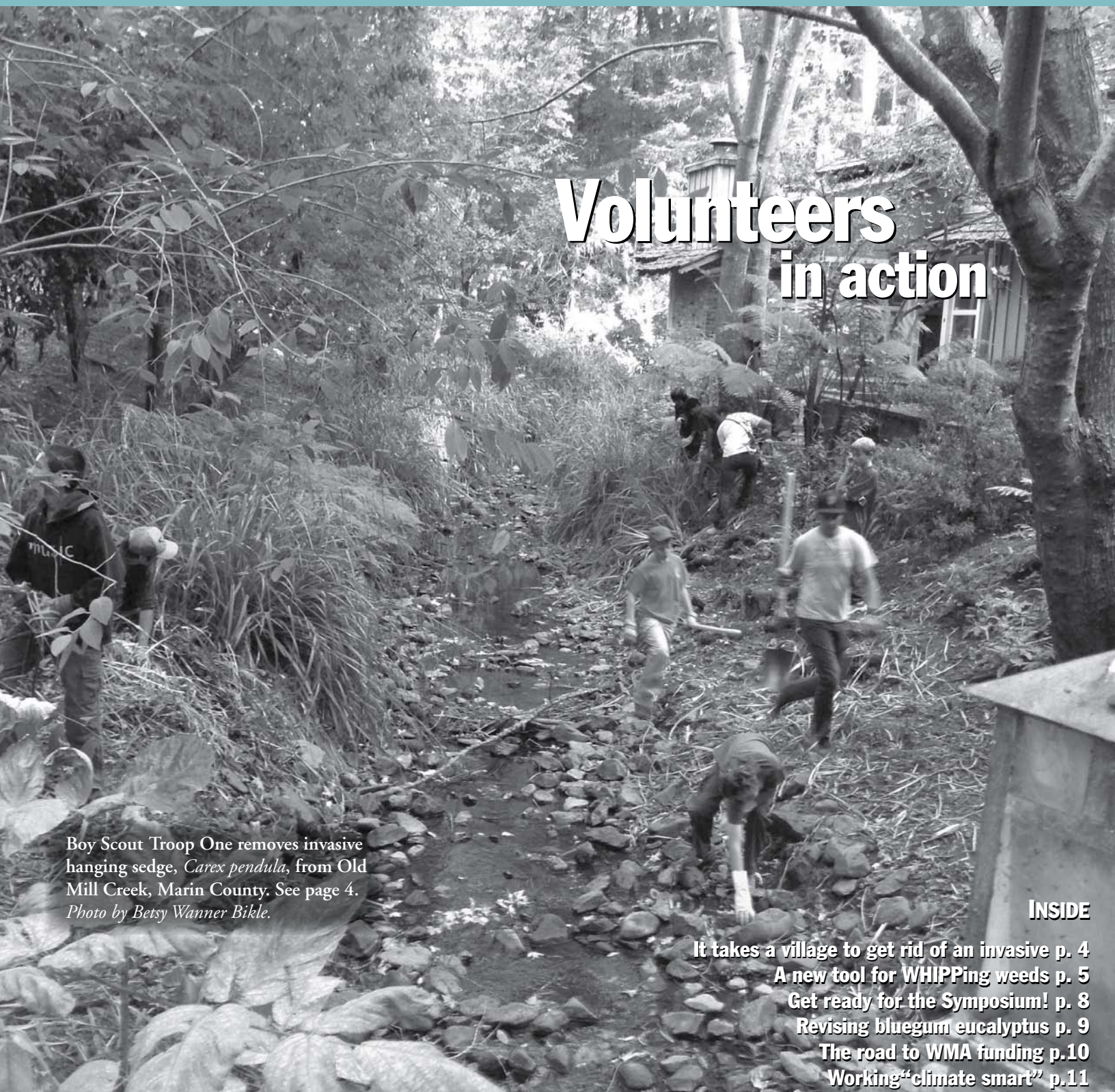
Vol. 22, No. 2 Summer 2014

Cal-IPC News

Protecting California's Natural Areas from Wildland Weeds

Newsletter of the California Invasive Plant Council



Volunteers in action

Boy Scout Troop One removes invasive hanging sedge, *Carex pendula*, from Old Mill Creek, Marin County. See page 4. *Photo by Betsy Wanner Bikle.*

INSIDE

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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.

Cal-IPC News
Summer 2014 - Vol. 22, No. 2

Editors: Doug Johnson & Elizabeth Brusati

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From the Executive Director

The volunteer contribution

Community volunteer projects, like the one organized by the Mill Valley StreamKeepers (page 4), are critical to stopping infestations at the urban-wildland interface. Such efforts do even more than protect the unique natural areas at hand. Because major invasive plant infestations can get their start in developed areas, these local efforts may also prevent more widespread problems.

Fifteen years ago there may have been a chance to stop stinkwort, *Dittrichia graveolens*, from spreading outside the Santa Clara Valley and a few other locations. John Beall of the San Mateo County Agricultural Commissioner's office raised the alarm, but there was not enough capacity for a coordinated response to get a handle on *Dittrichia*. Stinkwort is now found from Mendocino to San Diego, and into the Sierra Nevada.

One of the lessons we learned from this episode was that we must do more than focus on known invaders. Efforts like the Bay Area Early Detection Network brought more focus on anticipating the next problem species, and considering on-the ground intervention earlier on the invasion curve. This precautionary trend is also evident in PlantRight's recent addition of *Stipa tenuissima*, Mexican feather grass, to its list of horticultural plants to avoid in landscaping, despite the fact that the plant has not yet become a significant problem in wildlands. Likewise, Cal-IPC is gearing up to conduct risk assessment on our Watchlist species to determine which pose the highest risk for detrimental impact in the future.

Volunteers form a connection between the activities of professional land managers and our communities at large. They allow Californians to get their hands dirty with the realities of habitat stewardship, and to take ownership of their local environment. Some volunteer efforts, like the Friends of Five Creeks in the East Bay (whose leader Susan Schwartz won our 2012 Catalyst Award) also weave in cultural history that builds a deeper sense of place.

Volunteer efforts make a major contribution to our work. Their local projects can be integrated into broader landscape goals. The skills and knowledge developed in a local effort can be exchanged with other volunteers in the region. And their enthusiasm for stewardship can be shared among generations to create a genuine passion for California wildlands. For these reasons, Cal-IPC is looking at ways to coordinate diverse volunteer efforts at the regional level. The potential synergy is vital to our future success.

It's the water... Symposium 23 in Chico!

Our 23rd annual Symposium will be Oct. 8-11 at Chico State University, with theme sessions focusing on the intersection of wildland weed issues and water issues. Plus all the latest reports on management techniques, program design, and invasive plant research. Ken Moore and Joe DiTomaso will team up to give a training on woody plant control, and our field trips include a visit to Peace Valley in the Sutter Buttes. And did we mention the awards banquet at the Sierra Nevada Brewery? Join us! See p.8.

