



# Cal-IPC News

*Protecting California's Natural Areas  
from Wildland Weeds*

Vol. 13, No. 2, Summer 2005    Quarterly newsletter of the California Invasive Plant Council



## *Forming a partnership to prevent plant invasions through horticulture*

*Ivy (Hedera spp.) climbs in a Bidwell Park woodland in Chico, site of this year's Cal-IPC Symposium, October 6-8. As part of our role in a growing partnership with the horticultural community, Cal-IPC is pursuing funding for genetic studies of escaped Hedera species in California in order to determine problem species and support potential nursery actions. (Photo: Steve Green, Friends of Bidwell Park)*

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<i>...plus the 2005 Symposium!</i>	



## California Invasive Plant Council

1442-A Walnut Street, #462  
Berkeley, CA 94709  
(510) 843-3902  
fax (510) 217-3500  
www.cal-ipc.org  
info@cal-ipc.org

A California 501(c)3 nonprofit organization

Protecting California's natural areas  
from wildland weeds through  
research, restoration, and education.

### Staff

Doug Johnson, Executive Director  
dwjohnson@cal-ipc.org

Elizabeth Brusati, Project Manager  
edbrusati@cal-ipc.org

Gina Skurka, Project Intern  
gmskurka@cal-ipc.org

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## Cal-IPC News

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Editors: Doug Johnson and Elizabeth Brusati

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## From the Director's Desk

### Mapping the Lay of the Land

Last issue, we ran a Red Alert article on Japanese knotweed (*Polygonum cuspidatum*). Field biologists were finding what they believe to be new infestations in Humboldt County. Because the plant is rated by the California Department of Food & Agriculture on the list of noxious weeds, historical maps of the remaining populations are available, and these locations can be added—if indeed they are new—and monitored.

Such cases point out the importance of mapping. Observations at a particular place and time are invaluable for tracking the dynamic geographic phenomenon of weeds. Was this here before? How fast is it spreading? How and where is it spreading? These questions can only be answered by careful observation over time, and the way to share the information gleaned such observations is through maps.

Our strategies for controlling them weeds need to fully incorporate what we know about the lay of the land. Outlier populations, leading edges, protected native habitat “sweet spots”—our approaches can maximize effectiveness by being spatially adept at understanding the ecological behavior of weed populations.

Regional efforts are making strides at mapping weeds. In northern California, Modoc, Siskiyou, Shasta and Lassen counties are coordinating to aggregate their geographic data. In southern California, groups have assembled data on *Arundo donax* over most watersheds. New GPS software, like the Weed Information Management System (WIMS), are adding power to field data collection.

Cal-IPC's Mapping Committee is applying for funds to coordinate efforts statewide. The lack of statewide maps of most weeds is a sizable gap in our ability to address invasive plants at a landscape scale. As the revision of our inventory of California weeds nears completion, we will initiate surveying counties to determine distribution at a coarse level for each of the listed plants. Maps will help us envision ways to link our projects across the landscape—and to show the need for a higher level of resources to accomplish weed work at a greater scale.



Salmon Hole, Upper Bidwell Park, Chico (Steve Green photo)



Register Now for the 2005 Cal-IPC Symposium in Chico!

Early registration ends September 1. See details on page 10.

## Got Weedy Items? Donate to our 2nd Annual Auction

Like last year, we'll have a raffle and auction at our Thursday evening awards banquet at the Symposium, and we need your donated items to make it go! We already have a Scotch broom tea cup set and 1907 pampas grass post cards from a generous donor—do you have a tool, book, piece of clothing or craftwork, bottle of wine, weekend retreat—OK, so this is a broad, eclectic definition of weedy items! Please contact the organizers Wendy West and Gina Skurka at [wkwest@ucdavis.edu](mailto:wkwest@ucdavis.edu) and [gmskurka@cal-ipc.org](mailto:gmskurka@cal-ipc.org). Thank you!

To help the National Park Service fight invasive species and preserve threatened natural resources, Sen. Ron Wyden (D-OR) introduced legislation—S. 1288, **The Natural Resource Protection Cooperative Agreement Act**—to authorize the Secretary of Interior to enter into cooperative agreements with watershed councils, non-profits organizations, private landowners and county and state governments to protect, maintain and restore natural plant species and water resources in and around national park lands. The bill is co-sponsored by Sen. Daniel Akaka (D-HI). (*Medford News*)

In April, **House Resources Chair Richard Pombo (R-Stockton)** requested a report from the Government Accountability Office to identify lessons learned from a review of events related to the infestation of the nation's forests by several major invasive insects and diseases (i.e. the cause of Sudden Oak Death, Asian long-horned beetle, and emerald ash borer). The report will focus on federal efforts, but will also include state and local government agencies. (*National Invasive Species Council newsletter, www.invasivespecies.gov*)

**Two bills sponsored by the California Native Plant Society** are moving through the legislature without opposition. **SB 502 (Kehoe)** removes bias against native plants in current statutes dealing with maintaining fire breaks around structures and local weed abatement actions. These laws now suggest that native plants are the problem. **AB 1466 (Laird)** authorizes the state to enter into a cooperative program with the federal government and other Colorado Basin states to undertake the removal of tamarisk from the basin and reestablish native plants. ([www.leginfo.ca.gov](http://www.leginfo.ca.gov))

**The Coastal Environment Motor Vehicle Mitigation (AB 658, Kuehl)** would allow coastal counties to charge a DMV vehicle registration fee, whose proceeds would be applied to local environmental projects that address problems tied to roads, including invasive plants. ([www.leginfo.ca.gov](http://www.leginfo.ca.gov))

Researcher Bill Bruckart at USDA is conducting **studies on a rust fungus** (tentatively identified as *Puccinia acroptili*) that attacks Russian knapweed, investigating its potential as a biocontrol agent. He needs samples from infected plants. Infestations have been found in Santa Barbara. For more information, contact him at (310)619-2846 or [wbruckart@fdwsr.ars.usda.gov](mailto:wbruckart@fdwsr.ars.usda.gov).

Governor Janet Napolitano of Arizona signed an Executive Order creating an **Arizona Invasive Species Advisory Council**. The EO requires state agencies to evaluate their authorities and programs for invasive species. ([www.governor.state.az.us/press/March05/040105-SDOC0731.pdf](http://www.governor.state.az.us/press/March05/040105-SDOC0731.pdf))

**More from Arizona...** Arizona's national forests will soon be providing a smorgasbord for weevils, flies, moths, beetles and sheep. The feast is part of a U.S. Forest Service plan to treat 25 species of weeds on 135,000 acres of the Coconino, Kaibab and Prescott forests in northern Arizona over the next ten years. Bull thistle and Dalmatian toadflax make up 90% of the weeds that infest 187,500 acres in Arizona. (*Associated Press*)

The May 22 issue of Parade Magazine (a national Sunday newspaper insert) featured a cover article on invasive species titled **"When Poison is Pretty."** Cal-IPC provided information on the iceplant on the front cover. [archive.parade.com](http://archive.parade.com)

## New Brochures Available:

### Biological Pollution

Describes impacts of invasive plants for a general audience. Great for visitors' centers or public events.

### Don't Plant a Pest!

*Southern California*  
Adapted from original Bay Area version, with invasives and wildland-safe alternatives for California south of the Tehachapis.

### Trees in California

Recommended alternatives to 18 invasive tree species in California.

### Central Coast

For San Luis Obispo and Santa Barbara counties. Available soon.

For orders or samples, [www.cal-ipc.org](http://www.cal-ipc.org) or 510.843.3902



## 2nd Annual Cal-IPC Photo Contest

Give us your best shots!

### Categories:

- Weed Impacts
- Weed Workers in Action
- Landscape (big infestations)
- Specimens (single plants)
- Before/After Projects
- Humorous Weeds

### Deadline September 1

Prizes for 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> places in each category. Winners will be chosen by the Cal-IPC board and displayed at the Symposium.

Digital photos preferred. Send entries to [edbrusati@cal-ipc.org](mailto:edbrusati@cal-ipc.org) or mail to Cal-IPC.

# Don't Sell a Pest

## A New Partnership to Prevent Plant Invasions through Horticulture

Sarah Connick and Mike Gerel, Sustainable Conservation

*Cal-IPC is working with Sustainable Conservation and representatives from the horticultural community to develop voluntary measures that will address ongoing introduction of known invasive plants. The partnership also hopes to improve screening for new plant introductions so that future invasions can be avoided. This article is adapted from a paper delivered at the 2004 Cal-IPC Symposium.*

The horticulture industry has been an important pathway for invasive plant introductions in the United States, and a number of plants known to be invasive in California are widely available through nurseries and garden centers in the state. While substantial headway has been made in the development of techniques for controlling and eradicating invasive plants, relatively little attention has been given to the development of effective strategies for preventing new and continuing invasions. After researching the structure of the industry and efforts of others working in this area, Sustainable Conservation has established a multi-stakeholder partnership to develop and foster the implementation of strategies for preventing new and continuing introductions of invasive plants through the horticultural community in order to protect California's natural resources.

### Invasive Plants and the Horticulture Trade

The horticultural industry has been an important pathway for the introduction of many known invasive plants. Reichard (1997) determined that 85% of invasive woody plants in the United States were introduced for landscape trade, and estimated that there is the potential for more than 1000 new invasive plants to be introduced through this pathway (Reichard 2001). Stanton (2002) determined that 53% of California's most invasive plants have horticultural origins.

