

Cal-IPC News

Protecting California's Natural Areas from Wildland Weeds

Newsletter of the California Invasive Plant Council



Taking to the air p.4

A helicopter crew surveys artichoke thistle (*Cynara cardunculus*) for the Irvine Ranch Conservancy.

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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

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From the Director's Desk

Climate Adaptation

Reducing human greenhouse gas emissions is an important ongoing effort. But a new effort is gaining speed. Because significant climate change is already underway, and will continue into the foreseeable future, scientists and managers are beginning to address ways to prepare for and adjust to these changing conditions. This pursuit is referred to as "climate adaptation."

The National Wildlife Federation has developed "Climate-Smart" conservation guidelines because "climate change is now a primary lens through which conservation and natural resource management must be viewed."

Meanwhile, the National Fish, Wildlife, and Plants Climate Adaptation Strategy published last year aims "to inspire and enable natural resource administrators, elected officials, and other decision makers to take action to adapt to a changing climate." Adaptation actions are "vital to sustaining the nation's ecosystems and natural resources — as well as the human uses and values that the natural world provides."

Invasive species are mentioned early and often in the document. Among the document's recommendations, Strategy 7.3 focuses specifically on ways to strengthen invasive species prevention and management. As the document says, "reducing existing stressors on fish, wildlife, and plants may be one of the most effective, and doable, ways to increase resilience to climate change." We agree, and hope this understanding leads to renewed focus on invasive species management.

Cal-IPC and the California land management community are leaders in putting these principles to work on the ground. Projecting invasive plant response to future conditions helps make our management as strategic as possible. As another growing season cycles across the state, we can feel proud that we are doing some of the "most cost-effective and doable" work to protect California's plants and animals in an uncertain future.

Thank You Heather!

Longtime Cal-IPC staffer Heather DeQuincy has taken a new position with the East Bay Regional Parks District. As part of our core team, she has made tremendous contributions to the growth of Cal-IPC. In her role as Training and Outreach Program Manager, she oversaw the development of our field courses and had a hand in almost everything we do. With a background in land management, she loved interacting with our members and sharing in their work. We will really miss her!



AB 763 passes in California State Assembly and heads to the Senate.

Authored by Assembly Member Joan Buchanan and sponsored by Cal-IPC, the bill aims to strengthen response to invasive weeds in the Delta and to define “invasive species” in state code as a foundation for invasive species management programs. www.leginfo.ca.gov

Recreational boaters make Delta weeds a top issue. In related news, the Recreational Boaters of California put invasive plants at the top of their policy agenda for the year. There are 3 million recreational boaters in California, and plants like water hyacinth can block waterways as well as damage aquatic ecosystems. blog.sfgate.com/stienstra/2013/02/13/delta-weeds-cash-top-cal-boaters-fears/

Cal. Dept. of Fish & Wildlife announces new State Wildlife Action Plan newsletter. Track the progress of the SWAP, which examines the health of California’s wildlife and prescribes actions to conserve species and vital habitat. Subscribe at www.dfg.ca.gov/SWAP.

Group forms to create national standard for listing invasive plants. Working with sister organizations from other states, Cal-IPC has established an ASTM work group to develop a standard. The standard will strengthen lists like Cal-IPC’s so they can be cited by building codes that restrict landscaping to non-invasive plants. www.astmnewsroom.org/default.aspx?pageid=3095

New effort to secure federal funding for invasive species management. A coalition of western states is working on legislation that would redirect \$200 million of federal funds to states for on-the-ground invasive species control. Cal-IPC is tracking this effort with partner groups in the National Association of Exotic Pest Plant Councils and the National Environmental Coalition on Invasive Species. healthyhabitatscoalition.com

California’s Wildlife Conservation Board funds Cal-IPC. The new grant supports strategic prioritization of landscape-level projects across the state. The board also approved funding for the Invasive Spartina Project. www.wcb.ca.gov

Wildland Weed News

Eucalyptus advocates protest use of FEMA funds for East Bay hills. Two decades after the Oakland Hills firestorm, citizens and agencies are still struggling to agree on strategies for reducing fuel loads. “Deforestation” and use of herbicides are two concerns for protestors who increasingly dispute the concept of invasive species as personal bias in favor of native species. oaklandlocal.com/2013/06/storm-of-controversy-rages-over-fire-hazard-reduction-plans-for-oakland-hills/

Sweet broom on the way out? The Butte County Agricultural Department has petitioned the California Dept. of Food & Agriculture to place all hybrids of Genista and Cytisus species under quarantine. The move is based on UC Davis research that documents interbreeding between sweet broom, still available in nurseries, and invasive French broom. www.sciencedirect.com/science/article/pii/S1055790311003915

Climate change expected to cause widespread loss of common plants and animals. An international team studied 50,000 common species and found that two-thirds of plants and one-half of animal species will lose more than half of their climatic range by 2080. Immediate action to curb greenhouse gas emissions could reduce losses by 60% and buy an additional 40 years for species to adapt. www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1887.html

Landscape-scale conservation report released for Pacific Northwest. Coordinated by the National Wildlife Federation, the report drew on expertise and perspectives of participants in regional meetings. A top recommendation is to identify the dispersal corridors invasive species will use in response to changes in climate. northpacificlcc.org

Vector risk assessments for aquatic invasive species completed for California. The state’s Ocean Science Trust commissioned studies to help address pathways of introduction and spread. calost.org/science-initiatives/?page=aquatic-invasive-species



San Diego arundo fire started in a homeless encampment. The Mother’s Day fire destroyed or damaged five structures and a woman was hospitalized in critical condition. Photo by Mark Roberts, from lakesidefiredist.blogspot.com.