Correction: The table of biocontrol species in our last issue contained a mistake. Under yellow starthistle, the species *Urophora jaceae* should be *Urophora jaculata*.

Cal-IPC Updates

Symposium registration open. Cal-IPC 23 happens in Chico this October, complete with a banquet at the Sierra Nevada Brewery! See p.8.

AB2402 stripped of funding. The bill to renew the state's Weed Management Area (WMA) program passed the Assembly floor with a 73-0 vote, but with funding removed. Cal-IPC continues to pursue other avenues to secure WMA funding in next year's budget. See p.11.

WHIPPET online. With support from the USDA Forest Service and the US Fish & Wildlife Service, a beta version of this multi-species population prioritization tool is now available. See p. 6.

Weed management on military bases. Staff met with resource managers at Camp Pendleton and other bases in California to help set strategy, with support from the Dept. of Defense Legacy Program.

Work begins on Sierra meadows. Cal-IPC is contracting with Placer County, the Truckee River Watershed Council and others to control wildland weeds in and around meadows this summer, as part of a project funded by the Wildlife Conservation Society's Climate Adaptation Fund.

New training video posted. Ken Moore of the Wildlands Restoration Team demonstrates methods for controlling woody species. Thanks to Lynn Overtree for providing the footage. *www.cal-ipc.org/fieldcourses/videos*

New board members. Four new members have been appointed by the Cal-IPC Board of Directors: Morgan Ball of Wildlands Conservation Science, Elise Gornish and Marie Jasieniuk from UC Davis, and David McNeill from the Baldwin Hills Conservancy. See p.14.

New staff. Christina Ripken has joined Cal-IPC for 2014 as Conference Coordinator. She brings nine years of experience organizing events, including the Conference on Tropical and Subtropical Agricultural and Natural Resource Management (TROPENTAG).

Invasive species mixer. Join us at the Ecological Society of America conference in Sacramento on Wed., Aug. 13, from 6:30-8:00pm. We'll also be giving a talk that day in the session on "Science at Non-Profit Conservation Organizations" (OOS 32). *www.esa.org/am*

Talking to landscape architects. Cal-IPC's Doug Johnson spoke on a panel for the San Francisco chapter of the American Society of Landscape Architects on the issue of invasive ornamental plants.

Wildland Weed News

Other Updates

PlantRight adds species. The partnership added Mexican feather grass (*Stipa tenuissima*), water hyacinth (*Eichhornia crassipes*), and yellow water iris (*Iris pseudacorus*) to its list of plants that nurseries and consumers should avoid. Retail nurseries can pledge to follow PlantRight's list, have their staff trained on invasive plants, and receive acknowledgment on PlantRight's website. *www.plantright.org*

SoCal land manager listserv. Join a new listserv to discuss new invasive threats, restoration questions, and other topics of interest. To subscribe, contact Sandy DeSimone at *sdesimone@audubon.org.*

Boating & Waterways now a division of State Parks. The group controls *Egeria densa*, water hyacinth, and South American spongeplant in the Delta. *www.dbw.ca.gov/BoaterInfo/AquaInvSpec.aspx*

Western Governors urge federal cooperation on invasive species. Saying that invasive species create economic and ecological damage across western landscapes, governors want to work with federal agencies to develop and implement a new National Invasive Species Management Plan. *www.westgov.org/news/298-news-2014/583-western-governors-urge-federal-cooperation-on-invasive-species*

New climate-smart guide. The National Wildlife Foundation published "Climate-Smart Conservation: Putting Adaptation Principles into Practice" with broad-ranging guidance for designing and carrying out conservation in the face of a rapidly changing climate. *www.nwf.org/What-We-Do/Energy-and-Climate/Climate-Smart-Conservation/Guide-to-Climate-Smart-Conservation.aspx*

Future invasive plant "hotspots." Australian researchers modeled suitable habitat for 292 naturalized plants to determine locations that may be most suitable for a large number of potentially invasive plants later this century. They propose pre-emptive management in such "hotspots." *weedfutures.net*

Mexico invasive species website. With information in both Spanish and English, lists of invasive species, the national strategy plan, and information about prevention and collaboration programs. *www.biodiversidad.gob.mx/invasoras*

Rancher describes worst drought in a lifetime. As a rancher and president of the California Cattlemen's Association, Tim Koopmann is keenly aware of the tough choices ranchers in California are making to cope with drought. He is an Aldo Leopold Award recipient and a founder of the California Rangeland Conservation Coalition. Hear an interview at *www.accuweather.com/en/weather-news/cattle-ranchers-forced-to-cull/26595624*

Breaking News! Help remove Mexican feathergrass from production.

The largest grower of Mexican feathergrass in California (see update above) has agreed to phase out the plant and sell the remaining inventory to PlantRight at a discount. PlantRight will dispose of the plants safely but first it needs to raise funds for this purchase. An anonymous donor will match each donation up to a total of $10,000. This is a unique chance to catch a new invasion early and to reward a horticultural company for its willingness to change its practices. Funds need to be raised quickly.

Make a donation at www.plantright.org (click on "Stop California's Next Invasion") or http://bit.ly/PlantRight.

It takes a village… to get rid of an invasive!

By Betsy Wanner Bikle, Mill Valley StreamKeepers, www.millvalleystreamkeepers.org

The Mill Valley watershed drapes down Mount Tamalpais to Richardson Bay about 6 miles north of San Francisco. Thousands of homes within about 8 square miles have changed the setting, once redwood forest, oak woodlands and wetlands. Now tidy homes sit on filled lands, with palms, lavender, eucalyptus, and in the streamside redwoods: *Carex pendula* (hanging sedge) planted by home garden designers.

A section of Old Mill Creek before *Carex pendul*a was removed from the streambanks. Photos by the author.

The *Carex* seems to have been planted in a single garden, at 310 Cascade Avenue streamside along Old Mill Creek about 20 years ago. But it has spread downstream about two miles to the start of tidal salty water. Now we spot it up in the hills along road sides. No *Carex pendula* grows upstream on Old Mill Creek from that first property, although a few plants can be found high and dry above the first garden.

In amateur botany-speak, *Carex pendula* is a sedge whose blades reach about 2 feet high; it sports a stem protruding above with drooping pendulous seed heads. The roots are not very deep – only about 8 inches. Short rhizomes extend the reach of individual plants. The plant can be distinguished by whitish underside of the leaf blades; this is different from the native sedge found along our streams which has shiny bright green undersides.

The plant is on the early detection list for the Bay Area Early Detection Network although we have not heard yet of other extensive invasions. However, it has been noticed by vegetation managers of the Marin Municipal Water District who have seen one clump near the Bowknot – well away from a stream. South of San Francisco, a small amount has been seen in the extensive Midpeninsula Regional Open Space District.