While there are numerous individual reports of invasive plants sold at stores, little comprehensive data have been available to understand fully the number of species and extent of the availability of plants known to



*Vinca major* (periwinkle), a popular ground cover, invades Garrapata State Park. Photo: Bob Case

be invasive through wholesale and retail trade. To better understand the situation, Sustainable Conservation and Cal-IPC compiled information on the availability of known invasive plants through the review of catalogs and availability listings for 25 California-based wholesale nurseries. The nurseries were selected to provide a representative cross-section of the industry based on size, specialty, and location. Cal-IPC identified 52 plants from the approximately 100 in its *List of Exotic Pest Plants of Greatest Ecological Concern in California* (Cal-IPC 1999) that have potential horticultural value, treating horticultural varieties separately.

Cal-IPC found that 32 of the 52 plants were carried by at least one wholesaler (Figure 1). Thirteen of those 32 invasive plants also had varieties that were sold by at least one of the 25 growers surveyed. Cal-IPC found that 18 of the 25 growers carried at least one invasive plant and 22 carried at least one invasive plant or an invasive plant variety (Figure 2A). The average number of invasive

plants carried per wholesaler was 3.2, or 5.5 including varieties. Of the 13 plants having varieties, each was sold by an average of 4.5 nurseries. One wholesaler carried 14 invasive plants. Cal-IPC also reported on a 2003 retail nursery survey conducted by University of California Cooperative Extension Master Gardeners in San Mateo and Santa Clara counties. The Master Gardeners surveyed 23 nurseries looking for 25 invasive plants included in the 1999 Cal-IPC list, and found 23 on sale (Table 2B).

### California's Horticulture Industry

Horticulture is the third largest agricultural industry in California, after dairy and grapes. In 2001, it accounted for \$13.2 billion in sales, and provided approximately 169,000 jobs. Approximately 27% of California's nursery plant production takes place in San Diego County, and California produces 21% of the nursery plants sold nationwide (Hoy & Rodriguez 2003). On the consumption side, California is the largest nursery retailing state in the country, and sales have been trending upward.

California's horticulture industry is diverse and highly fragmented. At the wholesale level, plant material flows from a wide variety of seed and live plant propagators and growers to a wide range of retailers (Figure 3). The three main types of retail outlets are in-store retail, mail order, and landscape contractors. End customers vary widely from homeowners to commercial establishments and governmental purchasers, all of which have different needs.

There are 2,930 wholesale nursery producers in California (CDFA 2003), which accounted for \$3.1 billion in sales in 2001 (Hoy & Rodriguez 2003). The wholesale side of this industry operates on low profit margins, with high competitive rivalry, and has low bargaining power relative to retailers. Although the industry has experienced a significant amount of consolidation in recent years, some sources say it is stabilizing, and it remains highly fragmented. Wholesale

**Figure 1. Cal-IPC-listed invasive plants available from CA wholesale nurseries**

(from 2004 Cal-IPC Survey)

<u>Scientific name</u>	<u>Common name</u>
<i>Arctotheca calendula</i>	cape weed
<i>Aruno donax</i>	giant reed
<i>Cirsium vulgare</i>	bull thistle
<i>Cortaderia selloana</i>	pampas grass
<i>Cotoneaster lacteus</i>	Parney's cotoneaster
<i>Cotoneaster pannosa</i>	cotoneaster
<i>Cytisus scoparius</i>	Scotch broom
<i>Eichhornia crassipes</i>	water hyacinth
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Ficus carica</i>	edible fig
<i>Foeniculum vulgare</i>	fennel
<i>Hedera helix</i>	English ivy
<i>Helichrysum petiolare</i>	licorice plant
<i>Hypericum perforatum</i>	St. John's wort
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	yellow flag iris
<i>Lupinus arboreus</i>	bush lupine
<i>Mentha pulegium</i>	pennyroyal
<i>Myoporum laetum</i>	myoporum
<i>Myriophyllum aquaticum</i>	parrot's feather
<i>Olea europaea</i>	European olive
<i>Pennisetum setaceum</i>	fountain grass
<i>Retama monosperma</i>	bridal broom
<i>Ricinus communis</i>	castor bean
<i>Robinia pseudoacacia</i>	black locus
<i>Sapium sebiferum</i>	Chinese tallow tree
<i>Schinus molle</i>	Peruvianpepper
<i>Schinus terebinthifolius</i>	Brazilian pepper
<i>Sesbania punicea</i>	red sesbania
<i>Spartium junceum</i>	Spanish broom
<i>Tamarix ramosissima</i>	saltcedar
<i>Vinca major</i>	periwinkle

growers face several pressing issues in addition to concerns about invasive plants, including pathogen control and increased regulation of runoff water quality.

On the retail side, California's horticultural industry accounted for \$10.1 billion in sales in 2001 (Hoy & Rodriguez 2003). There are many plant retailers in California; however, the greatest volume of plant sales is concentrated in the big chain stores. The hardware/home center market share has grown rapidly in recent years, and the relatively high bargaining power of the big chains allows these retailers to put pressure on margin and volume. At the same time that these retail outlets handle large volumes of plants, plants are only one of many types of

California Department of Food and Agriculture maintains a list of noxious weeds, and is responsible for establishing appropriate levels of regulatory action. Thus, the listing of a plant as a noxious weed does not necessarily translate directly into a statewide sales ban. Until recently, this list focused on plants that have an adverse impact on agriculture. In 1993, however, the listing authority was revised to include plants that have

products they sell.

Landscape firms are also important retail outlets for plants. While no data are available for California, Americans spend approximately \$11.2 billion on landscape construction and installation, and approximately \$10.7 billion on landscape maintenance annually (First Research 2003). Landscape contractors constitute an estimated 7-14% of national nursery and grower sales (ANLA 2004).

Catalog sales account for \$3.1 billion in annual sales value nationally (MGA 2003). Although catalogue sales represent a relatively small volume, they have the potential to play a significant role in the introduction of invasive plants because of the distributed nature of the business.

**Existing Prevention Efforts**

There is no comprehensive framework for regulating all pathways of invasive plant introductions, or for regulating all types of invasive plants sold through the horticultural trade. Federal authority for invasive plant regulation and control is fragmented across many agencies, and emphasizes control of plants that have an adverse impact on agriculture, as opposed to ecosystems. The U.S. Department of Agriculture has banned a small number of highly invasive plants from importation and trade nationally. At the state level, the

ecological impacts, as long as the listing would not have a detrimental impact on agriculture. Eleven new plants were added to the list in 2003. At the local level, there has been increasing interest in ordinances banning the sale of specific plant species.

Despite the attractiveness of regulation as a strong tool for controlling business practices, it is not clear that regulation alone is the most effective tool for preventing new and continuing introductions of invasive plants (Wortman 2004). The issue of plant invasiveness is complex and differs widely according to plant species and geography. As a result, several organizations have sought nonregulatory means for preventing plant invasions. Invasive plant councils across the country are identifying and inventorying invasive plants to raise awareness of problems in their areas. Cal-IPC and other organizations have developed and disseminated educational brochures on alternatives to invasive plants.

In 2001, industry, academic, and nonprofit organizations concerned about invasive plants of horticultural origin came together to develop voluntary codes of conduct for nurseries, landscape architects, botanic gardens, and garden clubs. Since then, 35 organizations have voluntarily signed the St. Louis Declaration Codes of Conduct (Center for Plant Conservation 2001). The Codes represent a significant step forward in

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**Figure 2. Cal-IPC-listed plants most widely available in the nursery trade**

**A. Wholesalers (25 surveyed):**

	<u>No. of Wholesalers</u>
<i>Hedera helix</i> (English ivy)	7
<i>Cortaderia selloana</i> (pampas grass)	5
<i>Cotoneaster lacteus</i> (cotoneaster)	5
<i>Schinus molle</i> (Peruvian pepper tree)	5

Varietals:

<i>Pennisetum setaceum</i> var. (fountain grass)	12
<i>Hedera helix</i> var. (English ivy)	9
<i>Cortaderia selloana</i> var. (pampas grass)	7
<i>Vinca major</i> var. (periwinkle)	7

**B. Retailers (23 surveyed):**

	<u>No. of Retailers</u>
<i>Hedera helix</i> (English ivy)	23
<i>Pennisetum setaceum</i> (fountain grass)	21
<i>Vinca major</i> (periwinkle)	21
<i>Helichrysum petiolare</i> (licorice plant)	17



# High School Students Take On Carnation Spurge

By Christy Brigham, Santa Monica National Recreation Area

A new invader has established a foothold in the coastal bluffs near Malibu, California. *Euphorbia terracina* (Geraldton carnation spurge or false caper) is known from only two locations in the United States—Southern California and Pennsylvania. This species is originally from Mediterranean Europe and is an aggressive invader of shrublands in Australia.

Carnation spurge is related to leafy spurge (*Euphorbia esula*) but lacks that species' vigorous rhizome. Carnation spurge in the Malibu area invades any area of disturbance, large or small. It can be found in fire fuel modification zones surrounding houses, lots that have been graded for construction, and on gopher mounds in undisturbed coastal sage scrub. Once seeds are exposed to light, they germinate and grow rapidly. Within a single year, plants can form large shrubs three to five feet tall. The species forms dense monocultures that exclude all native vegetation and provide little habitat value due to their toxic milky sap. Plants are prolific seeders and fruits explosively dehisce, throwing seeds far and wide.

Carnation spurge now dominates several

acres of disturbed areas at Solstice Canyon in the Santa Monica Mountains National Recreation Area. This park is owned and managed by the National Park Service and has a long history of invasive species battles. Prior to acquisition by NPS, several local groups, such as the California Native Plant Society, spent countless hours working in the canyon to remove invasive species like periwinkle (*Vinca major*) and fennel (*Foeniculum vulgare*). When NPS received the site in 1993, they realized that carnation spurge was a major problem in the canyon.