Taking to the air to locate, prioritize and treat effectively

By Jutta C. Burger, Irvine Ranch Conservancy

Land managers face difficult decisions regarding where best to spend their limited resources fighting invasive species. Large, obvious stands of an invader, such as those of black mustard in coastal southern California, clearly erode native plant and animal diversity and ecological function. Small populations, such as those along the leading edge of Saharan mustard's range expansion, do not initially have significant large-scale ecological effects but could become future management nightmares.

Decisions are often complicated by not knowing the distribution or total cover of target species. Regional and statewide inventories such as those that Cal-IPC is developing are a tremendous help in setting targets. Yet the task of gathering fine-scale information on local status and distribution of species still lies on the shoulders of the land manager. Working without good surveys is much like treating a patient without having a complete diagnosis. Doing nothing with a survey or not treating systematically can further lead to disastrous and avoidable expansions of invasive species and wasted money.

The Irvine Ranch Natural Landmarks is a network of urban wildlands in Orange County that has been given both state and national status for its geological and



Spanish broom was the species mapped most accurately by air. Photo by Stephen Francis.

natural history values. It includes some of the largest remaining tracts of southern California's coastal sage scrub, perennial grassland, oak woodlands, and riparian habitat, as well as extensive stands of chaparral. The northern portion of the Landmarks is located in the foothills of the Santa Ana Mountains and is the focus of this article.

We compiled a list of 35 invasive plants to map for this area, selecting species based on personal experience, local expert opinion, and past surveys. We excluded ubiquitous species such as brome grasses and mustards, assuming these could neither be mapped nor controlled cost effectively on a landscape scale.

Using this list, we contracted for an aerial weed survey of a 31,000-acre area. The result was a first-time-ever comprehensive map of weed species and their cover for this area. Here I present the results of our survey, a coarse assessment of the accuracy of the methodology, and implications for management.

Methods

A Native Range, Inc. helicopter team conducted the aerial survey by flying transects following contours. The survey area was characterized by moderate topography with steep canyons and occasional wide valley bottoms that are characteristic of the foothills of the Santa Ana Mountains. Most habitat was either shrubland or grassland and therefore could be assessed relatively easily from the air.

The helicopter flew at 60-100' altitude to minimize disturbance of any nesting bird species. Two trained observers identified weed populations and recorded these digitally as points, lines, or polygons, depending on stand size and shape. For each population, we captured species, gross stand area, percent cover, age class, habitat type, recorder, date, and time. Stands of a single species distributed a minimum of 100' apart were considered distinct populations. The survey area was

mapped in twelve days.

Accuracy was estimated for giant reed, Spanish broom, and artichoke thistle by using GIS software to compare data from the 2011 aerial survey to foot surveys from 2012. Foot survey points were assumed to represent the true population distribution.

A simple prioritization model was built by numerically ranking all species using the following parameters: average population area, median population size, and total number of populations. Population parameters were averaged to produce a single number and added to a score of previous control effort and Cal-IPC ranking. The final ranking was used to assign each species to a "high", "medium", or "low" priority.

Survey Results

A total of 4775 populations were identified across 35 target invasive species, totalling 458 net acres (2403 acres gross). The five most abundant species were Italian thistle, artichoke thistle, gum tree (*Eucalyptus* spp.), milk thistle (*Silybum marianum*), and tree tobacco (*Nicotiana glauca*). All but *Eucalyptus* — historically planted along orchard and road edges — were under some level of management.

Artichoke thistle was widely distributed, even though the species had been treated for nearly 20 years prior to the survey. This species is ranked statewide as a "moderate" concern by Cal-IPC, but is considered a high concern locally by Orange County land managers. Most stands observed were small, however, consisting of only one to a few individuals. Of the 868 populations observed, nearly one fourth occurred in otherwise intact coastal sage scrub, oak woodland, or riparian habitat.

The survey located new populations of a few highly invasive species. The most significant was two new stands of yellow starthistle (*Centaurea solstitialis*) covering over half an acre, a few hundred yards

away from the only previously known stand. Small populations of spiny emex (*Emex spinosa*), tree-of-heaven (*Ailanthus altissima*), and Canary Island date palm (*Phoenix canariensis*) were also mapped for the first time. Pampas grass (*Cortaderia selloana*) and fountain grass (*Pennisetum setaceum*), previously not prioritized for control, were both more abundant than had been thought; totalling 3.8 acres across 77 stands and 2.6 acres across 81 stands, respectively.

Accuracy of aerial mapping was highest for Spanish broom (*Spartium junceum*), with 85% of all points falling within a 200' buffer of populations mapped on the ground. Accuracy of giant reed was slightly lower at 79%. Interestingly, foot surveys and aerial surveys each located two stands that the other did not. Accuracy for artichoke thistle was lowest at 63% and could have been due in part to germination of new plants after the aerial survey.

Summary and Conclusions

Several species that had not been targeted for reserve-wide control now have elevated priority due to the findings of our comprehensive survey. These include species that not previously recorded, such as spiny emex and tree-of-heaven, as well as some whose exact distribution had been unknown. Other species, such as yellow starthistle were already a high priority but are now known from additional populations. Still other species have increased in priority due to the ability to now remove them more strategically based on distribution data; these species include tamarisk, giant reed, Spanish broom, and pampas grass. Lastly, Italian thistle and tree tobacco, species that had been prioritized and treated previously, were found to be so abundant and widespread that they were down-weighted in our prioritization model. We now only treat them in a select number of manageable locations. Resources saved from reprioritizing these species can now be shifted to treating newly prioritized species and populations.

