

Dispatch

Managing stinkwort	4
Control with a spray drone	5
Protecting Sierra meadows	6
Discussing IPM with Bakke and Trumbo	8
2020 Cal-IPC Symposium	9
PlantRight 2.0	10
Conservation Legacy Ancestral Lands	12





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

*Protecting California's environment and
economy from invasive plants*

STAFF

Doug Johnson, Executive Director
Jutta Burger, Science Program Director
Agustín Luna, Director of Finance,
Operations & Administration
Bertha McKinley, Program Assistant
Claire F. Meyler, Communications & Marketing Manager
Dana Morawitz, Conservation Program Manager

BOARD OF DIRECTORS

President: Laura Pavliscak, Santa Clara River Conservancy
Vice-President: Drew Kerr, Invasive Spartina Project
Treasurer: Doug Gibson, Nature Collective
Secretary: Julia Parish, American Conservation Experience
Past President: Gina Darin, Cal. Dept. of Water Resources
Jason Giessow, Dendra, Inc.
Sarah Godfrey, Center for Natural Land Management
Marla Knight, Klamath National Forest (retired)
Tanya Meyer, Yolo County Resource Conservation District
LeeAnne Mila, El Dorado Co. Ag. Dept.
Juli Matos, National Park Service
Steve Schoenig, Schoenig Consulting
Baldeo Singh, Sacramento Conservation Corps
Amanda Swanson, Cal. Dept. of Fish & Wildlife
Marcos Trinidad, Audubon Center at Debs Park

STUDENT LIAISON

Katherine Brafford, UC Davis
Robert Fitch, UC Santa Barbara
Clarissa Rodriguez, UC Riverside
Noah Teller, UC Riverside

Affiliations for identification purposes only.

Cal-IPC Dispatch

Spring 2020 – Vol. 28, No. 1

Editor: Doug Johnson

Associate Editor: Claire F. Meyler

Designed by Melanie Haage

Published by the California Invasive Plant Council. Articles
may be reprinted with permission. Previous issues are
archived at cal-ipc.org. Mention of commercial products
does not imply endorsement by Cal-IPC. Submissions are
welcome. We reserve the right to edit content.

Follow us:



FROM THE DIRECTOR'S DESK

Nature bats last

By Executive Director Doug Johnson

Conceptually, we know that at any time we can be felled by a tree branch, hit by a car, or any number of things that change – or end – things for us abruptly. Californians face fires, floods, landslides, droughts, earthquakes and more, reminding us of our vulnerability.

I once had a bumper sticker reading, “Nature bats last.” We need to recognize the degree to which we depend on – and are at the mercy of – the natural world. The novel coronavirus shows the danger of not doing so. Epidemiologists have been clear about what can happen. As powerful as our technology may be, we

are still vulnerable. In addition to technological limits there are social inequities across our communities.

Not long ago, we worried about paralysis from polio. My sixth grader and I looked over information on that disease and talked about how fortunate we are to get shots, unpleasant as they may be. In the land management world, we know that strategic action is necessary to stop problem species from spreading. There is always a cost to action or inaction. Tradeoffs and limitations are a given. Let's hope we can better integrate this recognition into more sustainable practices.

Tomorrow's conservation leaders



Cal-IPC conducted trainings for three conservation corps organizations this winter. Local land managers shared information on ecology, plant lifecycles, weed control, and restoration careers. Corps members from Oakland Civicorps (above) show off certificates of completion.

Photo: Dana Morawitz

On the cover

County Agricultural Dept. staff survey a meadow for invasive plants in Alpine County. They are also checking water depth in marshy areas to help plan control work. Meadows provide critical habitat and water retention functions in the Sierra, and Cal-IPC has worked with regional partners to support control work in meadows. Our article on page 6 describes the products of

a recently completed project that developed (1) a system for prioritizing meadows for control work, (2) a research plan for studying invasive plant impacts in Sierra meadows, and (3) best practices for avoiding the spread of invasive plants when undertaking meadow restoration. Photo courtesy of El Dorado & Alpine Counties Depts. of Agriculture.

Wildland Weed News

CAL-IPC UPDATES

2020 Cal-IPC Symposium and State-wide WMA Meeting – Planned for Chico, Oct. 27-30, with special sessions on wildfire and weeds. See page 8.

Regional plans – Cal-IPC has funding from the California Dept. of Food & Agriculture to coordinate regional planning efforts for invasive plant management across the state. This will leverage local Weed Management Areas (WMAs) to generate landscape-level strategies.

Arundo mapping complete – Cal-IPC has completed detailed mapping of *Arundo donax* distribution across Central Valley waterways. The dataset is posted online as well as an impacts report and recommendations for ways partners across the region can begin removal efforts.

Weed work in Lassen – Cal-IPC will partner with the Lassen National Forest to initiate Canada thistle control on the forest, including NEPA permitting.

Rare plants and weeds – The California Dept. of Fish & Wildlife has funded Cal-IPC and the Santa Barbara Botanic Garden to explore the impacts of invasive plants on rare native plants on the central coast.

OTHER NEWS

NISAW webinars online – Webinars from this year's National Invasive Species Awareness Week are posted on NAISMA's Youtube channel. Topics include aquatic invasive species, triclopyr, firewood movement, and the National Invasive Species Council.

Inventory updates

Cal-IPC has added four species to the Inventory as Watch species: perennial sweet pea (*Lathyrus latifolius*), *Myoporum* or ngaio tree (*Myoporum laetum*), golden wreath wattle (*Acacia saligna*), and Sydney golden wattle (*Acacia longifolia*). These species were assessed using the Plant Risk Evaluator (PRE) tool as part of the PlantRight program's annual round of assessments and scored "High risk."

Invasion syndromes – An international team of 29 researchers published a paper describing a predictive approach based on pathways, species traits, and recipient ecosystem characteristics. *Biological Invasions*, March 2020.

JEDI blog – Former conservation biologist Marcelo Bonta writes the JEDI Heart blog on how to navigate issues of justice, equity, diversity, and inclusion "with love." His report, *Transforming the Movement*, presents ways that foundations can support environmental groups like Cal-IPC in capacity building in this area.

Western Weed Action Plan – Western states weed management coordinators have put together a plan for managing invasive plants in the sagebrush biome.

Pest Prevention By Design – the San Francisco Dept. of the Environment has produced guidelines for design features and planning considerations that can prevent pest infestations — including weeds — in managed landscapes. sfenvironment.org

Classic botanical illustrations – The Biodiversity Heritage Library has released 150,000+ images of scientific illustrations dating back hundreds of years, copyright free. Find specimens like knotweed (*Fallopia japonica*) and more on Flickr.



EPA on glyphosate

– The U.S.

Environmental Protection Agency released their interim registration review decision for glyphosate as well as responses to public comment received. EPA has been petitioned by a coalition of groups led by the Environmental Working Group around glyphosate residues found in breakfast cereals eaten by children. Residues result when farmers spray grain crops before harvest to help them dry quickly.

New approach to tree pests – A policy brief proposes a federal Center for Forest Pest Control and Prevention to implement strategic response using an ecologically-informed framework. 1/29/2020 in *Frontiers in Forests and Global Change*.