Solstice Canyon is an important site for restoration because it contains large areas of intact coastal sage scrub, riparian communities and chaparral. Its plant communities include 23% of all species native to the Santa Monica Mountains, as well as rare plants such as alders (*Alnus rhombifolia*) and Plummer's baccharis (*Baccharis plummerae*). The canyon also provides habitat for endangered southern steelhead trout and is popular with recreation area visitors.

Since 2002, NPS has worked with local school groups to remove carnation spurge and restore disturbed areas by planting native vegetation. The program, called EcoHelpers, brings high school groups—typically science classes—on one-day field trips to the canyon to learn about invasive species and help restore areas infested with

carnation spurge. Students typically come in groups of 30-50 and spend an hour learning about the impacts of invasive species and taking a short hike in the canyon. They then alternate between hand pulling carnation spurge (wearing gloves and long sleeves) and planting native plants. Volunteers in NPS' native plant nursery grow all plants for the project from seed or stock collected locally. Since the project started, 2,836 students have visited the canyon to work on restoring spurge-infested areas. More than 6,000 native shrubs and grasses have been planted and a five-acre area has been restored.

The success of this project has depended on numerous partners. The Los Angeles County Agricultural Commissioner's Office assisted by performing carnation spurge control in some large areas in preparation for planting by the high school students. Mountains Restoration Trust, a local non-profit conservation group, partnered with NPS on several restoration projects in Solstice Canyon, including the EcoHelpers program. The Los Angeles County Weed Management Area also donated time and materials to the project.

This is the final year for EcoHelpers in Solstice Canyon. We have run out of large areas appropriate for hand pulling and planting by school groups. The remaining small infestations of carnation spurge in the canyon will be treated by park staff and trained volunteers. EcoHelpers will continue at a different park site, Zuma Canyon, where students will focus on converting a weedy fuel modification zone into a native grassland.

Contact the author at [christy\\_brigham@nps.gov](mailto:christy_brigham@nps.gov).



High school students digging out *Euphorbia terracina* at Solstice Canyon. (Photos by Randy Philips, NPS)



# Controlling Red Sesbania in Dry Creek

By Peter Buck, Sacramento Area Flood Control Agency  
Shannon Lucas, May & Associates

The Sacramento Area Flood Control Agency, in partnership with Sacramento County, Placer County, the City of Sacramento, and the City of Roseville, is conducting a three-year project to remove the invasive riparian weed red sesbania (*Sesbania punicea*) from Dry Creek and its tributaries in Placer and Sacramento Counties. The project is funded by a Proposition 13 Flood Protection Corridor Program grant provided by the Dept. of Water Resources. During Year 1 (2004), we removed 80% of the mature red sesbania plants. In 2005, the remaining mature plants will be removed and follow-up treatments will be conducted for resprouting stumps and emerging seedlings.

Red sesbania is a vigorously-growing riparian plant native to South America. It thrives in the California Central Valley and spreads rapidly down waterways via floating pods that contain seeds that may be viable for many years. Since its initial detection in Dry Creek, red sesbania has become an aggressive and dominant species on stream banks and in-channel islands, altering river flow patterns, displacing native riparian vegetation, limiting shoreline access, and increasing erosion. In heavily infested portions of the Dry Creek watershed, red sesbania often comprises more than 50% of the biomass of emergent vegetation along the shoreline and on islands, causing canopy closures with a virtual biological "desert" underneath. Complex food webs that are maintained by a diversity of native wetland plants and aquatic habitats become simplified or excluded. In addition, the foliage and seeds of red sesbania are poisonous.

The Dry Creek watershed covers approximately 101 square miles in Placer and Sacramento Counties. Dry Creek flows through cities and unincorporated areas north of Sacramento and eventually joins Steelhead

Creek to flow into the Sacramento River. Of approximately 44 miles of creek within the project area, pre-treatment mapping in Summer 2004 identified 26 miles (60%) that were infested with red sesbania.

The eradication project aims to restore



Cutting red sesbania along Dry Creek (Photo by Peter Buck)

natural processes within Dry Creek, improve floodwater conveyance, and contribute to the elimination of this invasive plant regionally and statewide. Given that the species spreads by water flow, major elements of the project include identifying and eliminating upstream sources in order to contain the weed species, identifying new populations downstream following project completion, and monitoring and follow-up of treated areas to avoid reinfestation of the creek by seeds remaining after the initial removal efforts.

The project area supports valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), a federally-listed threatened invertebrate, and its host plant blue elderberry (*Sambucus mexicanus*). Dry Creek and its tributaries also support several anadromous fish species, including fall run Chinook salmon and federally protected steelhead. Measures employed by this project to protect these species and their habitat include herbicide restrictions (regarding timing,

distance, formulations and application methods) as approved by the US and California EPA and NOAA fisheries, as well as worker training and biological monitoring.

Red sesbania removal began in late summer and fall 2004, starting at the upstream extent of Dry Creek and its tributaries and continuing downstream. The primary method of removal was "cut-and-paint," i.e. cutting the shrub (with hand or power tools) near the base and immediately painting the remaining stump with herbicide (generally Aquamaster). Some younger, smaller sesbania plants were pulled out by hand.

Biomass was then hauled by hand, or "yarded" using ropes or cables, into piles outside of the Dry Creek floodplain, then chipped and mulched.

Year 1 work also included a public awareness campaign. A brochure was prepared to educate the public about red sesbania, its harmful effects to riparian communities, and the Dry Creek project. This brochure, along with a red sesbania fact sheet prepared by the Sacramento Weed Warriors, was sent to landowners along Dry Creek prior to our removal work. In an effort to prevent further introductions of red sesbania from landscaped areas along

Dry Creek, approximately 30 nurseries within the vicinity of the Dry Creek watershed were contacted by phone to ask whether they stocked red sesbania plants. A follow-up letter was sent to these nurseries describing the control project, as well as sesbania brochures and Cal-IPC's "Don't Plant a Pest" brochure.

Year 2 activities will include two or three follow-up treatments of resprouting sesbania stumps and removal and/or treatment of new seedlings beginning in March 2005, and removal of the remaining mature red sesbania plants in summer and fall 2005. Treatments in Years 2 and 3 will include a combination of herbicide application and green flaming, a new technique that damages new growth via focused, intense heat without posing a fire hazard to surrounding vegetation. Future goals include continued follow-up treatment of new seedlings, public volunteer opportunities, and continuing awareness outreach.

Contact the authors at [buckp@saccounty.net](mailto:buckp@saccounty.net) and [shannonlucas@mayandassociatesinc.com](mailto:shannonlucas@mayandassociatesinc.com).

# What's the plan?

## *The Cal-IPC board's vision for 2005 and beyond*

In April, Cal-IPC board members and staff met on Catalina Island to discuss short- and long-range strategy for the organization. Staying in tent cabins generously donated by the Catalina Island Conservancy, we spent a weekend discussing which of many projects to pursue, deciding how planned projects fit with current top priorities, and identifying possible funding sources. In outlining plans for the next two years, we focused on expanding our information resources, continuing our promising work with nursery partners, ramping up our advocacy for weed programs at the state and federal levels, and providing new avenues for Cal-IPC members to play an active role.

### 1. Completing revision of the Invasive Plant Inventory and expanding our other weed information resources

Cal-IPC's weed list committee has finished draft assessments of approximately 300 plants for the 2005 revision of our *California Invasive Plant Inventory*. All plant assessments are available on our website, and we encourage you to check the analysis and provide additional information for plants with which you are familiar. We will incorporate comments received by the end of August into a printed draft that will be distributed to attendees at the October Symposium for its last review. The final print version will be ready in early 2006.

Because of the lack of regional data, the inventory assesses weeds at a statewide level, and does not account for regional variations. Thus, an immediate next step is to collect regional mapping data to establish where each weed is in the state. We envision a county-based survey to establish the first coarse-level mapping of weeds throughout the state, and have applied for funding to coordinate a statewide weed mapping data committee.

In an effort to develop a more detailed statewide map of a single species as a pilot project, we are partnering with Team Arundo del Norte and the Santa Margarita/San Luis Rey Weed Management Area in San Diego County to map the statewide distribution of *Arundo donax*. In the future, we hope to develop an interactive web portal where users can submit geographic information on new invasions or range expansions, providing up-to-date distribution maps. Such features will require a significant upgrade to our website capacity.

We decided to offer Integrated Pest Management (IPM) field workshops, with the eventual goal of also publishing a

comprehensive weed management manual that is updated regularly. Our first workshop, scheduled for Oct. 5 in Chico before the 2005 Symposium, will focus on control techniques. Future workshops may also include project planning, mapping and monitoring, weed identification, and restoration topics.

### 2. Continue work aimed at addressing the horticultural pathway

Cal-IPC is a central participant in the Partnership to Prevent Invasive Plant Introductions through Horticulture with Sustainable Conservation, The Nature Conservancy, and members of the horticultural community (see article page 4). Together, we are working to identify which invasive plants to target and what actions will work best to prevent introductions of invasive plants through the trade.

In conjunction with the partnership, Cal-IPC will be developing a statewide program to educate nursery owners, other horticultural professionals, and consumers on non-invasive alternatives. We are coordinating with local weed workers around the state to produce "Don't Plant a Pest!" brochures for additional regions of California (see page 3 for newly released versions). We will also be coordinating with county groups, like those in Alameda and Marin counties, that are beginning to work with local retail nurseries to sell only wildland-safe plants.



