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# The Problem:

**Invasive Species  
threats  
are widespread and  
pervasive.**

**Even protected lands  
and waters can be  
invaded & degraded**



A significant percentage  
of invasive plants were  
originally introduced for  
horticulture  
(i.e. as ornamental plants):

> 40% in Florida  
> 30% in Australia

**Pampas grass**  
(*Cortaderia jubata*)





# Cosumnes River Preserve, ~ 12,120 hectares in California's Central Valley







English ivy (*Hedera helix*) in Oregon



**water hyacinth (*Eichhornia crassipes*)**  
**In Louisiana**







**Giant salvinia (*Salvinia molesta*) in Texas**





*Helichrysum petiolare* (licorice plant)



*Helichrysum petiolare* near the California coast









**We have Made Substantial Progress  
in Controlling Specific Invasions.**

**Ongoing Control of Invaders Will Remain Vital.**



**BUT IT WILL NOT BE ENOUGH...**



# Solutions

We Must PREVENT  
the Introduction &  
Spread of New  
Invaders

This will require a dual  
approach:

- Collaborations with Industries to Voluntarily Change Practices that Introduce Invaders
- Policy Work to Strengthen Prevention Incentives, Regulations, Funding, Agency Actions.





# Solutions:

Collaboration with Industries to  
Voluntarily Change Practices.

Voluntary Codes of  
Conduct with Horticulture  
Nurseries  
Landscape Architects  
Botanical Gardens





# Voluntary Codes of Conduct with Horticulture

- Minimize Sales and Use of Known Invaders
  - Identify Non-Invasive Species as Alternatives
- Screen Proposed New Introductions for Invasiveness



<http://www.centerforplantconservation.org/invasives/>



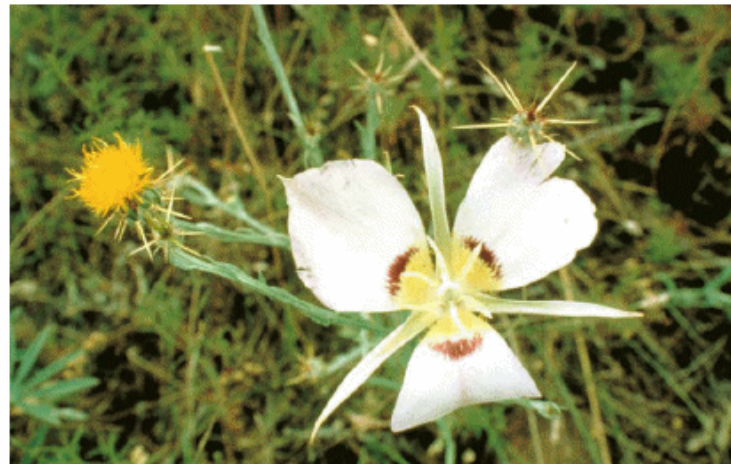
To minimize sales of known invaders they must first be identified and agreed upon

Use a Formal protocol to identify these invasive species

## AN INVASIVE SPECIES ASSESSMENT PROTOCOL

EVALUATING NON-NATIVE PLANTS  
FOR THEIR IMPACT ON BIODIVERSITY

VERSION 1



<http://www.natureserve.org/getData/plantData.jsp>



# **THE PROTOCOL IS DIVIDED INTO FOUR SECTIONS**

- I. Ecological Impact (5 Qs, 50%)**
- II. Current Distribution and Abundance (4 Qs, 25%)**
- III. Trend in Distribution and Abundance (7 Qs, 15%)**
- IV. Management Difficulty (4 Qs, 10%)**



# Invasive Species Impact Ranks (I-Ranks)

High: a severe threat to native species and ecological communities

Medium: a moderate threat to native species and ecological communities

Low: a significant but relatively low threat to native species and ecological communities

Insignificant: an insignificant threat to native species and ecological communities



The Four Sections of  
the Protocol

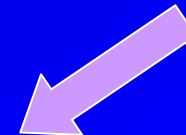
**Ecological  
Impact**

**Current  
Distribution  
&  
Abundance**

**Trend in  
Distribution  
& Abundance**

**Management  
Difficulty**

**I-RANK**



# Don't plant a pest!

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



A dense stand of pampas grass (*Cortaderia selloana*), a garden plant that has invaded California wildlands.

