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

30x30x30

By Executive Director Doug Johnson

The international push to conserve 30% of lands and waters by 2030 is gaining momentum. Governor Newsom's executive order committing California to 30x30 goals highlights the complementary goals of conserving biodiversity and addressing climate change.

At the same time, Cal-IPC is in its 30th year of leading efforts to reduce the impacts of invasive plants on California's environment and economy. A tremendous amount of progress has been made. Projects across the state — from multimillion dollar landscape level projects to small volunteer efforts — endeavor to remove wildland weeds and protect resources. Invasive plant management is recognized as a central aspect of land stewardship, and many informational resources are available to today's managers.

But many of our entrenched issues remain. One big concern is making sure that land management, or stewardship, is integrated into the definition of conservation. Too often, property acquisition is said to be "protecting" or "conserving" the land, when in fact it is only half of the need; ongoing management is the other essential, co-equal half of the need. We need to be rigorous in the language we use to frame the issue, and we need to find ways to build an assessment of stewardship into measures of conservation success. This includes the metrics that will be used for California's 30x30 initiative.

Another significant challenge is having invasive plant management at the statewide level be siloed within our agricultural agency. There are strengths in our current structure, especially the dedicated staff at the Dept. of Food & Agriculture (CDFA) and in County Agricultural Commissioners (CACs) offices. And it is promising that recent natural resource initiatives, like the governor's executive order, name CDFA as well as the Natural Resources Agency as leads for protecting biodiversity and addressing climate change. But that does not alter the fact that invasive plant management, an effort critical to protecting biodiversity, is housed within an agency that must prioritize agriculture, while the agency charged with protecting biodiversity does not have a program overseeing statewide invasive plant management.

Currently, funding from CDFA can only go to CACs (not RCDs, for instance), and can only be used on weeds rated by CDFA, which leaves out some invasive plants recognized by Cal-IPC. A statewide programmatic Environmental Impact Report (EIR), costing millions of dollars, may be necessary to enable the program to fund other entities and other weeds.

We will continue to find windows of opportunity, continue to leverage our community's expertise, and continue to partner with other organizations to strengthen the structures we work within. We will maintain a hopeful vision for progress in the next 30 years.

ON THE COVER

Interns at the Crystal Cove Conservancy help monitor the success of a restoration project in Moro Canyon in 2019. They're using a randomly-placed quadrat to assess the density of native plants inside the restoration area. Crystal Cove Conservancy partners with UC Irvine and California State Parks to offer paid summer internships and training to underrepresented and non-traditional students. See article on page 6. Photo: Crystal Cove Conservancy.

Wildland Weed News

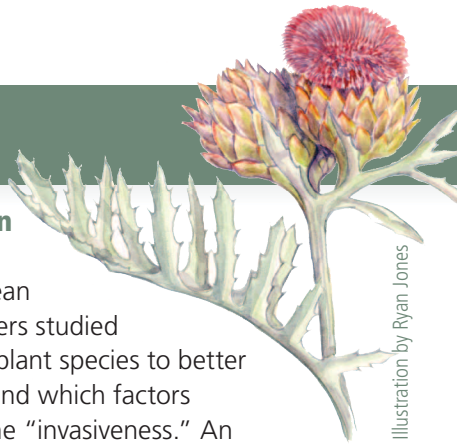


Illustration by Ryan Jones

30-Year Anniversary Symposium 2021 – Join us online, Oct. 26-29! Hear talks, see posters, interact in discussion groups, and more. See page 9.

CAL-IPC UPDATES

WeedCUT – In partnership with the University of California's Dept. of Agriculture and Natural Resources (UCANR) and the California Dept. of Pesticide Regulation, Cal-IPC has built an online decision-support tool that helps practitioners select the best non-chemical weed management approaches for their situation. See page 8 and weedcut.ipm.ucanr.edu.

WMA funding – The recently-passed state budget included substantial funding to address drought, wildfire, and climate resiliency. Cal-IPC is advocating for some of this funding to go to county weed management efforts and to statewide invasive species emergency response.

Invasive Lunch – As we have done the last three years, Cal-IPC teamed with UCANR to host lunchtime webinars every weekday of California Invasive Species Action Week in June. Recordings available at ucanr.edu/sites/invasivelunch/2021.

NEPA streamlining – Cal-IPC joined with other weed management organizations in urging the President's Council on Environmental Quality to approve the Dept. of Interior's requests for NEPA categorical exclusions for invasive species control so response can be timely.

OTHER NEWS

NISAW webinars – Webinars from May's National Invasive Species Awareness Week are available online at naisma.org.

Rangeland – Presentations from UCANR's 2021 Rangeland Weed Management Workshop are posted on YouTube.

Resist-Accept-Direct – The National Park Service has posted a new report framing an approach to natural resource management that recognizes the "trajectory of change" in today's environment. www.nps.gov.

Recreation – Outdoor Alliance has a whitepaper on "How Outdoor Recreationists Can Support 30x30" which shows linkages between equitable access and conservation. www.outdooralliance.org.

Invasion success – European researchers studied invasive plant species to better understand which factors determine "invasiveness." An overview on "Dimensions of invasion success" can be found at eurekalert.org.

Economic impact – An article published online by the journal *Nature* estimates current worldwide monetary costs of invasive species on the order of $160 billion annually. Amounts have tripled each decade since 1970, and management expenditures are an order of magnitude lower than damage costs. www.nature.org.

Policy primer – Oregon's Invasive Species Council published an overview of invasive species threats and opportunities to address invasives across jurisdictions. www.oregoninvasivespeciescouncil.org.