2005 Cal-IPC Board of Directors, staff, and retreat host. *Standing, from left:* Dan Gluesenkamp, Bobbi Simpson, Christy Brigham, Steve Schoenig, Carri Piroosko, Doug Johnson, Jenn Erskine Ogden, Gina Skurka, Alison Stanton, David Chang, Jon Fox, Bob Case. *Sitting, from left:* John Knapp (Catalina Island Conservancy), Mark Newhouser, Joe DiTomaso, Elizabeth Brusati, Wendy West, Jason Giessow.



### 3. Ramp up advocacy for weed programs

In 2005, Cal-IPC has taken a lead role in: organizing Day at the Capitol (at which the heads of the Resources Agency and the Dept. of Food & Agriculture spoke, and attendees made 80 legislative visits); coordinating California's largest delegation to National Invasive Weeds Awareness Week in DC; mobilizing local events for California Invasive Weeds Awareness Week; and hosting a bus tour for Sacramento legislative staff to view local weed control projects. These efforts represent a significant increase in outreach capacity, and we plan to continue on this trajectory.

Through the many legislative visits made on Day at the Capitol in March (see the Spring issue *Cal-IPC News*), we have maintained contact with several offices to explore potential funding avenues for Weed Management Areas and invasive plant control projects. While the state's continuing budget problems make obtaining funding difficult, we will continue to raise the profile of the invasive plant issue among legislative staffers, especially those from urban areas who may be less aware of the issue.

Economic impacts of invasive plants is one of the best ways to convince decision makers that the issue is serious. We plan to develop outreach materials that draw on a compilation of existing published research on economic impacts. To assist with this effort, Cal-IPC will host an intern from the Biological Invasions graduate program at UC Davis this summer who will prepare a literature review and write a draft report. We are also supporting the development of a decision-analysis model weighing control costs versus known impacts of a particular weed to agriculture, recreation, and natural ecosystems.

Educating the public is an important aspect of advocacy. We have found many groups—classes, garden clubs, homeowners' associations, etc.—interested in having a presentation on invasive plants. Our



Board member Joanna Clines pulls some tocalote on Catalina Island.

outreach committee is developing a speakers' bureau that will be available for making presentations to groups in their area that request information on invasive plants. We are designing short PowerPoint slide presentations with speaker's notes for several audiences, including garden clubs and general college classes.

### 4. Provide avenues for Cal-IPC members to play an active role

We are a member-driven organization, and all of the above programs depend in large part on participation from our knowledgeable, committed members. Below are listed some productive avenues for active involvement that Cal-IPC members.

## Member Involvement

**Comment on our plant assessments.** Members are our eyes and ears in the field, and most weeds do not have adequate published information, making field observations key. Add additional literature citations or personal observations that will improve the accuracy and documentation of the inventory. We are currently taking comments for the updated list until August 30, but new observations are always welcome. Visit [www.cal-ipc.org](http://www.cal-ipc.org) and follow the link in the center column.

**Be a Cal-IPC weed mapping contact for your county.** We will be surveying for all listed weeds in each of the state's counties, and will need individuals to serve as primary contacts for collecting information at a local level. Contact [dujohnson@cal-ipc.org](mailto:dujohnson@cal-ipc.org).

**Join the Cal-IPC speakers' bureau.** We will provide you with PowerPoint presentations, speaker's notes, and brochures. When someone from your area requests a talk, we will contact you. Or, even better, volunteer to give a talk to a group in your area. Contact [edbrusati@cal-ipc.org](mailto:edbrusati@cal-ipc.org).

**Come to this year's Cal-IPC Symposium in Chico.** Over 300 weed workers gather to share the latest on biology and management, with

local field trips, too (see page 10). And consider preparing a presentation or poster for next year. Full details at [www.cal-ipc.org](http://www.cal-ipc.org).

**Plan to attend Invasive Weeds Day at the Capitol, March 2006.** Spend a day in Sacramento educating legislators and agency managers about invasive plants in your county. We especially need participants from the far northern and southern ends of the state. It's a great opportunity to meet fellow weed workers from around the state and make a difference at the capitol. Contact [wkwest@ucdavis.edu](mailto:wkwest@ucdavis.edu).

**Plan an event for California Invasive Weeds Awareness Week, July 2006.** It's never too early to brainstorm ideas! Our website has suggestions for organizing and publicizing activities for Weeds Week or similar events. Visit [www.cal-ipc.org](http://www.cal-ipc.org).

**Submit an article to Cal-IPC News.** Let your fellow weed workers know about an innovative project, a new tool, an exciting event, etc. Contact [edbrusati@cal-ipc.org](mailto:edbrusati@cal-ipc.org).

**Join the California Weed Talk listserv.** Sharing information is what it's all about, and this is an easy way to do it. Visit [www.cal-ipc.org](http://www.cal-ipc.org) for instructions on joining.

## The 14th Annual Cal-IPC Symposium

# Prevention Reinvention:

## *Protocols, Information, and Partnerships to Stop the Spread of Invasive Plants*

October 6-8, 2005, California State University, Chico

Early registration: \$210 by September 1

### *Join us for our 14th annual Symposium!*

The Cal-IPC Symposium is the ideal place to learn the latest in invasive plant biology, management, and policy issues from researchers and practitioners working around the state. Invited speakers, contributed papers, working groups, field trips, posters, and trade exhibits make the Symposium the most comprehensive overview of wildland weed work in California.

The meeting venue is Bell Memorial Union on the campus of California State University, Chico. Chico's Bidwell Park, one of the largest municipal parks in the country, has one of the state's most active local weed control efforts (the park also played the part of Sherwood Forest for *The Adventures of Robin Hood* in 1938). Big Chico Creek runs through campus, and downtown Chico is right next store. The award-winning Sierra Nevada Brewery calls Chico home (as does the National Yo-Yo Museum). Lassen Volcanic National Park is an hour away.

This year's theme addresses the crucial role of prevention in weed programs. Three sessions of invited speakers, including Jerry Asher from BLM in Oregon (retired) and Eric Lane from the Colorado Department of Agriculture, will describe aspects of successful programs that prevent the spread of invasive weeds. Five contributed paper sessions and a poster session cover the full spectrum of wildland weed topics, from control techniques to GIS mapping, ecosystem processes to DNA identification. Four Saturday field trips explore weed projects in the Sacramento River National Wildlife Refuge, Bidwell Park, the Sutter Buttes, and Stony and Red Bank creeks. And eight working groups and discussion groups give you the opportunity to go in depth on a topic with your fellow weed workers. Plus Red Alerts, legislative updates, our awards banquet, auction, sponsor exhibits, and photo contest...

### **Invited Paper Sessions:**

- Protocols and Practices for Stopping Weed Movement
- Inventory and Prediction for Stopping Weed Spread
- Partnerships for Early Detection and Rapid Response

### **Contributed Paper Sessions:**

- Control and Management
- GIS to DNA: New Tools
- Successful Programs and Partnerships
- Safe and Effective Use of Herbicides
- Biology and Ecology of Weeds

### **Poster and Trade Exhibit Session**

### **Special Lunchtime Speaker:**

Joseph Silveira, Sacramento River National Wildlife Refuge, "The return of natural diversity to Great Valley wildlife habitats"

### **Working and Discussion Groups**

Cal-IPC Board committees will be running four Working Groups to plan strategy and enlist support for their projects:

- Weed List
- Horticulture
- Mapping
- Outreach

In addition, four Discussion Groups will invite attendees to share information on specific topics:

- Weeds in riparian areas, wetlands and sensitive habitats
- Trees and shrubs
- Weeds and fire management
- Grasslands

### **Awards Banquet**

- Jake Sigg Award for Vision and Service
- Golden Weed Wrench Award for Land Manager of the Year
- Catalyst Award for Inspiring Action
- Weedzilla Award for NPS Manager of the Year

### **DPR Continuing Education Credits**

We have applied to the California Department of Pesticide Regulation for 2 hours of Law and Regulations credit, 12 hours general credit for paper sessions, and 4 hours general credit for field trips.

### **Saturday Field Trips**

- The Sacramento River As It Was: Ordbend Park and Llano Seco Ranch
- Peace Valley at the Sutter Buttes
- Invasive Weed Control in Chico's Renowned Bidwell Park
- Arundo and Tamarisk in the North: Stony and Red Bank Creeks

**Full program, travel information, and registration materials available at**  
**[www.cal-ipc.org](http://www.cal-ipc.org)**





# Invasive Plants Research at UC Riverside

By Jodie S. Holt, Botany and Plant Sciences Department, University of California, Riverside ([jodie.holt@ucr.edu](mailto:jodie.holt@ucr.edu))

As a follow-up to the article, “Teaching Weeds: California university invasive plant programs” (*Cal-IPC News* Summer 2004), we wanted to highlight the abundant research underway at UC Riverside on the biology, ecology, and management of invasive plants. Several faculty members in the Department of Botany and Plant Sciences have both undergraduate and graduate students in their laboratories working on a wide range of weed species in a variety of ecosystems. This research ranges from very basic projects in ecology, genetics, and physiology to very practical projects in management of invasive species and conservation of native species. Here we highlight several of those labs and the research of their students. Departmental information, as well as links to all professors’ homepages, at [www.plantbiology.ucr.edu](http://www.plantbiology.ucr.edu).