The Mill Valley StreamKeepers have started a pilot project to begin to address the *Carex* thanks to a $2,500 grant from the Cereus Fund of the Trees Foundation. We have conferred with native plant nurseries and riparian restorationists and informally with permitting agencies.

The Mill Valley StreamKeepers board decided to have two streamside removal locations: the location of the initial residential planting and a location downstream on public land. Both are easily viewed by the public. We were thrilled to have a Mill Valley Eagle Scout candidate, Jake Marquis, take on the project. His contractor father, David Marquis, and the whole Troop One helped in the effort. Meetings with the home landowners, the city Department of Public Works, the native plant nursery in Mill Valley, and permitting agencies were preliminary to the weekend of activity. We were very pleased to have the permission of the homeowners, Bill and Corinne Lenehan, to do the clearing and replanting.

We dug up the invasive *Carex* in October, the best time of year for working in our streams which have threatened steelhead. We planted replacement natives at the same time. The city hauled away truckloads of *Carex* to a composting facility, and the Boy Scouts provided the labor, tools, and pizza!

Additional work was done at the downstream end of the infestation along the Arroyo Corte Madera del Presidio. The property owner was especially enthusiastic about the work as he himself had been an Eagle Scout and his sons also are Eagle Scouts. The city helped by taking all the green material pulled out to a compost facility.

Several neighbors and folks walking along the stream were interested in our work and pleased to hear that they too could improve the habitat on their property without need of a permit. Mill Valley StreamKeepers hopes to make a one-page brochure with mission, directions, and pictures for streamside property owners. This will definitely fit into city and county goals.

The only money we spent on this project was $1,875 for native plants: about 35 lady ferns, 60 chain ferns, 60 *Juncus patens* rushes, grasses, and two flowering

native shrubs. The California Native Plant Nursery in Mill Valley gave us a reduction in price due to the size of the order.

We are dedicated to enlisting the help of more streamside homeowners and the City's Department of Public Works. They need information and inspiration to turn back this invasion and return the stream to a more hospitable place for our threatened steelhead and the eventual return of coho salmon.

California Invasive Species Action Week

August 2-10, 2014

www.dfg.ca.gov/invasives/ActionWeek/

This new event sponsored by the California Dept. of Fish and Wildlife aims to increase awareness and promote participation in the work on California's invasive species. Youth poster contest! Hand out brochures and add your event to the online schedule.

Youth volunteers with the Mountains Restoration Trust help remove invasive red swamp crayfish (*Procambarus clarkii*) from Malibu Creek in Southern California. Photo by John Burnap.

Dads provided support for the Boy Scouts of Troop One, who took the lead on removing the hanging sedge.

Carex pendula... and yelling at the ocean

Andrea Williams, Marin Municipal Water District and Bay Area Early Detection Network

Sometimes I think my weed work is like yelling at the ocean; hours of intense struggle, and I can make the tide go out. My work accomplished, I stop and turn my attention elsewhere. But the tide returns. Those of us who live in coastal areas know to never turn your back on the ocean (and that you can see really cool stuff when the tide is out)—and those of us who do weed work know our attention must return to the weed patches we have worked to follow up!

And so it is with hanging sedge (*Carex pendula*). This 6-foot riparian up-and-coming weed (and BAEDN target) is only known from a few watersheds in California and the Pacific Northwest. It looks burly, but doesn't actually have much of a root system. What it does have are cascading waves of seeds, seeds that can be spread by water and wildlife in addition to people planting them. Hanging sedge can form dense patches, altering stream dynamics and vegetation. I have been unable to find a definitive estimate of seed life, but a good guess for the genus is 10+ years. That means at least a decade of returning to stem the tide, and communicating with other folks in the "tsunami zone" of spread.

Eradication of hanging sedge will be similar to the effort curve of red sesbania (*Sesbania punicea*), with the good news/bad news that we have begun work while populations are less widespread but that it's a much less obvious plant (and in one instance may have been planted by someone thinking they were planting slough sedge, *Carex obnupta*). Keeping on populations to ensure no further seed set will be key to hanging this sedge out to dry.

A new online tool for WHIPPing weeds: whippet.cal-ipc.org

By Elizabeth Brusati and Doug Johnson, Cal-IPC

To prioritize which invasive plant populations to control, land managers need to consider species biology, species impacts, size and location of populations, and feasibility of control. Prioritizing individual populations rather than species requires accounting for spatial factors like "how isolated is the population?" and "how near is it to a vector of spread like a road?" This can be a lot of information to evaluate, especially given the number of species, populations, and site values a land manager may have to take into account.

WHIPPET (Weed Heuristics: Invasive Population Prioritization for Eradication Tool) was developed by UC Davis and the California Dept. of Food and Agriculture to help analyze this large amount of information. WHIPPET is based on an algorithm that combines numerous species and population factors (including spatial analysis) to create a ranked list of populations suggesting which are highest priority. With support from the USDA Forest Service and the US Fish & Wildlife Service, Cal-IPC has developed an online version of WHIPPET, making the tool more accessible and easier to use at a range of geographic scales.

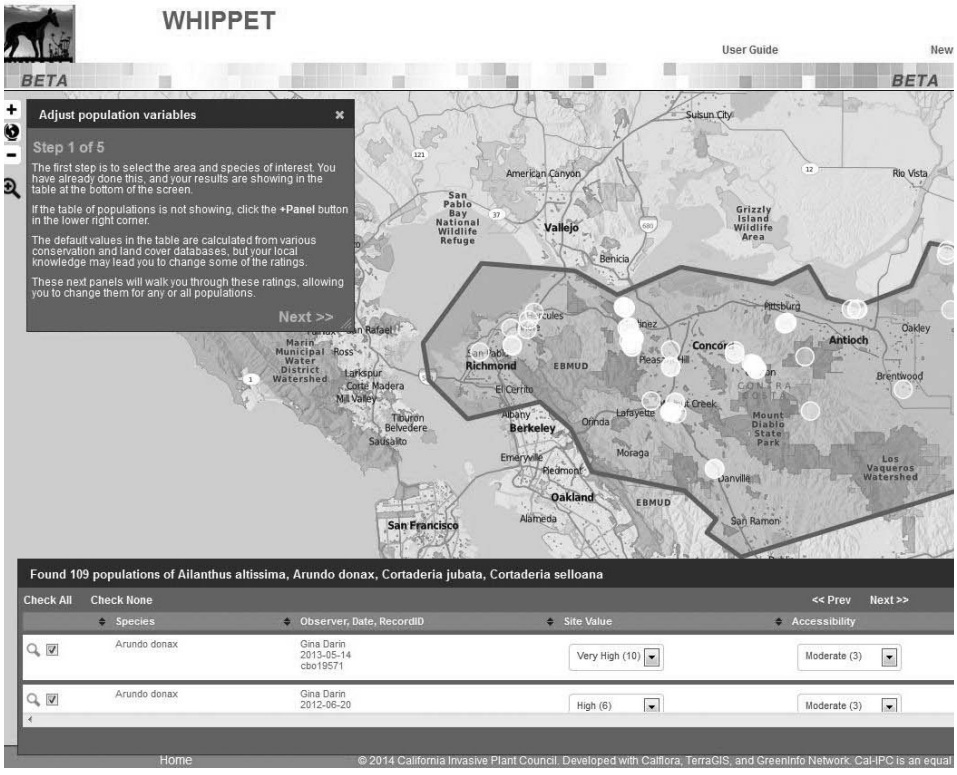
WHIPPET draws population information from Calflora (www.calflora.org), which contains over 200,000 invasive plant locations. This means that you will need a Calflora contributor account to log in to WHIPPET. You can use existing public data posted on Calflora as well as data that you upload to Calflora (which can be kept private as "unpublished" data if necessary).