Earthworms – *The Atlantic Magazine* ran a lengthy article on what earthworms have done to North American forests, and the new threat of invasive jumping worms from Korea and Japan.

What's native anymore? – A discussion piece in *Yale Environment 360* challenges what will be considered "native" as the world warms and species shift their ranges.

EDRR in the spotlight – A special issue of the journal *Biological Invasions* is dedicated to the topic of Early Detection and Rapid Response (EDRR) and the importance of building EDRR capacity into our policy and program frameworks.

Grasses and wildfire – Multiple news outlets reported that invasive grasses play a role in California's increasing wildfire. See *Science Daily* (11/7/2019), *nature.com* (11/6/2019) and *Popular Science* (11/1/2019).

YOUR MEMBERSHIP

Thank you for keeping your membership current. Note that your expiration date is shown on the mailing label of this newsletter. Cal-IPC's success in meeting its mission depends on your vital support.

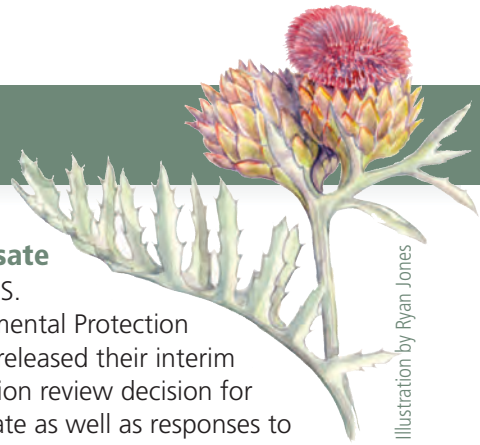


Illustration by Ryan Jones

Managing stinkwort

Kevin Woolen, IPM Specialist, San Francisco Water Enterprise

The Alameda Creek watershed is home to rare and threatened plants and animals, including California red legged frogs, California tiger salamanders, and Alameda whip snakes. The San Francisco Public Utilities Commission (SFPUC) owns and manages approximately 40,000 acres within the watershed to enhance water quality, natural resources, ecosystem services, rangeland production, and infrastructure while minimizing wildfire risk. Invasive vegetation impedes management efforts and impacts biodiversity.

The highest ranked invasive weeds include barb goatgrass (*Aegilops triuncialis*), purple starthistle (*Centaurea calcitrapa*), yellow starthistle (*Centaurea solstitialis*), artichoke thistle (*Cynara cardunculus*), and medusahead (*Taeniatherum caput-medusae*). Based on its spread over recent years, stinkwort (*Dittrichia graveolens*) has become a major concern.

Stinkwort is a ruderal species, a plant that invades disturbed areas. It favors riparian corridors, flood plains, lake margins, vernal pools, and seasonal wetlands, but really thrives in areas disturbed by human activity, such as roadsides, quarries, construction areas, heavily-grazed pastures — any area where soil has been disturbed.

Stinkwort was likely introduced through

	April	May	June	July	Aug	Sep	Oct	Nov	Dec
	rosette		bolt	vegetative		bud	flower and seed		dispersal
Milestone ¹									
Glufosinate-ammonium ¹									
Clearcast/Imox ²									
Vastlan/Capstone									
RoundUp Custom ¹									
Axxe									
manual (hoe or shovel) ^{2,4}									
manual (pull and bag) ^{2,4}									
manual (cut and bag) ^{3,4}									
mechanical (root removed) ⁴									

¹we used BioLink[®] Buffer & Penetrant to help cut through the resin-coated cuticle.

²removing the root.

³after Sept 22, cut plants at the base and bag them before seeds start to disperse.

⁴manual and mechanical methods carry some health risk from the plant.



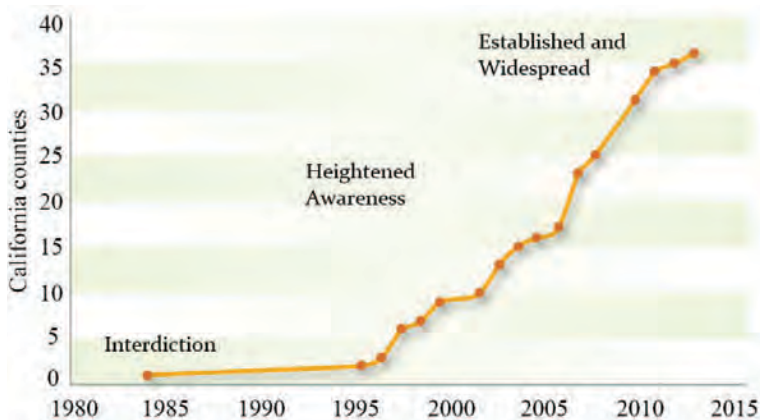
Stinkwort flowers. Photo: Robert E. Preston

to maintaining water supply infrastructure as a public utility, we use Cal-IPC's prevention best practices and our own internal policies.

Stinkwort is an erect, fall-flowering annual, growing to 3 feet tall in a pyramidal form. Seeds are short-lived, lasting up to three years in the soil. Their barbed pappus is readily dispersed by wind, rain, surface water, animals, and clothing. It may also spread via animal feed and vehicles. Stinkwort's foliage is intensely aromatic and can cause dermatitis, eye irritation, and headaches, which makes hand-pulling difficult. It's sticky, hairy, and glandular, which makes herbicide absorption a challenge.

In our stinkwort control efforts, we prioritize mitigation sites, new infestations, leading edges of infestation, and routes of spread. We have found success by taking an integrated pest management (IPM) approach with a variety of methods and herbicides employed at different times in the plant's life cycle (see treatment calendar). We use an a penetrant or acidifier to help herbicide applications overcome the cuticle barrier.

(Continued on page 11)



Approximate rate of spread of stinkwort (*Dittrichia graveolens*) in California as represented by the number of California counties where plant collections were made between 1984 and 2012. (Graphic from Brownsey, Kyser & DiTomaso (2013), data from the Consortium of California Herbaria)

contaminated gravel from local quarries and spread along transportation corridors. Access by consultants, contractors, and public utility operations staff may cause recurring introductions to the watershed. To reduce risk of invasive plant spread from activities critical

Plant Profiles

Find plant profile pages for stinkwort and each of 200+ other invasive plant species on our website with links to impacts, maps, Symposium presentations, *Dispatch* archives, and more at cal-ipc.org/inventory.

Controlling invasive plants with a spray drone

John Y. Takekawa, PhD, Operations Manager and Tim Edmunds, Biologist, Suisun RCD

Unmanned aerial systems, or drones, have recently begun to be used extensively for natural resource management activities such as mapping and habitat surveys. Novel applications include development of spray-drones that can apply chemical treatments for invasive plant control. A drone can get to hard-to-reach areas and make pinpoint applications, protecting both applicator and habitat. Spray drones reduce herbicide drift due to the drone's ability to fly very low to the ground and the down draft created by the drone's rotors.

