NEWSLETTER OF THE CALIFORNIA INVASIVE PLANT COUNCIL

Dispatch

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Protecting California's environment and economy from invasive plants

Cal-IPC Dispatch
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FROM THE DIRECTOR'S DESK

Weaving community

By Executive Director Doug Johnson

I was going to write about the wasteful loss of talent and expertise occurring as federal agencies fire staff. We work with dedicated individuals at the Forest Service, the National Park Service, the EPA and the Fish and Wildlife Service, the USGS and NRCS and BLM, and from a "getting all the work done" perspective these agencies were already understaffed.

But rather than lamenting these harmful actions, I'd prefer to focus on the examples set by good people within this community of folks dedicated to land stewardship. We work long hours doing physical labor outside, researching detailed aspects of plant ecology, planning out fieldwork and filling out paperwork so land stewardship can happen. We're committed to a common cause whose scale instills humility.

> **I'd prefer to focus on the examples set by good people within this community of folks dedicated to land stewardship.**

From my seat, communicating with people throughout the community, I have the good fortune to hear a range of inspiring stories. The conservation Corpsmembers who appreciate training on ecological fundamentals. The recipients of scholarships to the Symposium excited about the opportunity to network with others as they move forward in a stewardship career. The retirees dedicating time to local projects and serving on nonprofit boards.

One recent story that sticks with me started with a donation to our Spring Campaign. The donor lives in a state far away but retains a California connection. Their donation was made in memory of a good friend who had passed away. Out of curiosity I read an online article on the person's life. As a university professor in plant science, they had for decades mentored students while providing them with a rich social environment by organizing parties and annual retreats to a natural reserve.

Weaving community together is a special contribution, one to be celebrated and emulated, especially during these times when others are tearing at the fabric of our professional and avocational communities.

ON THE COVER

WIPING OUT ITALIAN THISTLE ON THE LOST COAST, HUMBOLDT COUNTY.

This issue's cover was a submission to the 2024 Cal-IPC Photo Contest. We welcome your photo submission this year at cal-ipc.org/photocontest. Cover photo: Jane Dexter, Mattole Restoration Council.

Wildland Weed News

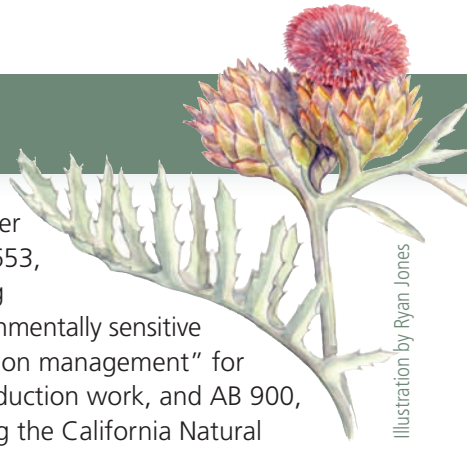


Illustration by Ryan Jones

CAL-IPC UPDATES

2025 Symposium – November 12-15 in Ventura and online! See details on page 9.

WeedCUT – Best practices for herbicide application methods, calibration, and equipment cleaning have been added to the online tool. More on page 8.

Online training – The University of California's IPM program posted a two-hour video training developed in partnership with Cal-IPC on herbicide equipment calibration, with DPR CEUs. Available in English and Spanish. More on page 8.

Corps trainings – Cal-IPC held three regional "train the trainers" workshops across the state for staff from local Conservation Corps. The goal is for the staff to now teach ecology fundamentals to Corpsmembers to provide context for their invasive plant management work.

OTHER NEWS

WMA funding – The California Dept. of Food and Agriculture (CDFA) is processing funding proposals from Weed Management Areas (WMAs) across the state. Grants are planned to start July and provide up to $40,000 a year for three years. CDFA is also assembling an Oversight Committee for the WMA program.

Prop. 4 – The ballot measure for water, wildfire prevention and land protection passed, providing $10 billion in bond funds. Included is $20 million for the Invasive Species Council of California (due to Cal-IPC advocacy) and new funding for the Wildlife Conservation Board (WCB).

Legislation – We are tracking several bills moving through the legislature. Two which Cal-IPC has signed onto as a supporter are SB 653, defining "environmentally sensitive vegetation management" for fuels reduction work, and AB 900, directing the California Natural Resources Agency to track stewardship as part of the state's 30x30 initiative.

International newsletter – The International Union for the Conservation of Nature (IUCN) and others have started a digital bi-annual Invasions Newsletter. Access it from https://joom.ag/mIjd.

Nursery labels – A new law in Virginia requires nurseries to post warning signs next to plants they sell if the plants are on a list of invasive plants in the state.

Public gardens – A consortium of botanical garden experts have published "Guidelines for Listing, Categorizing and Sharing Information on Plant Taxa Spreading from Cultivation at Public Gardens in North America" to help the network provide important data on new weeds.

Weed Science School – UC Davis offers a 2.5-day training on weed biology, ecology and management this fall. Email wric@ucdavis.edu for information.

Indigenous knowledge – The US Dept. of the Interior posted a handbook online describing ways to include Indigenous knowledge into restoration and research.

Civicorps Crew Leaders visit the Marine Mammal Center as part of the Whale Tail grant (more on page 13).

A farewell

In March, longtime staff person Claire Meyler left Cal-IPC for a new job as Development Manager for the nonprofit Mission Action in San Francisco. In her eight years with Cal-IPC, Claire filled a suite of roles, including member/donor relations, website management, Symposium organizing, social media, the Dispatch newsletter, photographer, artist, and more. Along with her versatility and productivity, we will miss her vibrant personality as part of our team. We wish her every success as she continues her career.

From Claire: "I truly loved my time at Cal-IPC. The staff, board, and community are made up of such smart, passionate, and grounded people. I will cherish the connections and support I found in this work as we forge a better path forward, together."

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.

Weed alerts and new additions to the Cal-IPC Inventory

Jutta Burger, Science Program Director, Cal-IPC

Cal-IPC presents "Weed Alerts" annually at our Symposium, typically in partnership with the California Department of Food and Agriculture (CDFA), to share information on a select number of non-native species that have either been newly discovered in California or have been rapidly expanding. Candidate species are nominated by botanists, land managers, and other experienced members of our community. We select a handful of candidate species from nominations based on how novel they are and how significant any change in their distribution or their impact has been.

