial. Fills out a 4 feet x 4 feet space in spring and summer. May die back then return the next year. Yellow flowers with reddish spots resemble snapdragons. Hummingbirds like it; deer don't. Also, for red flowers try *M. cardinalis*.



Bob Case

Also try:
mulefat (*Baccharis salicifolia*) 🌿
common waterplantain (*Alisma plantago-aquatica*) 🌿
soft rush (*Juncus effusus*) 🌿
Japanese iris (*Iris ensata* 'Variegata' & cultivars)
Siberian iris (*Iris sibirica* 'Butter- $\&$ -Sugar')

Try These Instead

western blueflag iris ☀️ 🌿
(*Iris missouriensis*,
I. longipetala)

A native iris with flowers ranging from white to blue to lavender. Leaves to 2 feet tall. Likes open, sunny, moist areas. Smaller in scale than yellowflag iris.



Bob Case

laevigata iris ☀️
(*Iris laevigata* & cultivars)

A true water-loving iris that will do well in 6 inches of water. Flowers in white, purple, lavender, and pink. Yellow-blooming varieties available but rare. Leaves to 18 inches tall.



Nick Kurzenko