Suisun Resource Conservation District (SRCD) works with private land-owners, agencies, and conservation organizations to benefit habitat in Suisun Marsh, the largest continuous brackish tidal wetland in the western U.S. Wetland managers are faced with the challenge of supporting diverse native flora and fauna while controlling expansion of invasive plants including perennial pepperweed (*Lepidium latifolium*) and common reed (*Phragmites australis*). In spring 2019, SRCD and partners (U.S. Geological Survey, California Dept. of Water Resources, and CASA 2100, a remote imagery firm) received a grant from the California Dept. of Food and Agriculture's Noxious Weed Program to test the use of spray-drones for controlling perennial pepperweed.

Several regulations must be followed for spraying with a drone. Firstly, operators need to be licensed by the Federal Aviation Administration (FAA) for unmanned aircraft under Part 107 of the Aviation Code. This requires taking a test at an approved FAA facility to get your Remote Pilot Certificate. Secondly, operators must be licensed by California Dept. of Pesticide



The six-rotor drone carries 3.5 gallons of herbicide. Each set of batteries powers a 14-minute flight. All photos courtesy of authors.

Regulations (DPR) to spray using an aircraft. After passing their exam, operators receive an unmanned pest control aircraft pilot certificate.

We worked with Leading Edge Associates (LEA) to field test spray-drone herbicide treatments on pepperweed at SRCD's Lower Joice Island managed wetland. Herbicide was applied in late May when the managed wetlands were drained for habitat work. We used LEA's six-rotor drone that carries 28.5 pounds (3.5 gallons) of herbicide in an onboard tank with two spray booms that cover a 10-foot swath. The spray-drone flew for 14-minute sessions on two batteries,



The spray-drone enables low-impact treatment in sensitive, difficult to access marsh areas.

which were then rotated for two charged batteries. Herbicide was refilled from a 100-gallon nurse tank. We were able to treat several acres of flowering pepperweed during our one-day trial. Based on the trial, LEA suggested that it may be possible to treat up to 100 acres in a day.

We operated the spray-drone manually, using the onboard camera to visually identify invasive plants and conduct spray treatment. This allowed for surgical precision with minimal overspray and highly efficient use



The operator uses the drone's onboard camera to identify target plants and apply herbicide precisely.

of chemicals. The spray drone can also be pre-programmed to spray weed populations along transects or plots. This would require first mapping weed populations from aerial imagery. We plan to continue to develop our methods by integrating improved imagery analyses to better detect invasive plant patches and increase efficiency of herbicide applications.

Contact the authors at jtakekawa@suisunrcd.org and tedmunds@suisunrcd.org

Protecting Sierra meadows

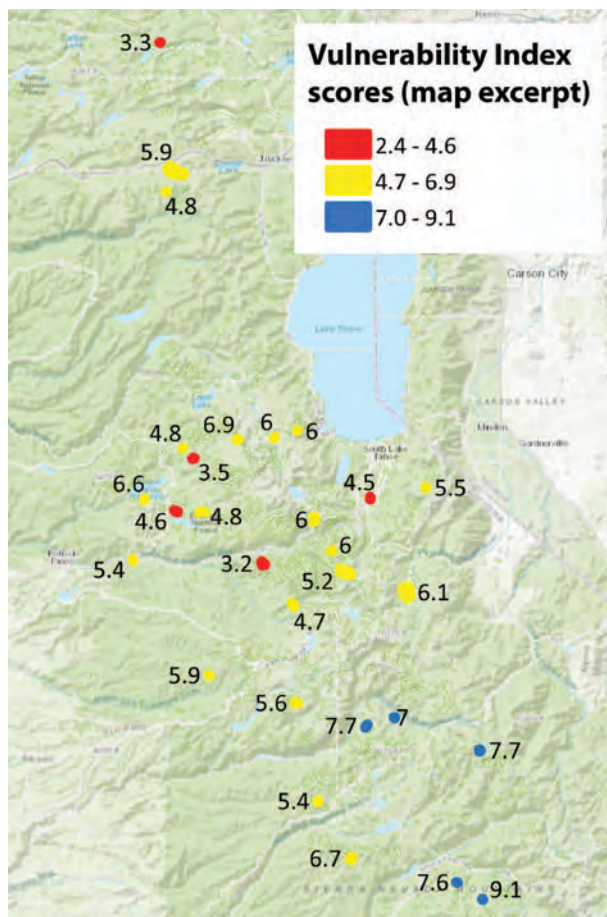
Doug Johnson, Cal-IPC

The Sierra Nevada, John Muir's "Range of Light," is a celebrated part of our natural heritage. Among the iconic craggy peaks and sweeping forests are wet meadows where snowmelt keeps streams flowing year-round and supports diverse grasses, wildflowers, and shrubs. These meadows play a vital role in the lives of wildlife species in the region, from songbirds to frogs, trout to bears.

Invasive plants have long been recognized as a threat to the region's wildlife for their range of biotic and abiotic impacts. Not only can they exclude native plants and alter the vegetation community that supports wildlife, some species may also increase water losses and wildfire. The California Natural Diversity Database (DFW 2012) lists 65 sensitive species directly threatened by invasive plants in the Sierra, and California's Wildlife Action Plan identifies invasive plants as a top threat to wildlife in the Sierra.

To date, the Sierra has been less severely impacted by invasive plants than other regions of the state. The region is protected in part by climatic conditions at higher elevations. But, as California's climate warms, and as human activity in the mountains grows, many invasive plant species are finding hospitable range farther into the mountains.

To protect Sierra meadows from invasive plants, Cal-IPC developed three tools to help with invasive plant management (funding provided by the National Fish & Wildlife Foundation): a "vulnerability index" ranking for meadows; a research plan to better



Excerpt showing some of the 100 randomly selected meadow complexes. Higher scores indicate higher ecological value and threat of impact from invasive plants. Find the full map in the Vulnerability Index final report in Cal-IPC's online library.

understand invasive plants' impact on meadows; and a guide for preventing invasive plant spread during meadow restoration.

Ranking meadows

The UC Davis dataset lists some 17,000 meadows in the region (<https://meadows.ucdavis.edu/>). It is important to be able to prioritize where to invest limited resources for invasive plant management. Cal-IPC developed its Vulnerability Index (VI) ranking system based on the Invasive Plant Inventory and Early Detection Prioritization Tool (IPIEDT)

from the US Fish & Wildlife Service. We used eight criteria, four of which are scored automatically using GIS and four that require expert input.

The criteria assess the ecological value of the meadow, the meadow's risk of invasion, and the status of invasive plants in the meadow. Cumulative scoring prioritizes meadows that have high ecological value, high risk of invasion, and few weeds present.

From the UC Davis dataset, we consolidated nearby meadows into approximately 4,000 meadow complexes. We then randomly selected 100 meadow complexes (hereafter referred to as meadows). To score each meadow we used GIS data: roads layers, the California Natural Diversity Database, CalWeedMapper, and layers for meadow connectivity and meadow capacity as refugia (from Morelli et al. 2016).