Clockwise from top left: Senecio angulatus *(Matt Guilliams),* Glaucium flavum *(Ron Vanderhoff),* Aristea ecklonii *(Ron Vanderhoff),* Bolboschoenus glaucum *(Morgan Stickrod),* Maytenus boaria *(Jean Pawek),* Corynepherus articulatus *(Michael Chasse).*

Through these presentations, we spread the word about new species to raise land managers' awareness and to encourage them to collect information on both their distribution and their impact for future evaluation or re-evaluation. At the 2024 Cal-IPC Symposium, we shared information on six species (we also alerted land managers at the California Department of Fish & Wildlife's Wildland IPM Symposium). Of those highlighted, one (creeping groundsel, *Senecio angulatus*) has since been formally evaluated by Cal-IPC and added as a "Watch" species to Cal-IPC's Inventory, and one (a grass, *Corynephorus articulatus*) stands out especially as a first North American record.

Senecio angulatus (creeping groundsel; Asteraceae) is a climbing herbaceous perennial native to South Africa that has been introduced as an ornamental into several other regions across the world. It is considered invasive in Mediterranean climates of southern Europe, Australia, and New Zealand. Plants look and act similarly to another invasive relative, Cape ivy (*Delairea odorata*). Its leaves, though also hairless and somewhat succulent like Cape ivy, are more triangulate. Its yellow flower heads have ray flowers, in contrast to Cape ivy's flower heads, which have only disc (tubular) flowers. Creeping groundsel can overtop and smother other vegetation and spreads mostly by stem fragments, which can be moved through garden waste. First documented in the 1960's as a landscape plant in Huntington Gardens, it has only recently been observed to be expanding into natural areas, most recently in Santa Barbara, Ventura, and San Diego counties. All parts of this plant are toxic. Creeping groundsel has been added as a "Watch" to Cal-IPC's Inventory. It has not be evaluated by CDFA.

Glaucium flavum (sea poppy; Papaveraceae) is an attractive annual or short-lived perennial native to the Mediterranean region of Eurasia. It may have been introduced either as an ornamental or in ship ballast. Sea poppy has been seen naturalizing in Ventura County since 2019 and more recently at a new location in Point Mugu. It appears to favor sandy beaches, dunes, and bluff habitats, which all harbor sensitive plant species. Sea poppy has invasive status in Massachusetts and Maine, where it has also invaded shoreline habitat. Its leaves are long, gray, hairy, and deeply lobed and its four-petaled flowers are yellow. Plants have a deep taproot. All parts of this plant are toxic. This species is pending assessment by Cal-IPC and is unrated by CDFA.

Aristea ecklonii (blue corn lily; Iridaceae) is an ornamental perennial native to western and southern Africa. It volunteers prolifically in gardens and has been found in a few disturbed natural areas in coastal California, including, more recently, San Diego County. It has a clumping, rhizomatous habit, a height about 18" and evergreen lance-shaped leaves. Flowers are blue and superficially resemble blue-eyed grass. Blue corn lily seeds abundantly and can spread along waterways, with yard waste, or on equipment. It is considered invasive in Australia, New Zealand, and Sri Lanka but has not yet been fully evaluated in California by either Cal-IPC or CDFA.

Corynephorus articulatus (Poaceae) is a short-statured annual grass from the Mediterranean and Mideast that was recently found on dune sands at the Presidio, part of the Golden Gate National Recreation Area in San Francisco. First observed in 2021 and verified in 2024, it represents a first North American record and has no English common name that we could find to date. Park biologists report that it has been spreading rapidly at two dune restoration sites where they are currently removing it. *Corynephorus*

articulatus has thin leaf blades that have no auricles (extensions at the sheath) and an obtusely-shaped ligule. Its inflorescence is an open panicle, with its most distinctive feature being its lemma awn which is two-segmented with a joint. This species grows in coastal beaches and grasslands and can tolerate a variety of conditions, including saline and alkaline soils and brackish water. *Corynehporus articulatus* has not yet been evaluated formally by either Cal-IPC or CDFA.

From left to right: Urospermum picroides *(Matt Guilliams),* Nassella tenuissima *(Ron Vanderhoff),* Eragrostis echinochloidea *(James Bailey).*

Maytenus boaria (mayten; Celastraceae) is an ornamental tree that is native to Argentina and Chile and has expanded relatively quickly across northern and central California, especially in the San Francisco Bay Area. It is currently listed as a Watch species in Cal-IPC's inventory. The recent discovery of a large stand of mayten in San Mateo County replacing coastal sage scrub and ongoing concerns about this species encroaching into sensitive habitat at Ring Mountain in Marin County were cause for its listing as a Weed Alert species and a suggestion to re-evaluate and potentially upgrade its status in the Inventory. It spreads by both root suckers and seeds, which birds can help to disperse. Leaves are evergreen and elliptical, with pointed tips and finely serrated margins. Flowers are small, with five free petals and either male, female, or both. Fruits are a showy yellow bivalve capsule, containing one or two seeds, covered by a red membrane. This species has not been evaluated by CDFA.

Bolboschoenus glaucus (tubered bulrush; Cyperaceae) is a bulrush that is native to the greater Mediterranean in Europe and northern Africa, eastward to central Asia. It was first reported in rice fields in California in 1948. Since then, it has become well established in northern Sacramento Valley fields and marshes. Tubered bulrush was chosen as a Weed Alert species because of its easy misidentification as the native B. *maritimus* (alkali bulrush), as well as recent awareness of its ability to hybridize with this species, forming fertile swarms with as yet unclear impacts to surrounding native vegetation. Tubered bulrush can be differentiated from alkali bulrush by its less clustered (longer-stemmed) spikelets, florets that have three, rather than two styles, and fruits that are three- rather than two-sided. Hybrids between invasive species can cause ecological problems because they can express "hybrid vigor," making them fitter than either parent genotype. This species has not been rated yet by either Cal-IPC or CDFA.

Weed Alerts help to inform our Inventory Committee of candidate species to be further evaluated for Cal-IPC's Inventory. Two species that were previous Weed Alerts have been evaluated this last year as "high" risk for becoming invasive in the future and have been added to the Inventory as "Watch" species: *Urospermum picroides* (prickly golden fleece), was a Weed Alert in 2008 and 2023 that is spreading quickly from California's central coast both northward and southward; *Eragrostis echinochloidea* (African lovegrass) was a Weed Alert in 2020, after it was found in San Diego County and confirmed as the first North American record of this species. Check out the profile pages and Inventory assessments of both species on our website for more information.

A third species, Mexican feathergrass (*Nasella tenuissima*), was re-evaluated and moved from "Watch" to "Limited" status in the Inventory. This species was re-evaluated because of additional evidence since its first evaluation of its establishment and spread in some natural areas adjacent to landscaping and its contribution to fire risk.

Seven other species were evaluated but not found to have enough evidence of impact to be added to the Inventory. These included: white water fire (*Bergia capensis*), Memphis grass (*Cutandia memphitica*), cypress spurge (*Euphorbia bourgaeana*), stinking iris (*Iris foetidissima*), statice (*Limonium sinuatum*), crimson bottlebrush (*Melaleuca citrina*). Turkish thistle (*Carduus pycnocephalus* ssp. *cinereus*) was also evaluated prior to it being considered a subspecies of Italian thistle, which is already listed in the Inventory.

