



Cal-IPC News

Protecting California's Natural Areas from Wildland Weeds

Quarterly Newsletter of the California Invasive Plant Council



Attendees at the pre-Symposium Habitat Restoration Workday at Nathanson Creek Preserve in Sonoma learned to use tools for "bucking and swamping".

Photo: Dana Morawitz

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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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Cal-IPC News

Fall 2012/Winter 2013 - Vol. 20, No. 4 & Vol. 21, No. 1

Editors: Doug Johnson, Elizabeth Brusati, Carol Bardoff

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From the Director's Desk

What is early detection?

It is widely agreed that “early detection and rapid response,” or EDRR, is the best strategy for using limited resources to stop the spread of invasive plants. But what exactly is EDRR? Generally, EDRR means finding and eliminating new invasive plant threats through timely action. But there are (at least) three flavors of EDRR, all important. I refer to them as classic, containment, and anticipatory.

The most dramatic situation involves finding new populations of a known problem species far from areas previously known to be infested. The more damaging the species and the further from previously known populations, the higher priority the detection and response. Thus, when *Caulerpa taxifolia*, the “killer algae” from the Mediterranean Sea, was found in southern California in 2000, it was a big deal. The eradication of these populations was rightfully heralded as a great EDRR success story.

Such geographically dramatic finds are unusual. More typical are the regular surveillance activities aimed at finding new populations of species already present in a region. Collaborative regional efforts like the Great Lakes Early Detection Network provide online reporting systems to facilitate communication about new finds, while smartphone apps make reporting of field observations accessible to a wide audience of citizen scientists. Such reports help managers contain the expansion of invasive plants at the landscape scale by addressing populations found in new locations.

And then there is anticipating which of the nearly 2,000 non-native species naturalized in California might become invasive in the future. (Invasives often have a substantial “lag phase” before they spread.) Detailed risk assessment is needed to determine which species are of highest concern. Several years ago Cal-IPC developed a list of plants that have become invasive in the world's other Mediterranean climate regions and cross-referenced this against species already found in California. We also maintain a “watchlist” of potential problem species compiled from land manager observations.

Partners in the Bay Area Early Detection Network (BAEDN) have worked to identify containment and anticipatory EDRR targets for their 9-county region. In 2013 Cal-IPC will be joining forces with BAEDN and will use their example when incorporating anticipatory targets into our regional initiatives statewide. Cal-IPC aims to coordinate effective action at the landscape scale throughout California, and integration of all three types of EDRR will be essential.



At the pre-Symposium training, attendees used a hand saw to create “moats” for herbicide application in a cut-stump treatment.

Photo: Dana Morawitz

Wildland Weed NewsNewsNewsNewsNews

Arundo as biofuel? The State of Oregon has authorized the cultivation of *Arundo donax* as a bioenergy crop. A bond of \$100/acre must be set aside for potential clean-up. More than 200 scientists organized by the National Wildlife Federation submitted a letter to the Obama administration urging tighter controls on invasive plants used for biofuels. *New York Times Green Blog*, Oct. 23, and *Oregon Invasive Species Council*, www.oregon.gov/ODA/PLANT/Pages/index.aspx

On September 23, Governor Brown approved a bill to fund invasive mussel eradication. State Assembly Bill 2443 (Williams) will add a charge to boater registration fees to fund inspections and eradication for quagga and zebra mussels. Municipal water districts will be eligible to apply for grants to help eradicate the mussels. leginfo.ca.gov

Diversity and abundance of invertebrates are reduced in stands of introduced palm trees along the San Diego River. Researchers compared the Canary Island date palm (*Phoenix canariensis*) to

native arroyo willows (*Salix lasiolepis*). Due to differences in canopy size, canopy density, and trunk texture, invertebrates were only 60% as abundant around the palms as the willows, with 70-80% of the species diversity. *Conservation Magazine*, www.conservationmagazine.org/2012/08/unfriendly-fronds

A quarter of science teachers surveyed said they released potentially invasive organisms such as the waterweed elodea, mosquito-fish, amphibians and red-eared slider turtles into the wild after lessons. “Many of the teachers were mortified when we pointed out they may be exacerbating the invasive species problem,” said researcher Sam Chan of Oregon State University. “We don’t want to discourage the use of live organisms in teaching because they can provide focus, enhance student interest, and foster responsibility and care. But there are consequences to using them, and both teachers and suppliers should consider what will become of these organisms when the classroom lessons are over.” www.eenews.net/Greenwire/2012/08/08/14

The Hawaiian Ecosystems at Risk project will close this winter due to budget cuts. The program has been an important resource on invasive species on Pacific islands. It appears the website will remain online. www.hear.org