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.

Remembering Ken Moore

As this issue goes to print, we were made aware of the passing of a legend: Ken Moore. An esteemed leader in invasive species management, Ken made extraordinary contributions to the field and helped develop specialized techniques for especially noxious species. He has been instrumental in protecting and restoring local natural history in Santa Cruz County and beyond, for over 40 years, and was a key "Weed Warrior" in Cal-IPC's foundation and early development. He will be missed, but his videos on tools and techniques continue to teach new generations. Look for a full bio in the next issue.


Ken Moore taught Cal-IPC Field Courses for many years. Photo: Bob Case.

Controlling oblong spurge along the Mokelumne River Watershed

Scott Oneto, UC Cooperative Extension Farm Advisor and Eric Mayberry, Amador County Agriculture Commissioner

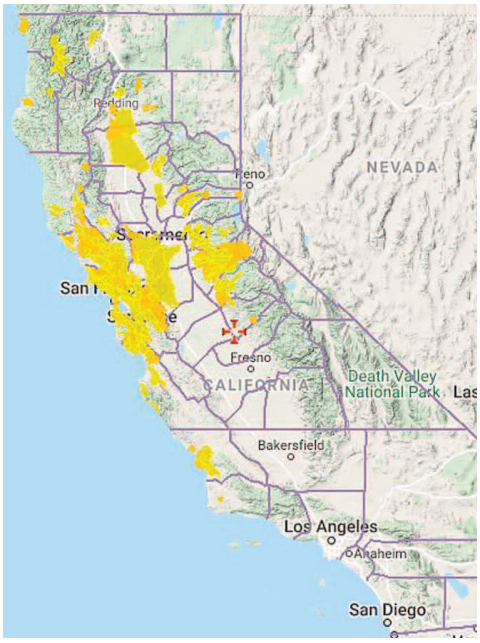
Oblong spurge (*Euphorbia oblongata*) is a noxious weed native to Europe that was introduced into the United States in the early to mid-1900's as an ornamental and has become naturalized in many western states including California (B rated), Oregon (A rated), and Washington (A rated). Plants can form dense patches displacing desirable vegetation and reducing biodiversity of native ecosystems. The milky sap is toxic and can irritate the skin, eyes, and digestive tracts of humans and other animals, making it undesirable along trails and recreational areas where human contact can occur. Livestock poisonings have been reported and wildlife avoid grazing or browsing the unpalatable foliage. Oblong spurge is most often found in damp meadows, streambanks, and shady woodlands, but more recently has started to expand its range into dry hillsides, oak woodlands, mixed conifer forests, and areas recovering from wildfires.

In California, oblong spurge is found along the coast from Mendocino south to Santa Cruz with a few isolated populations south to Santa Barbara. Inland, it occurs predominantly in the Sierra Nevada range and is most abundant in El Dorado, Amador, Calaveras, and Tuolumne counties. Cal-IPC has predicted that the suitable range for oblong spurge in California through 2050 could be extensive, including much of the Sierra Nevada, the Klamath Mountains, Coast Ranges, and the entire coastline.

Amador County, located in the central region of the Sierra Nevada, has an expanding population of oblong spurge, primarily along the Mokelumne River watershed. The Mokelumne is a 95-mile river that flows west from the rugged peaks of the Sierra Nevada into the Central Valley and ultimately into the Sacramento-San Joaquin River Delta. The river is used for recreation, wildlife habitat, hydroelectric power, and for industrial and urban water use. In 2018, a portion of the waterway was designated as a California Wild and Scenic River. The lower portion of the watershed is part of a rich agricultural region of the Central Valley where water is used to supply orchards, vineyards, annual crops, and livestock production. One of the largest landholders along the lower portion of the watershed is the East Bay Municipal Utility District, which owns and operates nearly 16,000 acres of working landscapes used for livestock production, recreation, and water supply for 1.4 million people in the East Bay region. In 2015, the Butte fire started along the Mokelumne river and burned nearly 71,000 acres in Amador and Calaveras counties. There is significant concern that oblong spurge will further establish in the burn area.

In 2020, the Amador County Department of Agriculture partnered with the University of California Cooperative

Oblong spurge growing along the Mokelumne River.



Current distribution of oblong spurge.

Extension to develop an oblong spurge control project that would aim at reducing the amount of oblong spurge predominantly along the Mokelumne watershed. The project was funded in part through the 2020 CDFA noxious weed grant program. The multi-year project consists of mapping spurge populations, contacting affected landowners, treating weed populations, monitoring, and retreating as funding permits. Although COVID-19 delayed most applications from being made in 2020, the time was spent developing outreach materials to educate the public about the weed and the importance for treatments. Materials included a one-page flyer that was sent to landowners, a permission form to grant access to apply herbicides on private property, and the creation of an ArcGIS story map. https://storymaps.arcgis.com/stories/1a1604aeae1e4c9891f8d040710e1bb4

The team also spent the first year collaborating with government and agency partners, including the Bureau of Land Management, Pacific Gas and Electric, East Bay Municipal Utilities District, City of Jackson, and Cal-Trans to ensure all impacted lands would be treated. The team also developed a mapping platform using ESRI Collector so that weed populations could be mapped in the field for fast data collection and analysis.

