Vol. 19, No. 3 Fall 2011

Cal-IPC News

Protecting California's Natural Areas from Wildland Weeds

Quarterly Newsletter of the California Invasive Plant Council

Cal-IPC celebrates 20 years!

At one of Cal-IPC's field trips at the 20th Annual Symposium participants biked to the Upper Truckee Marsh, the largest tributary of Lake Tahoe. Perennial pepperweed invaded the adjoining meadow in the 1980s and has been under control for more than a decade.

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A California 501(c)3 nonprofit organization

Protecting California's lands and waters from ecologically-damaging invasive plants through science, education, and policy.

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From the Director's Desk

What's in a word?

Articles have been flying around news outlets lately questioning the concept of "invasive species" and the utility of ecological restoration work. Is it "Time to Stop Worrying about Invasive Species" as suggested by *Scientific American* (6/8/11)?

The primary provocation for these articles is a short opinion piece called "Don't judge species on their origins" from June's *Nature* magazine. The basic thesis of the piece is hardly revolutionary; it is that not all non-native species are bad. Unfortunately the authors imply that this is indeed revolutionary news, that land managers are operating with blinders trying to "restore ecosystems to some 'rightful' historical state." (It is also troubling that the authors place importance in the fact that "introduction of non-native species has almost always increased the number of species in a region." Or in the fact that tamarisk uses the same amount of groundwater as native willows—per leaf area, and guess which has a lot more leaf area?)

As for the basic point of the piece, I agree with the authors: some non-native plants can play a harmless, potentially even useful role in ecological function. In setting priorities, land managers target non-natives whose impact is apparent, while leaving less damaging invasives. And in cases where non-native plants may be playing a role in supporting other species, land managers design their work accordingly. Working with non-native species as part of the mix will be increasingly important for conservation as climate change results in shifting vegetation communities,

The challenge remains determining the impacts – harmful or beneficial – of a particular species. As Carla D'Antonio, keynote speaker at our recent Symposium, pointed out, one scientific definition of "invasive" is simply "a non-native species that is spreading." It's when an organization like Cal-IPC adds "and causes ecological harm" to the equation that the accounting gets more difficult. Published studies of impacts are limited, and placing a value on impacts becomes subjective. I expect that attributing beneficial ecological impacts is equally challenging.

The authors' recommendation to "organize priorities around whether species are producing benefits or harm to biodiversity, human health, ecological services and economies… and much less on where they originated" is not news to land managers. Though the authors and media may prefer to treat the topic as revelatory, it is closer to common sense.

Symposium attendees making connections. See page 8 for more photos.

Wildland Weed NewsNewsNewsNewsNews

The state of California adopted a "Strategic Framework for Protecting California from Invasive Species". Leaders of six agencies signed off on the document, which makes 46 recommendations for strengthening a coordinated response to invasive species. The document was developed by the state's advisory committee on invasive species. The group will now begin work on implementation. *www.iscc.ca.gov*

Risk assessments to block invasive wildlife would pay off. A UC Davis study recently published in the journal *Ecological Economics* estimated that a nationwide risk-screening system would yield net benefits ranging from approximately $54,000 to $141,000 per species. They based their estimate on money currently spent to control species such as Burmese pythons and Asian carp. *www.news.ucdavis.edu*

UC Davis research has found that organic herbicides can be effective when weeds are small and environmental conditions are optimum. However, organic herbicides only kill contacted tissue, good organic herbicide coverage is essential. Organic herbicides only burn back the tops of perennial weeds, and they recover quickly. Organic herbicides have no residual activity on subsequent weed emergence. Researchers tested several organic herbicides in agricultural situations so it is uncertain how well the results would translate to wildlands. *ucanr.org/blogs/blogcore/postdetail.cfm?postnum=5623*

Cal-IPC Updates

Board election results
Please welcome new board members Dan Knapp (Los Angeles Conservation Corps) and Chris McDonald (UC Cooperative Extension, San Bernardino, Riverside, and Imperial Counties), who will begin their terms in January. Peter Beesley, Jason Giessow, and Peter Schuyler were re-elected. Officers for 2012 will be John Knapp (President), Jason Casanova (Vice-President), Julie Horenstein (Secretary), and Doug Gibson (Treasurer). Valerie Eviner, Brent Johnson, and Shea O'Keefe will leave the board in December 2011.

New grants
We have received a grant from the Marisla Foundation to support the training program.

Staff changes
Suzanne Harmon has left Cal-IPC to manage an organic farm in Sonoma County, with sheep for weed control!

New tools from Cal-IPC!
See page 7 for information on the "Prevention Best Management Practices for Land Managers" manual and page 11 for infomation on the CalWeedMapper website.

New t-shirts
At the symposium we offered new long-sleeved t-shirts. The dark brown shirts can be ordered from our website at *www.cal-ipc.org/shop/index.php* or call (510) 843-3902. Sizes L, XL, and XXL are available (the shirts run small).

Membership renewal
It's time to renew your membership for 2012. Make it easy and renew online now. *www.cal-ipc.org/about/membership*

Japanese dodder has been detected in Lompoc, Santa Barbara County, for the first time. This parasitic plant looks like bright orange spaghetti and can infest street trees, other ornamental plants, and agricultural crops. It is much larger than similar native species of dodder. See *www.dodder.org* for photos and more information. Report sightings of this species to your county agricultural commissioner's office. *www.kionrightnow.com/story/15379612/invasive-plant-found-in-lompoc*

"Noninvasive" cultivars may not be as safe as advertised. Researchers at Washington University and the Chicago Botanic Garden, studying woody ornamental plants, found that claims of environmental safety are in most cases based on misleading evidence that greatly underestimates the plants' invasive potential. What is more, the offspring of cultivars do not usually "breed true" and may reproduce more than their parents, especially if they cross with plants from nearby wildland populations. Even a 95% reduction in seed production may not be enough to make an ornamental cultivar non-invasive. *www.aibs.org/bioscience-press-releases*

The National Biological Information Infrastructure (NBII) is a victim of budget cuts. A program of the US Geological Survey, NBII includes resources such as maps of the vegetation in National Parks; the "National Framework for Early Detection, Rapid Assessment, and Rapid Response to Invasive Species"; and the Gap Analysis Program with digital species distribution maps. All of its projects and its website will end in January 2012. *www.nbii.gov*

A new aerial survey method shows that leafy spurge is expanding after fire in Idaho. Very Large Scale Aerial Imagery, or VLSA, is a new way to collect high-resolution photos automatically

...continued page 14

Perennial pepperweed control decision guide

by Christine Whitcraft, CSU Long Beach

Perennial pepperweed (*Lepidium latifolium*) is a non-native crucifer (mustard family) that was introduced to California from southeastern Eurasia in the 1930s. By 1993, perennial pepperweed was viewed as a major weed throughout the western states in a variety of habitats (Young et al. 1998, Renz 2001, Wilson et al. 2008). The Cal-IPC Inventory rates it as a highly invasive plant with high ecological impact, great invasive potential, and widespread distribution. It is also a CDFA B listed species. It is very difficult to control because new plants can easily regenrate from pieces of roots left in the soil, even those less than one inch long.