When does an invasive plant evolve into a rare plant that needs conserving? Scotch broom (*Cytisus scoparius*) is considered an invasive species in Denmark. However, it has been present there for four centuries and has evolved a horizontal-growing form that is more frost-tolerant and less invasive than the usual bush form. Using genetic analysis, researchers compared Scotch broom from Denmark to plants from Italy and learned that the erect form is similar to the Italian variety while the horizontal form is genetically distinct from the others. They concluded that Danish horizontal Scotch broom should be given a formal taxonomic status in order to initiate conservation activities for its protection. (Rosenmeier et al. 2012. *Botanical Journal of the Linnean Society*. online 20 Nov 2012)

Cal-IPC Updates

Day at the Capitol 2013

Join us in Sacramento on March 13 to visit legislators’ offices to advocate for funding and stronger programs. Your voice makes a difference! Free but registration is required. www.cal-ipc.org/policy/state/ciwad.php

Climate Change Models

CalWeedMapper now shows models of suitable range (with climate change) for 79 species. Our maps show a consensus of 17 Global Climate Models to take into account variation among projections. Select the Advanced tab, then Legend/Change Layers to see the options. calweedmapper.calflora.org/maps

Regions Page

Visit CalWeedMapper’s Regions page to view progress on Cal-IPC’s project to assist local partners with strategic planning, download lists of early detection species, and see eradication workplans. calweedmapper.calflora.org/regions

New Grants

We recently received grants from the National Fish and Wildlife Foundation (for on-the-ground work in the central Sierra), Orange County Community Foundation (for our training program) Sierra Nevada Conservancy (for making projects shovel-ready in Tuolumne and Placer counties), and US Fish and Wildlife Service Coastal Program (for work in San Mateo County).

Renewals

Have you renewed your membership for 2013? Check the mailing label to make sure you are current.

Bylaws Change

In September, Cal-IPC members approved a change to the organization’s bylaws. Directors will now be appointed by the board rather than elected by the membership, and bylaws can be amended by the board without a vote of the membership. These measures are expected to streamline our operations and add flexibility to board recruitment.

New Board Members

Welcome our new board members: Karen Buhr, Jutta Burger, Frank Davis, Jennifer Funk, and Gary Gero. www.cal-ipc.org/about/staff.php

Special concerns near aquatic habitats

By Sabrina Drill, Natural Resources Advisor, UC Cooperative Extension, and Joel Trumbo, Staff Environmental Scientist, Lands Program, Wildlife Branch, California Department of Fish and Wildlife

Weed workers often attack riparian invasive species with a goal of improving habitat quality for fish and wildlife in California's rivers, streams, and lakes. Those who are more experienced in terrestrial habitats may not fully understand some of the issues that arise working in and around freshwater aquatic habitats.

Characteristics of aquatic habitat and organisms

Aquatic habitats are defined by their physical, chemical, and biological characteristics. Basic physical features include flow, depth, gradient, and substrate. In terms of flow, systems can be defined as either lotic (moving water in springs, streams, and rivers) or lentic (still water as in lakes and ponds). Some of the basic characteristics of flow affect how these systems work, such as the fact that aside from any tidal influence, flow is unidirectional. This means that the habitat is in a continual state of change, and that upstream inputs affect downstream reaches.

Temperature and physiochemical aspects, such as oxygen and nutrient levels, also vary, and the chemical environment is affected by the underlying geology of the system as well as by external inputs. These can be natural, such as leaf litter, or unnatural pollutants. The types of substrate (e.g. gravel, bedrock, sand, mud) provide different kinds of physical habitat. As in terrestrial forest ecosystems, the amount of light and shade vary and can affect temperature as well as the ability of aquatic wildlife to sense visually. The clarity/turbidity of the water is another important characteristic.

Aquatic species are also a little different from their terrestrial counterparts. Aquatic organisms breathe dissolved

gaseous oxygen. They often take in oxygen, water, and other chemical components through skin and gills which are in direct contact with the environment, while terrestrial organisms bring these elements into their bodies through orifices, and gas and liquid exchange happens internally. Hence, aquatic organisms are highly sensitive to chemical pollutants that can enter the body through the skin. This can be especially true for eggs and



Juvenile California newt (*Taricha torosa*) from San Luis Obispo County, showing gills. Photo copyright Marlin Harms.

larvae, which are less likely than their terrestrial counterparts to be in a protective environment such as a hard shell.

Impacts of aquatic weeds

There are certain nuances to understanding the impacts that invasive plants can have in aquatic systems. Submerged weeds such as hydrilla, chara, Eurasian watermilfoil, and various pondweeds will affect flow by physically slowing water, and may also limit the available depth. They limit access to mineral substrate which invertebrates may need for attachment. They trap fine sediments that might otherwise flow through an area and can hence reduce water clarity. They may produce some oxygen, but that effect is countered by the oxygen they take up through respiration and decay.