Using recent research findings (Oneto 2020), the team is using a low volume, directed spray application technique called drizzle that has proven to provide excellent control of oblong spurge in a single application using the herbicide imazapyr. Even as a single treatment, control of established plants and significant suppression of seed in the soil seedbank can be achieved from one application. Treatments consist of applying imazapyr as a drizzle technique at 0.8lbs. ae/acre with a modified seed oil in a water carrier at 2 gallons of spray solution per acre. The drizzle method was developed at the University of Hawaii for directed treatment of hard-to-reach invasive plants along forest trails. This method uses higher herbicide

County personnel applying drizzle treatment to oblong spurge.

concentration than conventional methods but is applied at a lower total volume per acre. With a low application rate of 2 gallons of spray solution per acre, this technique has several advantages, including:

- Significantly less herbicide solution applied (2 gallons per acre compared to 50-100 gallons per acre in a traditional broadcast application).
- Reduced time to treat an infestation and refill sprayer.
- The drizzle application can reach a target plant 15 to 20 feet away, compared to 2 to 3 feet with a flat fan nozzle.
- Minimal drift because of large droplet size.
- Increased capability of making discreet target applications.
- Reduced cost compared to conventional backpack sprayer application or manual removal because application time is less.
- Increased versatility: The wand of the drizzle unit can be waved for broadcast application or aimed for a very precise spot application.
- Increased safety: Heavy loads are a risk factor in injuries. Risk is compounded by fatigue caused by carrying multiple heavy loads, especially in rough or steep terrain. Low-volume methods reduce the weight and/or number of loads that an applicator must carry.

As of July 2021, the team is finishing the first full year of treatments and is already seeing impressive results. The few areas that were treated in 2020 have few to no oblong spurge regrowth and the extensive patches treated in 2021 are already showing excellent control.

For more information about the project, contact Eric Mayberry at emayberry@amadorgov.org or Scott Oneto at sroneto@ucanr.edu. All photos and images courtesy Scott Oneto.

Reference:

Oneto, S.R. 2020. Developing Chemical Control Strategies for Oblong Spurge (*Euphorbia oblongata*), California Weed Science Society, Monterey, CA. Pg. 48.

Before (left) and after (right) treatment of oblong spurge.

Building partnerships to increase access to resource stewardship careers

Becky Rittenburg, Parks California, (statutory non-profit partner to California State Parks)

Nina Omomo was in her final semester at San Francisco State University as the world locked down into the pandemic. After six long years of balancing coursework and working part-time at a restaurant to pay her way through college, Nina had one final requirement to graduate with a degree in Environmental Studies: an internship.

Nina's schedule was already busy with work, and she did not have existing work experience in the environmental field to feel qualified for an internship. In her search, she found a volunteer opportunity at a native plant nursery with a local non-profit, Literacy for Environmental Justice (LEJ). LEJ promotes ecological health, environmental stewardship, and community development in southeast San Francisco that directly engages and supports local residents in securing a healthier future. As a part of their programming, they manage a native plant nursery and conduct habitat restoration projects throughout the Candlestick State Recreation Area and the Bayview Hunter's Point community.

Nina walked into that first volunteer experience with some hesitation — would she feel like an outsider? Was this going to be a "pretentious" environmental non-profit? Did she have the skills and experience to be successful? She was relieved by what she found. The atmosphere was laid back, the work was important to the community, it was fun, and — most importantly to Nina — it was inclusive. Anyone could volunteer, with or without any experience with plants. "I did not feel inferior, and it was very welcoming. I could see myself coming back and doing this type of work." So, she kept going — every Saturday morning for several months.

What Nina particularly appreciated about the organization was that they

Nina Omomo, an Eco-Apprentice with Literacy for Environmental Justice, received training in native plant nursery management, invasive plant control, and habitat restoration. Photo: Literacy for Environmental Justice.

"always, always, always worked from the community. The local community has lived in the area for decades. They know what the greatest needs are. They are the ones that can point to the solutions." She also appreciated that LEJ did not require a college degree for their training programs or positions — connections to the surrounding community and lived experience were equally valued.

Eventually, Nina applied for a training opportunity to continue working at the nursery and in local restoration projects through LEJ's Eco-Apprenticeship program, a paid workforce development internship serving youth ages 18-25. Most participants are people of color, many of whom are from the low-income neighborhoods of southeast San Francisco. Youth work up to 35 hours per week attaining environmental education, restoration, leadership, and team-building skills and experience.

Through the training, Nina learned the importance of native plants for ecosystem health, how to locally source them, get them established, and steward them. To her, a fulfilling part of the internship was learning through mentors. She learned to advocate for herself. She learned to read a landscape, envision a plan for restoration, and put the pieces together to phase out a project. "I learned more in my one-year at LEJ than I did in 6 years of college," she said. "And I learned to do something that I like to do, which can be hard to find."

Her favorite project? Nina loved working on a living shoreline and sea level rise enhancement project to an existing wetland at Heron's Head Park in the Hunters Point community through a partnership with the Port of San Francisco, Cal-IPC, and the Estuary and Ocean Center, with funding from the San Francisco Bay Restoration Authority. Nina has been leading a crew to support invasive sea lavender removal and grow thousands of native plants for the

revegetation of the site, including an endemic endangered wetland species, California sea-blite (*Suaeda californica*).

Upon graduating from the Eco-Apprenticeship program, Nina has been promoted to a full-time position with LEJ as a restoration coordinator. Four out of 5 of her other crew members have also found full-time positions in the stewardship field after a year of training in the Eco-Apprenticeship program.

Nina's encouraging story is one of many coming out of workforce development programs throughout the state that broaden access and training opportunities for people to explore jobs in resource stewardship. We at Parks California believe that these programs are crucial for the future of conservation, and we are endeavoring to support them.