## Edith Allen, Professor of Plant Ecology and Cooperative Extension Natural Resources Specialist

**Anthropogenic N deposition and invasive plant species.** Experimental evidence from the Allen lab has been mounting over the last 10 years that anthropogenic nitrogen deposition is increasing the abundance of invasive plant species in coastal sage scrub and Mojave Desert vegetation. Plant-available N emissions in southern California originate primarily from automobiles (as nitrate) with

lesser inputs from agriculture (as ammonium). Concentrations of extractable soil N may be > 5 times greater in soils affected by atmospheric deposition than in rural areas at a distance from urban sources. Weedy invasive plants such as red brome (*Bromus madritensis*) tend to be more nitrophilous than many native plants, and can take up N and grow faster in response to elevated N. One important consequence of N deposition is an increase in wildland fire frequency as vegetation becomes converted to exotic annual grassland. Current research underway at Joshua Tree National Park shows that the exotic Mediterranean split grass (*Schismus barbatus*) responded to N fertilization during a year of slightly above-average precipitation (2003/2004). Leela Rao, a Ph.D. student, is measuring vegetation response to N as part of her dissertation, and Drs. Andrzej Bytnerowicz and Mark Fenn of the Forest Service Fire Lab in Riverside are measuring atmospheric N inputs across the park. The decline of native biodiversity in southern California may also be related to N deposition. Ph.D. candidate Robert Cox is undertaking a survey of listed and sensitive plant species of western Riverside County and the Coachella Valley, and measuring the abundance of invasive species associated with sightings of rare plants. These are being correlated with the modeled map of N deposition created by Gail Tonnesen of UCR’s College of Engineering.

**Restoration to control invasive plant species.** As native vegetation goes into decline, restoration is an important tool for conservation and for controlling exotic species. Grass-specific herbicide (Fusilade) has been used to control brome grasses with good results, followed by seeding with native coastal sage scrub shrub species. Additional studies are underway by Robert Cox who was able to reduce exotic grass cover and

increase native forbs in coastal sage scrub stands for 5 years following Fusilade application, and by Ph.D. candidate Robert Steers, who applied Fusilade to creosote scrub to control Mediterranean split grass and increase native forbs in the shrub understory. Still another study is underway by Robin Marushia, a Junior Specialist working with the Allen and Holt labs, in weedy abandoned farmland in SW Riverside County, where solarization to kill the seed bank proved the most effective technique to assure successful establishment of native vegetation.

## Norman C. Ellstrand, Professor of Genetics and Director, Biotechnology Impacts Center

An area of interest in the Ellstrand lab is gene flow and hybridization as factors in the evolution of increased invasiveness. Hybridization between species and subspecies has been linked to the creation of invasive lineages in several systems. One such system is radish (*Raphanus*) in California. In the mid-1800s, two radish species, cultivated radish (*R. sativus*) and jointed charlock (*R. raphanistrum*), were introduced to California. Since their arrival they have freely hybridized into a complex that has invaded almost the entire geographic range of the state. While hybrid-derived radish has been successful in California, it is not clear that hybridization itself is the mechanism that is directly responsible; rapid adaptive evolution may have played a role in the lineage’s ability to expand its range. Caroline Ridley, a Ph.D. student, is testing both hybridization and rapid local adaptation as complementary explanations for the evolution of invasiveness in California wild radish.

Another Ph.D. student, Jutta Burger, studies weedy rye (*Secale* sp.), a persistent annual weed of the western US that is either of hybrid or of cereal (*S. cereale*) rye origin. She is investigating the genetic correlates of weediness of cereal rye in order to identify the possible origins of populations and to test for local adaptation in weedy populations along a latitudinal gradient. By understanding how this species has spread so successfully she



Students working on artichoke thistle at Crystal Cove State Park — Jared Stephens (undergraduate), Robin Marushia and Ginger White (graduate students). (Photo by the author)



hopes to better understand how genetics, especially hybridization, and local conditions interact to change introduced species into major invaders.

Janet Garcia is a new Ph.D. student at UCR who works between the Ellstrand and Holt labs. Her dissertation project focuses on the genetic relatedness of artichoke thistle, *Cynara cardunculus*, an invader of coastal grasslands, to the two conspecific crop varieties *C. cardunculus* var. *scobymus* (globe artichoke) and *C. cardunculus* var. *altilis* (cardoon). She is interested in identifying the weedy type in California (putative var. *sylvestris*) and understanding its origin in relation to the two crops.

### Jodie S. Holt, Professor of Plant Physiology and Chair, Department of Botany and Plant Sciences

Research in the Holt lab focuses on mechanisms and genetics of plant invasion in particular habitats and how these mechanisms might be manipulated for successful management. One current project focuses on the physiology and population ecology of artichoke thistle and the mechanisms by which it invades coastal grasslands. Dr. Virginia White recently completed her dissertation on the environmental physiology of artichoke thistle in which she studied traits contributing to invasiveness, sites most suitable for establishment, and competitive interactions with native and exotic grasses. Robin Marushia's recently finished M.S. Thesis addressed patterns of seed dispersal and seedling establishment in artichoke thistle, in which she demonstrated that in field settings most seeds dispersed within 5 meters of the parent plant, while in the absence of impediments created by vegetation, dispersed seeds may travel 40 meters or more. Another project, conducted by Dr. Ian Gillespie as a Postdoctoral Researcher, focuses on demography of artichoke thistle in order to understand the life history stages most important to population growth and most vulnerable to control.

Dr. Rana Tayyar, Staff Research Associate, recently completed a field experiment at UCR to determine the effect of Roundup and Transline herbicides on artichoke thistle applied at early resprouting, late resprouting, bolting and flowering stages. Both herbicides were most effective in controlling plants at the late resprouting stage (100% mortality) and least effective at the flowering stage (48% mortality). Dr. Tayyar has another experiment

underway to investigate genetic variation within and among field patches of artichoke thistle, which will allow us to assess the relative contributions of asexual and sexual reproduction to spread in grasslands. Random amplified polymorphic DNA (RAPD) markers will be used in this analysis to distinguish clones from seed-derived plants. Using a combination of demographic and environmental data we are also applying modeling approaches for scheduling the timing of control of this species.

Several projects either underway or recently completed in the Holt lab focus on invasion of riparian ecosystems by *Arundo donax* (giant reed). Mike Rauterkus recently completed his M.S. Thesis, which



Graduate student Lauren Quinn deep in *Arundo*. (Photo by the author)

addressed physiological characteristics of giant reed in comparison to native riparian species, and the impacts of giant reed on environmental resources and conditions in riparian habitats. Lauren Quinn, a current Ph.D. student, has investigated the invasion behavior of giant reed. In research where giant reed rhizomes were planted in three (already invaded) southern California riparian ecosystems, establishment varied with environmental factors but occurred in all locations, indicating that giant reed is able to succeed in many habitat types. However, in a field experiment at UCR's experiment station, she found that plant community composition, particularly the shrub component, reduced the invasion success of giant reed and

other colonizing plant species. Greenhouse experiments have shown that lateral spread of giant reed rhizomes may be enhanced by nitrogen fertilization and is most likely to occur in autumn, and biomass accumulation is highest under moderate shading. Results of this work are being used in experiments conducted by Dr. Virginia White to test approaches for giant reed removal and restoration of native riparian species in order to prevent reinvasion.

We have recently begun to address the physiological basis for the recent rapid spread of *Brassica tournefortii*, Sahara mustard, into southwestern US deserts. This research is a collaborative project with Dr. Matt Brooks of the USGS in Henderson, NV. In this project, Robin Marushia is assessing differences in phenology (seasonal timing) between Sahara mustard populations from desert and non-desert environments, and comparing patterns of phenology with those of other invasive mustard species (*B. geniculata*, shortpod mustard, and *B. nigra*, black mustard) that differ in range. She is also conducting field experiments to assess differences in phenology between Sahara mustard and native Mojave annuals and to measure the impacts of Sahara mustard on native plant density, growth, and fecundity at different levels of invasion. These experiments will inform management by defining priority levels of Sahara mustard density that are most likely to impact native annual plant populations. New Ph.D. student Melanie Stalder, who is interested in chemical ecology and allelopathy, will study the impacts of Sahara mustard on the desert rhizosphere (underground ecosystem).

### Related Research at UCR

Several other departments at UCR focus on invasive species. The Center for Conservation Biology (CCB) ([www.ccb.ucr.edu](http://www.ccb.ucr.edu)) assists in the conservation and restoration of species and ecosystems by facilitating the collection, evaluation, and dissemination of scientific information. The Center for Invasive Species Research ([cnas.ucr.edu/centers/cisr.html](http://cnas.ucr.edu/centers/cisr.html)) addresses pest and disease invasions by fostering cooperation and coordination of research efforts among UC campuses, USDA, the California Department of Food and Agriculture, and the agricultural industry. Finally, individual faculty in several other departments on campus conduct research on invasive species. For more information, visit the website of the UCR College of Natural and Agricultural Sciences ([cnas.ucr.edu](http://cnas.ucr.edu)).

**Horticultural invasions** *continued...*

addressing horticulture as a pathway for invasive plant introductions, and provide a solid foundation for developing practices throughout the horticultural community to prevent new and continuing introductions. At the same time, however, they provide broad direction and significant additional work is needed to translate them into action.

**Preventing Horticultural Invasions**

Sustainable Conservation is a nonprofit organization, based in San Francisco, which uses innovative partnerships to promote voluntary conservation in the private sector. In 2003-04, Sustainable Conservation conducted research on the horticulture industry and invasive plants. Based on our findings, we determined that an effective approach for developing and fostering the implementation of strategies for preventing introductions of invasive plants of horticultural origin in California would be through a multi-stakeholder partnership that engages representatives of the industry, consumer, nonprofit, environmental, and academic communities concerned with these issues.