Floating aquatic plants like water hyacinth, water primrose, and giant salvinia can cover the surface of lentic or slow-flowing environments. They physically block sunlight from reaching into the water column, but they also block gas exchange from air to water. This can greatly reduce the amount of dissolved oxygen, but also block the release of gasses produced during anaerobic digestion of dead material.

Riparian invasive plants such as arundo, tamarisk, and purple loosestrife also affect in-stream habitat. For example, when riparian willows, which overhang the streambed, are replaced by exotic reeds, the flow, timing and amount of nutrient inputs change. Shade over the stream is reduced causing water temperatures to rise.

Many aquatic and riparian plants propagate vegetatively. Because they are in flowing water, this can spread the infestation far downstream.

This factor needs to be considered in restoration projects that seek to improve habitat connectivity. For example, in a program to restore anadromous fish in the Ventura River by removing a large dam, our first step was to eradicate *Arundo donax*, a very well-adapted downstream colonizer, from behind the dam.

Controlling invasive plants in aquatic habitats

Those who control weeds within or near aquatic systems must pay attention to the impacts of both the invaders and the tools used to control them. Both chemical and non-chemical strategies pose potential ecological risks. Mechanical control measures which are likely to disrupt stream banks, stir up sediment, or displace

gravel substrates need to be implemented with great caution. These factors also need to be considered when physically getting into an area to perform chemical control. Mechanical control measures which require digging root masses out of riparian areas may cause greater environmental harm than judicious application of targeted herbicides.

Herbicides can pose a direct toxicological risk to non-target plants and animals. The risk is not based on toxicity alone, but also on exposure. The most common active ingredients used in invasive weed control, such as aminopyralid, clopyralid, glyphosate, imazapyr and triclopyr amine, are all in the US EPA's "practically non-toxic" range for fish.

There are fewer studies that address herbicide impacts to other aquatic fauna, like amphibians and invertebrates. Larval fish are routinely used as laboratory surrogates for assessing toxicological risk to larval amphibians. Over the last several years an increasing number of studies have been conducted on herbicide toxicity to tadpoles. The majority of these studies support the assertion that the sensitivity of tadpoles and larval fish to herbicides is similar. The available data on the toxicity of the most commonly used invasive weed herbicides on aquatic invertebrates indicates very low risk to these species as well.

The only exceptions to this assertion that invasive weed herbicides pose very low toxicological risk to aquatic fauna are products that contain the ester form of triclopyr (triclopyr butoxyethyl ester) and some glyphosate and imazapyr products that contain inactive ingredients such as surfactants that have higher aquatic toxicity. These products are moderately to highly toxic to fish, larval amphibians and aquatic invertebrates. But, they can still be safe to use near water primarily because the way they are applied does not offer much potential for exposure.

For example, let's say we're applying an herbicide to a riparian weed infestation using a ground-based application method. Under normal (and legal) conditions, most of that herbicide spray is absorbed by the target plants. Some lesser amount of the spray, however, may move via drift into the adjacent water body. Further, if a significant rainfall event occurs shortly after the application, there is the potential for some herbicide to move via surface flow to the water body. These off-target movement scenarios typically involve only a very small portion of the total spray volume. Once this off-target herbicide moves in to the waterway, it will be diluted by the receiving water. Each one



Removing aquatic invasive plants with equipment such as a backhoe must be done in a way that minimizes disturbance. Photo by Joel Trumbo.

of these steps in the herbicide's movement away from its target represents an exponential reduction in exposure. Added together, the off-target movement of low or even moderately toxic herbicides in small concentrations does not represent a significant toxicological risk to non-target aquatic species.

Of course, toxicological impacts are not the only potential hazards of herbicide use. Probably the most significant issue involves the reduction of dissolved oxygen that results from the decomposition of large amounts of herbicide-killed aquatic weeds. While this is a legitimate concern, it is generally restricted to large, monotypic infestations in lentic (lake) water bodies. In these cases, following herbicide label directions to spray only a portion of

the infestation at any one time can help avoid impacts to aquatic animals.

Finally, it's important to remember that herbicide applicators are legally required to follow all the appropriate regulatory requirements such as adhering to herbicide label directions and restrictions. Additionally, most aquatic weed control projects will require a written recommendation from a licensed pest control adviser, and some projects may require mitigation measures to protect threatened or endangered plant or animal species. In many cases, the aquatic herbicide user may need to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) permit.

For more information on the NPDES permit for aquatic weed control, contact the State Water Quality Control Board or your Regional Water Quality Control Board (www.waterboards.ca.gov/water_issues/programs/npdes/aquatic.shtml).