As the statutory non-profit partner, Parks California works hand-in-hand with California State Parks to make our state parks welcoming, inclusive, and climate resilient spaces where all people throughout California truly feel at home. To face the pressing landscape-scale challenges, there is great need to build and strengthen an inclusive community of stewardship practitioners and leaders that represent diverse perspectives across the state. We are on a journey to sustain and advance best practices from natural resources training and career development programs that also share a commitment to create opportunities for all in the environmental stewardship field.

The Amah Mutsun Land Trust Native Stewardship Corps' partnership with California State Parks is a model for how agencies can interact with and support local Indigenous peoples and their ancestral lands. Photo: Amah Mutsun Land Trust.

Through the launch of our Natural Resource Stewardship Career Pathways grants program, we partner with non-profits who focus on providing workforce development programs to traditionally underrepresented communities. "Bringing diverse perspectives, lived experiences, and Indigenous knowledge into landscape stewardship builds strength and resilience in the treasured places we all share," says Kindley Walsh Lawlor, CEO/President of Parks California.

Parks California's 2021 grantees represent a wide range of training models that help break down barriers for underrepresented communities, including Black, Indigenous, and people of color, to gain exposure and access to careers. Each of the grantees is currently working in collaboration with California State Parks on specific stewardship projects.

How are these programs addressing barriers to advance diversity and equity? In addition to providing training and work experience in invasive species removal work, habitat restoration projects, monitoring, and fuel reduction work, they also invest in building an inclusive culture through staffing and mentorship models. They build a sense of belonging for their participants, creating safe and welcoming spaces. They connect participants to job networks and provide career advice. They provide the equipment, wages, meals, and travel reimbursement to make trainings opportunities more accessible to the specific communities that they serve. "Building partnerships through programs like these is critical to recruiting, mentoring, and supporting the next generation stewardship workforce for our parks," says Jay Chamberlin, Natural Resources Division Chief at California State Parks.

Natural Resource Stewardship Career Pathways Grantees

Legend:

	Natural Resource Stewardship Career Pathway Grantee	Program Name	California State Parks
1	Student Conservation Association	Wildland Fuels and Ecological Restoration in Sinkyone Wilderness	Sinkyone Wilderness State Park
2	Sierra Institute for Community and Environment	P-CREW (Plumas Conservation Restoration, and Education in Watersheds)	Plumas-Eureka State Park
3	Stewards of the Coast and Redwoods	Career Pathways Partnership: Sonoma County Youth Ecology Corps and Stewards of the Coast and Redwoods	Armstrong Redwoods State Nature Reserve & Austin Creek State Recreation Area
4	Literacy for Environmental Justice	Eco-Apprenticeship Program	Candlestick State Recreation Area
5	Amah Mutsun Land Trust	Native Stewardship Corps	Año Nuevo State Park, Henry W. Coe State Park
6	Crystal Cove Conservancy	Crystal Cove Natural Resource Summer Capstone Internship	Crystal Cove State Park

WeedCUT: An online decision support tool for weed control without herbicides

Jutta C. Burger, Cal-IPC; Tunyalee Martin, UC IPM; Cheryl Wilen, UCCE, Emeritus; and Tom J. Getts, UCCE

We recently announced the publication of *Best Management Practices for Non-Chemical Weed Control*, a manual for land managers that is available for free download on the Cal-IPC website (www.cal-ipc.org/BMPnon-chem; (Volume 29:1, Spring 2021). We also promised the future release of a companion online decision support tool. That tool, fittingly named WeedCUT, is now live at weedcut.ipm.ucanr.edu! Co-created with the University of California Agriculture and Natural Resources Statewide Integrated Pest Management Program (UC IPM) and funded by the California Department of Pesticide Regulation (DPR), the tool is designed to provide improved access to information on non-herbicide techniques used in wildlands.

The WeedCUT webtool has a handy landing page that displays 21 mechanical and cultural weed control techniques and a link to the 18 biological control targets that were highlighted in the manual. Descriptions of each technique — including helpful photos — can be downloaded and printed as stand-alone guides. Thanks to the UC IPM design team, all website pages also come with an accessibility menu.

Online descriptions of techniques include symbology for selectivity, best-suited plants, cost, human safety, fire risk, risk to cultural resources, and environmental hazards for implementation. The tool includes several other features, including a filter option that helps users choose non-herbicide weed control techniques based on their specific situation or for a limited number of species (providing a demonstration of a species selection tool that will be built out later).

Users can select from an array of plant and site characteristics that they are interested in or choose a target weed type using a species-level filter. These include annual, perennial, shrub, or tree life forms; mode of reproduction (seed only or also rhizome, stolon, bulb/corm, root sprout); patch size; soil condition; habitat type; and relative cover of both undesirable and desirable plants. Each characteristic that is chosen helps to narrow down the number of techniques that are suitable.

The WeedCUT tool includes best practices for grazing (here, by goats). Photo: Marc Horney.

Techniques are grouped by their potential efficacy rating based on filter inputs. Efficacy groupings are Excellent control (>95% single season control of cover and associated propagule production), Good (80–95%), Fair (50–80%), Poor (5–50%), and ineffective (<5%), and are derived from individual efficacy scores that best management practices authors and contributors have painstakingly provided for 77 unique site and plant characteristics. Scores are, in most cases, not the result of experimentation but based on the experience of experts estimating what could potentially be achieved if the technique were implemented as described. They may be over- or under-estimates because they are, by necessity, generalizations.