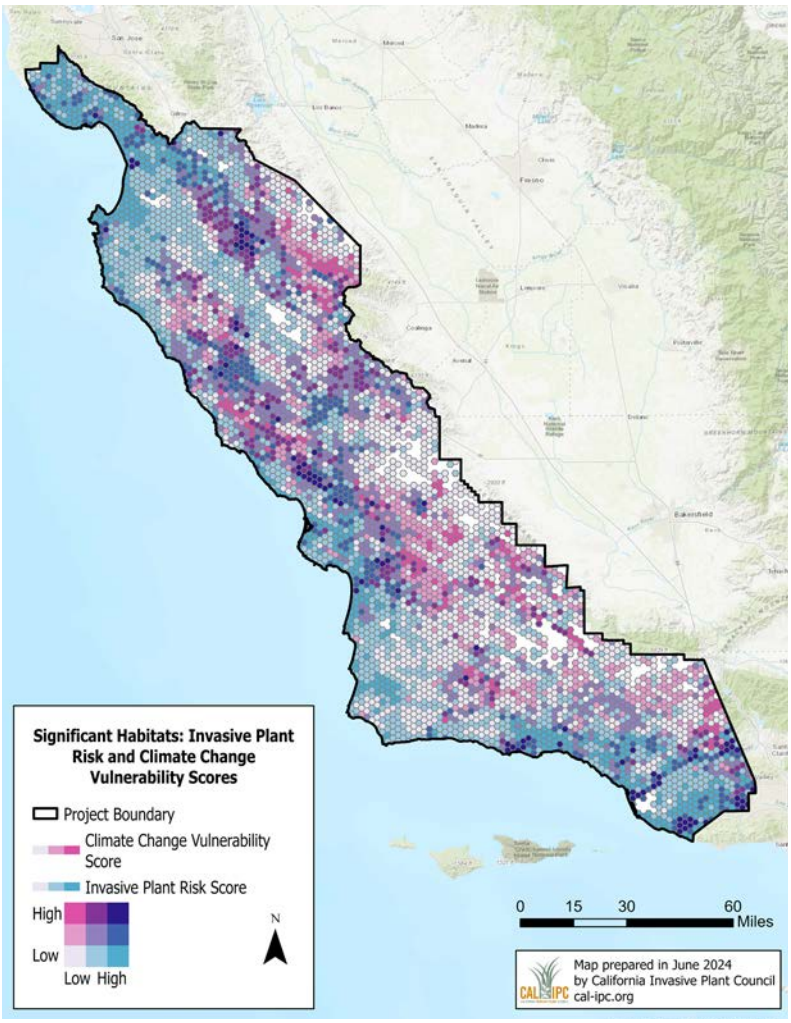
New species are continually being introduced into California, both as hitchhikers through trade and travel or as horticultural or agricultural imports. Only a small fraction of these become invasive. Our Inventory catalogs species—currently 331—that have been assessed as harmful or posing a high risk of becoming harmful ("Watch" species). The Inventory provides information about those species and serves as the go-to reference site in California for land managers, agencies, and the public who are concerned about natural areas and their management. Only those species that score as "High," "Moderate," or "Limited" status using our Plant Assessment Form (PAF) or as a high risk using the Plant Risk Evaluator (PRE) tool are added to the Inventory. The PAF evaluates species that are already well established, whereas the PRE predicts the future risk of a species becoming invasive.

Special thanks to the members of the Cal-IPC Inventory Committee, especially Weed Alerts co-presenter Ron Vanderhoff, for their expertise and commitment to evaluating species. This work was partially funded by a grant from the Western Integrated Pest Management Center.

Protecting sensitive habitats on the Central Coast

Nikki Valentine, Conservation Specialist, Cal-IPC

Climate change and invasive plants both pose significant threats to sensitive habitats. In a project funded by the California Wildlife Conservation Board (WCB) through their Climate Adaptation and Resiliency Program, Cal-IPC worked to assess these two threats to sensitive habitats across California's central coast region. We developed an "Invasive Plant Risk" score to evaluate how likely the sensitive habitat in a given area is to be impacted by invasive plants, and a "Climate Change Vulnerability" score to evaluate which sensitive habitats are most likely to be impacted by climate change. When combined, these scores identified which areas had sensitive habitat most at risk from invasive plants and future climate conditions.



Invasive Plant Risk (IPR) and Climate Change Vulnerability CCV) bivariate scores for significant habitats by hexagon. Pink indicates high CCV but low IPR. Teal represents high IPR but low CCV. Dark purple indicates high CCV and high IPR.

Invasive Plant Risk Scoring

We used the grid of 2.5 square mile hexagons used by the California Department of Fish & Game (CDFW) to map significant terrestrial habitats. For each hexagon, we scored invasive plant risk (IPR) to sensitive habitats from 1 to 10, based on eight criteria. Five of these criteria related directly to invasive plants: the sensitive habitats' vulnerability to invasive plants; co-occurring invasive plants with ecological impacts; co-occurring Cal-IPC-listed invasive plants; documented invasive plant threat to rare plant populations; and the abundance of invasive species at a regional scale. The other three criteria relate to conditions which can enable or limit invasive plants to invade an area: nitrogen levels; roadside abundance; and occurrence of serpentine soil.

Overall, coastal areas tended to score higher, indicating a greater risk from invasive plants. The highest-scoring hexagons were often located in more populated areas, such as Monterey, Santa Cruz, and Thousand Oaks.

Climate Change Vulnerability Scoring

We partnered with Tom Robinson Consulting Inc. to develop Climate Change Vulnerability (CCV) scores for sensitive habitats within the 2.5 square mile hexagons. CCV was scored from 1 to 3 based on sensitivities and exposure to heat-solar radiation, aridification, and fire dependency. Sea level rise was not included as a scoring factor.

Coastal areas generally scored lower, being less likely to be impacted by climate change, while riparian habitats scored highest. Several of the top-scoring sensitive habitats were associated with red willow (*Salix laevigata*), a species with greater water requirements compared to other willows, such as arroyo willow (*Salix lasiolepis*). As future drying trends continue, red willow may be especially vulnerable, particularly when combined with invasive species impacts.