For more information

Crop Data Management Services (herbicide labels and MSDS) www.cdms.net/LabelsMsds/LMDefault.aspx

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EXTOXNET (herbicide toxicology and environmental chemistry), extoxnet.orst.edu

UC Weed Research and Information Center, wric.ucdavis.edu/index.htm

USDA Agricultural Research Service, Exotic and Invasive Research Unit www.ars.usda.gov/main/site_main.htm?modecode=53-25-43-00

Western Aquatic Plant Management Society. wapms.org

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Ken Moore drew a crowd in the first-ever Tool Tailgate.
Photo by J.P. Marié



Jim Holmes “bucked” acacia at the Habitat Restoration Workday. Photo by Dana Morawitz

2012 SYMPOSIUM IN SONOMA COUNTY



Photo Contest, 1st Place: Demonstrating the amazing power of the clenching jaw of the weed wrench against Scotch broom (*Cytisus scoparius*), by William Welsch. See more on our Facebook page.

Ann Howald, founding board member, received the Jake Sigg Award for her longtime service to Cal-IPC and invasive plant work. Photo by J.P. Marié



Our closing panel addressed the challenges of “Working Across Time”, adapting invasive plant work in the face of climate change and other ecosystem changes. Photo by J.P. Marié



The Pollinators field trip visited Singing Frogs Farms.
Photo by Dana Morawitz

2012 Awards

Jake Sigg Award for Vision and Dedicated Service: Ann Howald, Garcia and Associates

Golden Weed Wrench Award: Mark Heath, Shelterbelt Builders

Ryan Jones Catalyst Award: Susan Schwartz, Friends of Five Creeks

Invasive Plants Policy & Media Award: 1) Assemblymember Joan Buchanan (16th District); 2) Karen Buhr, California Association of Resource Conservation Districts; 3) Bobbi Simpson, National Park Service Exotic Plant Management Team

Wildland Weeds Program Award for Organization of the Year: State Coastal Conservancy, San Francisco Estuary Invasive Spartina Project

Partnership Award for Wildland Stewardship: Marla Knight, Klamath National Forest, and Jodi Aceves, Siskiyou County Department of Agriculture

Student Paper Contest: 1st: Bridget Hilbig, UC Riverside; 2nd: Matt O’Neill, UC Riverside; 3rd: Christiana Conser, UC Davis



Sam Schuchat,
Executive Officer
of the State Coastal
Conservancy,
spoke on invasive
plant restoration
in wetlands of
northern and
southern California.
All presentations
are available as
pdfs on [www.
cal-ipc.org/symposia/
archive/2012_
presentations.php](http://www.cal-ipc.org/symposia/archive/2012_presentations.php).
Photo by J.P. Marié



Sponsors advertised their products and services to attendees, while helping us offset the cost of the Symposium.
Photo by J.P. Marié



Field trips visited the Sonoma County Coast, Singing Frogs Farm, the Blue Ridge-Berryessa Natural Area, and Mount Tamalpais (above). Photo by Dave Bakke

Thanks to our sponsors!

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US Fish & Wildlife Service, Inventory & Monitoring Program

Gold

California Native Plant Society

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California Native Grasslands Association

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Save the Date!

Cal-IPC 2013 Symposium

October 3-5, Lake Arrowhead

Join us in the San Bernardino Mountains for presentations, field trips, discussions, and more!. Abstract submission begins in the spring. Registration opens in June.

www.cal-ipc.org/symposia

Victorian box: an invasive tree spreading in California

by Marcel Rejmánek, Department of Evolution and Ecology, University of California, Davis

Victorian box is characterized as “uncommon” in *The Jepson Manual*, as an “uncommon ornamental escape” by *Weeds of California and Other Western States*, and as a species that was evaluated but not listed in the Cal-IPC Inventory. However, large infestations are in progress along the Pacific coast (see photos).

Pittosporum undulatum Vent., known under common names Victorian box, mock orange, sweet pittosporum, and Australian cheesewood, is an evergreen massive shrub or medium, up to 15 m (49 ft) tall, tree from the Old World family Pittosporaceae. It is native to the coastal belt and mountains of south-eastern Australia (New South Wales, Victoria). Victorian box is widely cultivated throughout the world as an ornamental plant. Currently, this species is recognized as invasive in the Azores, Brazil, Cuba, Hawai‘i, Jamaica, Portugal, the Western Cape of South Africa, and beyond its natural range in Australia (Gleadow 1982, Goodland

and Healey 1996, Lourenco et al. 2011, Mulett 2002).

Victorian box has fragrant flowers with five white petals, arranged in umbel-like clusters. Flowering starts at around five years of age. Introduced honeybees are

(yellow-orange two-valved capsules, ca. 12 mm across) take about six months to mature. The capsules usually contain 20-40 sticky orange seeds, which are dispersed by birds.