The ecological impacts of perennial pepperweed establishment are extensive and varied. In rangeland and agricultural settings established colonies are typically monocultures (Young et al. 1998). Yet, in estuarine wetlands, several plant and animal species co-exist with perennial pepperweed as an understory species (Reynolds and Boyer 2009).

Wetland ecosystems are particularly susceptible to invasion due to their landscape position, and ecosystem functions and human services they provide can be compromised by such invasions (Zedler and Kercher 2004). Invasive plant species are increasingly significant management problems in wetlands globally. In response to these problems, land managers face daily questions about the most effective and responsible way to control perennial pepperweed and about whether eradication is possible.

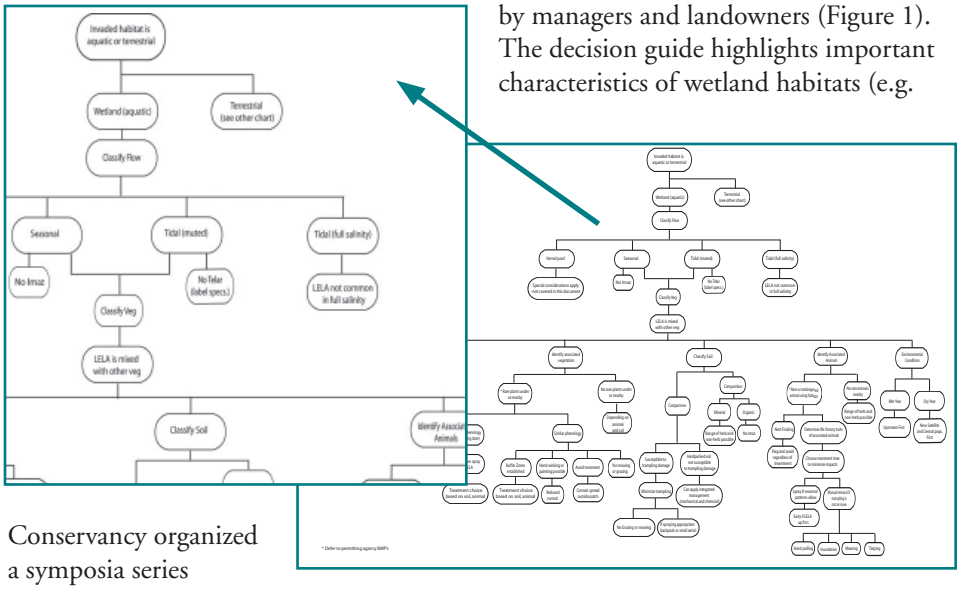
In the San Francisco Estuary, perennial pepperweed alters native plant communities including several endangered ones (Grewell et al. 2007, Fiedler et al. 2007). The presence of perennial pepperweed also alters soil properties, biogeochemical cycling, and supply of detritus (Blank and Young 2002). Finally, perennial pepperweed can potentially impact food-web structure by shifting the invertebrate community to species not widely consumed (Reynolds and Boyer 2009). These extensive ecological impacts occur within areas of high conservation value and emphasize the need for well-designed control and eradication strategies.

The extent of perennial pepperweed invasion becomes clear during the flowering season, shown here in the lightest color bloom.

Perennial pepperweed symposium

To address these needs the San Francisco Bay National Estuarine Research Reserve (SF Bay NERR), Solano Land Trust (SLT), and California Coastal Conservancy organized a symposia series in 2008 on perennial pepperweed with several goals in mind. Our principal aim was to address the question of the state of the science and management of perennial pepperweed in the San Francisco Bay area and the Sacramento-San Joaquin Delta. This required a two-pronged approach: (1) understanding the ecology and impacts of perennial pepperweed, and (2) discussing and designing effective management and control efforts.

Another goal of the symposia was to create a decision guide that could help streamline decision-making about control and reduction of perennial pepperweed by managers and landowners (Figure 1). The decision guide highlights important characteristics of wetland habitats (e.g.



Perennial pepperweed control decision guide for wetlands. Use this tool to determine the most appropriate type of control for the situation. Available at *www.cal-ipc.org/ip/management/plant_profiles/Lepidium_latifolium.php*

Table 1. Perennial pepperweed *(Lepidium latifolium, LELA)* summary treatment chart of pros and cons associated with particular herbicide and mechanical treatment options for within wetland ecosystems.

Herbicide with potential wetland application options		
Name	**Pros**	**Cons**
2,4 D	demonstrated effectiveness in some treatments over several year reapplication	potential toxicity implications; special applicator permit required; limited effectiveness in some studies
glyphosate	commonly used; good on thin stands; does not bind to soil; limited reported toxicity	potential non-target impacts to other vegetation
imazapyr	potential for control in single application; demonstrated efficacy in tidal systems	binds to soil; demonstrated residual and non-target impacts in some systems
chlorsulfuron	demonstrated sigificant and multi-year control in some systems	not rated for wetland/aquatic use; potential non-target impacts
Mechanism of herbicide application		
aerial	cover larger areas economically	requires proper equipment, drift is a potential issue
backpack	target specific application; limited drift	time-consuming, expensive labor; potential health issues for applicator; trampling is potential issue
wicking	minimizes damage to non-target, sensitive plants	time-consuming; expensive labor; impossible to apply large-scale; often less effective control
painting	minimizes damage to non-target, sensitive plants	time-consuming; expensive labor; impossible to apply large-scale; often less effective control
truck-mounted hose reel	least impact, faster and easier than backpack	high initial cost, need to be w/in 1200 ft of vehicle
amphibious vehicle	access across rougher terrain	highest impact on sensitive areas
ATV	cover larger areas, one person-job, more economical	only acceptable on dry, harder soils
Mechanical control with potential wetland application		
grazing	potential selectivity; lower residual impacts than some herbicides; continual grazing can control	potential impacts less well-researched (nutrients, trampling, containment issues, non-selectivity)
burning	kills most plants including LELA	non-discriminate; potentially dangerous to wildlife; ineffective for control
tarping	kills most plants including LELA; control unknown	not selective; non-target impacts not well-researched
disking	lower residual impacts than some herbicides	potentially dangerous to wildlife; can increase spread
mowing	lower residual impacts than some herbicides; consistant mowing can reduce carbohydrate reserves	impossible on soft soils; dangerous to wildlife; little control alone; not selective
inundation	natural solution; restoration at same time	expensive; requires extensive planning
active restoration	can increase native diversity and density; can control	costly; requires extensive planning
Extensive literature review and follow-up conversations (omitted from this article) were involved in the production of this table.		

plant biomass, height, soil parameters, native plant composition) that should be considered when deciding on a treatment course. A separate decision guide was also assembled for terrestrial ecosystems.