Results of our aerial survey suggest that artichoke thistle is still widely distributed and covers substantial acreage but occurs mostly in small, isolated

populations. After years of controlling artichoke thistle, the survey results are both sobering and encouraging. More control remains to be done, but the pattern of distribution is what would be expected after years of ongoing control that have eliminated most large stands.

Our control efforts for artichoke thistle will now emphasize “preventive care”, targeting isolated patches of this species to prevent future spread and incorporating annual aerial access for treating remote populations of this and other priority species. Our prioritization model does not identify artichoke thistle as a priority control target because of its extensive distribution.

Concerns over regional spread (especially in the event of a fire), the opportunity for local eradication of isolated patches, and the need to hold the ground gained through past control efforts that could otherwise be lost, however, have led to our decision to continue strategic control of this species.

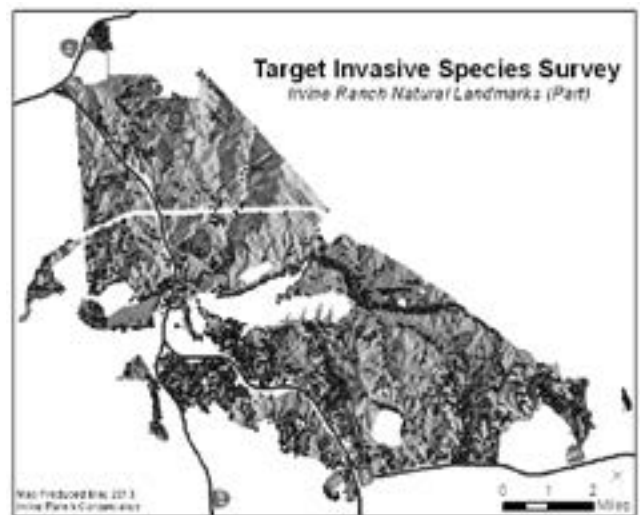
Choosing a Survey Approach

For our purposes, an aerial survey provided extremely useful distribution data that would have been virtually impossible (and cost prohibitive) to get from the ground. The aerial survey took 12 days and covered 31,000 acres at a cost of \$94,000 (a little over \$3/acre). In contrast, our foot survey of six canyons took two summers, covered 1345 acres and cost \$46,000 (\$34/acre).

When deciding whether to conduct a broad spectrum aerial survey or a foot survey, management needs, feasibility, and cost should be considered. The benefits of an aerial survey are the speed, consistency, and cost efficiency over a large area. A foot survey may ultimately be more accurate, but its consistency is severely impacted by the time it takes to survey and its coverage will not be complete due to accessibility issues in rugged terrain. Furthermore, physical access to remote areas can introduce disturbance and

weed propagules. The smaller the reserve and the greater other constraints such as proximity to urban areas and vegetation canopy, the greater the potential benefits of a foot survey.

If small, less apparent or understory species are a priority, then foot surveys should be considered. Most target species in our reserve area were typically two feet or greater in size and some of the smaller species, such as yellow starthistle, were distinctive enough to be easily identified by air. Other species, such as Saharan mustard (*Brassica tournefortii*) were not amenable to aerial survey. And of course, when conducting an aerial survey by



helicopter, care must be taken to minimize risks such as fire or disturbance of nesting sensitive species through wind or noise impacts.

Someday automated remote sensing from satellites or aircraft may become a viable alternative, but as yet the field has not been able to consistently identify more than a handful of invasive species. For now, if you're managing a large area, you may find as we did that an aerial survey provides the distribution data that is essential to setting effective strategy.

Special thanks to John Knapp and Native Range, Inc. for conducting surveys and providing helpful discussion and to Henry DiRocco, Jennifer Naegele, and Yi-Chin Fang for participation in the project.

Contact the author at jburger@irconservancy.org

Taking the Long View



Join fellow land managers, researchers, and conservationists for autumn colors at Lake Arrowhead in the San Bernardino Mountains! Our 22nd Symposium features the latest information on tools and strategies for controlling invasive plants and addresses the big-picture challenges we face in setting realistic goals to protect California's plants and wildlife in an era of rapid climate change. Bring your expertise and questions—we'll see you there!

All information is online at www.cal-ipc.org

Pre-Symposium Workshop, Oct. 2 **Climate-Smart Land Management**

Federal agencies and conservation organizations have been begun producing "climate-smart" guidelines aimed at protecting biodiversity in a changing a climate. This half-day workshop will survey these guidelines. share ideas for how they inform invasive plant management, and explore case studies that illustrate on-the-ground management choices already being made to support resilient ecosystems. This critical topic will benefit from robust discussion among instructors and attendees, and participants will have the opportunity to help refine recommendations for the Cal-IPC community.

Grizzly surveying the San Fernando Valley centuries ago. Painting by **Keynote Speaker Laura Cunningham**, naturalist, artist and author of *A State of Change: Forgotten Landscapes of California*.

Plenary Sessions. Oct. 3-4

Learning from Southern California Mountains and Deserts - Post-fire weed invasions, desert plant ecology, solar power plants, endangered species and more. Speakers include Katie VinZant, Angeles National Forest, and Travis Huxman, UC Irvine.