Seedling recruitment occurs below the shrub or tree canopy but increases in gaps. Seedling survival, however, is much higher in the shade (Gleadow 1982, Gleadow et al. 1983). Seedlings grow rather slowly for the first few years and then take off and become massive shrubs. Victorian box can be distinguished from the commonly cultivated and much less invasive Japanese pittosporum (*P. tobira*) by having flat, flexible, not leathery leaves. Japanese pittosporum has leaves with edges that curl down and inward. The climatic conditions of Victorian box in its native range vary from moist sub-tropical to dry temperate,



Above: Victorian box (*Pittosporum undulatum*) with partly opened capsules. Below: Victorian box infestation above Gorda at Cape San Martin, Monterey Co. Photos by Marcel Rejmánek

probably the most important pollinators. The species is incompletely dioecious, meaning male and female flowers are not always on separate trees. Fruits

but without a pronounced dry season. Therefore we may expect that this species will spread only in relatively wet coastal areas in California.

Three large infestations between Monterey and Cambria plus one approximately 10 km (6 mi) south of Julia Pfeiffer Burns State Park can be easily recognized on Google Earth images. It seems that all of them started from a few trees that were planted 20 to 40 years ago. Because mature individuals of Victorian box are taller than native coastal scrub, we may expect that the fate of native vegetation will be similar to South African fynbos invaded by exotic acacias and pines (Richardson et al. 1992) or to highland shrubby communities in the Galapagos



invaded by *Cinchona pubescens* trees (Jäger et al. 2009).

Adding a tree layer to naturally treeless communities represents a drastic change to whole ecosystems. A decline in the species richness and cover of native herbaceous plants and shrubs was documented from communities invaded by Victorian box in Australia. At an invaded dry sclerophyll forest remnant on the Mornington Peninsula, Victoria, vascular plant species richness declined from an average 15 species per 9 m² (96 ft²) in plots where Victorian box cover was less than 20% to just five species where its cover was more than 80% (Mullett 2001).

Control programs for Victorian box most often utilize the cut and paint method whereby individual trees are cut and stumps are immediately treated with herbicides. This method provides initially very encouraging results, but the associated increase of light and soil disturbance may promote establishment of new seedlings, particularly in the absence of follow-up and control. Bark stripping is effective in preventing sprouts, but only if all bark, from 30 cm (1 ft) down to soil level, is removed. A more efficient control method for this species is the drill and fill technique whereby herbicides are injected into the trunk and the canopy contracts over time (Mullett 2002). Unfortunately, size and rough terrain of currently infested areas in coastal California are such that the prospect for eradication of this species is rather bleak (see Rejmánek and Pitcairn 2002).

Contact the author at mrejmanek@ucdavis.edu.

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Victorian box infestation at Julia Pfeiffer Burns State Park, Monterey County, indicated by arrows. Native *Artemisia californica* is in the foreground. Photo by Marcel Rejmánek

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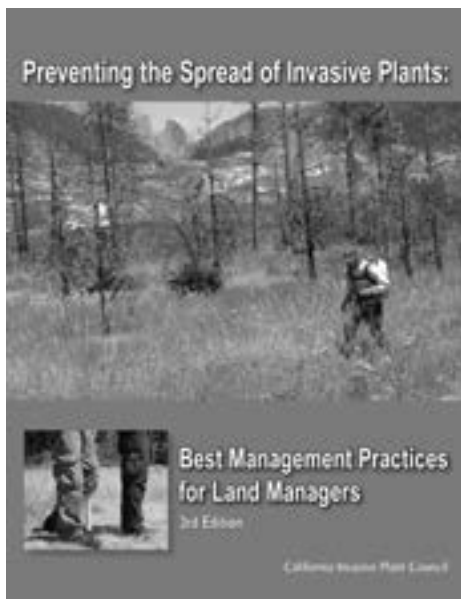
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New 3rd edition: “Prevention BMPs for Land Managers”

by David Bakke, USDA Forest Service, Vallejo

Burning news! Hot off the presses! (Sorry, couldn't help myself). A new edition of Cal-IPC's manual on Prevention Best Management Practices (BMPs) for land managers is available both in print and as a free download (www.cal-ipc.org/ip/prevention/landmanagers.php).



So what's new, you ask? Fire, fire!!!! No, seriously, the new edition includes an extensive new chapter on invasive plant spread prevention BMPs associated with wildfire suppression and forest fuel management activities, including the use of fuelbreaks and post-wildfire rehabilitation.

With funding provided by USDA Forest Service, State and Private Forestry, a large group of folks from around the state with invasive plants and/or fire suppression and fuel management backgrounds began to meet last winter, first on the phone, then in person and online. This group represented many different federal, state, and local agencies and organizations in the state. Many more individuals reviewed the drafts and work products. I can honestly say this has been one of the most intensely reviewed documents that I have been involved with in some time.

One concern that had to be addressed strongly and early on is that these prevention guidelines are never intended to compromise firefighting strategy and tactics.

As stated in the introduction to Chapter 10: “in wildfire suppression, protection of life is the foremost goal. Implementation of the prevention measures described... should not interfere with this goal.”