Establishing reasonable goals

Numerous attempts have been undertaken to control, contain or eradicate perennial pepperweed. Eradication is the removal of every individual and propagule of an invasive species, and where possible is the favored management choice (Zaveleta et al. 2001). However, complete eradication may not be feasible for many invaders. Control and containment both require indefinite investments of time, tools and money to keep an invader at bay but provide alternative strategies when eradication is not possible. At the SF Bay NERR symposium, it was generally agreed that perennial pepperweed programs in wetlands should be aimed at control or containment, not eradication, in order to be feasible.

There is a crucial need for continued development and application of effective

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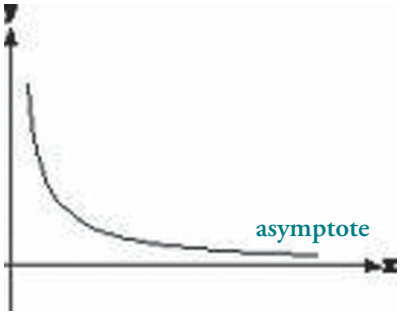
Feature

Long-term broom management

by Ken Moore, Wildlands Restoration Team, Santa Cruz, kenmm23@gmail.com

What does analytic geometry have to do with invasive plant management? In analytic geometry, an asymptote of a curve is a straight line that gets closer and closer to the curve, but never actually touches it. The distance between the curve and the line continually approaches zero as they tend to infinity. The asymptote has applications in fields such as quantum mechanics, particle theory, even philosophy.



It also serves as a great metaphor. As you approach infinity (or completion, perfection, etc.) each further step becomes more difficult. Take sharpening a cutting implement. Sharpening weed tools is fairly easy. But obtaining the edge needed for a surgeon's scalpel requires honing with successively finer stones, followed by polishing with successively finer rouges. However, even that mirror edge looks rough under a microscope, because the finest abrasives still cannot produce the theoretically perfect, sharpest edge.

In weed work where eradication is the ultimate goal, infinity equals zero presence. This is always challenging, but broom, more than any other plant I have tackled, epitomizes the asymptote principle.

Three phases of broom control

Phase 1 is removal of standing broom. Everything from hands to heavy equipment is employed at this stage. While this appears to be the hardest step, it is actually the easiest, even though it is the most work! People love the satisfaction they get from visible results.

Phase 2 is dealing with the sea of seedlings triggered from the seedbank by broom removal. Now the real difficulty of controlling broom becomes apparent. People don't relish pulling endless seedlings. Where they can be used, methods like flaming and foliar spray are best for larger sites. But after a few years, native plant growth on most sites will preclude using either of these methods.

Phase 3 is when native plants have achieved sufficient size and density so that broom is hard to see. Hand pulling or stem treatments are required now, and even seasoned pullers are missing broom. You are close to finishing, yet it is increasingly hard to prevent any seed set. The asymptote principle! Paul Simon put it succinctly: "The nearer your destination, the more you're slip-sliding away."

However, forces are gathering out there which have taken me 25 years to fully appreciate. Their effects are only beginning to become visibly apparent, and are therefore under-valued by many land managers.

Broom cannot tolerate heavy shade. It usually established following logging or other activities that removed tree canopy. Now that these areas are recovering, broom is increasingly shaded out. And where we're boosting native re-growth by removing broom, the effect is dramatic. Check seed pods in shady areas. They may still form, but not reach maturity.

Evolution is also helping. Yep, even on broom sites! When broom initially established here, browsing animals like deer probably ignored it. But sooner or later, one gets curious: "Hmmm, not bad." The word gets around!

Broom control Phase 1: Weed workers, volunteers and large equipment remove broom. This can be very satisfying!

Deer, rabbits, squirrels, gophers, wood rats, mice, and voles have all benefitted from our removing many of their predators. There are more hungry mouths to feed out there, especially herbivores. Being nature's larder on the hoof, they multiply copiously!

Not only are there more mouths, there's less native forage available to them. As we "convert" natural areas and invasive species displace natives, those mouths may increasingly turn to non-native plants to survive.

But evolution does not manifest itself overnight, so it is no wonder that early signs of adaptation to broom by browsers go unnoticed. On sites where broom removal is not underway, it is easy to miss, but look closely and you will see it, even there. On sites where broom is being controlled, the effects

Check for sharp angled cuts on broom around the edges of infestations. These are made as deer nip off the tender ends of young plants.

Wood rats, rabbits, mice, and voles gnaw the tender cambium layer, and can eventually girdle stems on the interior of broom infestations.

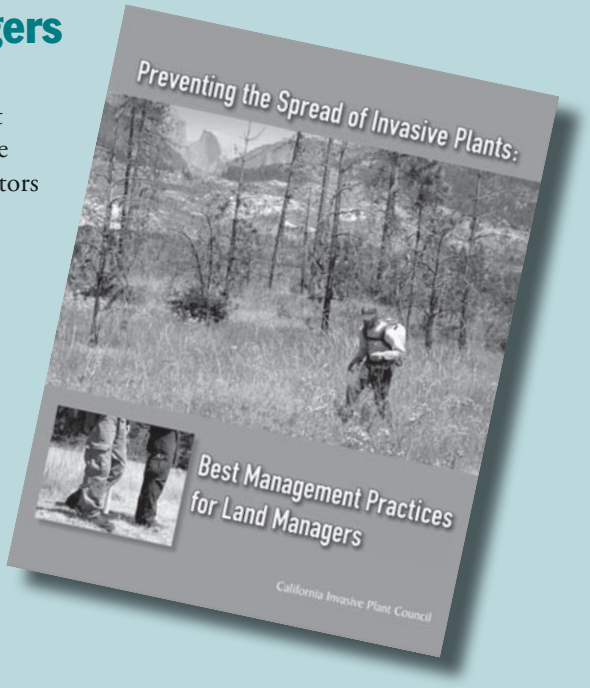
Gophers and ground squirrels, who work mostly underground, can completely sever the roots of large broom.

of browsing escalate. As fewer plants remain, they get hammered even harder. This is particularly helpful in Phase 3, when plants are harder to find. And those hungry mouths are out there 24/7!

