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

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On the cover:

Late-season treatments for invasive *Spartina alterniflora* hybrids amid bright fall colors on pickleweed at Oro Loma tidal marsh in Hayward.
Photo by Simon Gunner.

FROM THE DIRECTOR'S DESK

Check out Hawaii

By Executive Director Doug Johnson

At October's Cal-IPC Symposium, Josh Atwood, Program Supervisor for the Hawaii Invasive Species Council, gave an overview of Hawaii's state system for addressing invasive species. Each type of invasive species has a lead agency that is responsible for its management. The council has staff and annual funding (\$5 million) to help fill gaps for unanticipated situations and to support local collaborative efforts across the islands.

California should learn from this system. No doubt it's far from perfect. But simply having an active responsible party for every kind of invasive organism is a fundamental baseline that California is not meeting at this point. For instance, there has been no state program overseeing and coordinating terrestrial invasive plant management work since the California Dept. of Food & Agriculture (CDFA) eliminated its program in 2010 during the recession. Despite the economic recovery and department's legal mandate to serve as the state's lead agency to prevent the introduction and spread of noxious weeds, CDFA has shown little interest in renewing the program.

For aquatic weeds, the Division of Boating & Waterways has responsibility for the Delta and its tributaries, but nobody has overall responsibility for aquatic weeds in the rest of the state's waterways. The partnership between CDFA and the California Dept. of Water Resources to control *Hydrilla venticulata* fortunately remains intact.

Now is an auspicious time to evaluate and create an effective state invasive species program for California. For one, 2018 is Governor Brown's last year in office, and he has ambitious goals for California as a leader in addressing climate change. He is also supporting a push for stronger biodiversity goals.

Controlling invasives is a top strategy for promoting climate resiliency for native biodiversity, so our goals should align well with the Governor's goals.

In addition, the recent extension of California's cap-and-trade program through 2030 is expected to free up proceeds for use on climate resiliency efforts (in addition to greenhouse gas reduction and carbon storage efforts). This could provide a critical new funding source for strategic invasive plant management work.

In January, an Invasive Species Summit is being held in Sacramento at the Capitol, where we will press for progress. Members of the Cal-IPC board of directors will visit the Capitol in February to help advocate for measures coming out of the summit.

Cal-IPC will be working with partners like the Urban Forest Council, which is fighting the loss of urban street trees due to invasive pests like polyphagous shot-hole borer (see *Dispatch* Summer 2016). This and other tree pests are poised to decimate wild trees and landscaping trees in California, degrading habitat and reducing carbon sequestration. The issue will have direct impact on urban areas where most elected state representatives come from, helping to bring the impacts of invasive pests home for policy makers.

Returning to Hawaii, their new Biosecurity Plan for the next decade would cost \$400 million to implement over that time frame. Given that California is much larger in terms of area, population, and economy, the price tag here is undoubtedly much larger. The sooner we acknowledge the need for a tightly coordinated program for all invasives, not just crop pests, the better chance we have of protecting as much of California's biodiversity for the future as possible.

CAL-IPC UPDATES

Symposium presentations posted.

Talks and posters from the 2017 Symposium in Palm Springs can be found on our website, along with a searchable archive from 26 years of Symposia and newsletters. Cal-ipc.org/symposium

Next year in Monterey. Mark your calendar—the 2018 Cal-IPC Symposium is scheduled for Nov. 7-10 in Monterey.

State funding. Cal-IPC is mounting a new Sacramento campaign to push for a coordinated state weed program. We will be working to access cap-and-trade proceeds for funding climate adaptation activities like invasive plant management. An “Invasive Species Summit” at the Capitol presents a key opportunity in January.

Glyphosate policy. Cal-IPC has issued a statement supporting the use of glyphosate-based herbicides as part of an Integrated Pest Management approach to manage invasive plants in wildlands.

Volunteer trainings. Cal-IPC is planning trainings around the San Francisco Bay Area for this spring.

Desert knapweed containment. Removal work for year two of our National Fish and Wildlife Foundation project is underway in Borrego Springs in eastern San Diego County.

Sea lavender control. We are preparing for our third year of removal at tidal marshes around San Francisco Bay.

Tree mortality areas. Working with central Sierra counties and the California Dept. of Food & Agriculture, we will be controlling invasive plant populations threatening to spread in areas where drought and bark beetles have resulted in extensive tree mortality.