It is also important to keep in mind that these are voluntary measures; none are required to be implemented unless required within a particular agency or organization. Many of the BMPs in the new chapter have been used for several years by firefighting agencies including the National Park Service and Forest Service. By incorporating them into this manual, these practices are now made available to all.

Thanks to all the folks who assisted with this effort and a big thanks to the staff at Cal-IPC, notably Alice Chung and Heather DeQuincy, who provided guidance and kept the group on task, enabling the third edition to be completed on time.

Printed copies are available from Cal-IPC for \$10 plus tax and shipping. Order at www.cal-ipc.org/shop.

Prevention and yellow starthistle videos online

Were you unable to attend one of the workshops on “Preventing the Introduction and Spread of Invasive Weeds” held around the state in 2012? Do you need a video to educate the maintenance crew or upper management at your agency about utilizing best management practices to prevent the spread of invasives? Need a refresher on the best timing of various methods to control yellow starthistle? Online videos of the workshops are now available for your viewing and sharing pleasure!

Four workshops were held throughout California to extend information on best management guidelines for construction, aggregate production, maintenance

operations and land managers. Over 200 people attended the workshops in Los Angeles, Sonora, Tulare and Truckee. The USDA Forest Service, National Park Service, California Department of Food and Agriculture, University of California Cooperative Extension, and Cal-IPC sponsored the workshops with funding by the USDA Forest Service and the American Recovery and Reinvestment Act.

Video topics include:

- What is the Issue? Invasive Plant Biology and Vectors of Spread
- Controlling Invasive Weeds through an Aggregate Quarry Inspection Program

- Weed Control, Mine Reclamation, and the Surface Mining and Reclamation Act
- USFS Lake Tahoe Basin Management Unit Aggregate Inspection Program
- Best Management Practices for Work in Utility & Transportation Corridors
- Yellow Starthistle Biology & Control

These presentations could be helpful at your next weed training, to educate your co-workers or staff or to help you understand the complexities of inspecting gravel pits for invasive weeds. The videos are available at: www.cal-ipc.org/ip/prevention/preventiontraining.php.

Spongeplant treatment to begin in Delta

Success from our Day at the Capitol efforts! In Spring 2011, *Cal-IPC News* ran a cover story on “South American spongeplant spreading in the Delta.” Along with biological challenges, the story identified legal challenges to treating this aquatic weed. Though it grows near water hyacinth and Brazilian egeria, two species that are currently treated by the state’s Department of Boating and Waterways, the agency was not allowed to treat the South American spongeplant because it was not identified in state code.

Enter Assembly Member Joan Buchanan from the 16th District, based in Contra Costa County. Knowing that aquatic weeds threaten a range of Delta benefits of importance to her constituents and other Californians, she convened a group to discuss solutions. Based on the group’s recommendations, Assembly Member Buchanan authored a bill, AB 1540, to add spongeplant to the list of

species that Boating and Waterways can treat. At the 2012 Weeds Awareness Day at the Capitol we endorsed the bill in visits to the offices of all 120 state legislators, and this fall, the bill was signed by the Governor

Assembly Member Buchanan showed that smart legislative action can facilitate effective natural resource management. For her leadership, Cal-IPC presented her with a 2012 Policy Award at our Symposium in Sonoma.



Lars Anderson, USDA Agricultural Research Service, holds a South American spongeplant (*Limnobiium laevigatum*). Photo by USDA-ARS

Join us for Day at the Capitol 2013 on March 13! Register at www.cal-ipc.org/policy/state/ciwad.php.

PG&E honors Cal-IPC board member

The Pacific Gas and Electric Company (PG&E) honored Cal-IPC board member Peter Beesley with its Richard A. Clarke Environmental Leadership Award for his work to develop a Safe Harbor Agreement with the US Fish and Wildlife Service for the company’s property adjacent to the Antioch Dunes National Wildlife Refuge. Located in eastern Contra Costa County, Antioch Dunes is home to three endangered species: Lange’s metalmark butterfly, Contra Costa wallflower, and Antioch Dunes evening primrose. PG&E used a combination of employee volunteer work and herbicides to reduce the cover of invasive plants such as winter vetch, yellow starthistle, and rigput brome. (See *Cal-IPC News*, Winter 2012).

Peter has worked for the company for 11 years and has served on the Cal-IPC board of directors since 2010. Other award recipients placed power lines underground to protect California condors and developed a system to operate a bucket truck’s equipment electronically to reduce engine idling. Award recipients chose a nonprofit organization to receive a donation from PG&E; Peter donated his \$5000 prize to Cal-IPC. Congratulations and thank you to Peter!