The Novel Ecosystem Debate Reframed for Land Managers - How can managers make effective decisions on which non-native species to accept, perhaps even welcome, into otherwise native ecosystems? Speakers include Timothy Seastedt, University of Colorado, Boulder, and Deborah Rogers, Center for Natural Lands Management.

Impacts of Invasive Plants on Ecosystem Services

Plant invaders affect ecosystem services like pollination, recreation, and navigation. Can land managers make a case for funding invasive plant removal based on social and economic benefits? Speakers include Julie Rentner, River Partners, and Alexandra Threatt-Harmon, University of Illinois.

www.cal-ipc.org/symposia

Location

Lake Arrowhead Resort sits on the shore of Lake Arrowhead in the San Bernardino Mountains, a 45-minute drive from Ontario Airport. The discounted room rate is \$84/night (not guaranteed after Sept. 3).

Registration

Register online at www.cal-ipc.org. Early bird discount applies through Sept. 3. Discounts are available for students and Symposium volunteers. Registration includes continental breakfasts, Thursday Awards Luncheon and Social Hour.

Laws and Regs moves to Wednesday

The Laws and Regulations session, providing Dept. of Pesticide Regulation continuing education credits, will be held the evening of Wednesday, Oct. 2, the night before main Symposium sessions begin.

Discussion Groups

Learn from experts and your fellow attendees at our interactive discussion groups on hot topics in invasive plant research and management. Groups include: Ask the Management Experts; Primer on Prioritization Tools; Climate-Smart Land Management; Saharan Mustard; Invasive Species Besides Plants; and Biocontrols.

Saturday Field Trips

Santa Ana River: Visit restoration projects in Southern California's largest watershed. Get a bird's-eye view from the top of the watershed then descend into the valley to visit historic and current projects controlling arundo, yellow starthistle, perennial pepperweed, and more.

San Bernardino Mountains: Explore restoration sites in the mountains surrounding Lake Arrowhead, and visit the National Children's Forest and a historic fire lookout.

And More...

30 Presentations... Exhibitors and Posters... 2013 Awards Luncheon... Social Hour with Raffle and Auction... Photo Contest... Student Paper Contest...

Sponsor the Symposium!

Organizations sponsoring the Symposium receive exhibit space, free passes, and recognition, and the knowledge they are supporting the event and Cal-IPC's important programs. Information online.



Tool Tailgate with Ken Moore of the Wildlands Restoration Team at the 2012 Symposium. Ken and other experienced workers in the field will conduct a lunchtime tailgate at this year's Symposium as well. Photo by JP Marie.



James Law of the Santa Ana Watershed Association surveying vegetation in the upper watershed. SAWA will lead a field trip at this year's Symposium, visiting restoration sites that brought back the endangered least Bell's vireo. Photo by Lee Reeder.

Early registration deadline is September 3.

EDRR success at Henry Cowell Redwoods State Park

By Ramona Robison, California State Parks

In 2012, Cal-IPC worked with the Santa Cruz District of California State Parks to select top species for surveillance as early detection and rapid response (EDRR) targets. One of the sixteen plant species selected, yellow archangel (*Lamium galeobdolon*) is highly invasive in the Pacific Northwest and has the potential to invade redwood forest understory. Only one population was known in the area. This spring, newly-trained members of the Santa Cruz Resource Conservation District, which is partnering with State Parks and Cal-IPC on the project, identified a new population at Henry Cowell Redwoods State Park. They immediately reported the find to State Parks staff for eradication. That's exactly the way it's supposed to work!



We will be transferring this pilot approach to our Orange Coast District next, and hope to establish a standard statewide system.

Left: Yellow archangel is one of sixteen surveillance species for the Santa Cruz District.

Right: Resource Ecologist Tim Hyland of State Parks surveys for invasive plant surveillance species on Santa Cruz District park land.

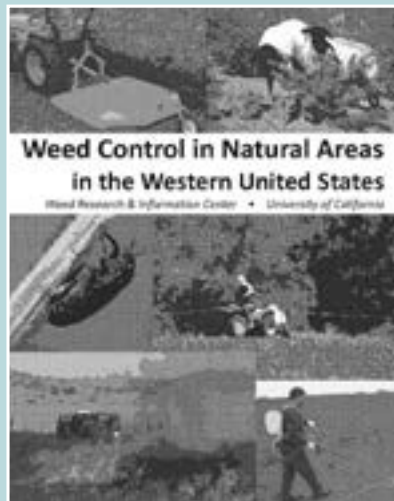


Weed Control in Natural Areas in the Western United States

Published in 2013 by the University of California's Weed Research and Information Center, with fifteen contributing authors

The manual presents detailed information on biology and control methods for 340 species found in thirteen western states. Includes tables summarizing chemical and non-chemical control options.

544 pages with photos.



\$37.00 plus tax and shipping from the Cal-IPC online store.

Order at www.cal-ipc.org/shop

SAVE THE DATE!

*Connections:
Weeding With Cooperative Management*

 **15th Annual
Central California
Invasive Weed
Symposium**

November 7th, 2013
Paicines Ranch, Paicines, CA

*Keynote Speaker: Ken Moore
Wildlands Restoration Team*

\$50 Early registration - \$25 Students - \$65 Late Registration

Field trips: Pinnacles National Monument,
Hollister Hills Recreation Area, Paicines Ranch

Continuing Education Units available for qualified applicators!