WHIPPET currently contains data for the 210 species on the Cal-IPC Inventory. Up to 50 species can be chosen for one WHIPPET run (but selecting a large number of populations may require several minutes for the system to retrieve information, so narrowing your species list can be a useful first step). WHIPPET focuses on eradication, so it will work best for species that are not widespread.

WHIPPET is designed to work for users at a range of spatial scales and with a range of knowledge. Throughout its development, we worked to balance the needs of different users. Thus the system includes programmed default values as well as options for customizing various parameters.

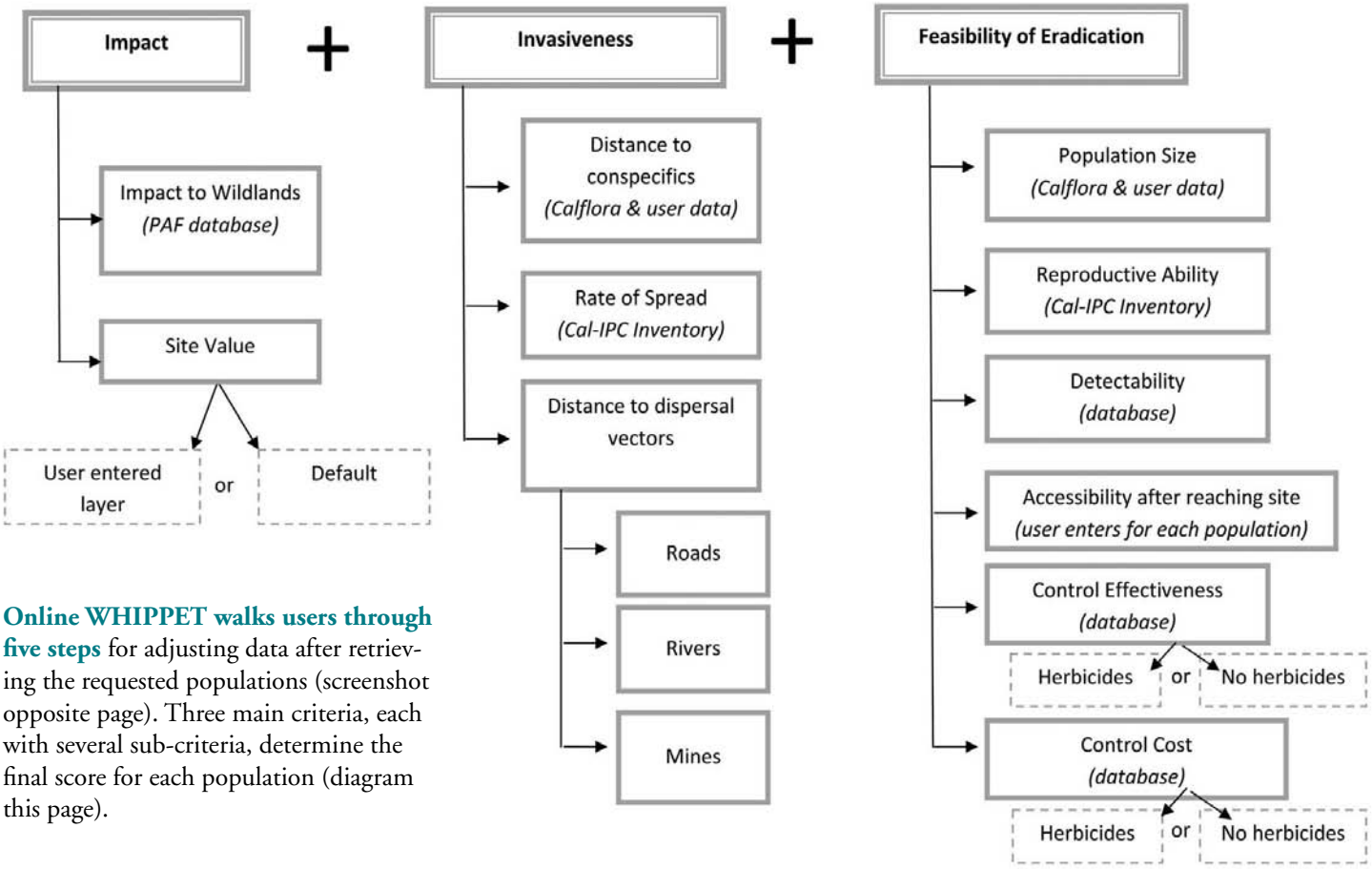
Adjusting data

Species information in WHIPPET comes from each plant's assessment for the Cal-IPC Inventory. WHIPPET also has built-in databases for parameters like relative control effectiveness and cost. GIS layers for roads, rivers, mines, and site value are already loaded to aid geospatial calculations. Together, these default values mean that running WHIPPET can be as simple as choosing only the species and region you wish to analyze.



However, if you want to further customize your analysis, parameters for each population can be adjusted based on your knowledge of local sites. WHIPPET walks you through these options. You may want to run WHIPPET several times in order to see the effect of changing scores for population parameters such as "accessibility" or "site value."

In addition to making changes to parameters for each population, you can also choose to upload your own customized GIS layers for Roads and for Site Value. (In both cases, the customized layer replaces the defaults for the area it covers.) The default WHIPPET Roads layer is based on a standard ESRI layer of public roads. Users may want to create a custom layer to incorporate additional park roads or even trails and levees. The default Site Value scores are based on the California Dept. of Fish & Wildlife's Areas of Conservation Emphasis (ACE II) layer, which aggregates numerous wildlife parameters. Users may prefer to use their own custom Site Value layer that instead prioritizes sites based on sensitive species, cultural resources or other factors.



Online WHIPPET walks users through five steps for adjusting data after retrieving the requested populations (screenshot opposite page). Three main criteria, each with several sub-criteria, determine the final score for each population (diagram this page).