Combined Scores

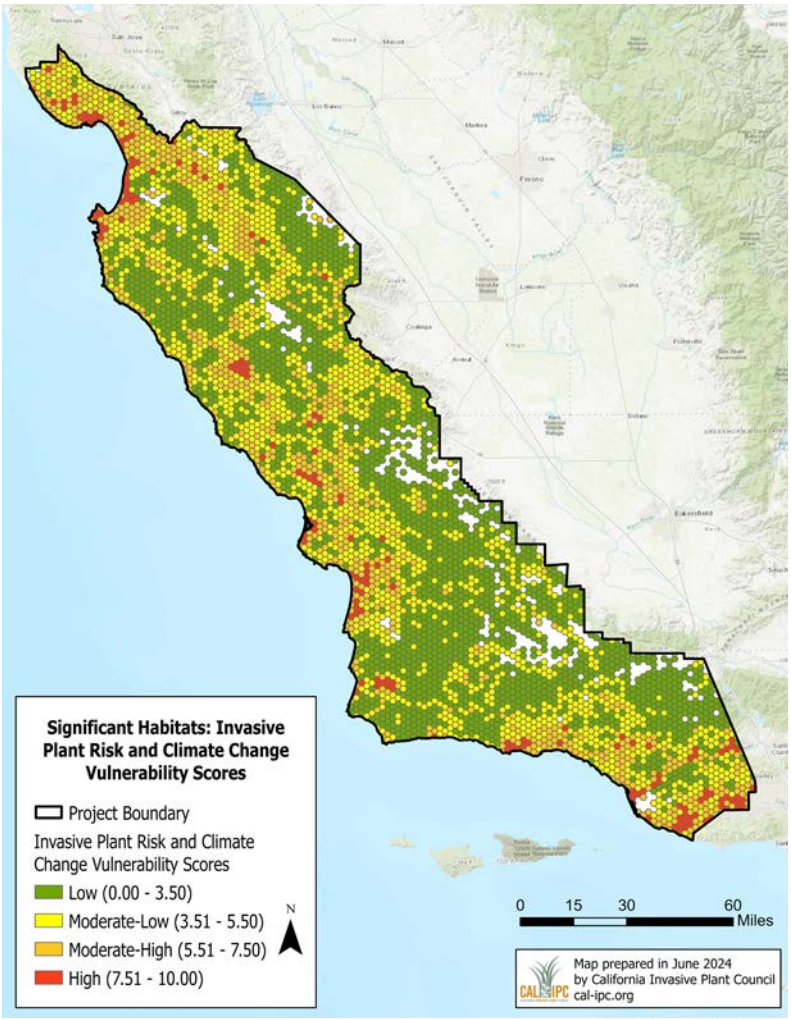
Incorporating the CCV scores into the IPR scores revealed several high-scoring clusters, which are also areas with high levels of disturbance. For example, Fort Hunter Liggett is a high-scoring cluster with well-known disturbances due to military activity. Once we had these combined scores, we averaged the scores for California Protected Areas (lands owned and protected for open space purposes). We used these scores to identify vulnerable sites and provide guidance for on-the-ground management in the Central Coast region.

Case Study

One of the highest scoring California Protected Areas was the Guadalupe-Nipomo Dunes Wildlife Refuge in San Luis Obispo County. The refuge contains

six different sensitive habitats: Central Dune Scrub, Central Foredunes, Fresh Emergent Wetland, Valley Foothill Riparian, Freshwater Forested Shrub/Wetland, and Coastal Oak Woodland. Additionally, the State-listed species beach spectaclepod (*Dithyrea maritima*), surf thistle (*Cirsium rhothophilum*) are present as are Western snowy plover nesting areas.

Red-purple ragwort (*Senecio elegans*) is considered one of the primary threats to the Central Dune Scrub sensitive habitat of the refuge. Red-purple ragwort, a Cal-IPC "Watch" species, is an especially aggressive colonizer of coastal dune habitat. It seeds prolifically and can carpet dunes, excluding other species. Removing purple ragwort is important for the reproductive success of beach spectaclepod and surf thistle as well as for protecting Western Snowy Plover nesting areas.



Combined Invasive Plant Risk and Climate Change Vulnerability scores for sensitive habitats by hexagon.

Because this red-purple ragwort population had already been partially managed using USFWS Coastal Program funds, and both neighboring properties had been managing invasive plant species, we saw this as a strategically important management opportunity. Our WCB funding allowed us to support an expansion of red-purple ragwort treatment in the refuge. The Land Conservancy of San Luis Obispo (LCSLO) hand-pulled red-purple ragwort in Central Dune Scrub and Central Foredune sensitive habitats where surf thistle and dune spectaclepod are also prevalent. They were able to make significant progress in decreasing the footprint of red-purple ragwort with the additional treatments.

*Surf thistle (*Cirsium rhothophilum*) growing in sensitive dune habitat amidst invasive iceplant (*Carpobrotus edulis*). Photo by Alex Heyman.*

Conclusion

By identifying locations where sensitive habitats are most at risk and which invasive plant species may pose the biggest threats, these scores help guide strategic prioritization of invasive plant management to ensure the most effective use of limited conservation resources. The methodology can be further refined to provide similar prioritization in other regions as a way to address the dual threats of invasive plants and climate change.

Note: The following datasets can be found on CDFW's online BIOS viewer:

Invasive Plant Risk Score for Significant Habitats - CAL IPC [ds3203]

Invasive Plant Risk Score for Rare Plant Populations - CAL IPC [ds3181]

New content in WeedCUT

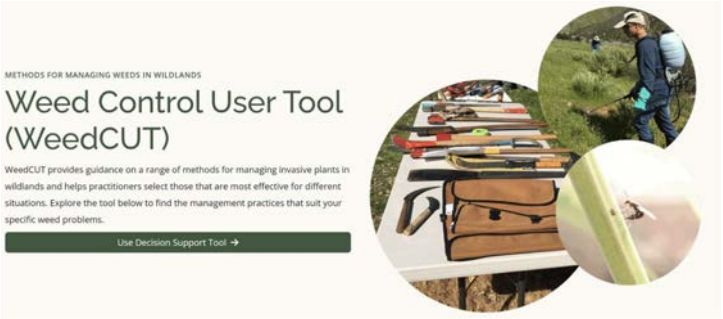
Free online herbicide calibration training and herbicide application BMPs now available!

Funded by an Alliance grant from the California Department of Pesticide Regulation, Cal-IPC, UC Cooperative Extension (UCCE), and UC IPM have co-published several great new training resources for wildland herbicide applicators. They include a free for-credit online herbicide calibration training course and nine best management practices documents for different methods of herbicide application that have been posted to WeedCUT (Weed Control User Tool). And both are available in English and Spanish!

The online course, titled **Herbicide Application Equipment Calibration for Non-Agricultural Sites**, is a first-of-its-kind combined in-depth course on calibrating several different herbicide application techniques in non-agricultural sites. It consists of seven modules: 1. Why calibration matters, 2. Foliar application methods, 3. Calibration methods, 4. Nozzles, 5. Practicing calibration calculations, 6. Managing woody weeds, and 7. Laws and Regulations. For licensed applicators needing DPR continuing education credit, the course provides 1.5 hours "Other" and 0.5 hours "Laws and Regulations" credit. UC IPM is generously offering this course free-of-charge through 2025! Visit their library of online courses at https://ipm.ucanr.edu/training/index.html to enroll.