Registration & Information at
<http://cciws2013.eventbrite.com/>

Celebrating SERCAL and CNGA

Cal-IPC salutes the California Society for Ecological Restoration (www.sercal.org) and the California Native Grasslands Association (www.cnga.org) for their exceptional work on behalf of California's wildlands. sister organizations Check out their trainings and conferences, read the following "teasers" adapted from recent articles, and become a member of these organizations if you are not already!

Towards Multidisciplinary Landscape-Scale Restoration

By Matt James, Coastal Restoration Consultants, adapted from 2012 Summer Solstice issue of Ecesis. Recent issues have covered biodiversity in agricultural settings and "messy creek" restoration. See Ecesis online at www.sercal.org.

Almost every restoration project, be it large or small, has societal benefits beyond its immediate ecological goals. Restoring wetlands usually has water quality and



Congratulations on 20 years! SERCAL held its 20th annual conference this spring at UC Santa Barbara. The event's ten field tours included this one to the Ventura River watershed. Photo by tour co-leader Paul Jenkin, Surfrider Foundation.

flood protection benefits for neighbors and entire watersheds. Restoring riparian habitats along creeks and rivers, especially where levees are set back or removed, is an excellent way to provide flood protection. Restoring resiliency to coastal habitats, including beaches, dunes and salt marshes, is becoming an important part of preparing coastal communities for sea level rise. Further, restoration sites are increasingly

seen as opportunities for recreation and education, especially in urban areas.

If restoration programs are to achieve truly ambitious large-scale goals, both ecological and societal, the future must lie in coordinating projects within much broader landscapes. This is happening with much fanfare in places like the Bay-Delta Region, the Everglades and Chesapeake Bay. This approach is also being employed on smaller scales, including the Ventura and Santa Barbara region, where watershed-scale restoration programs are being implemented to address the threat of sea level rise to natural habitats and other coastal resources.

California is a great place to be a restoration ecologist. Though we have done great damage to natural ecosystems here, I find reason for great optimism. As society becomes more and more accepting of ecological restoration as a tool for improving natural ecosystems and improving our quality of life, there is an increasing opportunity to do larger and more meaningful restoration projects than ever before. As restoration ecologists, we will meet ambitious goals only by looking far beyond the borders of our projects to understand how our work integrates with the rest of the surrounding landscape.

Volunteer Habitat Restoration—Trials and Triumphs

By Chad Aakre, Restoration Resources, adapted from the Spring 2013 issue of Grasslands.

What could be more fun than volunteering to lead a crew of people you have never met through the intricate process of installing a habitat restoration project? I offer these bits of advice to maximize the success of habitat restoration with volunteer labor.

Collaborate: Identify the primary stakeholders that will influence the success or failure of a project. Finding a local nonprofit with which you can partner will



CNGA 2013 Field Day organizer Bryan Young leads a driving tour of restoration projects along roadsides, canals, and pastures. Photo by Phil Hogan, NRCS.

.....
provide the validity you need to convince key stakeholders that they should join forces and collaborate with you.

Simple: One way to keep it simple is to think like a volunteer. Break the volunteer effort down into step-by-step procedures. Make a map. Convey a simple idea of what you would like to see happen in the project. One aspect of volunteer projects is not simple at all: correspondence. Take the number of emails, phone calls and meetings required to manage a normal restoration project and multiply by four.

Small: Start small, and then increase in incremental steps. A small project will win approval by key stakeholders more easily. Strive to be innovative but measured in your approach. Using techniques that maximize efficiency will help keep a project small and maximize success.

Successful: Keeping the project successful can only happen if the project area is managed in perpetuity. One way I like to push a project in the right direction is by creating annual work days. Keep a clear vision of what you want the project to eventually look like and figure out how to gently push the project in that direction.

Grass-centric: Look for opportunities to install grasses in every project you are involved with. One-gallon native grass container plantings can usually be easily incorporated into traditional tree planting projects with no measurable changes in design or management.

Regional planning spreads across the state

Central Sierra Eradication Project

Partners in the central Sierra counties of El Dorado, Alpine, Amador, Calaveras and Tuolumne are embarking on several new projects. As the first region to complete their strategic plan using CalWeedMapper, the region worked with Cal-IPC to apply for and receive grants from the National Fish and Wildlife Foundation (NFWF) and the Sierra Nevada Conservancy (SNC).

Funds from NFWF support region-wide eradication of Canada thistle, purple starthistle, and diffuse knapweed. County Agricultural Commissioners, local UC Cooperative Extension representatives, and the US Forest Service are coordinating to treat and monitor these species. Single isolated populations of eight additional species will also be targeted to make sure they do not spread. And in the Groveland area, along Highway 120 to



Becky Miller-Cripps of UC Cooperative Extension maps Spanish broom near Groveland. Photo by Dana Morawitz.

Yosemite, local leading edge populations of Spanish broom have been mapped. SNC funds are supporting necessary environmental permitting to allow treatment in an area of varied land ownership.

Other Regions

Following a similar path, both the Northwest region (Humboldt and Del Norte counties) and North Central region (Trinity, Shasta, and Siskiyou counties) submitted pre-proposals to NFWF this spring to implement projects based on regional priorities determined collaboratively using CalWeedMapper. We worked with the Central Coast (Santa Cruz, Monterey, and San Benito counties) and are beginning with the South Central Coast (San Luis Obispo and Santa Barbara counties) and the North Sierra (Placer, Nevada, Yuba, Sierra and Plumas counties). The California Landscape Conservation Cooperative has been instrumental in funding this landscape-scale prioritization by region.