Resulting prioritization

WHIPPET generates recommendations for prioritizing invasive plant management. Two caveats are important to keep in mind. First, like any decision-support tool, WHIPPET provides results that are only as good as the available data on which the analysis is based. Second, the results are not intended as a prescription; they may not include all factors important to a particular site.

However, WHIPPET's output includes both maps and a table that shows the full analysis so you can judge how the factors combine to generate the final recommendation, and then adjust accordingly. The online User Guide recommends steps to take after running WHIPPET to refine your results.

Next steps

Cal-IPC will use WHIPPET in its upcoming projects, including regional planning for the California Wildlife Conservation Board. The US Fish & Wildlife Service will use WHIPPET to prioritize management on California refuges. The California Dept. of Water Resources plans to use WHIPPET for restoration work as part of the the Bay Delta Conservation Plan and the Central Valley Flood Protection Plan.

WHIPPET is in beta version and your feedback will help us refine the tool. If you have questions or find problems, please contact us at mapping@cal-ipc.org.

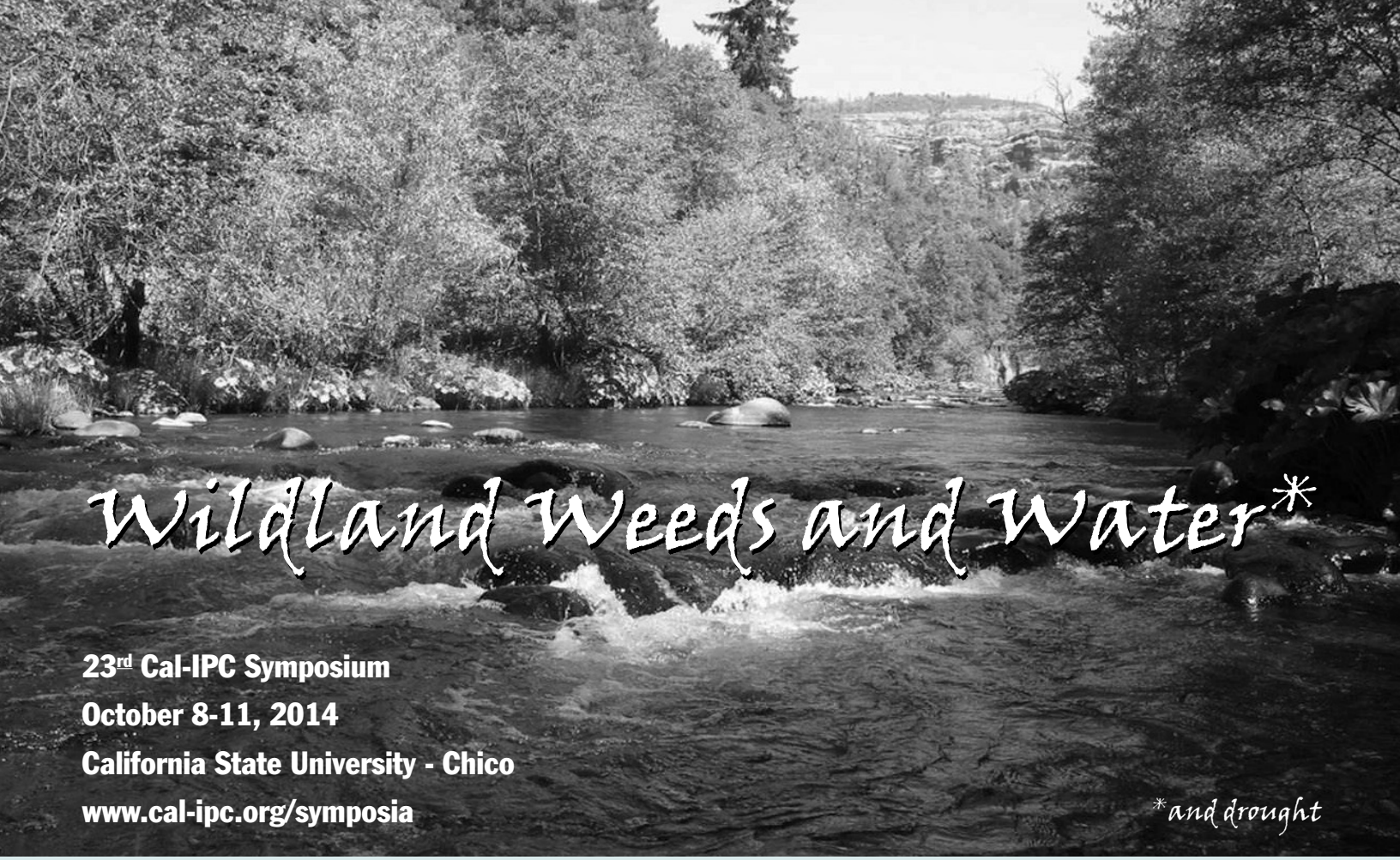
Acknowledgments

Funding was provided by the USDA Forest Service, Special Technology Development Program; the US Fish & Wildlife Service Inventory and Monitoring Program; and the California Wildlife Conservation Board.

The California Dept. of Water Resources contributed Gina Darin's time. Gina developed WHIPPET as part of her Master's thesis, and continues to improve the desktop version, which offers enhanced customizaton for those with GIS capability. Contact her at gsdarin@water.ca.gov for more information.

Features

- **Analyzes hundreds of populations simultaneously.**
- **Species information included – no need to research.**
- **No GIS required (but results can be imported into GIS if desired).**
- **Default values provided, custom adjustments supported.**
- **Map output shows ranked priorities.**
- **Table output shows calculation details and supports further analysis and map creation.**
- **Full user guide with instructions, background, and limitations.**



Wildland Weeds and Water*

23rd Cal-IPC Symposium
October 8-11, 2014
California State University - Chico
www.cal-ipc.org/symposia

*and drought

Join your fellow land managers, researchers, and conservationists in Chico for information and inspiration! Fall colors will be out, most of the treatment season will be behind us, and it will be time to cogitate and celebrate. We look forward to seeing you there, where the Cascades, the Sierra Nevada and the Great Central Valley all come together!

Trainings, Oct. 8

Woody Weed Control Field Course, Bidwell Park, 10am-4pm: Mechanical and chemical techniques for removing woody plants. Instructors include Joe DiTomaso and Ken Moore. (Separate registration required)

DPR Laws and Regulations, 6-8pm: We will apply for 2 hrs of DPR Laws & Regs continuing education credits. (Included with your Symposium registration)

Paper and Poster Sessions, Oct. 9-10

Keynote speaker: Tom Griggs of River Partners in Chico (retired), a pioneering restoration organization that applies agricultural techniques to large-scale restoration projects.

Other featured speakers include Tim Koopmann, winner of the Aldo Leopold Award, President of California Cattlemen's Association, and a founder of the California Rangeland Conservation Coalition.