Are you feeling like these factors aren't significant? Think longer term, when escalation of these combined processes has kicked in! Browsers may not eradicate broom by themselves, but they are not alone! (There are many more of us out there, as well. Some 150 people attended Cal-IPC's initial gathering in 1992, and I remember wondering if we could ever assemble that number again.) Seeing browsers closing ranks behind us is empowering. The best allies we could ever have are the very ones we are working to save.

Preventing the Spread of Invasive Plants:

Best Management Practices For Land Managers



Cal-IPC has a new tool for land managers: a manual describing prevention Best Management Practices (BMPs). Prevention practices are essential for limiting the introduction and spread of invasive plants. Increasing awareness of potential vectors for the spread of invasive plants is critical to meeting conservation goals.

This manual provides essential guidelines for integrating prevention BMPs into land management. Land managers can use this manual to conduct trainings for work crews, provide language for contractor specifications, and to develop educational materials for the public. It also includes ready-to-use checklists for planners and field crews.

Each BMP is appropriate for particular situations; managers can select those that are practical for their use. Download the manual at *www.cal-ipc.org/ip/prevention*

This manual was funded through the American Recovery and Reinvestment Act, with funding provided by the USDA Forest Service, State and Private Forestry through the California Department of Food and Agriculture.

2011 Cal-IPC Symposium in Tahoe

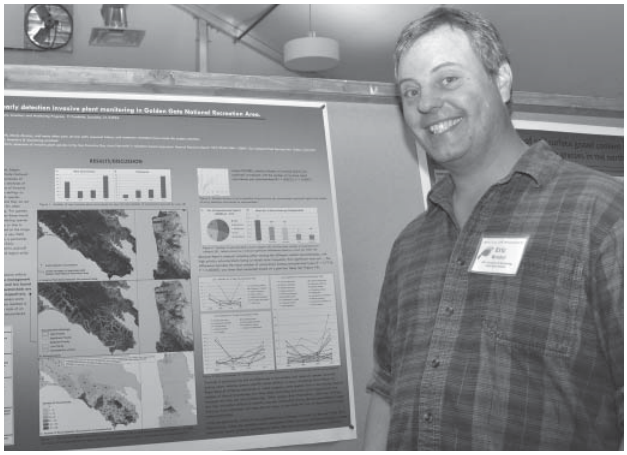
Twenty years ago, a small group of people interested in invasive plants met in Morro Bay to discuss forming a new organization to support invasive plant research and management. Little did they know that, two decades later, Cal-IPC would hold its 20th Annual Symposium with 300 attendees, a pre-symposium field course, 33 presentations, 21 posters, six discussion groups and three field trips. Although the snowy weather created some challenges, the sun came out in time for Friday field trips.

The Symposium is always a time to meet friends again. Long-time member Ken Moore (see his article on pg 6) with founding board member Greg Archbald.

At the Oktoberfest, board members Peter Beesley and Jason Giessow celebrate a year's worth of great work.

Attendees gathered at the Granibakken Conference Center in Tahoe City for two days of presentations.

Cindy Roessler of Midpennisula Regional Open Space District peruses one of the many great raffle prizes.



At the poster session, Eric Wrubel, NPS.

Find Symposium papers, posters and presentations at www.cal-ipc.org

Congratulations to our 2011 Award Winners!

Joe DiTomaso received a standing ovation.

Jake Sigg Award for Vision and Dedicated Service:

Joe DiTomaso, of the University of California, Davis, for providing extremely valuable resources, tools, and books for land managers in California and beyond, and for helping guide Cal-IPC in many endeavors.

Ryan Jones Catalyst Award:

Dan Gluesenkamp of Calflora **and Andrea Williams** of the Marin Municipal Water District, for taking tremendous initiative in conceiving and building the Bay Area Early Detection Network (BAEDN).

Policy and Media Award:

USDA's Plant Protection and Quarantine Division for approving the new NAPPRA protocol, which requires plant imports to be screened for invasiveness. This is a major step in limiting the introduction of new invasive plants into the country.

Sue Donaldson glowing!

Golden Weed Wrench Award for Land Manager of the Year:

Sue Donaldson, of the University of Nevada Cooperative Extension, for her establishment of successful Weed Warrior programs and her founding and coordinating the Lake Tahoe Basin Weed Coordinating Group.

Organization of the Year:

Lake Tahoe Basin Weed Coordinating Group, for actively representing five counties within two states, annually surveying 5,000 acres, hosting educational workshops, and establishing herbicide use guidelines in a region known for its strict water control board.

Student Paper Contest:

1st Place: Kai Palenscar, UC Riverside: "How does light attenuation affect giant reed (*Arundo donax*) establishment?" **2nd Place: Chelsea Carey,** UC Merced. **3rd Place: Rachel Brownsey,** UC Davis.

Board Award

The Cal-IPC board honored **Doug Johnson** with a special award, for ten years of growing Cal-IPC's capacity.

Photo Contest Winner: "Castor bean - The Movie" by Phillip Roullard (see *www.cal-ipc.org/symposium*). Pictured above left: "Spotted knapweed in Squaw Valley" by Christian Eggleton, Forester's Co-Op; right: "Fennel confronts Frisco" by Ruth Gravanis.

Thank You Symposium Sponsors!

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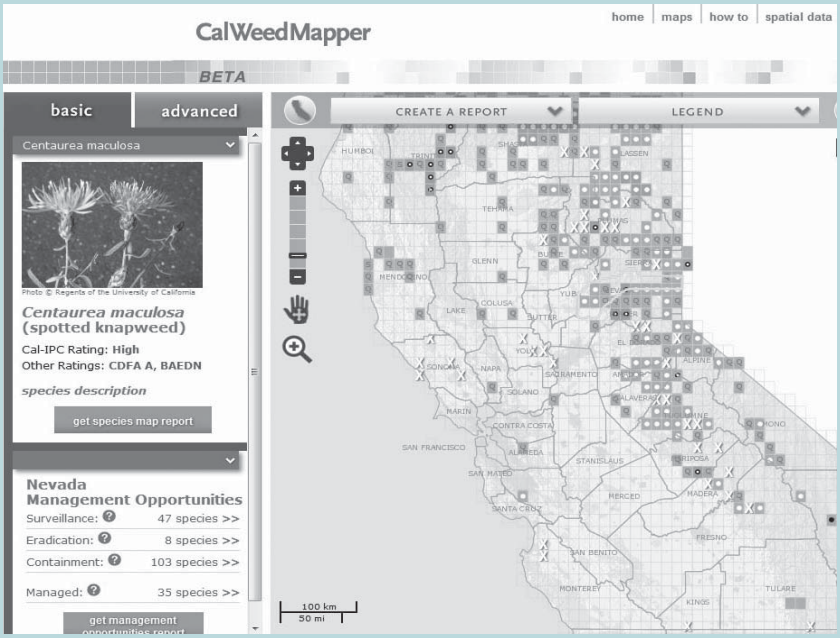
Wendy West and LeeAnne Mila discuss regional efforts to control invasive plants at gravel suppliers.