For other criteria, such as a meadow's general ecological integrity and current invasive plant condition, we conducted interviews with regional experts from National Forests, National Parks, County Agricultural Depts., Cal. Dept. of Fish & Wildlife, and the Cal. Native Plant Society. Experts had familiarity with some meadows; other meadows had information available from other sources; but many of the meadows were relatively unknown.

Meadow VI scores ranged from 2.4 to 9.1. Higher elevation meadows tended to score higher, indicating greater vulnerability. Size of meadow did not correlate with VI score. To make results most useful to land managers, we broke VI scores into five factors: meadow value/risk of invasion, current weediness, size,

accessibility, and level of information available.

The first factor, “meadow value and risk of invasion,” captures the essence of a meadow’s vulnerability: what could be lost and how imminent is the threat of losing it. The “weediness” factor tells a manager if there are weeds there to be worked on now or if prevention measures are more appropriate. The factors of “size” and “accessibility” relate to scale of potential impact and feasibility of management. The “level of information available” factor provides a confidence check on data and helps assess the relative importance of reconnaissance to collect additional information before formalizing an assessment of the meadow.

Given the level of effort required to assess these 100 meadows, it is not clear that there is an efficient process for scoring all 6,000 meadow complexes in the region using this methodology. Much of the information depended on a handful of experts, and even their level of knowledge on sites was limited. Moving to an assessment that only uses GIS will be necessary and may be possible as high-resolution geospatial data becomes more available.

A new Sierra Meadow Prioritization Tool for restoration, developed by a team led by Point Blue and available online, provides momentum for more powerful GIS-based assessment in the future that could integrate invasive plant management prioritization. Local expert knowledge will remain critical to refining prioritization.

Researching impacts

We prepared a plan for how researchers might gauge the impacts of invasive plants on meadow hydrology, carbon storage, and wildlife. We reviewed

existing literature and proposed a plan based on knowledge gaps that we found. Studies focus on hydrologic function and wildlife; the role of invasive plants is largely unstudied.

We recommended focusing on moist meadows at mid-elevation (5000’-7000’)



Recontouring Sierra meadows to restore hydrologic function can involve major disturbance, and protocols are essential for preventing accidental spread of invasive plants. Photo courtesy Sequoia & Kings Canyon National Parks.

to catch the leading edge of weeds moving into the region. While we encourage observational studies, our goal was to design a manipulative experiment that would begin to answer basic questions of what ecosystem-level impacts individual invasive plant species could have. We proposed a multi-tiered, scalable common garden experiment that compares eight non-native species that occur in mid-elevation meadows with eight functionally similar commonly occurring native meadow species.

To conduct the experiment, one would set up three 4m by 4m grids, with each species planted in 1m² plots. Each of the grids would have a different subsurface moisture regime to simulate a range of moist meadow conditions. Species could be compared based on: above-ground biomass production and soil organic carbon accumulation (surrogates for greenhouse gas assimilation), growth rate, water use efficiency, impact on soil moisture at three depths, biomass, and

number and diversity of arthropods occurring on them (surrogates for direct contribution to food web and diversity). Results would indicate which species might be most detrimental to a meadow and could inform decisions about management.

Preventing weed spread

Sierra meadows are targets of large projects aimed at restoring hydrologic function. Projects can involve massive soil disturbance which can inadvertently introduce and spread invasive plants. It is essential that this work be conducted in a way that reduces potential for weed spread.

We produced best practices aimed specifically at the project timeline and procedures typical of meadow restoration projects.

Cleaning vehicles, purchasing weed-free restoration materials, and disposing of biomass appropriately: these approaches need to be standard operating procedure. Together with similar resources we developed for preventing weed spread in heavy tree-mortality zones, we aim to help those working in the Sierra make sure best practices are in place to protect vulnerable areas from invasive plants.

Find products mentioned in this article in Cal-IPC’s online library at cal-ipc.org/library and read more about the project at cal-ipc.org/sierrameadows. For further information on Sierra meadow conservation efforts, check out the Sierra Meadows Partnership at sierrameadows.org

Literature cited:

Morelli, TL, C. Daly, SZ Dobrowski, DM Dulen, JL Ebersole, ST Jackson, et al. 2016. “Managing climate change refugia for climate adaptation.” *PLOS ONE* 11(8): e0159909.

The importance of IPM: A conversation with David Bakke and Joel Trumbo

By Doug Johnson, Cal-IPC

Earlier this year, I had the pleasure of discussing IPM — integrated pest management — with two recently retired experts. David Bakke served as Pesticide Use Specialist & Invasive Plants Program Manager for the US Forest Service, State and Private Forestry here in Region 5, covering California and Pacific territories. He grew up in Marin County, studied forestry at UC Berkeley, and worked on the Eldorado National Forest for many years before moving to the regional office in Vallejo. At last year's Cal-IPC Symposium, he received our 2019 Jake Sigg Award for Vision and Dedicated Service.

Joel Trumbo served as the IPM Coordinator for the California Dept. of Fish & Wildlife (CDFW) for almost 30 years, starting in 1990. In 2019, he became the Environmental Program Manager for CDFW's Lands Program overseeing management of ecological reserves and wildlife areas across the state. Joel grew up in southwest Placer County, studied Plant Science at UC Davis, and spent the early part of his career working on pesticide regulatory issues in production agriculture.

Doug Johnson (DJ): Midpeninsula Regional Open Space District, which put together a strong IPM plan several years back, just did a review of new papers on the chemicals they use, and plan to do this annually.

David Bakke (DB): That's useful, if new papers are interpreted in the context of existing scientific literature or existing risk assessments like the ones completed by the Forest Service. New papers don't necessarily add new information.

Joel Trumbo (JT): There's a deep literature. Our best knowledge is based on the preponderance of data, the weight of evidence. You can't go on one case study alone. Outliers need to be looked at carefully.

DJ: You need to look at published studies very carefully, not just their methods and conclusions, but also to understand the authors' motivations, whether they skew pro-industry, anti-industry, or are fairly agnostic — which is what we need.

DB: In some cases, the statistics don't support the conclusion, or the research question is not asked in a clear way. One needs to distinguish between high-value and low-value studies. Overall, it's good to review new publications, but it needs to be done in a smart way, otherwise time (and money) is wasted. As soon as you publish a risk assessment, it's dated because new information is constantly coming out.

JT: There's a psychology at play where we gravitate toward information that confirms what we believe to be true. It has more to do with our beliefs than with science. This dynamic has always been there, but the volume has been turned up recently with glyphosate concerns.

DJ: There are some regions where past herbicide use by the Forest Service has left communities deeply mistrustful.

DB: Early in my forestry career, concern over herbicides was a big deal. After the Vietnam War, 2,4-D was associated with Agent Orange, which was sprayed widely and had health impacts. The forestry profession was a bit tone deaf and widely used 2,4-D throughout tree plantations on the north coast. This resulted in some areas, like northwestern California, being suspicious about any herbicides. That history is very much still alive. NEPA (the National Environmental Protection Act) had just started, too, and at the time EAs (environmental assessments) were only 2-3 pages long. Now, there is much greater public involvement, which is



Joel Trumbo recently retired from the California Dept. of Fish and Wildlife. Photo courtesy of Joel Trumbo.