Herbicide techniques commonly used in combination with non-herbicide techniques are not described in the current version of the tool, because it was designed for practitioners that either need or want to exclude herbicides. The beauty of this tool is that users can learn about how site and plant type can dictate the success or failure of different techniques.

*The WeedCUT tool covers special tips for competitive planting, including a chart of highly competitive native species. Here, a volunteer plants plugs of a competitive perennial (*Grindelia camporum*). Photo: Tanya Meyer.*

The best management practices manual and WeedCUT tool were inspired by the increasing need that land managers have for information about weed

(Continued on page 14)

Photo credits, left to right: Dana Morawitz, Benjamin Dion, Stacy Schmidt, Michael Viramontes.

Celebrate the 30-Year Anniversary Cal-IPC Symposium with us! Share the latest in invasive plant biology and management.

SYMPOSIUM FEATURES

Join colleagues from across the state to share the latest updates on effective tools, new weeds, relevant research, strategic approaches, and evolving management perspectives. Our online format will include opportunities to pose questions to speakers, chat with sponsors/exhibitors, engage during discussion groups, talk to poster and lightning talk presenters, and create video meetups with friends and colleagues.

TUES., OCT. 26: WMA MEETING, LAWS & REGS, AND MORE

8:00 am – 10:30 am: 2021 Statewide WMA Meeting. Representatives from Weed Management Areas convene to share information on project design, new weeds, control techniques, early detection, mapping, and funding. (no cost)
11:00 am – 12:00 pm: Career Panel
1:00 pm – 2:30 pm: Weed Management 101 Training
3:00 pm – 5:00 pm: DPR Laws & Regulations Session

WED. to FRI., OCT. 27–29: MAIN CONFERENCE

Session talks, plenaries, discussion groups, and posters cover a wide range of topics on invasive species biology and management, including:

- Lessons learned and management insights
- New mapping and prioritization tools
- Management tools and techniques
- Native plant conservation and invasive plants
- Productive partnerships
- Social equity in conservation
- And more!

SPECIAL THEME SESSIONS:

- Expanding the conservation community
- Protecting biodiversity in California and around the globe, with speakers from Australia, South Africa, Chile, England, and Canada.
- Managing invasive plants to meet California's "30x30" conservation goals

Plus, our annual Photo Contest, Poster Session, and Exhibitor Gallery.

FIELD TRIPS

Just added! Register and pay separately for field trips. Space is limited.

- **Fri., Nov. 5: Yolo County grasslands** (Half day, $25)
- **Sat., Nov. 6: Mindego Hill restoration** (Santa Clara County, Full day, $25)
- **Sat., Nov. 6: Santa Clara River** (Ventura County, Half day, $25)
- **Sat., Nov. 6: Upper Newport Bay** (Orange County, Half day, $25)

REGISTRATION

Early Bird through Aug. 20 / Regular through Oct. 15 / Late through Oct. 25. Registration closes Oct. 25, 5:00 pm.
Member: $75 early bird / $100 regular / $125 late
Non-Member: $100 early bird / $125 regular / $150 late
Student Member: $25 early bird / $40 regular / $55 late
Student Non-Member: $40 early bird / $55 regular / $70 late
Presenter: $25 early bird / $40 regular / $55 late
Student Presenter: $0 early bird / $15 regular / $30 late
Limited income: $0

Additional Costs/Discounts:

Charge for DPR continuing education credits: $50
Discount for attending SERCAL or CNGA: Subtract $25 (Discount code needed)

Visit cal-ipc.org/symposium to register, participate in the Photo Contest, and find more Symposium information.

Thirty years of Cal-IPC and the California land management community

Doug Johnson, Cal-IPC

As Cal-IPC turns thirty years old, we can look back with some pride (and frustration) and forward with some hope (and concern). We have become a leader in land management in California, supporting and partnering with organizations across the state working to protect the state's biodiversity.

If it were not for some major serendipity, Cal-IPC might never have formed. A confluence of individuals, needs, and events came together in 1991 and led to the formation of what today is the California Invasive Plant Council.

The first lightning strike came at the 1990 Natural Areas Conference that was held in Concord. During a breakout session, several people sat down at the table with the subject card of "Invasive Plants." Among them were John Randall of The Nature Conservancy, Carla Bossard of St. Mary's College of California, and Greg Archbald of the Golden Gate National Parks Association (GGNPA). In addition, there was a newcomer to the state, George Molnar.

George had come from Florida, where he was chief of the Biological Resources Section of Metro Dade County. He described to others in the small breakout session how land managers in Florida had recently formed the Exotic Pest Plant Council (EPPC) to coordinate resources and advocacy at the statewide level. Greg said what others at the table were also thinking, "That's what we need here in California!"

The second fortuitous coincidence was that George had moved to Mill Valley in Marin County, where Greg also lived. In a time before email and the internet, this enabled George and Greg to meet in person and share information about how the EPPC had formed, what its goals were, and how it operated. A one-pager from EPPC at the time read, "The secret to EPPC's success has been quite simple. EPPC pulls together the resources and talents of a wide variety of people, agencies, organizations, and corporations."

A small selection of photographs from the Cal-IPC archive shares moments from Symposia, Field Courses, and Weed Training Workshops.

Greg's new position with the GGNPA had been created to engage the community in stewardship. He more clearly recognized the importance of management as a complement to the acquisition work he had previously focused on for the Trust for Public Land. In particular, at that moment he needed to find out how to control capeweed, and he could see how a network like the EPPC in Florida could facilitate information exchange. Fortunately, his position allowed him the flexibility to put time into exploring the idea of a California EPPC.