Lars Anderson, UC Davis, shows attendees native and non-native aquatic plants during the Emerald Bay field trip.

Dana Morawitz and Cynthia Powell demonstrate Cal-IPC's CalWeedMapper website during the poster and exhibitor session.

CalWeedMapper goes live

Cal-IPC's yearlong mapping effort, undertaken in partnership with WMAs and local experts across the state, has culminated in the release of CalWeedMapper, our new online mapping tool for invasive plants. Hosted by Calflora at *calweedmapper.calflora.org*, CalWeedMapper displays distribution, spread and management status for each species by USGS quad, as well as occurrence reports from Calflora and the Consortium of California Herbaria. CalWeedMapper also displays suitable range for species that we have modeled to date, including future climate scenarios.



For any selected region, users can download a list of management opportunities in which relevant species are categorized as potential targets for surveillance, eradication, or containment. Users can also select individual quads to view source information and to add their own comments to help update the maps.

Thank you to everyone who has participated in building this tool and dataset! CalWeedMapper was funded through the American Recovery and Reinvestment Act, with funding provided by the USDA Forest Service, State and Private Forestry through the California Department of Food and Agriculture. We welcome your feedback on the beta version of CalWeedMapper. Try it out, and send comments to *CWMwebmaster@cal-ipc.org*!

...perennial pepperweed from page 5

eradication methodologies that are tailored to the particular invaded ecosystem. Recommended control programs will evaluate site attributes as well as control probabilities in the development of a comprehensive management strategy. Ideally, a comprehensive control strategy should include a sequence involving (1) site assessment to avoid unwanted ecological effects, (2) pre-control evaluation, and (3) post-removal assessment of control/eradication effects on both the target organism and the invaded ecosystem as a whole. Early action is vital, but these steps ensure that any action taken is part of a comprehensive plan and able to be effectively evaluated for success.

Control techniques

A variety of techniques have been attempted to control perennial pepperweed. These have been summarized the pros and cons of these in wetlands in Table 1. Extensive conversation and literature review (omitted from this article) were involved in the production of this table, and the table continues to evolve as more research is conducted on perennial pepperweed control projects. Regardless of method, small scale trials are a prudent first step in any management area to determine efficacy and possible non-target impacts.

One of the largest challenges in comparing previous studies is consideration of the method details such as spray rates, surfactant choice, and phenology at time of application. Such details are not in this table but were discussed intensively during the symposia.

In addition to the single method results summarized in Table 1, integrated approaches can capitalize on weaknesses in perennial pepperweed life history and can offer the potential for increased control of perennial pepperweed. Several recent studies have shown coordination of mechanical and herbicide methods to result in perennial pepperweed control and containment.

Special considerations

Managing invasive weeds may also affect biodiversity and endangered species adversely. Poorly planned removal without follow-up, such as vegetation restoration, might harm an endangered species. Numerous properties within the Suisun Marsh contain endangered species, both flora and fauna. In some cases, treatment programs have even been repeatedly delayed because of use by endangered species (i.e. perennial pepperweed in Benicia State Park).

Combined with documents like the pro/con treatment chart in Table 1, the decision guide provides information about potential non-target impacts associated with different treatment courses. Not all environmental situations are covered, but the decision guide is meant to be used as a tool to document potential pitfalls and to share experiences of the San Francisco Bay community. Careful considerations of the constraints in the individual landowner's

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What invasive plants are for sale in California?

by Christiana Conser, Project Scientist, Sustainable Conservation

Sustainable Conservation's PlantRight program (*plantright.org*) works with California's nursery industry to voluntarily stop the propagation, distribution and sale of invasive garden plants. Cal-IPC has been part of the PlantRight coalition since its inception in 2004. PlantRight also promotes alternative ornamental plants that are environmentally safe and commercially viable. Through our Spring Nursery Survey, PlantRight tracks the availability of invasive garden plants in California each year. Data collected from this survey helps inform PlantRight's strategy, and allows us to monitor the effectiveness of our work over time.

PlantRight randomly selected 251 retail nurseries to survey in 2011, from a total pool of approximately 3,100 stores in California. One hundred forty-three volunteers, mostly UC Master Gardeners, surveyed 226 nurseries in 38 counties for the presence or absence of 19 invasive plants (see list at right).

Results

In 2011, 70% of the nurseries surveyed were not selling any of PlantRight's 19 invasive garden plants. Of the stores that were selling invasive plants, the majority sold only one invasive species. About 40% of small and independent retailers and large retailers carry invasive garden plants, compared to just 9% of big-box stores. Compared to all other types of stores, big-box stores were significantly less likely to carry an invasive plant, small and independent retailers were more likely to carry an invasive plant, and there was no significant differences for large retailers.

Stores carrying invasive plants are most prevalent in California's south coast region, and less prevalent in the other regions. For the desert region and Sierra and coastal mountain regions, the only a small number of stores were included in the survey, so we cannot be certain of the inference that fewer stores in these regions carry invasive plants (this is particularly true for the desert region).

When the results are viewed by both region and store type, it is noteworthy that small and independent stores in the south coast region were carrying the most invasive plants. These stores also comprise half of the stores that were surveyed this year, due to the high concentration of nurseries in Southern California. In fact, small and independent stores in the south coast region are more likely to carry invasive plants than stores in other regions. No other significant differences emerged when comparing the different regions by store type.

The results of PlantRight's 2011 Spring Retail Nursery Survey indicate that the overwhelming majority of stores selling invasive plants are small and independent stores. Contacting, engaging and educating these stores will be inherently more challenging than dealing with a few box store chains. However, we can allocate our resources wisely by first working with small and independent stores in the south coast region. Although just 9% of surveyed box stores were selling invasive plants, the volume of plants sold at box stores may mean that reducing that percentage further would provide an effective leverage point for reducing the quantity of invasive plants in California.