Doug Johnson (Cal-IPC), Janet Loduca, (PG&E Vice-President, Environmental) Peter Beesley, and Des Bell (PG&E Senior Vice President). Photo by Dalton Chan

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Nevada Brewing Co., Smokey Ridge Ranch, Bruce & Nancy Steele, Kate Symonds, Trader Joe's, True Grass Farms, Rebecca Waegell

New Members

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

Susan Anderson (Occidental), **Andrienne Beeson** (RECON Environmental), **Jeff Bennett** (East Bay Regional Park District), **Kelly Bougher** (Bureau of Land Management), **Eric Brown** (PG&E), **Daniel Brubaker** (Shelterbelt Builders), **Karen Buhr** (CARCD), **Scott Butterfield** (The Nature Conservancy), **Josh Carlson** (Concord), **Jim Cartan** (Oakland), **Joel Cervantes** (Pepperwood Preserve), **Sarah Chmielewski** (Bureau of Land Management), **Ryan Colley** (Bureau of Land Management), **Kenneth Collins** (Elkhorn Slough Foundation), **Michelle Cooper** (UC Davis Bodega Marine Reserve), **Adam Cope** (Civicorps), **Jeffrey Coward** (Insignia Environmental), **Josie Crawford** (California Native Plant Society), **Kevin Dixon** (East Bay Regional Park District), **Alicia Dunphy** (El Portal), **Claire Elliott** (Acterra), **MaryBeth Farley** (Roseville), **Megan FitzSimmons** (Sonoma Ecology Center), **Alison Forrester** (San

Francisco), **Daniel Franco** (Golden Gate National Parks Conservancy), **Deanna Giuliano** (California Native Plant Society), **Janie Godfrey** (Sierra Streams Institute), **Sarah Gordon** (Kenwood), **John Guardino** (Laguna Foundation), **Jeannette Halderman** (Truckee), **Aaron Hebert** (Sempervirens Fund), **Sallie Hejl** (US Fish & Wildlife Service), **Karen Holl** (UC Santa Cruz), **Jim Holmes** (Weaverville), **Chrissy Howell** (USDA Forest Service), **Elizabeth Hubert** (Water Resources), **Diana Immel Jeffery** (Sonoma-Marin Coastal Grasslands Working Group), **Michelle Jensen** (Pepperwood Preserve), **Dennis Kanthack** (Ventura), **Dave Kaplow** (Pacific Open Space, Inc.), **Timothy Keldsen** (USFWS), **Richard King** (Petaluma), **Alan Leavitt** (Arnold), **Kent Lightfoot** (UC Berkeley), **Paul Maben** (PG&E), **Marco Mares** (County of San Diego), **Patrick McIntyre** (East Bay Regional Park District), **Theo Michaels** (Petaluma), **William Miller** (U.S. Fish and Wildlife Service), **Jason Mills** (Chico), **Patrick Moran** (USDA-ARS, Exotic and Invasive Weeds), **Nicholas Mueller** (San Joaquin Conservation Corps), **James Murphy** (Habitat West, Inc.), **Lynette Niebrugge** (Marin Resource Conservation District), **Matt O'Neill** (UC Riverside), **Mike Palladini** (Napa), **Meghan Parish** (Laguna Foundation),

Michael Parks (Target SP), **Joseph & Mary Paternoster** (DriWater), **Joshua Pepper** (Pesticide Research Institute), **Terra Perkins** (Whiskeytown), **George Phillips** (Walnut Creek), **Allison Phillips** (Half Moon Bay), **Stephen Pree** (City of El Cerrito), **Tyson Read** (PG&E), **Thomas Reyes** (El Portal), **Catey Ritchie** (Golden Gate National Parks Conservancy), **James Robinson** (Cedar Ridge), **Cliff Rocha** (East Bay Regional Park District), **Homero Romero** (Grass Valley), **Daydre Roser** (Sacramento), **Connor Ross** (Sonoma Ecology Center), **Josh Rubin** (Gallo Family Vineyards), **Linda Ruthruff** (California Native Plant Society-SCV), **Jessica Saenz** (Deangelo Brothers, Inc.), **Ron Sanders** (San Francisco), **Sam Schuchat** (State Coastal Conservancy), **Andrew Smith** (Sonoma County Agricultural Dept.), **Sue Smith** (Circle Bar Ranch), **Amanda Swanson** (Riverside), **John Swenson** (NPS/Point Reyes National Seashore), **Sarah Swope** (USDA Exotic & Invasive Weeds Research Unit), **Louis Terrazas** (USFWS), **Kou Thor** (Oroville), **Britt Thorsnes** (East Bay Regional Park District), **Debra Turrieta** (DriWater), **Kirstie Watkins** (Sebastopol), **Jeff Wilcox** (Berkeley), **Rosie Wilson** (Marin Agricultural Land Trust), **Victoria Wojcik** (Pollinator Partnership), **Scott Woodin** (McLaughlin Preserve)

Symposium attendees vied for many great raffle and silent auction items.