Greg, John, Carla, and others grew excited about the potential benefits of building such a network in California. In the fall of 1991, they organized an exploratory meeting of thirty people at the Bay Conference Center in Marin County. Those in attendance were also excited, so the team got to work organizing a larger statewide meeting. This first Symposium was held in Morro Bay in October of 1992.

The first day featured 14 presentations and a concluding panel discussion, followed by energetic evening discussion groups. For the second morning, the agenda was titled "Organizational Meeting" to determine "where we go from here." More than 150 people attended, and the enthusiastic consensus was to move forward with creating the California Exotic Pest Plant Council as a nonprofit organization. Several attendees then went on a field trip to local restoration sites. We were off and running!

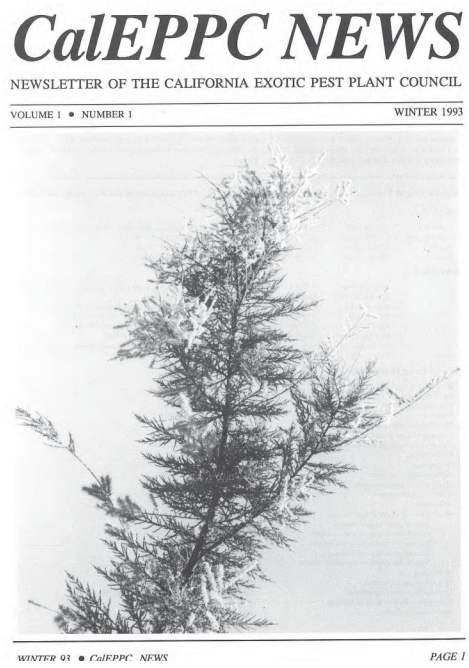
The first issue of Cal-IPC's newsletter came out shortly thereafter (see all archives online at cal-ipc.org/dispatch). In his President's message, John Randall expressed "a strong feeling that I can best describe as pride" in seeing the Morro Bay Symposium become a reality and "to have worked with such fine people while doing so." He expressed the thought, "This group will make a difference… I believe that we can increase public awareness about problems posed by invasive non-native weeds in the state's wildlands, and that we can help emplace programs to deal with many of these problems."

So much has happened in the ensuing years: publication of the first version of Cal-IPC's weed list (1996), publication of Weeds of California's Wildlands through UC Press (2000), holding our first field course (2005), partnering to create PlantRight (2005), lobbying successfully to restore state funding for Weed Management Areas (2006), catalyzing creation of the state's interagency Invasive Species Council (2009), mapping *Arundo* in coastal watersheds from Monterey to Mexico (2011), completing CalWeedMapper (2013), publishing herbicide best management practices (2015), adding Watch species to the Inventory (2019), and completion of an online decision-support tool on non-chemical weed control methods with the University of California (2021), to name a few.

All of the organization's accomplishments are a testament to the vision and energy of our founders and to the hard work of staff, board, and members every year. This year's Symposium, our 30th, reflects the continued vitality of California's land management community.

GGNPA, the organization that supported Greg Archbald's work toward forming Cal-IPC, has come a long way, too. Back in 1988, the volunteer Habitat Restoration Team grew out of a volunteer trail maintenance effort. As they worked on broom and gorse in the Golden Gate National Recreation Area (GGNRA), one of the volunteers, Tom Ness, invented the original weed wrench, the progenitor of the many variations available today.

Invitation to the first Symposium in 1992.


CalEPPC NEWS

NEWSLETTER OF THE CALIFORNIA EXOTIC PEST PLANT COUNCIL

VOLUME 1 • NUMBER 1 WINTER 1993

WINTER 93 • CalEPPC NEWS PAGE 1

First edition of the newsletter.

Since then, the Golden Gate National Parks Conservancy (GGNPC) as they are now known, have engaged thousands of community volunteers and interns in natural resource management. They implemented a major tidal marsh restoration at Crissy Field in San Francisco. They formed the innovative One Tam partnership to coordinate multiple land agencies in the region, and they are leading the new California Landscape Stewardship Network to support formation of such collaborations across the state.

These accomplishments reflect decades of innovative work by stewardship professionals like Sharon Farrell and Sue Gardner as well as their National Park Service partners like Maria Alvarez and many others. Today, GGNPC and GGNRA are at the forefront of efforts to integrate work on conservation with work on equity and social justice.

Cal-IPC's strength remains what it always has been — you and everyone else that make up the state's land management community. The spirit of knowledge sharing and collaboration that breathed life into the organization at the beginning remains the essence of our collective ability to move forward. When we produce a new Best Management Practices document, we do so by organizing a technical advisory committee of Cal-IPC members to contribute their expertise.

As we look ahead to our fourth decade, the need for our work has never been greater. The governor's recent executive order recognizes the twin threats of biodiversity destruction and climate change. New initiatives, like 30x30 (to protect 30% of the state's lands and waters by 2030), offer an opportunity to build stronger invasive plant management into public policy. Partnerships with networks of local agencies, including County Agricultural Commissioners (CACs) and Resource Conservation Districts (RCDs) provide avenues for implementing critical on-the-ground projects to stop the spread of high priority weeds.

It is indeed something to be proud of, and I feel the same as John Randall did in 1992 — that it is a joy to join with such fine people in doing the work. Here's to continued progress in protecting California's environment and economy for future generations.