Most commonly sold

The most frequently found invasive garden plants in the survey were periwinkle (found at 16% of stores surveyed), pampas grass (9%) and green fountain grass (8%). While focusing education efforts on these three species would potentially have the largest impact, their prevalence also indicates that they represent significant sources of revenue for the nursery industry, which presents challenges to the industry in eliminating these plants. The survey also found highway iceplant, Chinese tallow tree, Scotch broom, myoporum and Spanish broom at fewer than 3% of stores surveyed. These species may be easier to remove from circulation.

The data from this survey, in combination with PlantRight's knowledge of the relative threat posed by each species, will help us determine how best to effectively partner with growers and suppliers. Over time, the annual survey is an excellent tool for gauging the effectiveness of PlantRight's efforts to stop the propagation, distribution and sale of invasive garden plants in California.

Visit *plantright.org* for more information about our nursery survey and PlantRight's effort to stop the sale of invasive plants in California. The 2011 Survey Fact Sheet is available at *www.plantright.org/spring-nursery-survey.*

PlantRight's 19 Invasive Garden Plants

Common Name	Scientific Name
Arundo, giant reed	*Arundo donax*
Blue gum	*Eucalyptus globulus*
Bridal veil broom	*Retama monosperma*
Capeweed	*Arctotheca calendula*
Chinese tallow tree	*Sapium sebiferum*
Crystalline iceplant	*Mesembryanthemum crystallinum*
French broom	*Genista monspessulana*
Green fountain grass	*Pennisetum setaceum*
Highway iceplant	*Carpobrotus edulis*
Jubata grass	*Cortaderia jubata*
Myoporum	*Myoporum laetum*
Pampas grass	*Cortaderia selloana*
Periwinkle	*Vinca major*
Russian olive	*Elaeagnus angustifolia*
Saltcedar	*Tamarix ramosissima*
Scarlet wisteria	*Sesbania punicea*
Scotch broom	*Cytisus scoparius*
Spanish broom	*Spartium junceum*
Striated broom	*Cytisus striatus*

Progress, but unfinished business

An interview with founding board member Mike Kelly

by Gina Darin, California Department of Water Resources

Mike Kelly was introduced to the impacts of invasive weeds on wildlands as a volunteer with the Friends of Peñasquitos Canyon in the 1980s. He helped lead a fight to save the future Peñasquitos Canyon Preserve from being developed into residences and a golf course. By the end of the '80s, Mike realized that development was not the only threat to the biodiversity in the Preserve; invasive plants and animals were almost as big a threat. He realized he had to manage the land, not just save it. Mike began teaching himself about invasive weeds and how to control them. He started a volunteer effort to stop their spread, perhaps the first in San Diego.

With few good sources of information for wildland weeds, finding information on wildland-appropriate control methods was very difficult. In 1991, Mike read a notice in the California Native Plant Society (CNPS) newsletter to discuss invasive species at an upcoming conference in Morro Bay. Anyone involved in invasive weeds was welcome to attend. Luckily, Mike registered early because there was standing room only. Potential walk-ins were turned away.

Mike Kelly, true to his interest in invasive plant education, has been a regular instructor at Cal-IPC Field Courses.

Greg Archbald, John Randall, and Carla Bossard invited attendees interested in forming an organization to stay for the last session of the conference. People were asked to volunteer, and thus Mike became the first secretary.

Hopes for Cal-IPC

From the beginning, Mike was interested in control methods, education, and promoting research. "When I volunteered to be Cal-IPC's first secretary and to help build the organization I hoped it would become an organization I could learn from." He envisioned an organization that would educate people to manage wildlands by identifying weed invasions and by developing strategies for dealing with them. Mission accomplished.

Involving volunteers from the beginning set the California EPPC apart from the Florida EPPC model, which was a group of agency representatives. Mike was a volunteer, not a professional in the field, and made his role in Cal-IPC to involve volunteers in every level of Cal-IPC's organization from the Board of Directors to speakers at the Symposia. This is, and always has been, part of Cal-IPC culture.

Early on, Cal-IPC needed strategic partners, and Mike helped Cal-IPC form partnerships with many agencies and NGOs, including the California Society for Ecological Restoration (SERCAL), California Native Grasslands Association, The Nature Conservancy, CNPS, California Department of Food and Agriculture, Cattlemen's Association, and botanic gardens. One lingering concern Mike has is that the Caltrans partnership didn't work out as well as the others. He feels that Caltrans is one of the most important partners Cal-IPC is missing.

Mike Kelly received SERCAL's first award for contributions to conservation and restoration in California.

Fond Cal-IPC memories

Mike's favorite memory is "board meetings – believe it or not." He described these as chaotic gatherings of strong personalities, and absolutely wonderful events. Mike couldn't wait to get together with fellow board members and find out the latest news from weeds on the move, to new control techniques, to Carla Bossard's world travels. As you can imagine, it was difficult to remain on the agenda. Mike confesses, "It was so hard to keep us focused on the mechanics of building an organization, even when I was president and knew better." Lunch was always a cacophony of conversations about weeds – downloading from the cutting edge of the field.

On a more personal note, Mike added that when the board meetings were in Davis, he used to travel up the day before to visit the UC Davis library. Without an agricultural school in San Diego, this was his pre-Internet source for published literature. He would do his research in the copious botanical and agricultural journals, studying the decades-old controversy on allelopathy and laying waste to the university's supply of copy cards.

...continued page 14

...perennial pepperweed from page 11

ecosystem must be weighed when using this document and the associated key. Utilization of such a decision guide could help avoid unintended consequences of actions with the development of comprehensive control and holistic ecological restoration plans. Feedback from readers and managers on the utility of this type of decision guide is welcome!

Contact the author at cwhitcra@csulb.edu

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Perennial pepperweed invades wetlands within the Sacramento-San Joaquin Delta.

...Mike Kelly from page 13

Mike presided over Cal-IPC's 10th anniversary. That year the Board made the decision to hire Cal-IPC's first employee. Committing their entire treasury was a risky move. The hiring was done under the next president in line, Joe DiTomaso. Doug Johnson was selected as Cal-IPC's Executive Director. And the rest is history.

Next Step for Cal-IPC

As a complement to Cal-IPC's new professional certification program, Mike wants to see Cal-IPC work with the Department of Pesticide Regulation to develop a Wildland Weed category in the testing program for Qualified Applicators Licenses (QAL) oriented to wildland applicators and managers. This would be a big step toward getting the state regulatory agencies to recognize that wildland weed habitat requires a different set of knowledge and skills than existing exams cover for the QALs.