Suggested alternatives for invasive garden plants

More alternatives listed at the California Invasive Plant Council website: [www.cal-ipc.org](http://www.cal-ipc.org)

**Southern California Version**



# Work with the Horticulture Community to Identify Non-Invasive Species as Alternatives

## GROUND COVERS

### DO NOT PLANT!



iceplant or hottentot fig (*Carpobrotus edulis*)

This vigorous groundcover forms impenetrable mats that compete

directly with native vegetation, including several rare and threatened plants. Small mammals can carry seeds of iceplant from landscape settings to nearby natural areas. Pieces of the plant can be washed into storm drains and into natural areas where they become established.



English ivy, Irish ivy, and Algerian ivy (*Hedera helix*, *H. hibernica*, *H. camerianas*)

Some ivy species in the *Hedera* genus are a problem in California.

They can smother under-story vegetation, kill trees, and harbor non-native rats and snails. It's difficult to distinguish problem species from less invasive ones. Do not plant ivy near natural areas, never dispose ivy cuttings into natural areas, and maintain ivy so it never goes to fruit.

Photo courtesy: Missouri Botanical Garden



periwinkle (*Vinca major*)

This aggressive grower has trailing stems that root wherever they touch the soil. Their ability to resprout from stem fragments enables periwinkle to

spread rapidly in shady creeks and drainages, smothering the native plant community. Also avoid: cape ivy/ German ivy (*Delairea odorata*).

Photo by Richard Old [www.videarvisee.com](http://www.videarvisee.com)

Photos of these plants invading natural lands and open spaces can be viewed at [www.cal-ipc.org](http://www.cal-ipc.org)

### TRY THESE GROUND COVERS INSTEAD

wall germander (*Teucrium chamaedrys*, *T. lucidrys*) ☀️ 🌧️ 💧



This plant can be sheared into a neat groundcover or allowed to grow to full height (about one foot), and produces lavender flowers in the spring. Compact cultivars are available.

Photo courtesy: Missouri Botanical PlantFinder

San Diego marsh elder (*Iva hayesiana*) ☀️ 🌧️ 💧

This fast growing native is widely used for slope coverage and erosion control. Grows 1'-2' tall and 4'-6' across with inconspicuous flowers.

Summer watering will help maintain a more lush appearance. Prune annually to encourage new growth.



ivy geranium (*Pelargonium peltatum*) ☀️ 🌧️ 💧

Glossy, bright green leaves with flowers in white, pink, rose, red and lavender. Vigorous groundcover recommended for flat areas only, not suitable for erosion control.

Also try: elijah blue fescue (*Festuca cinerea* 'Elijah Blue')



ivory star jasmine or asian jasmine (*Trachelospermum* species) ☀️ 🌧️ 💧

Evergreen, vining groundcover up to 20' across. Has glossy, dark green leaves and pale yellow, pinwheel-shaped flowers with a jasmine scent.

beach strawberry (*Fragaria chiloensis* or *Fragaria californica*) ☀️ 🌧️ 💧

Forms lush compact mat 4"-6" high. Glossy dark green leaves, white flowers. Mow or cut back annually to force new growth.



common yarrow (*Achillea millefolium*) ☀️ 🌧️ 💧

Perennial groundcover from 1'-4' high. Can be used as a lawn substitute, will tolerate foot traffic. Produces white flowers and should be pruned or mowed annually.