In June 2004, Sustainable Conservation convened a forum for stakeholders to share their perspectives on the nature of the problem and challenges in addressing it, and

to assess the need for such an effort. The group concluded that a collaborative effort to develop and foster implementation of strategies for preventing invasive plant introductions through nurseries is needed in California. It identified several key challenges, especially the critical importance of bringing the right people to the table with respect to both the constituency an individual represents, and the commitment of that person's organization to the process. In addition, the group saw coming to agreement on the definition and determination of "invasiveness" as a significant hurdle to be crossed. Other key challenges included consumer preferences for particular plants, the diversity of the audiences that this effort needs to reach, and the need for high-quality scientific information.

In December 2004, Sustainable

**Figure 4. Organizations participating in the California Partnership for Preventing Invasive Plant Introductions through Horticulture**

- American Nursery and Landscape Association
- American Society of Landscape Architects, Northern CA Chapter
- California Association of Nurseries and Garden Centers
- California Department of Food and Agriculture
- California Invasive Plant Council
- California Landscape Contractors Association
- California State Floral Association
- Home Depot
- Mail Order Gardening Association
- Monrovia Nursery
- The Nature Conservancy
- UC Davis RIDNIS Program (Reducing the Introduction and Distribution of Non-native aquatic Invasive Species)
- California Agricultural Commissioner and Sealers Association
- Sustainable Conservation
- UC Cooperative Extension, Master Gardeners Program
- UC Santa Cruz Arboretum

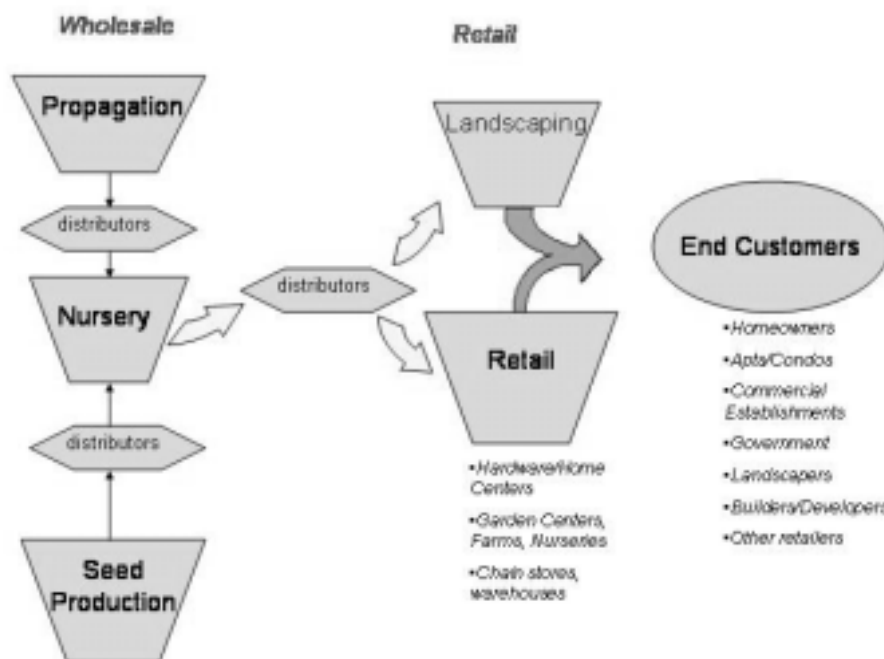
Conservation convened the Steering Committee for this effort, which named itself the California Partnership for Preventing Invasive Plant Introductions through Horticulture or Cal-PPIPIH (Figure 4). The group adopted a statement articulating its purpose:

"To develop and foster implementation of strategies for preventing new and continuing introductions of invasive plants through the horticultural community in order to protect California's natural resources."

The group agreed to move forward with its work on two parallel tracks. One track will come to agreement on a definition of invasiveness and evaluation criteria using examples to inform this work, and then identify invasive plants that are used and propagated in the horticultural community. The other will develop the strategies needed to prevent new and continuing introductions of plants that are identified as invasive, including education and outreach approaches to industry and consumer communities. Sustainable Conservation has hired a new project manager to coordinate the program; progress will be reported in upcoming issues of Cal-IPC News.

Contact the author at [sconnick@suscon.org](mailto:sconnick@suscon.org), or see the Sustainable Conservation website at [www.suscon.org](http://www.suscon.org).

**Figure 3. Chain of horticultural products from production to consumers** (chart by Sarah Connick and Terri Kempton, Sustainable Conservation)





# Australia prohibits importation of 3,335 plants

*From the Australian Ministry of Fisheries, Forestry, and Conservation  
June 1, 2005*

The Australian Government has prohibited importation of 3,335 potential weeds to protect the nation's agriculture and environment. Conservation Minister Senator Ian Macdonald said removal of the potential weeds marked the end of the first stage of a major project to remove whole groups (genera) from the list of permitted seed imports. "This is an important next step in protecting Australia's agriculture and environment from potential weeds," Senator Macdonald said.

The permitted seeds list (Schedule 5 of

the Quarantine Proclamation 1998) has been amended to reflect the completion of Stage One of the review. The Australian Government announced earlier this year that Biosecurity Australia would accelerate the review of the permitted seeds list.

Biosecurity Australia consulted widely on a list of 4,000 species recorded as weeds overseas and not yet considered present in Australia. The Cooperative Research Centre (CRC) for Australian Weed Management prepared the list for the Worldwide Fund for Nature. Following the consultations, Biosecurity Australia determined 3,335 species on the list were not present in Australia. Australia will permit imports of these species only if a weed risk assessment determines their weed potential in Australia is low. "The review will enhance Australia's favourable pest and disease status by ensuring Australia does not import known weedy species," Senator Macdonald said. "The second stage of the review will remove genus-level listings from the permitted seeds list. This means Australia will target individual plants rather than groups of plants."

For the second stage of plant evaluation, Biosecurity Australia is preparing information for extensive consultation with over 400 stakeholders including the World Wildlife

A report called "Jumping the Garden Fence: Invasive Garden Plants in Australia and their Environmental and Agricultural Impacts", was commissioned by World Wildlife Fund- Australia and prepared by senior scientists. In its 173 pages, the document examines impacts of invasive garden plants on both agriculture and natural ecosystems. Garden plants comprise 70% of Australia's total (agricultural, noxious, and natural ecosystem) weed population; their cost is estimated at AU\$4 billion annually. The report names key offending species and calls for stricter monitoring and enforcement. <[www.wwf.org.au/News\\_and\\_information/Publications](http://www.wwf.org.au/News_and_information/Publications)>

Fund, Australian Seeds Federation and the CRC for Australian Weed Management, as well as research to determine which species in over 2,900 currently permitted genera are present and/or commonly traded in Australia. "I expect the complete review of the permitted genera to be finalised by the end of next year," Senator Macdonald said.

Further information available at [www.daff.gov.au/biosecurityaustralia](http://www.daff.gov.au/biosecurityaustralia).

*Partnership, cont'd...*

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## Book Reviews

### Invasive Plants of Range and Wildlands and Their Environmental, Economic, and Societal Impacts.

Edited by Celestine L. Duncan and Janet K. Clark

(2005 Weed Science Society of America)

222 pp. \$20.00 through [www.wssa.net/publications](http://www.wssa.net/publications)

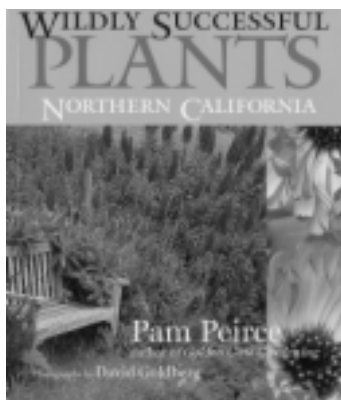
This paperback summarizes literature on 16 invasive plants, including 13 species found in California (three thistles, three knapweeds, perennial pepperweed, purple loosestrife, leafy spurge, downy brome, medusahead, dalmation toadflax, and saltcedar). Information was compiled from published literature and a questionnaire sent to weed managers to provide updated distribution information for each species. The book focuses on summarizing impacts—to livestock and wildlife, plant communities, community function, soil and water resources, human health, and economics. (Any benefit provided by each species to livestock or wildlife is also noted.) Though little economic data exists for many of these plants, the book's summary of existing studies performs an important function by establishing the foundation that will help researchers identify data gaps.

The book is not meant as a taxonomic guide, and there are no photographs (though each species is shown on the back cover). While certainly not an extensive reference, this book provides a concise review of a few key species of interest to many land managers. The lengthy citation list for each species forms a good foundation for researchers or those wanting more detailed information.

### Wildly Successful Plants: Northern California

By Pam Peirce (2004 Sasquatch Books) 306 pp

\$24.95 from [www.sasquatchbooks.com](http://www.sasquatchbooks.com)



This book is aimed at convincing gardeners that they can have a beautiful garden with minimal effort by choosing plants adapted to northern California's climate(s). It focuses on 50 plants, with detailed descriptions of their required growing conditions. Pam Peirce is an instructor of horticulture at City College of San Francisco and co-founder of the San Francisco League of Urban Gardeners (SLUG).