Species spotlight: Italian lords-and-ladies (*Arum italicum*)

Jutta Burger, Cal-IPC and Alex Stubblefield, PlantRight

Italian lords-and-ladies (*Arum italicum; Araceae*) has officially been added as a "Watch" species to the Cal-IPC Invasive Plant Inventory. This species has many other colorful common names, including orange candleflower, large cuckoo pint, and Italian *Arum*. It is native to the Mediterranean region of Europe and has been popular as an ornamental for years, mostly because of its striking foliage and showy fruit stalks. It is a short-statured perennial, reaching about 1.5 feet, with arrow-shaped, glossy, green leaves and pale-colored leaf veins. Flowers are tightly packed on a rod-like spadix that is partially enclosed in a large cream-colored bract. Fruits are borne on the spadix and are bright red. Italian lords-and-ladies reproduces easily by both seed and tubers. It is pollinated by flies.

Colorful fruit stalks of Arum italicum. *Photo: Jennifer Mo, Santa Clara Water District.*

The first herbarium record from California that we are aware of is from 1960, from a private property in Mendocino County where it was already referred to as "very abundant" (California Academy of Sciences #602305). Occasional herbarium specimens and local checklists — mostly from northern California — documented its slow-but-steady spread over the next fifty years. More recently, we have received a pulse of reports through the community science reporting tools Calflora and iNaturalist, and to us directly, about this species invading riparian areas. Italian lords-and-ladies has by now been reported from 25 counties in California, ranging from Humboldt to Orange County and eastward to the Sierra Nevada, with its center of distribution in the San Francisco Bay area (https://www.calflora.org/app/taxon?crn=730).

Foliage of Arum italicum. *Photo: Friends of Five Creeks.*

Washington State has listed this plant as a noxious weed, citing, in particular, its toxicity and how difficult populations have been to control. *Arum italicum* was still highlighted by the horticultural industry as a desirable ornamental in 1975 (see Wood in American Horticulturalist 54:1), though several online resources now warn about its invasiveness. Its seeds and tubers are easily spread long-distances by contaminated garden waste and compost.

We were not surprised that *Arum italicum* scored as a "high risk" of becoming invasive. Although it has attractive foliage and flowers, it can spread quickly into monocultures, both by seed and tubers. It blocks out light that other plants need to germinate and grow. All parts of the plant are poisonous to people, pets, and livestock, and do not appear to be heavily used by wildlife.

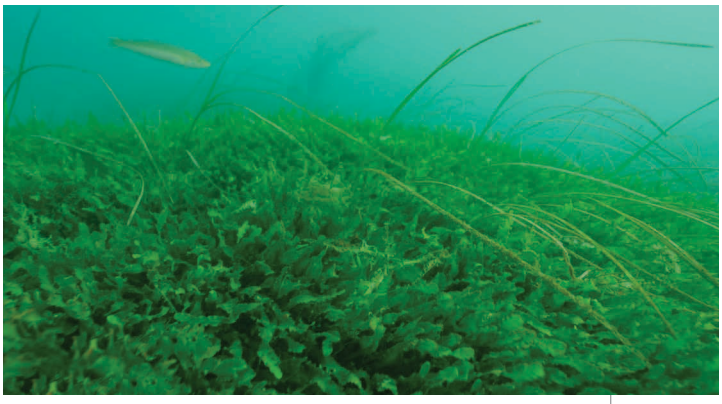
If you see this species in wildland habitat, please report it (using iNaturalist or Calfora) and contact your local land manager about your concern. They may be able to do something about it, and, if not, they will at least appreciate being aware of the species and its potential to spread. Home gardeners can contact their local Master Gardener association for tips on control. The Washington State Noxious Weed Control Board has some description of control with herbicides and cautions on using common control methods that do not employ herbicides.

PlantRight and Cal-IPC are partnering with specialists from Washington, Oregon, Arizona, and California over the next six months to screen an additional 24 other ornamental plants that have "hopped the fence" or are at risk of doing so across our western States. Stay tuned for more reports!

Caulerpa prolifera: A new invasive algae discovered in Newport Beach, Orange County, CA

Amanda Swanson, PhD, California Department of Fish and Wildlife

In February 2021, a diver who was underwater filming in China Cove of Newport Harbor, Orange County, happened to come across a suspicious looking algae that looked eerily similar to invasive *Caulerpa*. With immediate concern, the diver and his team notified local agencies and nonprofit partners. A sample of the algae was promptly collected and submitted to the California Department of Food and Agriculture for identification, where it was confirmed to be *Caulerpa prolifera*, a new finding in the coastal waters of California.



Caulerpa prolifera *in Newport Harbor, photographed by the diver who found the infestation. Photo: Lance Milbrand.*

Caulerpa prolifera *in Newport Harbor. Photo: Lance Milbrand.*

Caulerpa prolifera is native to Florida and other subtropical and tropical regions. While it does not pose a threat to human health, it can grow rapidly and outcompete native seaweeds and sea grasses and has potential to cause great harm to coastal marine ecosystems in California.

The blades of *C. prolifera* are flat, erect, elongate to oval in shape, and range from 2 to 6 inches tall. The blade is tapered at the base where it connects to the stalk, which is approximately 0.4–0.8 inches tall. A species of green algae, *C. prolifera* is bright green with several flat blades whose stalks are linked together by stolons. The stolons are anchored in place by hair-like root structures called rhizoids. Since *C. prolifera* photosynthesizes, the size and branching patterns of leaves can be variable depending on the amount of sunlight available.

Like other *Caulerpa* species, *C. prolifera* can reproduce through fragementation which contributes to its invasiveness. Nine species of *Caulerpa* were banned by Assembly Bill 1334 in 2001, but *C. prolifera* is not included on this list and is still sold commercially as an aquarium plant. Currently, the source of the Newport Harbor infestation is unclear.