David Bakke recently retired from the US Forest Service, State and Private Forestry. Photo: Claire F. Meyler.

overall a good thing, though it can slow or stop restoration projects.

JT: I come from a production agriculture background. Like Dave, I've seen how concerns about pesticides that used to be common in farming — but are no longer used now — still influence how the public views pesticide impacts. I've heard people at meetings say, "This is DDT all over again," without realizing just how far things have come in terms of the sophistication of the chemistry and the risk assessment.

DJ: How have you dealt with people's passionate reactions to pesticide use?

DB: When I meet with people, I make sure to let them know I'm not interested

(Continued on page 13)

Recovery and Resilience: Confronting Fire, Weeds, and Forest Pests

Cal-IPC Symposium - Oct. 27-30, 2020
California State University, Chico

Note: We are working on plans for an online Symposium in case we cannot meet in person. Stay tuned!

SYMPOSIUM FEATURES

The Symposium is the place to connect with colleagues from across the state, and get the latest updates on effective tools, relevant research, and strategic management approaches.

Check out trade exhibits from our sponsors, discuss the student paper/poster contests, vote in the annual photo contest, cheer for the awards, and enjoy the social hour with raffle and silent

auction. Sign up for an optional field trip Friday to explore conservation efforts and invasive plant management in and around Chico.

2020 STATEWIDE WMA MEETING

Join Weed Management Areas from across the state to share information on project design, new weeds, control techniques, early detection, mapping, and more.

TRAININGS:

Topics being considered include: Mapping; Communications; Management Tools of the Trade; Plant Identification; Justice, Equity, Diversity, and Inclusion in the Conservation Field; Herbicides 101; and more.

FIELD TRIPS:

Paradise Fire Recovery (Full day) Tour the Camp Fire footprint and see the invasive weed issues that follow catastrophic megafire.

Restoration and Habitat in the Oroville Area (Full day) Visit the Oroville Wildlife Area, the Oroville spillways restoration project, and the unique ecological diversity of North Table Mountain Reserve.

Sacramento River Tour (Half day) See Sacramento River wildlife and habitat and discuss efforts to address invasive plants threats.



Network and learn with colleagues from across the state. Photo: Claire F. Meyler

Prescribed Fire in Upper Bidwell Park (Half day) Check out sites where the City of Chico plans to use prescribed fire to reduce invasive weeds and learn about all the preparation needed to conduct a burn.

SPECIAL SESSIONS:

- Fire and stewardship where the Sierra, Cascades, and Central Valley meet, including Native American land management practices
- Forest pests and weeds: How climate change may alter our forests forever
- Progress! Invasive plant management success stories across California

REGISTRATION

Visit cal-ipc.org/symposium to register, submit an abstract, and find the latest Symposium information.



Explore nearby conservation efforts, such as Bidwell Park, on a field trip. Photo: Ebryden, Creative Commons

Planting Right with PlantRight in 2020

Jutta Burger, Cal-IPC

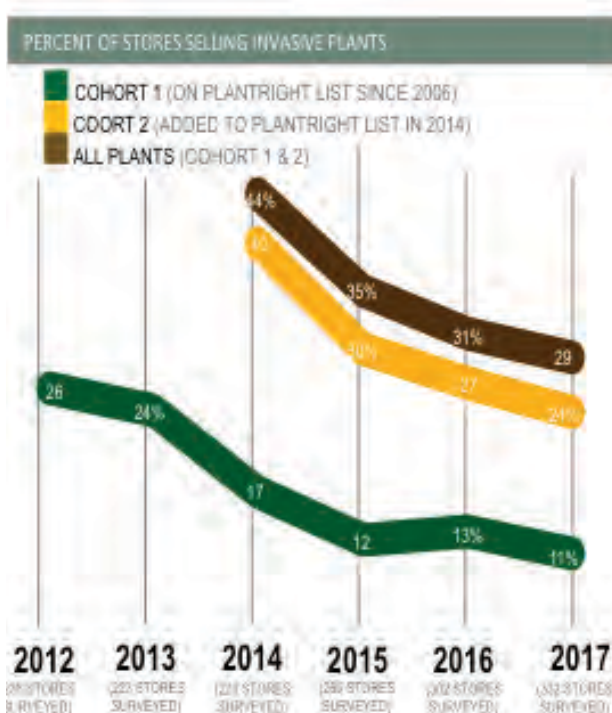
PlantRight is a 15-year-old collaboration between industry, advocacy, and agencies working to prevent invasive plants in the nursery trade and promote landscape-friendly ornamentals. As of 2019, the program's home transitioned to the Plant California Alliance, a coalition of landscape and nursery professionals.

New plants in the nursery trade can be exciting. They are part of the reason California's residential gardens and landscaping are so colorful and diverse. Few people, however, are aware that nearly half (48%) of our invasive plants in California are escaped ornamentals.

In 2005, a network of researchers, industry leaders, agencies, and conservation organizations (including Cal-IPC) formed a partnership called California Horticultural Invasives Prevention (Cal-HIP) to address this problem. Their goal was to compile and share information with the nursery industry and the public for stopping the use of horticultural plants that can be problems for our wildlands.

This partnership developed into a program called PlantRight which does several things: it engages trained volunteers to survey commercial nurseries each spring to determine what invasive (or potentially invasive) plants are being sold; it trains nursery professionals to understand the invasive plant problems; and it provides information to the community about safe planting alternatives to invasive plants that may still be in the trade.

Progress has been made. Some invasive ornamental species, like French broom, vinca, and crystalline iceplant, are now largely out of the trade in California thanks to conscientious growers removing these plants from sales. Other plants, like the "green variety" of fountain grass



Plants selected by PlantRight for outreach have been found in a lower percentage of retail stores each year. Image courtesy of PlantRight

(*Pennisetum setaceum*) and Mexican feathergrass (*Stipa tenuissima*), are now sold at much lower quantities because many growers, retailers and consumers are now more aware of their ability to spread.

In partnership with all the Cal-HIP partners, the nonprofit organization Sustainable Conservation (SusCon) led PlantRight from its inception through 2018 when SusCon worked to transfer management of the collaborative to the Plant California Alliance (PCA), which serves and represents the nursery trade. Funding secured through Cal-IPC advocacy in Sacramento for weed management in 2018 provided a grant from the State of California to support the move.

Last fall, PCA hired Project Manager Alex Stubblefield to head up PlantRight. (You may have met Alex at last year's Cal-IPC Symposium in Riverside during her first month on the job!) Alex comes to the program with a degree in in Sustainable

Agriculture and Food Systems from UC Davis. She interned at the UC Davis Arboretum where she became inspired to pursue a career in developing sustainable and environmentally friendly horticultural practices. Ensuring that invasive species stay out of the trade is a natural fit.

Alex, with support from SusCon in making the transition, had planned to conduct its annual nursery survey in partnership with Master Gardeners across the state this spring. These surveys look for a set of known "bad actors" as well as several potentially worrisome plants selected by a review committee. To start the process, Alex organized the review committee (including experts from retail nursery growers, UC Extension specialists, the California Dept. of Food and Agriculture, and



Alex Stubblefield, Manager, PlantRight

Cal-IPC) to select a set of ornamental species to evaluate using the Plant Risk Evaluator (PRE) tool.