Though the title of the book makes one somewhat apprehensive at first, Peirce does a good job of balancing the needs of novice gardeners with the issue of invasive plants. She mentions wildland weeds repeatedly throughout the book,



and specifically recommends against some of the worst species, such as brooms or pampas grass. She also tells gardeners how to act responsibly by not throwing bulbs or other plant material over their fence, watching to see if plants are escaping out of the yard, and being especially careful if they live near a creek or open space. Cal-IPC's list is referenced and explained, as is the official state Noxious Weed List. Most of the plant recommendations are appropriate, but four species in the book are of some concern. *Vinca major* and *Digitalis purpurea*, both rated as Medium level invasives in the current draft of our updated list, are featured plants, though the author does mention their potential invasiveness. Peirce makes a stronger case for the invasiveness of ivy (*Hedera helix* and *H. canariensis*) and warns gardeners not to allow the vines to climb and fruit due to potential dispersal by birds.

We recommend this book as a gift (along with a "Don't Plant a Pest!" brochure) for your friend or relative who's interested in gardening and can't understand why you want to pull out all the pretty Scotch broom from the hillsides. The many photographs of gardens and flowers will attract those looking for pretty plants for their yards, and hopefully readers will pay attention to the information on invasive garden escapees and consider the issue of wildland weeds when choosing new plants.

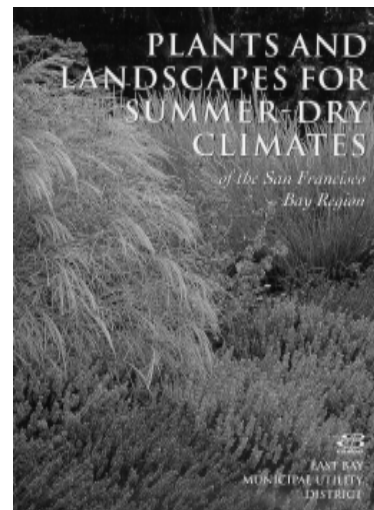
### Plants and Landscapes for Summer-Dry Climates of the San Francisco Bay Region

(2004, East Bay Municipal Utility District) 320 pp. \$34.95 from

[www.ebmud.com](http://www.ebmud.com)

This book, with its large format (9" x 12") and multitude of gorgeous photographs, would almost be worth buying simply to put on your coffee table. An update to EBMUD's *Water-Conserving Plants and Landscapes for the Bay Area*, it contains a catalog of 650 plants with charts in the back to organize information by growth form and light or water requirements. Although it focuses on plants suitable for the Bay Area, introductory chapters cover topics appropriate for most of California, including tips for working with summer-dry and winter-wet climates, an explanation of microclimates, and designing landscapes for fire safety on the wildland-urban interface.

The first page of the plant catalog mentions the fact that many plants have been found to be invasive, but states that because invasiveness varies so much by location and climate, the authors chose to address the issue by noting potential invasiveness in individual species descriptions. Several of the recommended plants, such as cotoneaster, are listed by Cal-IPC, and their descriptions make a brief mention of possible invasiveness in specific areas. This is another book to give with a "Don't Plant a Pest!" brochure, and one that reminds us of the ongoing need to integrate invasives information with recommended plant lists being developed for water conservation, fire safety, power line safety, and other concerns.



# New Members and Donors

*Thank you for your generous support! This list reflects donors and new members since the last newsletter.*

## Donations

Robert Berman (CNPS, Pacific Grove)  
Susan G. Duncan (Oakland)  
John Ekhoﬀ (Long Beach)  
Judy B. & Arnie Fishman (Los Angeles)  
Betty Kipp (CNPS, Berkeley)  
Robert P. and Averil Leach (West Sacramento)  
David Loeb (Berkeley)  
Judith Lowry (Larner Seeds, Bolinas)  
William McCoy (CNPS, Berkeley)  
T. Charles Moore (Sunnyvale)  
Val Page (Mojave Desert RCD, Apple Valley)  
Jake Sigg (San Francisco)  
Don Stiver (CNPS, El Cerrito)  
Noreen A. Trombley (NPS, Yosemite)  
Jean Vandevort (Felton)  
Peter Warner (CA State Parks, Little River)  
Annette Wheeler (Los Altos Hills)  
Matthew & JoAnn Zlatunich (San Francisco)

## Donations to Cape Ivy Biocontrol

### California Native Plant Society:

East Bay Chapter  
Marin Chapter  
Los Angeles-Santa Monica Mountain Chapter

San Luis Obispo Chapter  
Santa Clara County Chapter  
Carolyn Halde (San Francisco)  
Greg Archbald (Nevada City)  
Judy and Arnie Fishman (Los Angeles)

## New Members

Flo Anderson (Weed), Clare Aslan (UC Davis), Darin Banks (Prairie Village, KS), Katharyn Boyer (SFSU Romberg Tiburon Center, Tiburon), Cathy Boze (Mariposa County Dept. of Agriculture, Mariposa), Terrel Brand (Oakland), Ernest Bryant (Santa Barbara), Tim Butler (Oregon Dept. of Agriculture, Salem, OR), Mary Carroll (Santa Barbara), Penny Dalton (Sebastopol), Jonna D. Engel (CINMS, Santa Barbara), Arne Johanson (Poway Blue Sky Reserve, San Diego), Ann and Peter Jones (CNPS - Marin Chapter, Woodacre), Celia Kutcher (CNPS Orange County, Capistrano Beach), Monique Lau (San Rafael), Samuel Leininger (UC Davis, Sacramento), Virginia Moran (Ecological Outreach Services, Grass Valley), Deborah North (EDAW, Davis), Mary Shea (Vernal Consulting, Concord), David Sundstrom (CNPS South Coast Chapter, Rancho Palos Verdes), Bobbie Stephenson (Kingfisher Environmental, Inc., San Diego), Justin Watson (JDW Industries, Arroyo Grande), Stephen Winter (San Luis NWR Complex, Los Banos), Fred Thomas (CERUS Consulting, Chico)

## Have you seen this plant? Mystery *Senecio* found in So Cal

By Scott White, [scottbioservices@earthlink.net](mailto:scottbioservices@earthlink.net)

This apparently undescribed *Senecio* has been collected at several sites in San Diego and Orange Counties over the past few years. It grows in wetland margins at roadsides, seeps, alkaline flats, and probably stream channels. It is a shrub, about 1 - 1.5 m tall, with

straight, erect stems. It spreads laterally as older stems lay onto the ground and sprout new verticle shoots. The involucre are about 4 mm wide and the flowers are yellow.

*Senecio* spec. nov. resembles *Senecios* of South America and

...cont'd next page





# Readings & Resources

**Cal-IPC website:** We have added and reorganized several sections on our website. The Landscape Alternatives page is now called **For Gardeners**, and will point visitors to “Don’t Plant a Pest!” brochures and FAQs on species like sweet broom. A section called **For Land Managers** includes links to the Weed Workers’ Handbook and a **Weed Control page** with links to control information for plants rated High or Medium in the latest Cal-IPC list. You can now connect directly to individual species accounts in the WWH without downloading the full book. Control information will continue to be expanded in the coming months. Finally, we have a **new e-mail address** ([info@cal-ipc.org](mailto:info@cal-ipc.org)) for general inquiries. [www.cal-ipc.org](http://www.cal-ipc.org)

**Federal register notice:** The U.S. Fish and Wildlife Service published in the Federal Register a final list of bird species to which the **Migratory Bird Treaty Act** does not apply because they are not native to the United States and have been introduced by humans everywhere they occur in the nation. The list is required by the Migratory Bird Treaty Reform Act of 2004. [migratorybirds.fws.gov](http://migratorybirds.fws.gov)

**Herbicide report:** The Invasive Spartina Project has released a report describing the **proposed use of imazapyr** to control invasive

cordgrass in San Francisco Bay. The report concludes that imazapyr offers an improved risk scenario over the existing treatment regime with glyphosate. [www.spartina.org](http://www.spartina.org)

**Fact sheets:** The EPA has web links to information on **microbial biopesticide products**. All three products are expected to be especially useful in battling invasive plants: first *Chodrosterum purpureum* product, registered October 2004; second *C. purpureum* product registered March 2005; and Dyer’s Woad Rust, registered June 2002. [www.epa.gov/oppbopd1/biopesticides/ingredients/index.htm](http://www.epa.gov/oppbopd1/biopesticides/ingredients/index.htm)

**Outreach materials:** The Center for Invasive Plant Management, with support from the Western Integrated Pest Management Center, recently developed “**The Invasive Plant Resource Guide: a Big Book for a Big Problem.**” It provides reference materials developed by many agencies and organizations to support invasive plant management and education efforts. A web-based version will be available soon. [www.weedcenter.org](http://www.weedcenter.org)

**Website:** The US Forest Service has a new site to serve as a portal for information on their invasive species programs at the national, regional, district, and forest levels. [www.fs.fed.us/invasivespecies](http://www.fs.fed.us/invasivespecies)

**Cape Ivy Research:** The annual research report for the Biological Control of Cape Ivy Project is now available as a pdf on the Cal-IPC website’s publications page.