Readings & Resources

UC Davis Videos

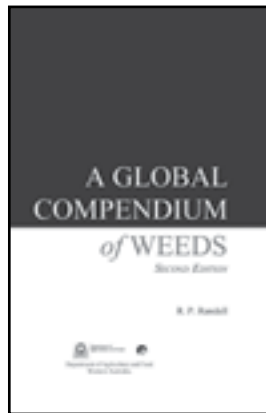
Four online videos are available from the UC Davis Weed Research and Information Center: Control Techniques, Principles of Weed Control, Calibration in Natural Areas, and Weed Identification. ucwric.org

IPM Perspective

Three scientific societies examined issues associated with using “least toxic pesticides” as a “last resort” in the context of Integrated Pest Management. View their conclusions at wssa.net/WSSA/PressRoom/WSSA-IPM.htm

Goat Grazing

A list of contractors who provide goat grazing services for weed control is available at www.livestockforlandscapes.com/network.htm.



Global Compendium of Weeds

Rod Randall has updated his comprehensive *Global Compendium of Weeds*. The new edition includes more than 33,000 species with more detailed citations. It is available as a free, large (1115 pg) pdf download. www.agric.wa.gov.au/objtwr/imported_assets/content/pw/weed/global-compendium-weeds.pdf

Center for Invasive Species Management

...is the new name for the Center for Invasive Plant Management based at Montana State University, reflecting its new, broader mission. Their website is an excellent source of information. www.weedcenter.org

California Climate Change

The State of California has released 30 new studies on California climate adaptation issues. They offer information on energy, water, agriculture, public health, coastal, transportation, and ecological resources. www.climatechange.ca.gov/adaptation/third_assessment/

Sportman's Guide

A Sportsman's Guide to Invasive Species educates hunters and anglers about invasive species prevention. Free download at www.weedcenter.org/store/outreach/sportsmans_guide.html

New book!

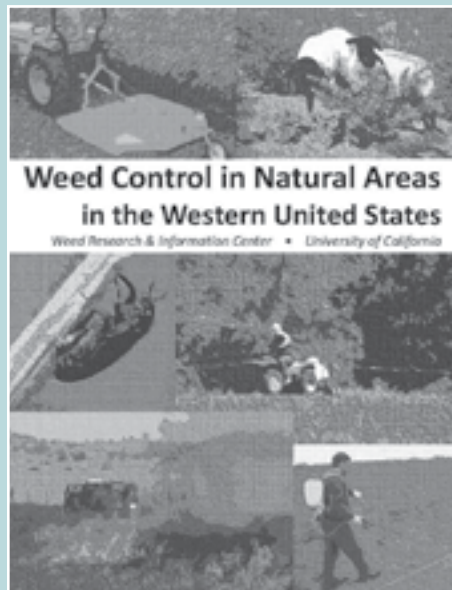
Weed Control in Natural Areas in the Western United States

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February - March

California Weed Science Society

January 23-25

Sacramento

www.cwss.org

National Invasive Species Awareness Week

February 28 - March 4

Washington, DC

www.nisaw.org

California Invasive Weeds Awareness

Day at the Capitol

March 13

Sacramento

www.cal-ipc.org/policy/state/ciwad.php

April - July

CNPS Vernal Pool Plant Taxonomy

April 15-17

UC Davis and Central Valley

www.cnps.org/education/workshops

SERCAL Conference

May 14-16

UC Santa Barbara

www.sercal.org

Invasive Plant Short Course

June 25-27

North Platte, Nebraska

ipscourse.unl.edu

August & beyond

Cal-IPC Symposium

October 3-5

Lake Arrowhead

www.cal-ipc.org/symposia

Central CA Invasive Weeds Symposium

November 7

Monterey County

Quotable

“While I didn’t take this up specifically for its exercise benefits, it has proven to be an outstanding fitness activity.”

- Retired professor Sue Duckles combined her love for hiking and gardening into a hybrid hobby—removing invasive weeds from wilderness parks. *San Francisco Chronicle*, p. D1, October 10.

“Finding a middle ground on which all sides of the debate can respectfully agree, rather than perpetuating the divisive debate on points of difference, is a vital process.”

- Nancy Shackelford et al. “Finding a middle-ground: the native/non-native debate” in *Biological Conservation* 2013.

“What phrases in literature or life will ever top the rich resonance of its opening line? “The Inventory categorizes plants as High, Moderate, or Limited, reflecting the level of each species’ negative ecological impact in California...” “Call me Ishmael” has nothing on it!

- A column bemoaning changes in high-school reading lists. (Actually, the Cal-IPC Inventory is among the suggested resources for high school science classes.) *Rock Hill Herald*, www.heraldonline.com (also covered on National Public Radio’s “Wait, Wait, Don’t Tell Me!” December 15)



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