In California, past efforts to control invasive *Caulerpa* have involved *C. taxifolia*, a relative of *C. prolifera*. Dubbed "killer algae" due to its ability to invade and eliminate native marine ecosystems, *C. taxifolia* has a history as a notorious invader in the Mediterranean Sea and other regions, causing significant adverse effects to the marine ecosystems. In 2000, infestations of *C. taxifolia* were discovered in Agua Hedionda Lagoon in San Diego County and Huntington Harbor in Orange County. Rapid response of resource agencies to reports of the infestations led to the formation of the Southern California *Caulerpa* Action Team (SCCAT). SCCAT developed a multifaceted strategy that led to the eradication of *C. taxifolia* in 2006. The cost of this effort amounted to approximately $7 million. With the recent finding of *C. prolifera* in Newport Harbor, SCCAT has reconvened and will use a similar strategy for eradication of this new species.

SCCAT has developed a three-phase approach which is in the early stages of implementation. Phase 1 is currently underway and involves 100% coverage surveys to assess the full extent of the infestation followed by treatment. Initial removal, which began in mid-June, is being done by hand-held dredge, which divers use to "vacuum" up plants as they are pulled out of the substrate. Phase 2 will involve post-treatment surveys that will continue for multiple years following treatment to ensure reinfestation does not occur. Phase 3 includes ongoing surveys beyond the known location to search for other infestations in nearby areas where it could have spread to, including the upper portions of Newport Bay and areas outside of Newport Harbor.

The recent finding of *C. prolifera* and the successful eradication of *C. taxifolia* highlight the Importance of early detection rapid response (EDRR) efforts. If you suspect you may have found *Caulerpa*, please refrain from collecting (which could unintentionally result in spread). Take several pictures, if possible, and report your finding to the California Department of Fish and Wildlife at https://wildlife.ca.gov/Conservation/Invasives/Species/Caulerpa.

A promising agent to control tree-of-heaven

Ailanthus altissima *in flower. Photo: Luis Fernandez Garcia*

Finally, a ray of hope in the fight against tree-of-heaven (*Ailanthus altissima*) — a potential ally in the form of a fungus that kills the tree: a microscopic organism called *Verticillium nonalfalfae*, believed to be native to Pennsylvania, Virginia, and Ohio.

Ailanthus altissima is highly invasive tree in California: it can grow three feet a year, cloning itself via underground suckers or through the hundreds of thousands of seeds each tree produces every year.

This notorious plant outcompetes native species by forming dense thickets and producing chemicals that impact the growth of neighboring plants. It also emits a bad smell from its flowers; has no natural predators; and serves as a host plant for several destructive invasive insects, including the spotted lanternfly, a major pest of several agricultural and ornamental species, as well as native trees

Scientists are now experimenting with using the fungi to kill tree-of-heaven, by hacking the trunk and directly injecting the pathogen into the plant. The results of one study, published in September 2020 in the journal *Biological Control* (Brooks et al., 2020), found the fungus to be "highly effective" as a control against *Ailanthus*. The fungus kills *Ailanthus* by infecting it with vascular wilt disease, essentially clogging the plant's vascular system and starving it of water. The plant slowly begins to wilt, dropping fungal spores into the soil where the *V. nonalfalfae* life cycle begins anew. The fungus seems to be able to spread within a stand on its own.

Read more: www.nationalgeographic.com

WeedCUT

(Continued from page 8)

control options that do not use herbicides and can be used at scale in wildland conditions. They were also inspired by common misconceptions that we observed about efficacy (either discounting them or assuming a higher control rate than possible), persistence needed, cost, and hazards. Just as any applicator can read about environmental hazards and safety on herbicide labels, we have provided guidance on each technique's safety considerations and environmental hazards. Our goal has been to supplement DiTomaso, Kyser et al.'s (2013) landmark manual *Weed Control in Natural Areas in the Western United States* in a digital format that can be updated in real-time, by including site-specific considerations, generalized efficacy ratings, and more detailed descriptions specifically for non-chemical techniques.

The next phase of WeedCUT — also funded by DPR — will integrate herbicide-based weed control options into the tool and will expand the species filter tool to include a much larger selection of Cal-IPC-listed weeds. This will take three years to build out, but we are already excited to start!

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www.sercal.org/registration-for-sercal-2021

NAISMA Annual Conference
September 27-30, Missoula, MO and Online
naisma.org/conferences/

Invasive Species Research Conference
October 6-7, Online
bcinvasives.ca/

Cal-IPC Symposium
October 26-29, Online
cal-ipc.org/symposium

Innovations in Invasive Species Management Conference and Training
November 29-December 2
Nashville, TN
https://www.invasiveplantcontrol.com/conference20/

California Association of Resource Conservation Districts Annual Conference
November 30-December 3,
Santa Barbara, CA
carcd.org/conferences/2021-carcd-annual-conference/

Northern California Botanists Symposium
January 10-11, 2022, Chico, CA
norcalbotanists.org

"In the past, a manager could plausibly work to reverse or mitigate many stressors or their impacts to approximate pre-disturbance ecological conditions, but now accelerated warming, changing disturbance regimes, and extreme events associated with climate change reduce that potential. Thus, the convention of using baseline conditions to define goals for today's resource management is increasingly untenable, presenting practical and philosophical challenges for managers."

— From "Resist-Accept-Direct (RAD) — A Framework for the 21st-century Natural Resource Manager", National Park Service, Natural Resource Stewardship and Science (2021)