Sessions

Talks by invited experts in theme sessions:

Riparian Restoration

Weeds as Water Wasters

Complex Problems, Creative Solutions

Plus talks by a range of speakers in "contributed" sessions:

Prevention and Early Detection

Innovative Tools & Techniques

Mapping & Monitoring

Invasive Plant Biology & Impacts

Discussion Groups

Interact with your peers to discuss key issues:

Control Methods: Ask the Experts

Decision-Support Tools for Prioritization

Working with Volunteers

Careers in Invasive Species & Restoration

Working on the Wildland-Urban Interface

Revegetation & Competitive Planting

Registration

Register by September 10 for the $295 early-bird rate! Discounts for Cal-IPC members, Symposium volunteers, presenters, and students. Rates and information on discounted hotel room blocks are listed on our website.

Students

Student Paper & Poster Contest *(with $250 prizes!)*

Cal-IPC Student Chapter Lunch

Career Panel

Student registration rate only $100!

Continuing Education Credits

Cal-IPC will apply for continuing education credits from the Dept. of Pesticide Regulation, including 2 hours of Laws & Regs and 12 hours Other. The field course and field trips will have additional credits.

We will also apply for credits from the Society for Range Management.

Credit hours will be posted on our website in late summer.

Sponsorship

Get visibility for your organization's work while supporting the Symposium and Cal-IPC programs! A range of levels are available. Sponsor benefits including free Symposium registration, exhibit space, recognition at the event, and professional-level memberships for your attendees.

Photo from Western Rivers Conservancy, www.weternrivers.org

Sierra Nevada Brewery!

...is this year's location for the Thursday evening Social Hour, Raffle & Silent Auction, and Awards Banquet. The brewery is just two miles from Chico State and will provide the perfect atmosphere to win weed-pulling tools, gourmet food, books, or trips in our annual raffle and auction. Promises to be memorable!

Awards

See who receives this year's Golden Weed Wrench for Land Manager of the Year, Jake Sigg Award for Dedication and Vision, Catalyst Award, and Organization of the Year!

Photo Contest

Get out your camera/smartphone/tablet and impress your fellow weed workers! We're working to expand the formats of this year's contest.
www.cal-ipc.org/symposia/photocontest.php.

www.cal-ipc.org/symposia

Field Trips, Oct. 11

Peace Valley in the Sutter Buttes / Oroville State Wildlife Area (8am–5pm)
Experience the Sutter Buttes, eroded volcanic lava domes that make up "the world's smallest mountain range"! Public access is limited—this is a special opportunity to visit Peace Valley, a State Parks property located within the Buttes.

Stoney Creek / Kopta Slough / Woodson Bridge Natural Preserve (8am–5pm)
Meander through multiple riparian restoration sites with Tom Griggs of River Partners (our keynote speaker). Tom will showcase his pioneering riparian restoration work at the 708-acre Kopta Slough.

Big Chico Creek Ecological Reserve (8am–12pm)
A unique opportunity to enjoy a much-loved refuge as a Chico local! Stewarded for the last decade by Dr. Paul Maslin, the Reserve protects nearly 4,000 acres of diverse canyon and ridge habitats, including 4.5 miles of Big Chico Creek. Reducing invasive plant impacts is a key management goal for the Reserve.

***Plus:* Calflora Training** (separate registration through Chico St. Herbarium)
Calflora staff will be on hand to provide a hands-on training on the use of Observer, their smartphone tool for logging observations in the field, and to give an update on the development of Weed Manager.

Photo of the Sutter Buttes from the Sutter Buttes Ninety-Nines. www.sutterbuttes99s.org

Revisiting bluegum eucalyptus: Cal-IPC proposes adjustments to its assessment

By Kristina Wolf, UC Davis, and Doug Johnson, Cal-IPC

California has a love-hate relationship with Australian eucalyptus trees. We are accustomed to their unmistakable profile, and for many they evoke nostalgic memories of seashore excursions. For others, they are bark-shedding behemoths that clog coastal streams. And for others they are culprits in the 1991 Oakland Hills fire which claimed 25 lives. Jared Farmer provides a thoughtful cultural history of eucalyptus in *Trees in Paradise: A California History*.

Since its inception in 1996, Cal-IPC's Invasive Plant Inventory has listed bluegum eucalyptus (*Eucalyptus globulus*) and redgum eucalyptus (*Eucalyptus camaldulensis*). (Some twenty other eucalyptus species have been introduced to California but have not become invasive.)

One of the atypical aspects of assessing these eucalyptus species is that they were purposefully planted for a range of uses, including fuel breaks, firewood, and aesthetics, and today's stands are those same populations. Some stands in moist areas are actively regenerating and spreading, while others in dry areas are not, and few if any isolated new populations occur outside of these planted areas. So we are gauging ecological damage resulting from intentional planting.

In recent years, eucalyptus species have become highly politicized, as fire safety plans call for clearing thousands of trees in Oakland, Berkeley, San Francisco, Scripps Ranch and other communities. One has only to read the extensive commentary following online articles to sense the division and passion of those interested in our eucalyptus.

Some of this energy has come Cal-IPC's way, because our assessment of ecological impact is sometimes used in arguments for removing a particular stand. Advocates have questioned aspects of Cal-IPC's 2006 assessment, and we agreed that this assessment was dated and should be revisited. New literature is available, and the original assessment was completed as part of a major initiative during which some 200 plant species where assessed. Given the intense interest in eucalyptus, the assessment merits thorough re-examination.

All invasive plant species have stronger impacts in some areas than in others; eucalyptus are no exception. And every land management situation has its own unique set of factors to consider: biological, cultural, and economic. Cal-IPC's assessments aim to provide science-based information on ecological impacts that can serve to inform that aspect of any particular land management decision.

We convened an expert team to revisit our assessment of bluegum eucalyptus. We examined literature submitted by those critical of the assessment, and collected additional literature to document the determinations made for each criterion in our assessment system. A review draft is now available (see www.cal-ipc/ip/inventory/eucalyptus) and comments are being solicited through July 31.

Changes in the draft assessment

Two significant changes are proposed for the assessment. The first is to increase the level of abiotic impacts (criterion 1.1) from Moderate to Severe. The increase is due primarily to the major changes to fire regime where dense stands of eucalyptus are established. This is especially true when comparing to grasslands, where eucalyptus was often planted, but it is also true relative to native woodlands and riparian areas. Another key abiotic impact is the high groundwater use of eucalyptus.

The other change involves downgrading the ability of eucalyptus to spread. Several criteria in section 2 have been re-scored, including: the role of disturbance on establishment (eucalyptus for the most part require active planting to get established); innate reproductive potential (eucalyptus reproduction is relatively slow); and potential for human-caused dispersal (bluegum eucalyptus is virtually gone from the horticultural trade).