The Herbicide Application Equipment Calibration course is based on the curriculum developed over four in-person calibration trainings that we held with UCCE instructors across the state in 2023 and 2024 and from herbicide application BMPs that these same experts developed with us for WeedCUT. Our work was based on the collective concern that, without proper calibration and attention to on-the-ground application rates, herbicides are far more easily over- or under-applied than their labels suggest, which can increase exposure and risk to habitat and reduced treatment efficacy.

We hope that, over time herbicide applications can be better planned and estimated based on actual per area application rates, rather than percentages of active ingredient in solution, which disregards the vast differences in how herbicide solutions are applied across applicators.



As of this spring, application and calibration information is also available through the online decision support tool WeedCUT (https://weedcut-new.ipm.ucanr.edu/). Application and calibration BMPs (Best Management Practices) for spot spray, broadcast, drizzle, wick, basal bark, cut stump, hack-and-squirt, and drill-and-fill, as well as for how to clean equipment after use, can be accessed by selecting the "Application Techniques" tab on the top right menu bar in WeedCUT. Similar to herbicide, non-chemical, and biological control BMPs, each has a thumbnail and includes details about the what, where, when, why, and how of each technique. BMPs include links to calibration worksheets and are also linked to herbicide BMPs.

WeedCUT provides many other resources in addition to the application techniques, including how-to guidance on a range of non-chemical and chemical approaches for wildland weed control. You can also use the Decision Support Tool, an interactive tool that will help rate the effectiveness of various approaches for your plant and site characteristics.

Surveys by Cal-IPC have shown that the majority of herbicide applicators do not calibrate their equipment on a regular basis, are not comfortable with estimating their application rates, and participate only rarely in herbicide calibration training. The online resources that we have developed are designed to help make calibration and application rate-based thinking a standard operating procedure. However, practitioners still need hands-on training and guidance to learn how to use equipment safely and effectively. Cal-IPC has another grant with CDPR in review that, if funded, will help support more detailed in-person training and creation of supporting documentation for backpack sprayers and weed trimmers, the two most used techniques by wildland weed managers. Stay tuned for more resources and let us know what you would find most useful to help you effectively control the weeds you are targeting.

Special thanks to UC Cooperative Extension experts Tom Getts, Chris McDonald, and Scott Oneto for their expert work in developing application BMPs and serving as instructors, as well as Petr Kosina, Cheryl Reynolds, and the UC IPM Communications Team for developing a detailed and informative bilingual training course.

Herbicide Application Equipment Calibration for Non-Agricultural Sites:

Online training course offers 1.5 hours "Other" and 0.5 hours "Laws and Regulations" DPR credit. Available in English and Spanish, and is free-of-charge through 2025! Visit https://ipm.ucanr.edu/training/index.html to enroll.

WeedCUT online decision support tool:

For application and calibration BMPs, select "Application Techniques" tab on the top right menu. https://weedcut-new.ipm.ucanr.edu/

Connect with colleagues in-person in Ventura or stream online! Early Bird rates end Aug. 25.

Join us for the 34th annual Cal-IPC Symposium! Share your knowledge, learn from others, and connect with land stewardship colleagues. We will gather in Ventura, but if you can't travel you can join remotely through our conference web platform.

Congratulations to those who have been awarded John H. Anderson Scholarships to attend the Symposium!

SYMPOSIUM FEATURES

- 2025 Statewide Weed Management Area Meeting
- Herbicide Laws & Regulations session for DPR credit
- Student and Emerging Professional Career Panel
- Discussion Groups
- Lightning Talks and Posters
- Workshops
  - Weeds 101: Principles of Integrated Pest Management
  - Weeds 101: Principles of Integrated Pest Management
  - Mapping: Setting Up ArcGIS and Field Devices
  - Management Techniques: Spot Spraying and Weed Trimming
  - Fire: Pre-Fire Planning and Post-Fire Response
- Sessions
  - Managing invasive plants in rare plant/sensitive habitats
  - Grassland management
  - Aquatic, riparian, and wetland management
  - Restoring chaparral and coast sage scrub habitat
  - Protecting deserts from invasive plants
  - Managing invasive plants after a wildfire
  - Lessons learned
  - Tools and techniques
  - Art, culture, and weeds
- Field trips
  - Santa Cruz Island
  - Santa Clara River
  - Santa Monica Mountains
- Plus our annual Photo Contest, Reception and Raffle, Exhibitor Gallery, and Awards!

DPR CREDITS

We will apply for continuing education units from the California Dept. of Pesticide Regulation, including units fulfilling Laws & Regulations requirements.

SPONSORSHIP

Your organization can sponsor the Symposium! Help us keep registration affordable and support our work. Benefits for sponsoring organizations include free admissions, exhibitor space, recognition on Symposium materials, and Cal-IPC membership.

REGISTER AND MORE

- Early Bird through Aug. 25 / Regular rates through Oct. 10 / Late registration runs through close of registration Nov 4, 5 pm.
- See our special discounted rates for early bird registration, members, presenters, students, and those with limited income.
  - **Limited Income and Student rates are** available for individuals who find registration costs prohibitive. We encourage field techs, conservation corps members, and other front-line staff to use this rate.
- All the latest Symposium information is online. Submit an abstract, register to attend, sign up as a sponsor, enter the Photo Contest, and more at cal-ipc.org/symposium.

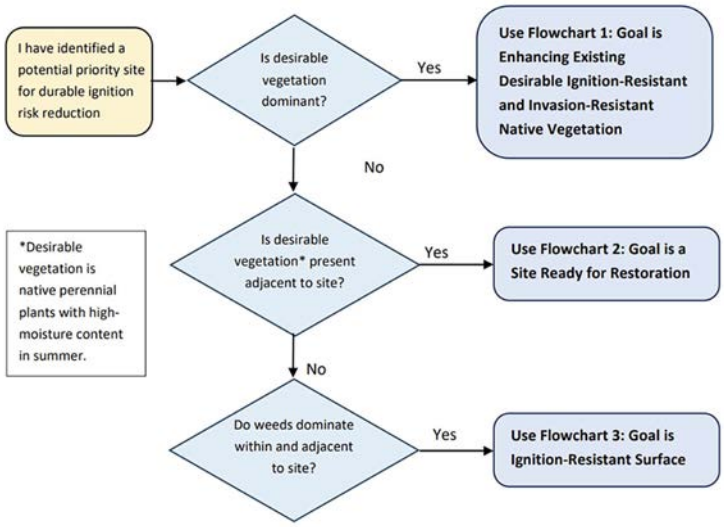
The Durable Ignition Reduction Toolbox (DIRT) for roadside environments in Southern California