CalWeedMapper can be used for different types of regions. The Shasta-Trinity National Forest used the distribution information as a primary source to establish management priorities for the forest. The resulting strategy will enable the forest to use an early detection and rapid response strategy. In addition, this process identified a small number of eradication targets that represent “low-hanging fruit” that can be acted on now in an effort to prevent further entrenchment of these species in the landscape. Their plan, with a description of their process, can be found under News on the CalWeedMapper website.

WHIPPET Progress

When all populations of important invasive plants in an area have been mapped, the WHIPPET tool developed by Gina Darin and collaborators at UC Davis can be used to set finer-scale priorities between populations of multiple species. With support from the US Fish & Wildlife Service and the USDA



Regional planning is underway in seven regions, indicated by stars.

Forest Service-State & Private Forestry, Cal-IPC is building an online version of WHIPPET.

BAEDN and California EDN

With the end of ARRA stimulus funding, the Bay Area Early Detection Network (BAEDN) elected to become a project of Cal-IPC and join with the other regional partnerships across the state that are also working on identifying and addressing eradication targets. Cal-IPC is supporting continued work on Bay Area populations that have been selected as eradication targets, and working to restore the BAEDN website which was badly damaged by hackers. A substitute BAEDN website has been uploaded at www.cal-ipc.org/WMA/BAEDN.

As Cal-IPC continues to work with regional partnerships to set eradication and surveillance priorities, a statewide network is taking shape. This fills the role envisioned for a California EDN, and includes additional aspects of strategic management. Cal-IPC is working to strengthen communication within and between regions, which is critical for flagging priority species. Our current push is to jump-start funding to respond to priorities on-the-ground. We will continue to help regional partnerships continue to grow, establish priorities, and implement top projects.

Cal-IPC Student Chapter mentors local K-12 students

By Bridget Hilbig, UC Riverside

Last fall Cal-IPC Student Chapter members from UC Riverside were approached with a unique opportunity to participate in an educational program run by the Santa Rosa Plateau Foundation. The program gives local high school, middle school, and elementary school students from the nearby town of Murrieta hands-on experience restoring invaded perennial grasslands.

Throughout the school year, three Cal-IPC Student Chapter members from UC Riverside have helped design and implement restoration projects at Santa Rosa Plateau in conjunction with local school teachers and reserve managers. We have participated in multiple field trips in which we helped students identify native and invasive plants, set up a weather station, conceptualize a scientific experiment, and use vegetation sampling techniques.

The high school students designed a study on the effects of mulching on species abundance and diversity. The middle school students have set up transects to look at the effects of gopher activity and mowing on invasive annual grasses. The elementary school students started a seed

bank study to identify what percentage of the seed bank is invasive species. As part of the seed bank study, some of the high school students mentored the younger students.

Working with the students has been an amazing and rewarding opportunity. The students are truly excited to be outdoors and learning about California's native plants and the impacts of invasive plants. We will continue working with these students for the remainder of this academic year, and hope that we can continue to help this project in years to come.

This is one of the most involved K-12 outreach projects for the Student Chapter. Over the past few years, the Student Chapter has participated in public outreach activities in order to help educate people about invasive plants. The chapter started at UC Riverside and has members at several other universities in California. Some outreach activities have included setting up informational booths at native plant sales, attending events such as Earth Day in the Garden, and working with second grade students at a local elementary school.



High school students trained by the Cal-IPC Student Chapter work with fifth graders at the Santa Rosa Plateau. Students set up experiments related to grassland restoration work at the site.

If you would like more information about the Cal-IPC Student Chapter, or are interested in keeping up-to-date on events, visit our website at calipsc.org or 'Like' our Facebook page at www.facebook.com/calipsc.

New and improved online California Invasive Plant Inventory!

Cal-IPC has a new, more powerful online system for using our Invasive Plant Inventory, the definitive reference for invasive plants in California. Through the new website, users have more options for getting summaries of information and for viewing each species' detailed Plant Assessment Forms.

First, the summary table (at www.cal-ipc.org/paf) now allows you to search for plants by Jepson ecoregion and/or habitat type. For example, you can search for all plants that invade forests in the Sierra Nevada. You also now have the ability to download the full Inventory into a spreadsheet, including full details from the plant assessment forms. This function

will help users sort or search the data for their own projects.

For each plant, the table links to its Plant Assessment Form, its Plant Profile page on our website, and its map on CalWeedMapper.

Information for the Plant Assessment Form for each species is now in an online screen format that replaces links to individual files. When viewing the score for each of the 13 criteria questions, you can read the explanation and citations that go along with it, and bring up the complete definition of a particular criteria to now what each score means. (You can still download the information as a pdf.)

It's always important to remember that the Inventory ratings of High, Moderate, and Limited are statewide ratings and may not reflect differences in different parts of California.

In addition to the 200 species in the Inventory, the webpage also provides access to our Watchlist, which contains another 200 plant species that have been observed in wildlands and may be a concern in the future. To submit information regarding a species you are concerned about, contact Science Program Manager Elizabeth Brusati at edbrusati@cal-ipc.org.

www.cal-ipc.org/paf

“Buy It Where You Burn It” campaign to stop forest pests

By Tom Smith, California Department of Forestry and Fire Protection

Perhaps you have seen a campground poster encouraging people not to move firewood, or maybe a billboard with the “Buy It Where You Burn It” slogan. The incentive and justification for this outreach campaign is simple – untreated firewood is a great vehicle for tree insects and diseases, including harmful invasive pests that are forever altering natural environments in California and the rest of the US. The threat is quite real – long distance spread of the Asian longhorned beetle, emerald ash borer, goldspotted oak borer, and polyphagous shot hole borer can occur via the transport of infested wood. The same is true for a multitude of other pests and diseases that go unseen in tree bark and wood, or incidentally hitch a ride on the surface of firewood.