These changes do not alter the overall rating of *E. globulus* as "Moderate" in the Cal-IPC Inventory. They do, however, provide a more current and thorough foundation for informing decision-making that includes consideration of ecological impacts.

www.plantright.org

AB 2402: The rocky road to WMA funding

By Doug Johnson, Cal-IPC

Given the slight thaw in the state's budget freeze, Cal-IPC sponsored AB 2402 (Buchanan) this spring to pursue renewed funding for the state's Weed Management Area program and weed biocontrols program. The bill has received support letters from150 conservation organizations across the state.

The bill passed the Assembly Agriculture Committee unanimously, and more recently, the Assembly floor on a 73-0 vote. In between, however, the $2.5 million in funding was removed because there the bill was unlikely to make it through the appropriations process.

What does this mean? For funding, we continue to explore ways to influence the legislature and the Governor's office as they finalize the budget, making the case that invasive plant management is critical for long-term drought relief (see sidebar). It saves groundwater and helps reduce wildfire risk.

Even without funding, moving the bill forward does have benefit. For one it shows continued interest in the program. It also makes small but important changes to the structure of the WMA program that can help it operate more effectively. The portion of funding directed to program support has been increased to enable coordination with hundreds of partners in 58 counties.

AB 2193 (Gordon)

Meanwhile, the Habitat Restoration and Enhancement Act also passed the Assembly floor unanimously. The bill would give the CA Dept. of Fish & Wildlife the ability to approve voluntary, small-scale (up to 5 acres) habitat restoration and erosion-control projects within 60 days in an effort to facilitate such projects. The approval would be in lieu of existing CDFW permit requirements such as Section 1600 Lake and Streambed Alteration Agreements and Section 2081 Incidental Take Permits.

We will keep you posted on progress as the legislative session and the budget continue to unfold. We are monitoring possible water bonds for this fall, and a possible park bond for next year, both of which could contain funds for on-the-ground restoration work.

Invasive Weeds Awareness Day at the Capitol atendees before capitol visits, March 12.

Weed Management as Drought Relief

1 million acre-feet wasted each year by yellow starthistle in the Central Valley

Gerlach (2004) found that yellow starthistle (*Centaurea solstitialis*), consumes between 1,050-1,200 m^3/hectare/year of excess water relative to exotic annual grasses, the most common ground cover in California rangelands. Pitcairn *et al.* (2006) estimated 2.6 million net acres of yellow starthistle in the Central Valley (Sacramento and San Joaquin River drainages) in 2002 and more than 14 million gross acres infested throughout California.

Converting to acre-feet:

(1,125 m^3/ha/yr) (0.0008 ac-ft/m^3) (0.4 ha/ac) = 0.36 acre-feet water per acre YST per year

Total for the Central Valley:

(2,600,000 acre YST) (0.36 ac-ft/acre YST/year) = 940,000 ac-ft/yr

Thus approximately one million acre-feet of water are consumed by yellow starthistle each year in the Central Valley above and beyond what would be consumed by annual grasses.

References

Gerlach, John D., Jr. 2004. The impacts of serial land-use changes and biological invasions on soil water resources in California, USA. *Journal of Arid Environments,* 57: 365–379

Pitcairn, Michael J., Steve Schoenig, Rosie Yacoub and John Gendron. 2006. Yellow starthistle continues its spread in California. *California Agriculture*, 60(2): 83-90. californiaagriculture.ucanr.org

Climate-smart invasive plant management: Getting from "you should" to "here's how"

By Virginia Matzek, Santa Clara University; Sandy DeSimone, Audubon Starr Ranch; and Elizabeth Brusati, Cal-IPC

Land managers are often told that they need to plan for climate change, that today's weed work may be nothing but wasted effort in the warmed-up, dried-out California of the future if their management techniques and restoration plans don't adapt. The problem is this advice is rarely accompanied by any practical suggestions on *how* to plan. What exactly is a manager supposed to do?

Cal-IPC made a first attempt at filling that information gap with a special half-day event preceding last year's Symposium in Lake Arrowhead. The intent of the "Climate-Smart Land Management Workshop" was to help managers overcome the paralysis we sometimes feel in the face of uncertainty and complex recommendations from academic researchers, and to facilitate a move into active decision-making mode.

The 30 participants heard talks on uncertainty in climate modeling, principles for climate-smart land management, and frameworks for envisioning future scenarios and planning for ecological restoration. The heart of the workshop, though, was a participatory exercise, based on the real-world experience of planning for climate change at Audubon Starr Ranch in Orange County, which gave attendees some practice in deciding whether climate change warranted a change in strategy for controlling particular weed species. Several lessons emerged from the workshop:

No. 1: Uncertainty is not going to go away. The challenge is to embrace it, not resist it. Everything in climate-smart land management is uncertain, from the models we use to decisions on what species belong in what climate zone, to the forecasts of rainfall and temperature patterns a half-century from now, to the efficacy of management techniques like biocontrol. These uncertainties not only add up, they multiply. Luckily, most managers are already familiar with taking an adaptive management approach. Climate change will require managers to be even more adaptive in their thinking and practice. A manager's toolbox in an uncertain future will need to include: formulating management plans to resemble risk analyses; trying more high-risk approaches along with traditional techniques; monitoring more extensively (more variables, longer timeframes) to capture phenological changes and responses to a shifting climate; and deciding which undesirable species deserve the most priority.

No. 2: Scenario planning can help focus our attention on the most important drivers of change. Scenario planning is a useful technique for envisioning what the future will look like and evaluating how different decisions might play out depending on future conditions. Originally developed by the military to prepare responses to unusual (but plausible) strategic situations, scenario planning involves choosing a few important unknown variables, and then imagining storylines or scenarios that go along with different combinations of those variables. For instance, local precipitation in California might increase or decrease in the future and a biocontrol agent for a particular species may be approved or not approved for release. A manager can imagine what might change, and how to react, for the four possible scenarios (e.g., increased precipitation + new biocontrol agent, decreased precipitation + no biocontrol agent, etc.)

No. 3: Resilience will come from building in redundancies, and planning for success under multiple scenarios. One of the principles of climate-smart planning is to build in redundancy—multiple seed sources, increased size and connectedness of preserved or treated areas, high ecological and species diversity, etc. Similarly, when a project or plan is designed, alternatives should be judged for their potential success under multiple future scenarios, and the best choice is the project that has the most success across scenarios, not the project that performs the best under just one likely scenario. Nat Seavy of Point Blue Conservation

Audubon Starr Ranch is taking climate change into account while planning and monitoring restoration projects. Photo by Sandy DeSimone.

Science took workshop participants through several examples, including a look at the possibilities for tidal marsh restoration in the San Francisco Bay Area. Using scenario planning with two main drivers—high or low sea level rise, and high or low rates of sediment supply to the newly restored marshes—planners found that selecting restoration sites under the assumption that any one of the four scenarios would occur actually had the best overall success, compared to fitting a particular approach to a single scenario. Managers should take some solace in the fact that, although the future is unknown, it is possible to plan for a variety of outcomes.