Jutta Burger, Science Program Director, Cal-IPC
Mark Heath, On Point Land Management Inc.
Jeff Heys, Wildfire Crisis Strategy Landscape Manager for Southern California, US Forest Service
Nicole Molinari, Southern California Province Ecologist, US Forest Service
Andrea Williams, Williams Ecological Assessment and Planning

Roadside ignitions are a major contributor to wildfires in Southern California. Some invasive plants—such as annual brome grasses, fountain grass, and broadleaf weeds like mustards, yellow starthistle, and stinknet—favor fire-prone environments and leave behind thatch that is highly ignitable and can carry fire, increasing wildfire risk and frequency. Roadside vegetation management practices designed to control them and reduce wildfire risk are most successful when properly timed and customized to site-specific conditions.

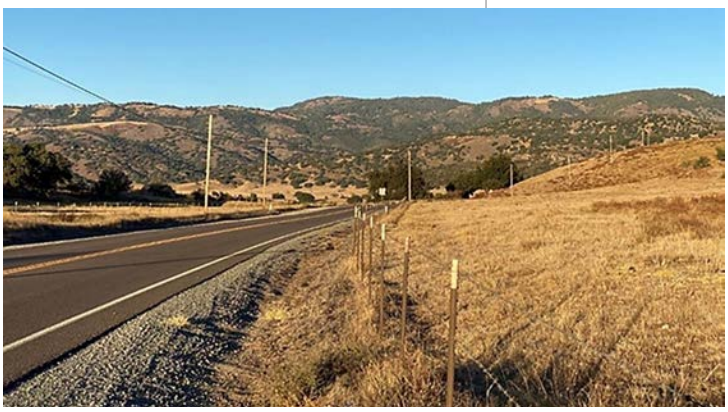
With funding from the National Forest Foundation and the US Forest Service (USFS), Cal-IPC, Williams Ecological Assessments and Planning, and On Point Land Management Inc. developed a Durable Ignition Reduction Toolbox (DIRT) for assessing and informing the management of weedy, high fire risk roadsides across Southern California. The purpose of this tool is to select and implement more site-based, sustainable, and effective roadside vegetation management and avoid being trapped in an expensive perpetual annual cycle of suboptimal control practices.

Our project was part of a larger interagency initiative, the Southern California Ignition Reduction Program (SCIRP), that is working to identify and finance long-term wildfire risk reduction strategies along Southern California's roadways. In particular, USFS and partners would like to mainstream more sustainable and ecologically appropriate roadside management methods that measurably reduce roadside ignitions and their associated risk to natural and human landscapes.



The first flowchart in the DIRT directs users to the three goal-specific flowcharts that follow it.

The DIRT includes several flowcharts to identify appropriate roadside weed management approaches. Each flowchart endpoint recommends an approach that depends on both initial conditions and long-term desired outcomes. The DIRT also provides a more detailed description of each approach, with both herbicide and non-chemical alternatives included where feasible, along with their limitations. Best management practices tables for different weed management techniques, a timetable for management, a table comparing costs, links to additional resources for weed control practices, and an annotated bibliography of relevant literature are also included.



A grassy roadside adjacent to non-native-dominated vegetation, where the best long-term goal may be bare ground or hardscape in perpetuity. Photo: Jeff Heys, USFS.

The three alternative long-term management goals considered by DIRT are:

1. Enhancement of existing desirable ignition-resistant and invasion-resistant native vegetation.
2. Site preparation for restoration with desirable vegetation.
3. An ignition-resistant roadside surface.

Each goal has its own flowchart. Together, the three flowcharts identify 14 weed control approaches and non-chemical alternatives that are based on the amount and type of invasive plant cover, surrounding desirable vegetation, and

(Continued on page 12)

Outcomes of invasive plant management in the world's largest urban national park

Justin Valliere, UC Davis, Olivia Parra, UC Davis, Joseph Algiers, National Park Service

What are the long-term outcomes of invasive plant control? We expect (and hope) that all the time and resources invested in weed management will yield effective control and the recovery of native plant communities and ecosystems. The key to answering the question of long-term outcome lies in robust monitoring efforts.

An example of successful control of yellow starthistle (left) within the park. After years of treatment, native tarweed (middle) and California poppies (right) are abundant. Photos courtesy National Park Service and Tony Valois.

Certainly, most practitioners closely observe on-the-ground outcomes and adjust their approaches based on experience. The knowledge and intuition of land managers and field crews are often central to the success of weed management efforts. However, complementing this expertise with empirical data on vegetation dynamics can greatly strengthen decision-making.

Unfortunately, monitoring is too frequently underfunded or deprioritized in favor of more immediate weed control actions. Even when data are collected, land managers may lack the time, capacity, or tools needed for analysis. Collaborative partnerships between researchers and practitioners can help overcome these barriers, enabling better use of monitoring data to optimize control strategies and guide resource allocation.

We are working to analyze long-term treatment and monitoring data in Santa Monica Mountains National Recreation Area (SMMNRA), the world's largest urban national park. Located within the greater Los Angeles area, the park encompasses large expanses of native shrublands, woodlands, and grasslands interwoven within a matrix of urban and suburban development. The wildland–urban interface is a defining feature of the park's landscape.

Like most of California, the region has been impacted by many invasive plant species, making weed control a top land management priority within the park. These efforts are complicated by a number of factors that can promote invasion, including severe drought, nitrogen deposition from air pollution, and the increasing frequency of large wildfires such as the recent Palisades Fire.

There are many examples within SMMNRA of successful weed control and restoration projects. However, in such a dynamic and expansive landscape, not all efforts yield effective control, and new invasive species and infestations continually emerge. Our work aims to build on the park's extensive archive of weed treatment data – coupled with present day site visits – to identify key factors that contribute to success or failure, with the goal of informing and improving adaptive management strategies.

To this end, we analyzed data from nearly 20 years of weed control efforts within the park. To survey current conditions, in spring 2023 we revisited 279 sites where invasive species had been treated over the past two decades. We collected new data on native and nonnative plant abundance. Our goal was to evaluate the long-term outcomes of past weed treatments and identify key predictors of successful management, including factors that influence eradication rates, invasive plant cover, and native species recovery.

Overall, we found strong evidence of a successful weed management program. However, levels of eradication were relatively low for the most commonly targeted and widespread species. While increased investment in weed control efforts tended to yield reductions in infestation size and cover, as well as promote native recovery, many sites defied this pattern. Although persistence may hold the key to successful control, we found that landscape-level factors can complicate management efforts.