[www.cal-ipc.org](http://www.cal-ipc.org)

**Recipes:** Why just kill weeds when you can eat them? The National Park Service’s Alien Plant Working Group has a link to recipe pages from several invasive plant groups. Sorry, at this time we have no plans to serve **kudzu sorbet** at the Cal-IPC Symposium dinner. [www.nps.gov/plants/alien/recipes.htm](http://www.nps.gov/plants/alien/recipes.htm)

**Herbicide guidelines:** The Nature Conservancy has posted two **guides for herbicide use in natural areas** on its Invasive Species Initiative website. The guides are “Safe Herbicide Handling in Natural Areas: a Guide for Land Stewards and Volunteer Stewards” and “Upkeep and Maintenance of Herbicide Equipment: a Guide for Natural Areas Stewards.” [tncweeds.ucdavis.edu](http://tncweeds.ucdavis.edu)

**Website:** The San Francisco Estuary Institute is launching an internet-based guide to exotic organisms as a resource for educators, researchers and others. It contains photographs, descriptions and ecological information on several **common marine invaders in San Francisco Bay**. They plan to expand it to include additional species in the San Francisco Estuary and elsewhere on the North American Pacific Coast. [www.exoticguide.org](http://www.exoticguide.org)

**Book: Reclaiming Lost Provinces: A Century of Weed Biological Control in Queensland** has been published by the Queensland Department of Natural Resources and Mines. It is available for AU\$35.95 plus shipping. The author is Craig Walton, who says this volume would be a good companion to Biological Control of Invasive Plants in the United States (see book reviews). [www.nrm.qld.gov.au/pests/news\\_publications/publications/biocontrol\\_book.html](http://www.nrm.qld.gov.au/pests/news_publications/publications/biocontrol_book.html)

**Public Service Announcement:** Following last year’s “Knotweed!” video, the Whatcom County (WA) Noxious Weed Board has produced a second public service announcement to be shown before movies in Bellingham, WA. The 30-second “**Gill Man spot features a damsel in distress and a swamp creature**,” focusing on aquatic invasive species. It can be viewed at The Nature Conservancy’s website (free Quicktime player needed to watch it). Coming soon is a longer DVD on invasive garden plants. [tncweeds.ucdavis.edu](http://tncweeds.ucdavis.edu)

## *Senecio, cont’d...*

Australia. A formal description prepared by Brant Primrose and the late Ted Barkley will be published soon. While it remains unknown to botanical science in its native range, it has somehow reached southern California and spread across two counties. Horticulture is the most likely agent of dispersal. Perhaps it is being grown in specialty nurseries, or traded among garden hobbyists.

Though it is possible that it is native to California, that seems very unlikely. It is big, conspicuous, grows in densely populated regions, and is generally found in disturbed places such as roadsides. It threatens to become a serious invasive pest in native riparian vegetation.

Your help is needed! Please document

any occurrences in the wild or in cultivation with photographs, or better, by collections. Forward specimens with labels (date, location, collector) to one of these herbaria:

- Herbarium, Rancho Santa Ana Botanic Garden, 1500 N. College, Claremont, CA 91711, [909.625.8767]
- Herbarium, Dept. of Botany and Plant Sciences, University of California, Riverside, CA 92521, [909.787.3601]
- Herbarium, San Diego Natural History Museum, P.O. Box 121390, San Diego, CA 92112-1390, [619.255.0247]
- Herbarium, Plant Pest Diagnostics Center, CA Dept. of Food & Agriculture, 3294 Meadowview Rd., Sacramento, CA 95832-1448

# The WILDLAND WEED CALENDAR

## Sierra Nevada Alliance 12th Annual Conference

July 29-31, 2005  
North Lake Tahoe, CA  
Speakers, workshops, field trips, and networking with Sierra conservation leaders.  
[www.sierranevadaalliance.org](http://www.sierranevadaalliance.org)

## "Invasive Plants: Perspectives, Prescriptions, and Partnerships"

August 16-17, 2005  
Philadelphia, PA  
Contact: [jlm@pobox.upenn.edu](mailto:jlm@pobox.upenn.edu)

## Western Regional IPM Symposium

"Water, Wildlife & Pesticides in the West: Pest Management's Contribution to Solving Environmental Problems"  
Portland, OR  
Contact: *R.S. Melnicoe, 530-754-8378*

## 8th International Conference on the Ecology and Management of Plant Invasions

September 5-12, 2005  
University of Silesia in Katowice, Poland.  
[www.emapi.us.edu.pl](http://www.emapi.us.edu.pl)

## World Conference on Ecological Restoration

September 12-18, 2005  
Zaragoza, Spain  
Organized by the Society for Ecological Restoration. [www.ecologicalrestoration.net](http://www.ecologicalrestoration.net)

## Santa Barbara WMA's Annual Noxious Weeds Seminar

September 14, 2005  
Solvang, CA  
The theme of this year's seminar is riparian weeds management. [www.countyofsb.org/agcomm/umal/WMASeminar.htm](http://www.countyofsb.org/agcomm/umal/WMASeminar.htm)

## 2nd New England Invasive Plant Summit

September 17-18, 2005  
Framingham, MA  
Convened by Invasive Plant Atlas of New England and New England Invasive Plant Group. [invasives.eeb.uconn.edu/panel](http://invasives.eeb.uconn.edu/panel)

## 7th Annual California Weed Management Area Meeting

September 19-20, 2005  
Woodland, CA.  
Funding and grantwriting; networking between WMAs; state and federal funding legislation updates; weed control technology vendors; GIS and mapping; education and outreach; new weeds and new control tools. New this year - Educational Display Contest!  
Contact: *Steve Schoenig, (916)-654-0768 or [SSchoenig@cdfa.ca.gov](mailto:SSchoenig@cdfa.ca.gov)*

## Biological Invasions IGERT Fall Symposium

September 21, 2005  
Davis, CA  
A forum for discussion on biological invasions relating to the nursery and aquarium trades.  
[www.cpb.ucdavis.edu/bioinv/](http://www.cpb.ucdavis.edu/bioinv/)

## 32nd Natural Areas Conference

"Changing Natural Landscapes: Ecological and Human Dimensions"  
September 21-24, 2005  
Lincoln, NE  
[www.unl.edu/plains](http://www.unl.edu/plains)

## North American Weed Management Assn.

13th Annual Conference  
September 26-29, 2005  
Manhattan, KS  
[www.nawma.org](http://www.nawma.org)

*Know of an event that should be posted here?  
Please contact [edbrusati@cal-ipc.org](mailto:edbrusati@cal-ipc.org).*

## 7th Biennial State of the Estuary Conference

Oakland, CA  
October 4-6, 2005  
Focusing on connections between the watershed, delta, and San Francisco Bay, with sessions relating to habitat restoration, estuarine water supplies, and water quality.  
[www.abag.ca.gov/events/estuary](http://www.abag.ca.gov/events/estuary)

## Cal-IPC Wildland Weed Field Course

One-day hands-on field course focusing on a variety of control techniques.  
October 5, 2005  
Chico, CA  
<[www.cal-ipc.org](http://www.cal-ipc.org)>

## Cal-IPC Symposium

"Prevention Reinvention: Protocols, Information and Partnerships to Stop the Spread of Invasive Plants"  
October 6-8, 2005  
Chico, CA  
*See pages 10 and 11. [www.cal-ipc.org](http://www.cal-ipc.org)*

## Nevada Weed Management Association

October 11-14, 2005  
Reno, NV  
Contact: *Sue at [donaldsons@unce.unr.edu](mailto:donaldsons@unce.unr.edu)*

## California Society for Ecological Restoration (SERCAL)

"Restoring the Heart of California"  
October 19-22, 2005  
Bass Lake, CA  
Topics include restoration project funding, linking classroom to the field, restoration and ranching, and more.  
[www.sercal.org](http://www.sercal.org)

## North American Plant Protection Organization Annual Conference

October 17-21, 2005  
Puerto Vallarta, Mexico  
[www.nappo.org](http://www.nappo.org)

## Southwest Vegetation Management Association Annual Meeting

November 2-4, 2005  
Phoenix, AZ  
Contact: *Patti Fenner (602) 255-5386*  
[www.svuma.org](http://www.svuma.org)

## Quotable:

"A lot of people ask, 'What are you trying to do? Make it look like it did before the Europeans got here?' ... But you can never make it look like that. What we want is a functioning ecosystem."

*John Knapp, Catalina Island Conservancy  
Orange County Register, May 6, 2005*

# Cal-IPC Membership Form

*We're working to protect California's wildlands from invasive plants—join us!*

Cal-IPC's effectiveness comes from a strong membership, including scientists, land managers, policy makers, and concerned citizens. Please photocopy the form below, complete, and mail with your payment. Additional donations are always welcome to support our projects; we are a 501(c)3 nonprofit organization, and donations beyond regular membership rates are tax deductible.

## Individual

- Regular \$35
- Family \$60
- Contributing \$75
- Life \$1,000
- Joint Cal-IPC/SERCAL \$55
- Joint Cal-IPC/CNGA \$70
- Cal-IPC/SERCAL/CNGA \$95
- Student/Volunteer \$15

## Institutional

- Regular \$150
- Contributing \$300
- Patron \$600
- Sustaining \$1,000
- Small company or Nonprofit \$100

Name \_\_\_\_\_

Affiliation \_\_\_\_\_

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City, State & Zip \_\_\_\_\_

Work Phone \_\_\_\_\_

Home Phone \_\_\_\_\_

Fax \_\_\_\_\_

E-mail \_\_\_\_\_

Credit Card No. \_\_\_\_\_

Exp. Date \_\_\_\_\_

### Ways to join:

**Mail:** send this form with check (made out to "Cal-IPC") or credit card info to Cal-IPC, 1442-A Walnut Street #462, Berkeley, CA 94709

**Fax:** fax form with credit card info to 510/217-3500

**Email:** send contact and credit card info to [dwjohanson@cal-ipc.org](mailto:dwjohanson@cal-ipc.org)

**Phone:** call us at 510/843-3902 and provide contact and credit card info



**California  
Invasive Plant  
Council**

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Berkeley, CA 94709

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