California joined the firewood campaign in November 2010, when the nonprofit California Forest Pest Council passed a resolution leading to the formation of the California Firewood Task Force, a coalition of agencies,

organizations, and other stakeholders working to protect the State’s urban and wildland forests and natural environments



from invasive pests and diseases. The principle Task Force goal is outreach and education.

Throughout the nation, quarantines have been established for specific pests and some states have enacted laws restricting the movement of untreated firewood; however, regulations and laws have their limits. While most Californians value the State’s trees and forests, they often don’t understand threats to these resources or recognize that their personal actions can make a difference. Ultimately, the challenge is to educate the public about risks associated with firewood movement, as the collective cooperation of the general populace is our greatest hope for making a difference.

With its wealth of diverse landscapes, habitats, and species, California has much to offer and much to lose. The story of invasive pests and their potential impact in new environments is a basic ecological lesson, one about which, arguably, all Californians should know. To learn more about the California Firewood Task Force and the firewood issue, go to www.firewood.ca.gov.

Habitat restoration workday at Antioch Dunes for Earth Day

By Peter Beesley, Pacific Gas & Electric Company

On April 20, Cal-IPC members joined staff from Pacific Gas and Electric and Company (PG&E) and the US Fish and Wildlife Service (USFWS) for a volunteer habitat restoration day on PG&E property adjacent to the Antioch Dunes National Wildlife Refuge. PG&E is partnering with the USFWS to restore habitat for three critically endangered species—the Lange’s metalmark butterfly, Contra Costa wallflower and Antioch dunes evening primrose—found only on PG&E property and the adjacent refuge lands. The goal is to reduce the amount of invasive plant cover through a voluntary Safe Harbor Agreement. Cal-IPC volunteers focused on mechanically removing invasive winter vetch, yellow starthistle, tree-of-heaven, and Russian thistle to

improve habitat for the protected species. This is the second year that Cal-IPC has helped organize volunteer habitat restoration days on PG&E and refuge lands. Local Weed Management Areas, California State Parks, and the East Bay Chapter of the California Native Plant Society also participated. Read more

about the project at www.pgecorp.com/corp_responsibility/reports/2010/en_feature_02antioch.jsp.



Mendocino County stops northbound stinkwort

By Chuck Morse, Mendocino County Agricultural Commissioner

In October 2010, the Mendocino County Department of Agriculture was notified by a local weed warrior and member of the Inland Mendocino County WMA that they had found a significant stinkwort (*Dittrichia graveolens*) infestation near Willits. This was our first indication that stinkwort had arrived in the county. We surveyed the immediate area and mobilized the next day to hand-pull all the plants, enough to fill 34 garbage bags.



Stinkwort around a reservoir in Santa Clara County. Photo by Eric Wylde.

We quickly surveyed our major highway corridors (Hwy 101 and Hwy 20). We found infestations along our southern border with Sonoma County northward to the town of Hopland, but fewer plants north of Hopland, and only a few lonely pioneer populations north of Ukiah up to nearly the Humboldt County line. We realized that we were at a point where we could possibly control the plant versus having it overwhelm our ability to control it. As the leading edge of the stinkwort invasion heading north from the Bay Area, we decided to try to stop its spread.

In late summer and fall of 2011, the Ag Dept. went “all in” to stop the spread and dramatically reduce the population of stinkwort. Low speed highway-edge survey and spot treatments were employed to address any plants found. The late

and extended maturation of this plant necessitated three survey/treatment passes per season to capture all the plants as they matured. Many locations required extensive work beyond the road edge where the stinkwort had infested larger waste areas and road cuts associated with the highway. Pioneer populations were hand-pulled by the Ag Dept. or were treated by private landowners after learning about this invasive weed.

Last year, our crews once again went on the hunt for stinkwort. It was a pleasant surprise to see a noticeable decrease in the overall population densities compared to 2011. The same protocol of repeated survey and treatment was employed in 2012. We found that the months of July, August, September, and October constitute the treatment window. Any sooner and this late-maturing plant is easily missed. Any later and you're into post-bloom/mature seed territory.

This Asteraceae species sets mature seed very quickly after bloom, so dealing with it pre-bloom is almost a necessity. In both 2011 and 2012, the Ag Dept. spent over 200 man-hours/year on stinkwort. This represents a significant commitment and demonstrates how serious we are about



Dittrichia graveolens. Photo by Bob Case.

not allowing stinkwort to become established in Mendocino County. In 2013, we will once again survey and treat stinkwort. We are hoping for dramatic reductions in population numbers after two full years of the program, as we have done everything within our means to prevent new seed production.

Contact the author at morsec@co.mendocino.ca.us. California Agriculture published an article on the expansion of stinkwort in its April-June 2013 issue, available at californiaagriculture.ucanr.org/archive.cfm.



Bags of removed stinkwort removed as part of “rapid response” effort in Mendocino County. Photo by Chuck Morse.

Cal-IPC adopts new membership structure for individuals and organizations

Cal-IPC's membership is the foundation for the organization's work. Your expertise and commitment inform all that we do. And your membership dollars provide a vital component of our annual budget.