KEY FINDINGS:

- Larger infestations were harder to eradicate. The bigger the initial infestation, the lower the chances were of effective control.
- Steep slopes and frequently burned

(Continued on page 14)

Fostering the next generation of weed scientists

Rebecca Ann Nelson, Utah State University
Marielle Simone Hansel Friedman, University of California, Davis
Anthony Dant, University of Arizona

Students have always been a key part of the Cal-IPC community. Whether conducting research or preparing for work in the field, students make unique contributions and represent the future generation of weed workers.

SEPS Liaisons Rebecca Nelson (left) and Marielle Friedman (center) greet attendees at a networking job fair. Photo courtesy Marielle Friedman.

The Cal-IPC Student and Emerging Professionals Section (SEPS) formed over a decade ago to encourage the career development of those interested in weed science and management. We three currently serve as SEPS liaisons to Cal-IPC's Board of Directors. Our work aims to connect early career weed scientists and land stewards with a network of professionals across sectors and provide information on career pathways.

SEPS hosts a career panel every year at the Cal-IPC Symposium. In 2024, our panelists included Professor Jen Funk from UC Davis, Antoine Penn from Civicorps, and Miguel Ordeñana from the Natural History Museum of Los Angeles County. Panelists shared their career journeys and discussed topics such as switching fields and networking. We also held an informational lunch session on how to get involved in SEPS, which sparked ideas for new initiatives. We recently created official bylaws for the governance of SEPS.

Other SEPS efforts include maintaining a job board of career opportunities for early career professionals, blogging about weed science and management, running CV-building workshops, and tabling at the UC Davis Environmental Science career fair.

As SEPS liaisons, we collaborate closely with the Cal-IPC Board of Directors and serve on planning committees, such as the Justice, Equity, Diversity, and Inclusion Committee, the Symposium Committee, and the Policy Committee. We contribute to efforts such as developing support networks for early career scientists, planning the Cal-IPC symposium, and advocating for weed management funding. We meet on a monthly basis to discuss our goals and initiatives.

The three of us are all graduate students or post-grads. Becca recently finished her PhD at UC Davis, where she researched how invasive plants affect relationships between plants and pollinators in California grasslands. Anthony is a PhD candidate in ecology at the University of Arizona, where he researches the urban ecology of the invasive plant *Centaurea melitensis*. Marielle is getting her PhD in entomology at UC Davis where she researches how plant-herbivore interactions respond to human-caused environmental changes.

SEPS alumni have gone on to pursue a diversity of career pathways within conservation and weed science, working at academic institutions like UC Davis and Sacramento State, government agencies such the USDA, National Park Service, and US Fish & Wildlife Service, environmental nonprofit organizations (including Cal-IPC), and as environmental consultants.

We are always looking for new folks to take on leadership roles within SEPS. If you're a student or early career professional, interested in land management and invasive species, and wanting to contribute to the great team at Cal-IPC, please reach out to the current SEPS Chair at becca.nelson@usu.edu. You can find us online at www.cal-ipc.org/SEPS.

DIRT Toolbox

(Continued from page 10)

other site-specific features (e.g., site size, rockiness, steepness, and proximity to sensitive resources).

A cornerstone of the DIRT is the emphasis on long-term reductions in fire-promoting roadside weed cover not only by removing annual growth, but also by reducing seed production, reducing seedling establishment, and enhancing more desirable vegetation. By focusing on reducing not just invasive cover, but also regrowth, establishment, and spread of ignitable invasive plants, these more sustainable weed management practices will also ultimately reduce weed spread.

Find the full DIRT document in the Publications Library on Cal-IPC's website.

Coastal ecology program goes statewide

Constance Taylor, Conservation Specialist, Cal-IPC

Since 2022, Cal-IPC has worked with Civicorps, a conservation corps group in Oakland, to educate nearly 350 Corpsmembers, Crew Leaders, and staff about the unique shoreline ecosystems of the San Francisco Bay Area. The project was made possible by a Whale Tail grant from the California Coastal Commission.

Shoreline ecology trainings combined classroom time, field trips, and service learning days pulling invasive plants at local shorelines such as Point Pinole in Richmond and Arrowhead Marsh in Oakland. We had our grand finale outing in March to the Marine Mammal Center in Sausalito, where we saw baby elephant seals being rehabilitated and learned how our actions on land affect marine life.

In surveys taken after the trainings, Corpsmembers reported their thoughts and lessons learned. A few of the responses follow.

"These trainings made me appreciate marshlands. They've become one of my favorite ecosystems to learn about."

"I learned about the importance of understanding environments as systems."

"These trainings impacted me both in the career field and in my personal life because I can understand more of what's going on around me. On a personal level I'm able now to understand the full effects of climate change and it causes me to want to be better about what I can do to reduce what goes into our atmosphere."

"I didn't realize how important marshes were and how prevalent they were in the Bay Area. I had always thought of them as empty areas. After learning about how marshes foster many diverse animal species, and their role in managing tides coming in from the bay, I found a new respect for the ecosystem and the work done to preserve them."

Civicorps Crew Leader at a shoreline weed removal workday taking a break to watch wildlife.

Due to the success of the trainings, Civicorps has now restructured their orientation week for incoming Corpsmembers to include expanded content on foundational environmental concepts and information on environmental careers. This new format helps strengthen Corpsmember commitment to environmental care and fosters a deeper appreciation of the role that Civicorps plays in land stewardship.

Now, every new Civicorps Corpsmember receives a standardized, consistent introduction to the ecological concepts and principles of the work they do, why the work they do is so important, and where they as Corpsmembers fit into the larger picture of land stewardship.

Topics covered include shoreline ecology, climate change, watersheds, plant identification, impacts of invasive plants, and site hygiene (cleaning gear so weed seeds and soil diseases are not spread). Conservation career pathways are also discussed at length to expose new Corpsmembers to the variety of opportunities in the green workforce and guide their progress through the program.

Building on the success of the Whale Tail project, in 2024 we began developing programming for other conservation corps groups throughout California. The California Local Conservation Corps Foundation secured funding from Hearst Foundations which allowed us to partner with Conservation Corps North Bay to launch the statewide effort. Cal-IPC built an "Eco-Foundations" curriculum and this spring introduced it to all 13 local conservation corps groups across the state through "train the trainers" workshops for staff. But that's another story.

We are grateful for the Whale Tail grant from the Coastal Commission and are proud of the impact it has made possible in strengthening ecological training for conservation Corpsmembers!

Photo caption: Civicorps Crew Leaders at the Marine Mammal Center in March, 2025 (elephant seal for scale).