The PRE tool was developed in collaboration with UC Davis and University of Washington specifically to assess future potential risk of invasion for plant species that are not yet broadly established. SusCon secured a grant from the USDA Farm Bill to fund development of the tool as a way of screening potential horticultural imports for their risk of invasiveness.

The PRE tool uses a 20-question form and results in a numerical score that indicates level of risk: Low risk (<12),

Moderate risk (12-15), and High risk (16-24). For the horticultural industry, PRE provides the added benefit of compiling information about a species' growth habits and biology. (Cal-IPC also uses PRE to evaluate escaped species in California that have not yet become invasive — those species scoring "High risk" are added to the Cal-IPC Inventory as "Watch" species.)

This year's PRE assessments included: Cabbage tree (*Cordyline australis*; Low-7), Albanian spurge (*Euphorbia characias*; Low-10), perennial sweet pea (*Lathyrus latifolius*; High-16), (*Myoporum laetum* — 'Clean n Green' variety; High-17), golden wreath wattle (*Acacia saligna*; High-17), Sydney golden wattle (*Acacia longifolia*; High-18).

As noted on page 3 of this issue of *Dispatch*, these assessments resulted in four additions to (and one removal from) the Cal-IPC Inventory. We can also now say that, to the best of our knowledge, Albanian spurge is one spurge that appears to be safe to plant!

The last PlantRight nursery survey was conducted in 2017 by 172 volunteers who surveyed 332 nurseries across 45 counties. Results were encouraging; only 11% of nurseries surveyed sold any of the plants on PlantRight's original list (compared to 30% in 2012).

The eleven species selected for this year's survey include the seven species on PlantRight's current "Do Not Plant" list — pampas grass (*Cortaderia selloana*), Mexican feathergrass (*Stipa tenuissima*), green fountain grass (*Pennisetum setaceum*), highway iceplant (*Carpobrotus edulis*), periwinkle (*Vinca major*), water hyacinth (*Eichhornia crassipes*), and yellow water iris (*Iris pseudocorus*) — as well as Italian buckthorn (*Rhamnus alternus*), perennial sweet pea (*Lathyrus latifolium*), natal grass (*Melinis repens*), and myoporum 'Clean N Green' (*Myoporum laetum*), species for which PlantRight is seeking more information.

The 2020 survey is postponed for now, but Alex is staying focused on planning for

future PlantRight activities. We are excited that PlantRight has a new home and we will be working as partners to make the program a success!

Find PlantRight online at plantright.org. Find Cal-IPC resources for landscape professionals and gardeners, such as our "Checklist for California Landscaping" and "Don't Plant a Pest!" brochures at cal-ipc.org/landscaping.

Managing stinkwort

(Continued from page 4)

Stinkwort germinates in winter but remains in rosette until late spring, when it is one of the last annuals to emerge. After growing over the summer, it buds in early fall, then flowers and produces seeds in October and November. Reproduction is daylength dependent, with fall equinox as the trigger. This timing is shown in the treatment table.

Employing a variety of treatment options is important because we cannot get to every population at every stage of development. With limited resources, we need to maximize efficacy throughout the growing season by having a diverse set of tools that work at each stage. As an example, we found that AXXE, an organically certified burn-down herbicide, can work for plants treated after bud set (plants recover if treated earlier in the season).

We benefited from trials conducted by Mark Heath (then with Shelterbelt) and advice from Rachel Brownsey, who did her thesis on the biology and management of stinkwort at UC Davis and subsequently assisted our department as a consultant with ESA.

One of our big challenges is determining how to address stinkwort in seasonal wetlands, since our palette of tools is reduced based on water quality protection and the California red-legged frog injunction. We continue to experiment with treatment options to determine which approaches are most effective.

Literature cited:

Brownsey R, Kyser G, DiTomaso J. 2013. "Stinkwort is rapidly expanding its range in California." *California Agriculture* 67(2):110-115

What can you do to help?

Help with the 2020 nursery survey! Sign up at PlantRight.org. (Survey timing will be posted based on guidelines from the CDC and health experts as our communities recover from the COVID-19 pandemic.) Survey participants need to watch a training video and pass a short quiz.

Help map the distribution of invasive plants in the field by using an online application (we recommend Calflora, but iNaturalist is also an option). This will help us differentiate "potential risk" from actual spread. For PlantRight, we are currently interested in mapping *Acacia longifolia*, *A. saligna*, and *A. pycnantha*. (Make sure to include a photograph with your record because these species are hard to tell apart.) More distribution information will help us tell whether all subspecies are invasive or only a subset.



Acacia saligna



Acacia longifolia



Acacia pycnantha

Three *Acacia* species on the Cal-IPC Watch list. *Acacia saligna* has long, narrow leaves; *A. longifolia* has (contrary to its name) shorter leaves that are finger-wide in their center with no prominent midvein; *Acacia pycnantha* has long leaves that similar in length to *A. saligna* but wide in the center. Photos: (left and center) R. Vanderhoff, (right) Barbara Boethling.

Indigenous land management in the Southwest: Conservation Legacy Ancestral Lands

Chas Robles, Michellsey Benally, and Kyle Trujillo, Conservation Legacy Ancestral Lands;
Claire F. Meyler, Cal-IPC

Conservation Legacy is a national organization that operates and supports locally based conservation science programs. Their partnerships provide service and work opportunities for a diverse group of individuals to complete conservation and community projects for the public benefit. The Ancestral Lands program model was established in 2008 and focuses on engaging Native American and indigenous youth* and developing the skills to lead Native nations back to ecological and cultural wellbeing. Originated at Pueblo of Acoma, New Mexico, the program has since expanded to work with multiple Native communities to replicate this model.

The Ancestral Lands model is rooted in the culture and heritage of local tribal communities, engaging Native youth and young adults in meaningful conservation projects on Native lands. Crews work on projects such as historical preservation, traditional agriculture, invasive plant monitoring and mapping, chainsaw crews, hiking clubs, stream restoration, fencing, trail construction, and more. Aaron Lowden, Program Coordinator at the Pueblo of Acoma Office explains, "These projects are in areas of cultural significance, where our members can learn the history of the people and see the places that we mention in our oral histories. These programs also provide knowledge that is being lost, such as traditional farming practice and masonry work." The Ancestral Lands program also

*Participants of Conservation Legacy Ancestral Lands represent the diaspora of Native American and indigenous peoples, including members of Tribes that are not formally recognized by state or federal governments, and Latinx/Chicanx people who are indigenous to this continent, as well as displaced Natives who are disconnected from their cultures. The phrase "Native American and indigenous" is used to describe this spectrum. For brevity in this article, we use the term "Native."



Ancestral Lands crew members treat Russian knapweed along the Cataract Canyon section of the Colorado River. Photo: Conservation Legacy Ancestral Lands

aims to incorporate Native language as part of crew lifestyle and project work.