...News from page 3

every 1,000 feet. USDA researchers believe this can be an important tool for sampling large areas in conjunction with ground-based surveys to detect expanding invasive plants. This study provided the first evidence that leafy spurge is displacing sagebrush seedlings. *www.ars.usda.gov/is*

Detector dogs are on the case to detect invasive species. The California Department of Food and Agriculture's dog teams search plant products entering the state through parcel delivery facilities and airfreight terminals for the presence of plant pests or other harmful organisms. Between July 2009 and June 2010, the Dog Teams intercepted 53 pests and helped reject 1,560 packages for violations of state and federal plant quarantine laws and regulations. *www.cdfa.ca.gov/plant/dogteams*

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Doug Johnson and Dave Bakke enjoy the social hour.

Auction & Raffle Donations

Thank you for soliciting donations for and contributing to Cal-IPC's annual raffle, silent auction, and live auction.

Andrea Adams-Morden, Edith Allen, Morgan Ball, Bear River Pasta Company, Peter Beesley, Charlie Blair, Cindy Burrascano, Elizabeth Brusati, Patterson Clark, California Department of Fish and Game, California Native Plant Society, Catalina Island Conservancy, Concannon Vineyard, Earle Cummings, Gina Darin, Mark & Erica Dedon, Athena Demetry, Heather DeQuincy, William Dewey, Joe DiTomaso, Edmund Duarte, Valerie Eviner, Forester's Co-Op, Doug Gibson, Jason Giessow, Joanne Greer, Paul Hawken, Hedgerow Farms, Julie Horenstein,

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New Members

As a Cal-IPC Member, you join a powerful network of land managers, researchers, volunteers, and concerned citizens. Welcome!

Sam Abercrombie, **Ben Adamo** (Shelterbelt Builders), **Tom Anderson**, **David Astorga** (City of San Diego), **Nita Barve**, **Scott Batiuk**, **Jeff Begovich**, **Beth Brenneman**, **Carroll Brentano**, **Elayna Bryant** (Cal State San Marcos), **Kim Carr** (Sierra Nevada Conservancy), **Robert Carson** (City of Torrance, Park Services), **Charlene Carveth** (El Dorado County Dept. of Ag), **Any Conilio** (UC Santa Cruz), **Rim Counch** (Resource Conservation Partners, Inc.), **Quinn Cypher** (Inland Empire RCD), **Jason Davlin** (West Coast Arborists), **Steven Delgavero** (Yosemite National Park), **Garrett Dickman** (Yosemite National Park), **Shannon Dinis** (PG&E), **Matt Dunnahoe** (Placer County RCD, Auburn), **Jack Easton** (Riverside Land Conservancy), **Suzanne Easton** (BRBNA Conservation Partnership), **Holly Eddinger**, **Woody Elliott** (Mt. Lassen Chapter CNPS), **Margie Evans** (UN Cooperative Extension), **Amanda Ferguson** (Carson City), **Steve Frisch** (Sierra Business Council), **Jennifer Funk**, **Ryan Gilmore**, **Ashley Gilreath**, **Sean Glantz**, **Patricia Gordon-Ready**, **Dave Graber** (Sequoia & Kings Canyon NP), **Thomas Gustie**, **Sarah Hall** (Golden Gate National Recreation Area), **Michael Hamilton** (UC Blue Oak Ranch Reserve), **Walter Hoffman**, **Chris Hoffman**, **Kim Hornbeck** (City of Torrance, Park Services), **David Jaffe** (Yosemite National Park), **Jared Jaggers**, **Matt James** (Coastal Restoration Consultants), **Katie Kain** (Joshua Tree National Park), **Bonnie Kalb**, **Kris Kuyper** (Sierra Business Council), **Michele Lanctot**, **Susan Lewitt** (San Diego CNPS), **Krista Lindley**, **Kirsten Lindquist** (Tahoe RCD), **Denise Louie**, **Betsy Macfarlan** (Eastern Nevada landscape Coalition), **Amanda magallanes** (GGNRA), **Scott Massed**, **Beth Mather**, **Derrick Mathews**, **Virginia Matzek** (Santa Clara University), **Willie McDarment** (Tule River Indian Reservation), **Kathryn McEachern** (USGS Channel Islands), **Louanne McMartin** (USFWS), **Christine Meyers** (Mi-Wuk Village), **Constance Millar** (PSW Research Station, USDA Forest Service), **Annaliese Miller**, **Rebecca Miller-Cripps** (UC Cooperative Extension), **Nelson Money** (NRM-VMS, Inc.), **Max Moritz** (UC Berkeley), **James Mort** (Midpeninsula Regional Open Space District) **Justin Nalder** (Bridgeport Indian Colony), **Scott Nelson**, **Kim-Chi Nguyen**, **Monica Oey**, **Meagan Olson** (RECON Environmental, Inc.), **Dana Olson** (Tahoe RCD), **Alexandra Onisko** (BLM), **Don Pierce** (PG&E), **Gillies Robertson** (Yolo RCD), **Ryan Robitaille** (California Institute of Technology), **Scott Rose** (Natures Image), **William Rosenberg**, **Janet Rowley** (Dow AgroSciences), **Jasmine Rubalcaba**, **Paul Schlange**, **Steve Schrader**, **Ernest Seidel** (OC Parks), **Daniel Shaw** (California State Parks), **Mike Simoneau** (City of Torrance, Park Services), **James Smith** (South Lake Tahoe Public Utility District), **Michael Springborn**, **Jens Stevens**, **Mark Stewart** (PG&E), **Christine Sullivan** (GGNRA NPS), **Heyo Tjarks** (River Partners), **Dean Tonenna** (BLM), **Elena Tuttle** (Santa Monica Bay Restoration Commission), **Susan Urie**, **Juan Villarino** (California State Parks), **Sophia Weinmann**, **Stuart Weiss** (Creekside Center for Earth Observation), **Kathy Welch** (Truckee River Road Warrior), **Debra Welch**, **Paul Wilson** (Shelterbelt Builders)

Cal-IPC's Alice Chung helps as one of Cal-IPC's stellar raffle ticket sellers.

Cal-IPC staff dressed up and having fun at the Oktoberfest celebration.

New Organizational Members

Organizational Members advance Cal-IPC's mission to protect California's wildlands from invasive plants.