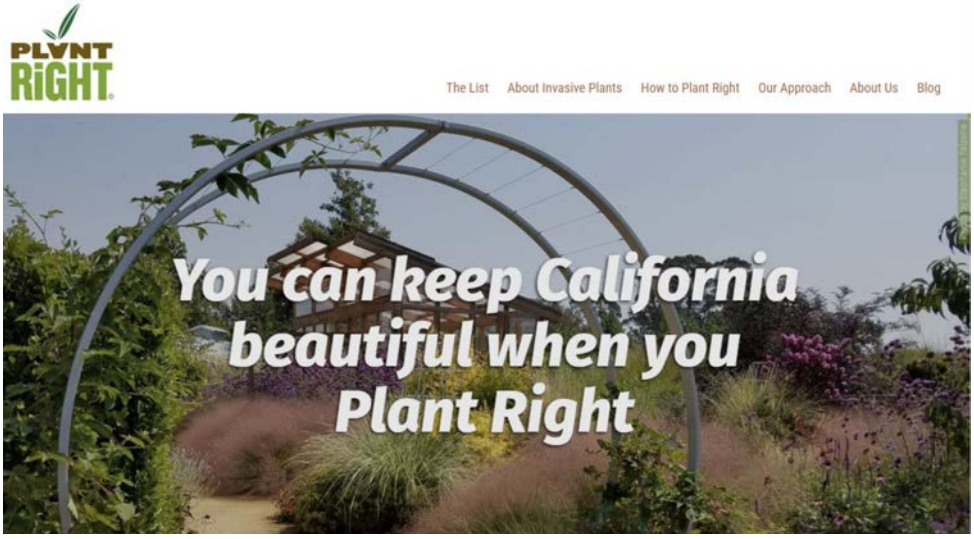
PlantRight welcomes Deanna van Klaveren

Cal-IPC is a longtime partner of the PlantRight program to prevent the spread of invasive plants through horticulture. After being without staff for a year, we are excited to share that PlantRight now has a new coordinator.

Deanna van Klaveren has been hired by Plant California Alliance, a trade association representing the state's horticultural industry, to a position that includes supporting the PlantRight program. PlantRight includes a website (plantright.org) that provides wildland-safe planting alternatives and organizes a nursery survey to reduce horticultural sales of invasive plants. Deanna is co-owner of Generation Growers, Inc. where her family grows a variety of containerized plants for retail garden centers in the Bay Area and other parts of Northern California.

Deanna earned a bachelor's degree in Ornamental Horticulture, a teaching credential in Agriculture, and a master's degree in Agricultural Education from Cal Poly, San Luis Obispo. Deanna is a graduate of the California Agricultural Leadership Program (Class 32) and is in the current Horticulture Research Institute Leadership Academy (Class 2025).

We are excited to have Deanna on board to support the PlantRight program!



Outcomes in world's largest urban national park

(Continued from page 11)

areas posed greater challenges. Weed infestations in these areas were more resistant to control efforts.

- Reducing invasive plants generally benefited native species, but not always. While native plants often rebounded when invasives were suppressed, some sites did not show clear recovery. In such cases, active restoration may be necessary.
- Persistence was key. More frequent treatments, both chemical and nonchemical, along with greater labor investment, tended to result in greater reductions in invasive plant cover.
- For several invasive species, including yellow starthistle and Italian thistle, we found that combining routine spot treatments and nonchemical methods with broader-scale herbicide applications may be critical for achieving effective control.
- Frequent site revisits are worth the investment, as we found that the longer the time since the last treatment, the lower the likelihood of successful control.

These findings underscore the complexity of invasive species management and the value of data-driven decision-making. By identifying how site conditions, infestation severity, and management strategies influence long-term outcomes, land managers can better tailor their approaches and maximize the impact of limited resources. We aim to expand this work to additional sites across the state to support more effective and informed weed management.

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August 14, 2025, San Diego
californianature.ca.gov

State of the Estuary Conference
October 28-29, 2025, Oakland
sfestuary.org

North American Invasive Species Management Association (NAISMA) Conference
November 3-6, 2025, Stateline, NV
naisma.org

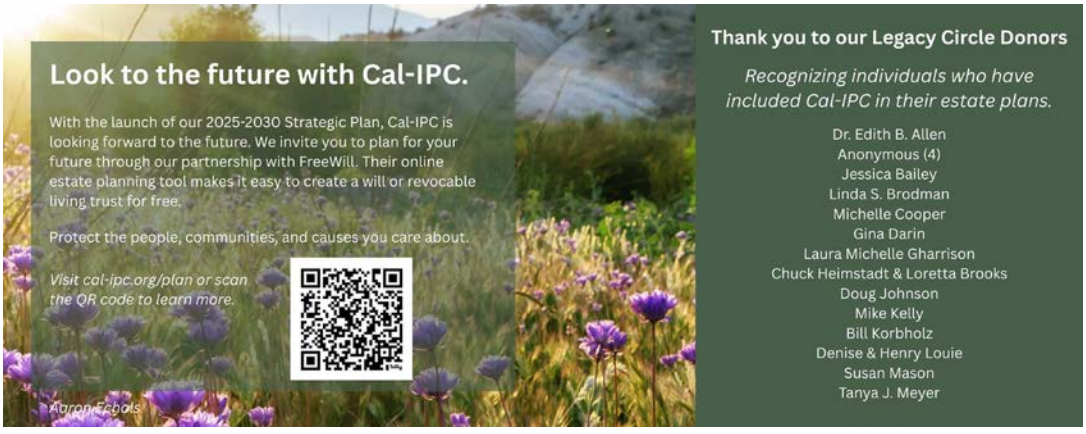
California Invasive Plant Council (Cal-IPC) Symposium
November 12-15, 2025, Ventura and online
cal-ipc.org/symposium

California Association of Resource Conservation Districts (CARCD) Conference
November 18-20, 2025, Sacramento
carcd.org

California Native Plant Society (CNPS) Conservation Conference
February 5-7, 2026, Riverside
conference.cnps.org

Western Society of Weed Science
March 2-5, 2026, Tucson, AZ
wsweedscience.org

Western Section of the Wildlife Society
February 2-6, 2026, Monterey
tws-west.org



"I, along with many others, departed federal service on April 30. NOAA lost 1,056 employees last week representing over 27,000 years of institutional knowledge and expertise. I count myself among them, with 28 years dedicated to understanding and interpreting the environmental impacts humans have on our planet. As I look back at my federal career, I see my time at USGS and at NOAA as a calling, and so much more than a job. I am, and in some ways will always be, a mission-driven civil servant. I believe government is meant to serve every citizen. The people of this country need the dedicated work done by the civil service – even if they don't see us or feel us helping."

— Ellen Mecray, Former Director, Regional Climate Services-East at the National Oceanic and Atmospheric Administration (NOAA), from LinkedIn, May, 2025.