Also try: California wild grape (*Vitis californica* or *V. girdiana*), yerba mansa (*Anemopsis californica*), bear's foot hellebore (*Heliborus foetidus*), California honeysuckle (*Lonicera subspicata* var. *denudata*) or winter saxifrage (*Bergenia cordifolia* and hybrids)

Expanded list of alternatives can be viewed at [www.cal-ipc.org](http://www.cal-ipc.org)

# Screen Proposed New Introductions for Invasiveness

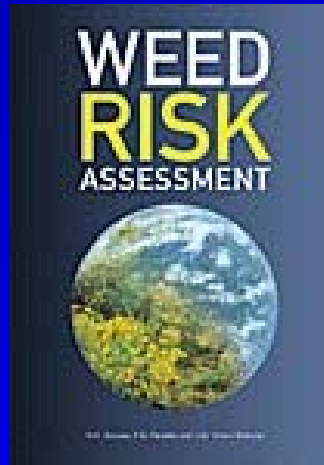


Australian Government

Department of Agriculture,  
Fisheries and Forestry

Biosecurity Australia

Weed Risk Assessment System (WRA)



2001

R.H. Groves, F.D. Panetta  
& J.G. Virtue (editors)



Weed Risk Assessments for Hawaii and Pacific Islands

<http://www.botany.hawaii.edu/faculty/daehler/WRA/>



What Next?

# Monitor whether sales and distribution of invasive species decrease and whether this leads to decreased invasion of conservation land.



United States  
Department of  
Agriculture

Animal and Plant  
Health Inspection  
Service

July 2005



## **Availability in Florida nurseries of invasive plants on a voluntary “do not sell” list**

### **Contact**

Barney P. Caton, Ph.D.  
USDA-APHIS-Plant Protection and Quarantine  
Center for Plant Health Science and Technology  
Plant Epidemiology and Risk Assessment Laboratory  
1730 Varsity Drive, Suite 300  
Raleigh, NC 27606  
[barney.p.caton@aphis.usda.gov](mailto:barney.p.caton@aphis.usda.gov)



# Possible work with other industries to change practices that introduce invaders



SHIPPING



FORESTY



AQUARIUM  
INDUSTRY



**Roan Mountain, North Carolina –Tennessee border  
NOT INVADED!**









**Linking Ecology & Horticulture to Prevent Plant Invasions  
Workshop held at Missouri Botanic Garden, December, 2001**



# **St. Louis Declaration**

**Codes of Conduct for  
Nurseries, Landscape Architects,  
Botanical Gardens, Garden Clubs**

**<http://www.centerforplantconservation.org/invasives/>**

## **Voluntary Codes of Conduct for Nursery Professionals**

- 1. Ensure that invasive potential is assessed prior to introducing and marketing plant species new to North America. Invasive potential should be assessed by the introducer or qualified experts using emerging risk assessment methods that consider plant characteristics and prior observations or experience with the plant elsewhere in the world. Additional insights may be gained through extensive monitoring on the nursery site prior to further distribution.**
- 2. Work with regional experts and stakeholders to determine which species in your region are either currently invasive or will become invasive. Identify plants that could be suitable alternatives in your region.**



## **Voluntary Codes of Conduct for Nursery Professionals** **(continued)**

- 3. Develop and promote alternative plant material through plant selection and breeding.**
- 4. Where agreement has been reached among nursery associations, government, academia and ecology and conservation organizations, phase-out existing stocks of those specific invasive species in regions where they are considered to be a threat.**
- 5. Follow all laws on importation and quarantine of plant materials across political boundaries.**
- 6. Encourage customers to use, and garden writers to promote, non-invasive plants.**

**Linking Ecology & Horticulture to Prevent Plant Invasions II**  
**Chicago Botanic Garden, October 2002**



- **Guidelines for Listing Non-Invasive Alternative Plants**
- **Regionality Considerations**
  - Defining Regions
  - Developing working invasive plant lists for regions
  - Listing Criteria
  - Other Factors (economic and political)

<http://www.centerforplantconservation.org/invasives/>