Starting in April, Cal-IPC instituted several changes to our membership structure. These changes were considered carefully by our staff and board of directors, and are intended to give Cal-IPC the strong financial support it needs for meeting its ambitious mission while providing members with even better access to information and advocacy.

Memberships are current for 12 months from renewal date. (Previously, memberships were on a calendar year basis).

Membership provides a registration discount to events, including the Symposium. Symposium registration will

no longer include automatic membership renewal. (You have the option to join or renew with your registration.)

Joint memberships with SERCAL and CNGA are no longer being offered. We continue to strongly support their work, but need to streamline our membership administration.

Organizational Members receive one, two three or four Professional-level memberships for individuals within their organization. They also receive recognition in all issues of this newsletter for 12 months, ranging from a listing by name up to a quarter-page ad.

For online information on membership, please see www.cal-ipc.about.membership. Please let us know if you have any questions or concerns by emailing us info@cal-ipc.org. Thank you for your work, your ethic of stewardship, and your support of Cal-IPC!

Individual Membership:

Stewardship Circle	\$1000
Champion	\$ 500
Partner	\$ 250
Professional	\$ 100
Friend	\$ 50
Student	\$ 25

Organizational Membership:

Benefactor	\$2000
Patron	\$1000
Sustainer	\$ 500
Supporter	\$ 250



Spring Campaign for Climate Adaptation a success!

Thanks to generous contributions from individuals and organizations, Cal-IPC met its goal of raising \$30,000 this spring for our work on climate adaptation!

Cal-IPC's climatic suitability modeling helps predict which invasive plant species are most likely to expand dramatically with a warmer climate. We need to be strategic about investing our resources in addressing invasives on the ground so we get the greatest conservation benefit, and this analysis helps us be "climate-smart" in our approach.

Wildlife agencies at the state and federal levels are working to determine ways to give wildlife the best chances of adapting to new conditions. California's Wildlife Action Plan is being revised with ambitious goals. Stressors for each regional habitat type are assessed (including their interactions with climate change) followed by strategies to address those stressors. Cal-IPC is being funded by the Wildlife Conservation Board to take the first cut at assessing invasive plant impacts for regional habitats and generating project specifications that will provide sustainable conservation benefit. Your support from our Spring Campaign is a critical complement to this public funding. Thank you!

Bull thistle (*Cirsium vulgare*) at Tioga Pass in the Sierra, an example of invasive plants moving to higher elevations. Photo by Bob Case.

Thank You for Supporting our Work!

New Stewardship Circle Members:

Alicia Funk, Nevada City

Julia Kelety, San Diego

Spring Campaign Donors:

Mark Abramson, Paul Aigner, Edith Allen, Greg and Connie Archbald, Richard Arnold, Stephen Batchelder, Louise Beesley, Chris and Megan Beynon, Douglas Brannon, Ann Brenner, Bob Brenton, Norm and Marcia Brockbank, Sheilagh and Bob Broderson, Josh Brody, Wendy Butts, Jason Casanova, Mike and Patrice Chamberlain, Sarah Chaney, David Chang, Nona Chariello, Rebecca Coffman, Philippe Cohen, Sarah Connick, Helen Conway, Ellen

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Organizational Members



ACS Habitat Management
California Association of Local Conservation Corps
California Native Grasslands Association
California Native Plant Society
California Weed Science Society
Center for Natural Lands Management

City of Walnut Creek
County of Lake Agricultural Commissioner's Office
DriWater, Inc.
Dudek and Habitat Restoration Sciences, Inc. (HRS)
Forester's Co-Op
Habitat West, Inc.
Hedgerow Farms
Inyo County Water Department
National Park Service - California Exotic Plant Management Team
Pacific Gas and Electric Company
RECON Environmental / RECON Native Plants, Inc.
Rocky Mountain Elk Foundation
Santa Ana Watershed Association
SERCAL
Shelterbelt Builders, Inc.
Sierra Foothill Conservancy
Southern California Mountains Foundation

Sweetwater Authority
The Huntington Library
The Nature Conservancy
US Fish and Wildlife Service - Inventory and Monitoring Program
USDA Forest Service



Weed Wrench, 1st place in the 2012 Photo Contest, by William Welsch. See our website for photo contest details. You do not need to attend the Symposium to enter!



California Invasive Plant Council

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2013 Symposium
registration is open!
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THE WILDLAND WEED CALENDAR

UC Davis Weed Day

July 11

UC Davis

wric.ucdavis.edu/events/weed_day_2013.htm

Planning and Implementing Sustainable IPM Programs

August 11-24

Corvallis, OR

oregonstate.edu/conferences/event/ipmplanning

Conference on Marine Bioinvasions

August 20-22

Vancouver, BC

www.icmb.info

CNPS Rapid Vegetation Assessment

September 3-5

In the Sierras

www.cnps.org/cnps/education/workshops

Cal-IPC Symposium

October 2-5

Lake Arrowhead

www.cal-ipc.org/symposia

Central CA Invasive Weed Symposium

November 7

Paicines

ccius2013.eventbrite.com

Northern California Botanists

January 13-15, 2014

Chico

www.norcalbotanists.org

Western Society of Weed Science

March 10-13, 2014

Colorado Spring, CO

www.wsweedscience.org

“Global warming and biological invasions are two major agents of the global changes affecting our planet; these human-induced phenomena often work in synergy to contribute to the ongoing decline of biological diversity.”

- from “Wildlife in a Changing Climate,” Food & Agriculture
Organization of the United Nations, 2012, p.51, www.fao.org/forestry