Ancestral Lands Southwest Conservation Corpsmember Anthony "Chako" Ciocco explains the importance of integrating Native tradition, "When you are here working and living and trying to help nature try to be who she is, you are also restoring your culture and identity as a human person... Particularly for us as Natives, we have a lot of challenges in our community today. Culture loss and language loss are some of the biggest ones. We have found that this is an ideal setting. We have young people living, working together, bonding, and we found it really effective as a place to share and learn and continue being who we are in a deep, authentic sense. We are whole heartedly invested in Mother Nature."

Of course, protecting Native lands includes managing invasive species. Partnership with the federal Bureau of Indian Affairs (BIA) provides for a series of far-reaching programs to treat invasive plants across the Navajo Nation, a territory covering roughly 17.5 million acres. The largest land area retained by an indig-

enous tribe in the United States, the Navajo Nation occupies portions of northeastern Arizona, southeastern Utah, and northwestern New Mexico. Ancestral Lands crews have received technical GIS/GPS training, learning to accurately assess the current status of invasive weeds. Their efforts have helped the BIA develop a mitigation strategy for the future of the Navajo Nation's wildlands.

Crews are mapping fifty species of invasive plants in this area, of which fifteen are considered "Class A," meaning they currently have limited distribution but great potential for widespread expansion and are priority invasive weeds for early eradication. Class A weeds include musk thistle (*Carduus nutans*), hoary cress (*Cardaria draba*), perennial pepperweed (*Lepidium latifolium*), and Scotch thistle (*Onopordum acanthium*). The most widespread weeds ("Class C" weeds which will require local management decisions based on feasibility of control and level of infestation) include cheatgrass (*Bromus tectorum*), field bindweed (*Convolvulus arvensis*), jointed goatgrass (*Aegilops cylindrical*), and puncturevine

(*Tribulus terrestris*). Following mapping protocol provided by the Bureau of Land Management, crews typically work 3-6 months, and sometimes extend their involvement over a year. To date, Ancestral Lands crews have mapped more than 100,000 acres of public and tribal lands, with more than 60 Native participants.

Many Navajo Conservation Crews are also working on a River and Wash Restoration Project with BIA. The crews complete invasive vegetation mitigation in riparian areas along the Escalante, San Juan, Colorado, and Dirty Devil rivers, as well as elsewhere throughout the Southwest, including the Navajo Nation, National Park Service units including Canyon de Chelly National Monument, El Malpais and El Morro National Monuments, Aztec Ruins National Monument, Saguaro National Park, Organ Pipe National Monument, Pecos National Historical Site, Chaco Cultural National Historic Park, and other units.



Ancestral Lands Crew Leader Cheyenne Peterman controls invasive Russian Olive trees along the Escalante River using a low stumping technique. Photo: Conservation Legacy Ancestral Lands

Members receive chainsaw training, as well as learn proper restoration techniques and herbicide application. Crews have been removing Russian olive, (*Elaeagnus angustifolia*), tamarisk (*Tamarix* spp.), Siberian elm (*Ulmus pumila*), tree of heaven (*Ailanthus altissima*), kochia (*Kochia scoparia*), and buffelgrass (*Pennisetum ciliare*), among other species.

These highlights provide a small sample of the work done by Ancestral Lands

crews. To date, 17 different Ancestral Lands programs operate across the country, including programs in Acoma Pueblo, Navajo Nation, Hopi, Diné, Zuni, and Albuquerque communities throughout New Mexico and Arizona.

As the reach of Ancestral Lands continues to grow, program leaders like Aaron Lowden remain hopeful for the future. He says, "I have had the huge pleasure of overseeing a program that so many young Native leaders have put their

hearts and souls to help continue to push this vision into reality... These young amazing Native people give me hope for the future. And I know when I look back, these young people will carry on what we have left, and they will take our places."

Learn more at conservationlegacy.org/ancestrallands. Watch videos featuring Aaron Lowden and Anthony "Chako" Ciccio at sccorps.org/ancestrallands.

The importance of IPM

(Continued from page 8)

in changing their values. I just want to provide the science. They can make up their own mind what they want to do with it.

JT: The current glyphosate issue is a case where some people's values are telling them "There must be a way to control weeds without using glyphosate (or any other herbicide)." These folks are not swayed by science.

DB: Environmentalism encompasses a broad spectrum of people. Ranchers, foresters, and farmers consider themselves stewards of the land and they have an up-close-and-personal connection to the workings of the land. Meanwhile, a lot of environmentalism has become a certain mindset that says we need to leave everything alone.

JT: Many environmentalists from outside the natural resource management fields are coming with a philosophy that's informed by emotion and a more pedes-

trian understanding of ecology. I've seen that the people most likely to claim you can control some invasive weed species without herbicides are people who haven't actually tried controlling that weed.

DJ: What are the implications of limiting the IPM toolkit?

JT: One of the key aspects of a career in IPM is that you need to be committed to the scientific process and not get too attached to any one approach. New scientific information could shift the thinking. You need to stay flexible. At the same time, I've learned that things that sound too good to be true usually are, so I don't get too excited about the new shiny idea.

DB: This is part of a desire to export our resource extraction. We want lumber, but we don't want to get it from the Sierra. We'd rather pay to have it cut down somewhere else and transported here. Meanwhile, with no thinning in the Sierra, we're faced with major wildfires.

DJ: What are the alternatives to systemic herbicides?

DB: Some useful new things have come along over the years, such as foam steaming, flaming, and goats. They all have a place — and impacts. But nothing really fills the same role as herbicides. We need to be honest about the tradeoffs. For example, organic herbicides are contact killers only, not systemic, and typically more hazardous to the applicator. Foam systems are very expensive and limited in where they can work.

JT: That's why the glyphosate situation is so unfortunate. I can see how it makes sense from the layperson's perspective. But why abandon a good tool when science says it's safe? Especially when there's not a great alternative.

DJ: What is the prognosis for glyphosate?

DB: California listing it as a probable carcinogen opened the flood gates for lawsuits. People don't know that that listing was automatic, since the International Agency for Research on Cancer (IARC) listed it. IARC assesses hazard — a substance, like bacon or coffee (both listed), could

(Continued on page 14)

The importance of IPM

(Continued from page 13)

conceivably cause cancer – but they don’t assess actual risk based on exposure. That’s a huge gap. But when it comes to cancer, we all know people who have had cancer. It’s mysterious and scary and we want to point at a cause.

JT: There is emotional comfort in having something to blame. Science becomes secondary. I still read items that make it sound like glyphosate directly harms butterflies, missing the link that it’s glyphosate overspray on milkweeds depriving the monarchs of their host plant. Glyphosate is not easily replaced: it addresses a wide spectrum of plants, including grasses; it doesn’t have a residual impact; it doesn’t move around in the soil; and it has very low toxicity, acute or chronic, for people and wildlife. There isn’t an easy replacement.

DJ: The difference between “it can conceivably cause cancer” and “it could cause cancer during typical real-world exposure” seems like a huge difference that is entirely missed by Prop. 65.

DB: Humans are not great at assessing risk.