No. 4: Dang… this is really hard when you sit down to do it. The last part of the workshop was an exercise in decision-making, based on real issues faced by Audubon Starr Ranch in working to protect songbirds and their habitat. We affectionately termed this exercise "The Matrix" because we compiled information into a tabular format to facilitate analysis.

Using summary information from the scientific literature, participants were asked to decide on the major climatic drivers of future change in the vegetation at Starr Ranch, such as increased summer drought or wetter winters. For each invasive plant species at the site, the participants evaluated whether the changing climate variable would increase, decrease, or leave unchanged the site's suitability for that plant. This was also done for several native plant species that currently provide significant wildlife habitat for songbirds at Starr Ranch.

A second part of the matrix asked participants to evaluate the benefits of the species, if any, to wildlife. This allows for the possibility that these wildlife services could be provided by non-natives in the future if key native plants are no longer able to provide them. Then, the sum of the information, and the managers' intuition and understanding about vegetation management, were used to determine if any change in Audubon Starr Ranch's priorities should be considered—that is, whether any invasive species should be made higher or lower priority, or if control of any species should be abandoned altogether.

Of course there were no "right" answers determined at the workshop—only time (and monitoring!) will tell. But participants reported that the exercise helped them think more creatively and expansively about how they will manage invaders in the future, rather than continuing to pursue a single path forward.

At Cal-IPC, we were inspired to develop this workshop becausewe did not find scenario planning exercise or climate adaptation plans specific to invasive plant management in published literature or online. Our closest analog was the excellent work done in support of Point Blue Conservation Science's climate-smart riparian restoration project. We also followed principles for climate adaptation laid out by various agencies and compiled on the California Climate Commons website.

Useful references are linked from the Cal-IPC climate adaptation webpage at *www.cal-ipc.org/ip/climateadaptation*. Resources from the workshop itself are also available on the page, including pdfs of the speakers' talks and the species matrix. For more information about the matrix exercise, please contact Sandy DeSimone, sdesimone@audubon.org, 949-858-0309.

Charting a course on Santa Cruz Island

The Cal-IPC board of directors convened its annual strategic retreat in May, this year on Santa Cruz Island. The Nature Conservancy and the University of California Reserve System hosted Cal-IPC. Together with key staff and board alumni, the meeting planned future strategy and provided the inspiraton of seeing species found nowhere else, like the Santa Cruz Island kit fox.

Special thanks to UC Reserve Director Lyndal Laughrin who made sure we had everything we needed during our stay at the UC Santa Cruz Island Field Station, and Eamon O'Byrne, TNC's California Islands Project Director, for opening up the Santa Cruz Island Preserve and providing logistical support. Thanks also to the Elkhorn Slough Foundation for helping cover food costs. To keep costs down for the organization, board members covered their own travel costs to the island.

Lyndal Loughrin has served as the UC Reserve Director on Santa Cruz Island for over 40 years. Plein air painting, such as this portrait of Dr. Laughrin overlooking Valley Anchorage, has a deep history on the island.

Welcome new board members!

The Cal-IPC Board of Directors appointed four new members to two-year terms. **Morgan Ball** is Executive Director of Wildlands Conservation Science in Ventura. He's a wildlife biologist and habitat restorationist with experience in coastal and riparian habitats in Central California and the northern Channel Islands. **Elise Gornish** is a postdoctoral scholar at UC Davis working on arid land restoration and invasive species management. **David McNeill** is Executive Officer of the State of California's Baldwin Hills Conservancy. He oversees the long-term acquisition and planned development of open space into much needed parkland for southwest Los Angeles County. **Marie Jasieniuk** is Associate Professor in the Plant Sciences Department at UC Davis where she focuses on identifying the origins and routes of spread of invasive plants. Learn more at *www.cal-ipc.org/about/staff.php*.

Morgan Ball

Elise Gornish

David McNeill

Marie Jasieniuk

Thank You for Supporting our Work!

Supporting Members

[New and renewing]

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Peter Beesley, Grass Valley
Gary Gero, Glendale
Karen Paulsell, Oakland
Jake Sigg, San Francisco
Peter Schuyler, Santa Barbara

Champion ($500)

Jason Casanova, La Crescenta
Doug Gibson, Encinitas
Georgia Stigall, Woodside
Michael Swimmer, Palm Desert
Charles & Marilyn Wright, Irvine

Partner ($250)

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Bob Case, Concord
Darlene Chirman, Santa Barbara
Jennifer Funk, Orange
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Individual Membership

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

Members receive *Cal-IPC News* and discounts on Symposium registration.

Organizational Membership

Benefactor	$2000	Pro membership for 8	Quarter-page
Patron	$1000	Pro membership for 6	Eighth-page
Sustainer	$ 500	Pro membership for 4	Logo
Supporter	$ 250	Pro membership for 3	Name

Organizations receive Professional membership for individuals and newsletter recognition for 12 months.

See www.cal-ipc.org for full membership details

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The Wildland Weed Calendar

California Invasive Species Action Week
August 2-10, statewide
www.dfg.ca.gov/invasives/ActionWeek

Ecological Society of America
August 10-15, Sacramento
www.esa.org/am

California Adaptation Forum
August 19-20, Sacramento
www.californiaadaptationforum.org

Sierra Nevada Alliance
September 6-8, Kings Beach
www.sierranevadaalliance.org

Pacific NW Invasive Plants Conference
September 16-17, Seattle, WA
depts.washington.edu/uwbg/education/conferences/2014InvPlants/InvPlants2014

Cal-IPC Symposium
October 8-11, Chico
www.cal-ipc.org/symposia

Natural Areas Association Conference
October 15-17, Dayton, OH
naturalareas.org/conference

California Naturalist Conference
October 17-19, Pacific Grove
calnat.ucanr.edu/2014conference

Bay-Delta Science Conference
October 28-30, Sacramento
scienceconf2014.deltacouncil.ca.gov/

Central Coast Invasive Weed Symposium
November 6, Monterey Bay
cciws2014.eventbrite.com

California Association of RCDs
November 12-15, Ventura
www.carcd.org/annual_conference0.aspx

CNPS Conservation Conference
January 13-17, 2015, San Jose
www.cnps.org

"Just over one third of species protected under CMS Appendix I and II are under some level of threat from Invasive Alien Species... Predominant threat mechanisms are predation, habitat loss, disease transmission, competition and interspecific hybridization."

~ From the Executive Summary of *Review of the Impact of Invasive Alien Species on Species Protected under the Convention on Migratory Species (CMS)*, a 2013 report prepared by the Invasive Species Specialist Group, International Union for Conservation of Nature, report to the United Nations.