Bay Area Early Detection Network
California Landscape Conservation Cooperative
California State Parks
Center for Natural Land Management
Resource Conservation Partners, Inc.
San Diego Chapter CNPS
Shelterbelt Builders, Inc.
Sierra Nevada Conservancy
USFWS Inventory and Monitoring Program

Readings & Resources

Education Website

The new Washington Invasive Species Education (W.I.S.E.) website provides educational resources about invasive species and the damage they can do to the environment and economy, how invasive species spread and how everyone can help stop them. *www.wise.wa.gov*

E-edition of California Agriculture

California Agriculture is now available in a free electronic edition. Readers can download and print copies in html or pdf format. Authors will be able to print articles on demand for distribution to target audiences. *California Agriculture* is a peer-reviewed journal reporting research, reviews and news from the University of California and its Agriculture and Natural Resources division. *californiaagriculture.ucanr.org*

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NeoBiota is a peer-reviewed, open-access, rapid online journal launched to accelerate research on alien species and biological invasions, including aquatic and terrestrial animals, plants, fungi and micro-organisms. All published papers can be freely copied, downloaded, printed and distributed. *www.pensoft.net/journals/neobiota*

Ecological Data Wiki

The Ecological Data Wiki is intended to serve as a central source for identifying datasets that are useful to the study of ecology and quickly figuring out the best ways to use them. It will use the knowledge and effort of the entire ecological community to compile this information rather than relying on each scientist to contribute information for their own studies. *ecologicaldata.org*

Invasive plant articles sought

The *Invasive Plant News* blog seeks articles from guest writers. They are especially interested in articles on practical topics such as advice on identification and control. *invasiveplantnews.com*

Cal-IPC Inventory update adds eight plants

Eight new species have been added to the "California Invasive Plant Inventory". The Inventory scores species based on 13 questions covering impacts, invasiveness, and distribution. These are statewide ratings so impacts may differ in particular regions. An "Alert" indicates that a species is not widespread but seems to have potential to expand. The assessments for these species were completed by Elizabeth Brusati, Cal-IPC, and Joe DiTomaso, UC Davis, based on information submitted by Cal-IPC members.

Plant Assessment Forms with detailed information used to rate the plants, including cited literature, are available at *www.cal-ipc.org/ip/inventory/weedlist.php*. The criteria list used to rate species is also available there. Additional information is available in the Plant Profiles at *www.cal-ipc.org/ip/management/plant_profiles/index.php*.

We also updated the Cal-IPC Watchlist based on comments contributed by Cal-IPC members. The Watchlist contains information on species that have been observed in wildlands but have not been reviewed for the Inventory due to lack of information. It is available at *www.cal-ipc.org/ip/inventory.*

Other states have adopted Cal-IPC's Inventory format, including Colorado and Texas.

South American spongeplant is now Inventory listed as a High Alert.

Species	Rating
Danthonia pilosa (hairy oatgrass)	Limited
Erica lusitanica (Portuguese heath)	Limited
Gazania linearis (gazania)	Moderate Alert
Limnobium laevigatum (South American spongeplant)	High Alert
Limonium ramosissimum ssp. *provincale* (Algerian sea lavender)	Limited
Nanozostera japonica (dwarf eelgrass)	High Alert
Nassella manicata (tropical needlegrass)	Limited
Tetragonia tetragonioides (New Zealand spinach)	Limited
Evaluated but not listed	
Ascophyllum nodosum (knotted wrack)	not enough information
Cuscuta japonica (Japanese dodder)	not yet known to invade wildlands
Nassella tenuissima (Mexican feathergrass)	not yet known to invade wildlands

The Wildland Weed Calendar

November - December

CA Assoc. of RCDs Conference
November 9-11
Stockton
www.carcd.org/conference.php

Central CA Invasive Weed Symposium
November 10
Monterey
ag.co.monterey.ca.us/pages/invasive-weed-resources

January - February

CNPS Conference Conference
January 10-14, 2012
San Diego
www.cnps.org/cnps/conservation/conference/2012

Nat. Conf. on Science, Policy & Env't
January 18-20, 2012
Washington, D.C.
www.environmentandsecurity.org

CA Weed Science Society Conference
January 23-25, 2012
Santa Barbara
www.cwss.org

National Invasive Species Awareness Week
February 26-March 3, 2012
Washington, D.C.
www.nisaw.org

March - June

Western Society for Weed Science
March 12-15, 2012
Reno, NV
www.wsweedscience.org

California Invasive Weed Awareness Day
March 14, 2012
Sacramento
www.cal-ipc.org

Noxious Weed Short Course
April 16-19, 2012
Loveland, CO
www.wsweedscience.org

North Bay Grasslands Symposium
May 3-6, 2012
Sonoma County
www.cnga.org

July & beyond

N.A. Congress for Conservation Biology
July 15-18, 2012
Oakland
www.scbnacongress.orgwww.ser2011.org

Aquatic Plant Management Society
July 22-25, 2012
Salt Lake City, UT
www.apms.org

Ecological Society of America Annual Mtg
Aug 5-10, 2012
Portland, OR
www.esa.org/portland

Cal-IPC's 21st Annual Symposium
October 10-13, 2012
Rohnert Park
www.cal-ipc.org

Quotable

"Terminology is imprecise and inconsistent. It combines objective and subjective concepts."

~ Carla D'Antonio of UC Santa Barbara, pointing out problems with terms used for invasive species in her symposium talk, "Nuance, naysayers and twenty years of studying species impacts".

"Nimbleness matters: Be flexible, experimental, and innovative."

~ Constance Millar, US Forest Service, in her symposium talk "Climate change in the Sierra Nevada: Processes, projections, and adaptation options".

"IPM: the Intelligent Person's Method"

~ From the Invasive Plant Integrated Pest Management discussion group at the symposium.

California Invasive Plant Council

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Membership

- ☐ Regular $40
- ☐ Student $20
- ☐ Organization* $150

** Receives member benefits for three individuals. Attach contact information for add'l individuals.*

Joint Memberships

- ☐ SERCAL only add $25
- ☐ CNGA only add $35
- ☐ SERCAL & CNGA add $65

Cal-IPC Membership runs on the calendar year. Those who join after June 30 will be current through the following calendar year. Joint memberships receive a $5 discount on each organization's normal rate and apply only to Regular Cal-IPC memberships.

Donation

- ☐ Amount of gift _____
  - Friend ($1 - $99)
  - Contributor ($100 - $249)
  - Champion ($250 - $499)
  - Patron ($500 - $999)
  - Stewardship Circle ($1,000+)
- ☐ I would like to consider a legacy gift. Please send information on planned giving.

- ☐ Check here if you would prefer to receive the *Cal-IPC News* as a link to an online pdf file rather than a paper copy.
- ☐ Occasionally, we share members' addresses with like-minded organizations. Check if you ***do not*** want your information shared.

Mail this form with check (payable to "Cal-IPC") or credit card info to:
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