We make decisions on our perceptions of risk, which are not always well founded. On the job, I’ve seen that risk assessment and decision making are important skills that can get lost when there’s staff turnover. There’s a constant need for training.

JT: Unfortunately, as a society, we are not trusting science as much as we should. Look at climate change. You don’t see people challenging the science behind what their dentist does, but that’s more immediate.

DB: We need to better explain what happens if we don’t control invasive plants. We all need to understand the impacts to our lives.

JT: We need even more information on the impacts of weeds so we can show the cost of inaction. It would be valuable to highlight cases that show how ecosystems respond positively when invasive plants are removed. Like how Bell’s vireo rebounded along the Santa Ana River when *Arundo* was controlled and native vegetation came back. Or how native bumblebees or butterflies respond when plant diversity increases after invasive weed removal.

DJ: What’s the good news?

DB: Cal-IPC’s decision-making tools like CalWeedMapper and WHIPPET put a lot of power in people’s hands to make decisions about how to be most effective. We must hope that folks across the state look farther afield at the landscape level and don’t get caught up just doing things the way they’ve always been done.

JT: For sure, new distribution information is a major improvement for setting strategy.

DB: And best management practices (BMPs). People are more aware of the importance of not spreading weeds than they used to be. I know firefighters identify weedy areas to avoid in their fire camps. Cal-IPC’s BMP manuals certainly help strengthen this going forward.

JT: It’s true, Cal-IPC’s role in bringing this community together to share information with each other has really been a help in my career. It makes us all more effective.

Find Cal-IPC’s resources mentioned in this article, including Best Management Practices manuals at cal-ipc.org/library. Find CalWeedMapper at calweedmapper.cal-ipc.org. Find WHIPPET at whippet.cal-ipc.org.



HABITAT WEST
NATIVE HABITAT RESTORATION

23 Years
Serving Southern California since 1993

HabitatWest.com



S&S SEEDS

P.O. BOX 1275
CARPINTERIA, CA 93014-1275
TEL: 805-684-0436
FAX: 805-684-2798
E-MAIL: INFO@SSSEEDS.COM
WEB: WWW.SSSEEDS.COM

Erosion Control Wildflowers Revegetation
Turf Grasses Native Grasses Native Sod

Individual Membership

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

Members receive **Dispatch** and discount on Symposium registration!

Organizational Membership

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

Organizations receive Professional membership for their staff and newsletter recognition for 12 months!

See cal-ipc.org for full membership details

Thank You for Supporting Our Work

Organizational Supporters



American Conservation Experience
 B&J Trading, LLC
 Calflora
 California Assoc. of Local Conservation Corps
 California Assoc. of Resource Conservation Districts
 California Dept. of Food and Agriculture
 California Native Grasslands Association
 California Wildlife Foundation/California Oaks
 Catalina Island Conservancy
 Chambers Group Inc.
 Channel Islands Restoration
 City of Brisbane
 CNPS — East Bay Chapter
 CNPS — Los Angeles/Santa Monica Mountains
 CNPS — Mount Lassen Chapter
 CNPS — Riverside San Bernardino Chapter
 CNPS — Sacramento Valley Chapter
 CNPS — San Diego Chapter
 CNPS — Santa Cruz County Chapter
 CNPS — South Coast Chapter
 CNPS — Yerba Buena Chapter
 East Bay Regional Parks District
 Dendra, Inc.
 Forester's Co-op
 Golden Gate National Parks Conservancy
 Go Native, Inc.
 Habitat West, Inc.
 HANA Resources, Inc.
 Hedgerow Farms

Helena Agri Enterprises, LLC
 H.T. Harvey & Associates
 The Huntington Library
 Irvine Ranch Conservancy
 Irvine Ranch Water District
 Jesse Mack Company
 Marin Agricultural Land Trust
 Marin County Parks
 Marin Municipal Water District
 Moosa Creek Nursery
 Nakae & Associates, Inc.
 Nature Collective
 Nomad Ecology, LLC
 Orange County Parks
 Palos Verdes Peninsula Land Conservancy
 Placer County Dept of Agriculture
 Plant California Alliance
 Rancho Santa Ana Botanic Garden
 RECON Environmental, Inc.
 S&S Seeds
 Sage Environmental Group
 San Dieguito River Valley Conservancy
 San Mateo County Parks Dept.
 San Mateo County Dept of Agriculture, W&M
 Santa Barbara County Ag Commissioner
 Sempervirens Fund
 SERCAL
 Solano County Dept. of Agriculture
 SOLitude Lake Management
 Southern California Botanists
 Triangle Properties
 Tule River Indian Tribe

Individual Supporters

(New and renewing)

Gifts received from December 4, 2019
 to April 8, 2020

Stewardship Circle

Anonymous
 Joe DiTomaso, Woodland
 Richard Hoskins, Mill Valley
 Tamia Marg-Anderson, Berkeley
 Elizabeth Mather, San Diego, CA
 Joan Miller, Laguna Nigel
 Stephen Rosenthal, San Jose, CA
 Lincoln Smith, Albany

Champion

Anonymous
 Jason Giessow, Encinitas
 Susan Schwartz, Berkeley

Partner

Anonymous
 Jack Bartley, Gilbert, AZ
 Michael Blankinship, Davis
 Chip Bouril, Yountville
 Mark Bowler, Trabuco Canyon
 Carol Lane, Concord
 Patrick Moran, Albany
 Ingrid Parker, Santa Cruz
 Al & Barbara Sattler, Rancho Palos Verdes

A special thank you to all the generous donors to our 2020 Spring Campaign! Your generosity helps us continue our hard work. (Printed acknowledgement to come in the next issue)



1442-A Walnut Street, #462
Berkeley, CA 94709

ADDRESS SERVICE REQUESTED

Non-Profit Org.
U.S. Postage
PAID
Oakland, CA
Permit No. 8435

WILDLAND WEED CALENDAR

Check all websites for latest event updates

California Invasive Species Awareness Week

June 6-14
wildlife.ca.gov/Conservation/Invasives/Action-Week

Society for Ecological Restoration, North American Conference

June 7-11, Quebec, Canada
ser.org/page/RegionalConferences

NEOBIOTA 2020: 11th International Conference on Biological Invasions

September 15-18, Vodic, Croatia
neobiota.eu/

SERCAL Conference

September 16-18, Palo Alto, CA
sercal.org

Cal-IPC Symposium

October 27-30, Chico, CA
cal-ipc.org/symposium

UC Natural Reserve System Symposium

November 12-13, Berkeley, CA
ucnrs.org/nrs-symposium/

Innovations in Invasive Species Management Conference and Training

December 14-17, Nashville, TN
invasiveplantcontrol.com/conference20/

"A growing number of environmental organizations are realizing that an investment in diversity, equity, and inclusion (DEI) capacity building enhances their mission, creates a higher performing organization, provides them relevance in a rapidly changing world, and leads to deeper relationships and more successful work with the staunchest supporters of environmental protection — people of color."

From "Transforming a Movement: How foundations can support effective Diversity, Equity, and Inclusion (DEI) capacity building efforts in environmental organizations" by Marcelo Bonta, JEDIheart.com.