Sierra meadows. We are assessing meadow vulnerability to invasive plants and impacts to water, wildlife and carbon.

Wildland Weed News

Coastal eradication. Collaborative efforts continue along the north coast (Humboldt and Del Norte county) and the south-central coast (San Luis Obispo and Santa Barbara counties) to eradicate a handful of emerging invasive plant species in each area.

Arundo mapping. Cal-IPC and partners have mapped giant reed along waterways throughout the Central Valley, and are beginning to evaluate impacts and plan regional removal efforts.

Planning BMPs. Cal-IPC is working with the US Fish & Wildlife Service and a technical advisory committee to publish a best practices manual to guide organizations in developing plans for their invasive plant management.

Cross-border mapping. Cal-IPC followed up last May’s tri-national conference in Savannah, GA with a November meeting in Las Vegas, NV to share weed mapping data across the continent.

YOUR MEMBERSHIP

Thank you for keeping your membership current. Note that your expiration date is shown on the mailing label of this newsletter.

Welcome Claire F. Meyler!

In September, Cal-IPC welcomed Claire F. Meyler to the team, in the newly-added position of Communications & Marketing Manager. She brings 16 years of experience in non-profit administration and communications. Claire started her career at the Oakland Museum of California, providing marketing and fundraising support, to help exceed their goal of \$62.2 million for the museum’s complete transformation. Claire then joined Kulintang Arts, Inc. (Kularts), where she re-designed the organization’s website and digital communications to promote a busy events calendar. As marketing manager and webmaster at Yosemite Conservancy, she gained insight into wildland management, reporting on projects in the park via the biannual magazine, annual report, e-newsletter, and website updates. Since joining Cal-IPC, Claire has jumped in to assist on several projects, including creating the new membership brochure, launching and maintaining the new website, and taking the reins on social media. We are excited to have her on board. Help us welcome her to the team!



OTHER NEWS

State of the plants. In their 2017 “State of the World’s Plants,” Britain’s Kew Gardens reviews studies of invasive plant management, which it says are “among the most important drivers of biodiversity loss.”

Invasive seaweed website. UC Santa Cruz’s Multi-Agency Rocky Intertidal Network group and California Sea Grant created MarineInvasives.org, with a reporting system and information about invasive seaweeds.

Protecting butterfly groves. The Xerces Society has published guidelines for managing overwintering habitat in California, including eucalyptus stands. Available as a free download at xerces.org/guidelines

Snakes increasing disease risk. As invasive Burmese pythons eat their way through south Florida’s wildlife, mosquitoes are drawing more blood from a rat species that carries a virus dangerous to humans, according to a study in *Biology Letters* of the Royal Society.



Illustration by Ryan Jones

PlantRight update: Nursery survey and plant list

Stephanie Falzone, PlantRight Project Manager

PlantRight works with California’s nursery industry to promote the sale of exclusively non-invasive plants throughout the state. To do so, we recommend commercially viable and environmentally safe alternatives to the most commonly sold horticultural invasive plants. This article provides an update on two related program elements—our annual nursery survey and our evolving plant list.

Our annual Spring Nursery Survey tracks the retail market for invasive garden plants in California. The data collected from the survey informs our strategy and helps us monitor the effectiveness of our work over time. We also use the survey results to decide which plants to add to and retire from our invasive plant list.

Each year, PlantRight randomly selects a sample of retail nurseries to survey, from a total pool of more than 1,500 stores operating across California. This year, we coordinated surveys in 332 of these nurseries, more than 20% of the total. These included many types of retail outlets: independent nurseries,

small chains, and big-box retailers. We surveyed nurseries in 45 of the state’s 58 counties. Surveys were conducted by 172 trained volunteers, many of whom are UC Master Gardeners.

The plants we choose to survey change slightly from year to year. The survey list includes all species from our current invasive plant list; it also includes a few species that are being evaluated for potential addition to our invasive list. In 2017, we surveyed for the seven species currently on our invasive plant list, plus nine “candidate” plants.

The accompanying graphs show results over time for the seven plants currently on the PlantRight invasive plant list. (These plants were added in two different cohorts, as indicated.) Each plant is considered invasive in some of the five climate zones of the state (based on Sunset gardening zones), and survey results are based on plants being sold in climate zones where they are invasive.

Survey results show a steady decrease in nurseries selling invasive plants. In 2014, 44% of nurseries surveyed were selling invasive plants on our plant list. As



Ron Vanderhoff

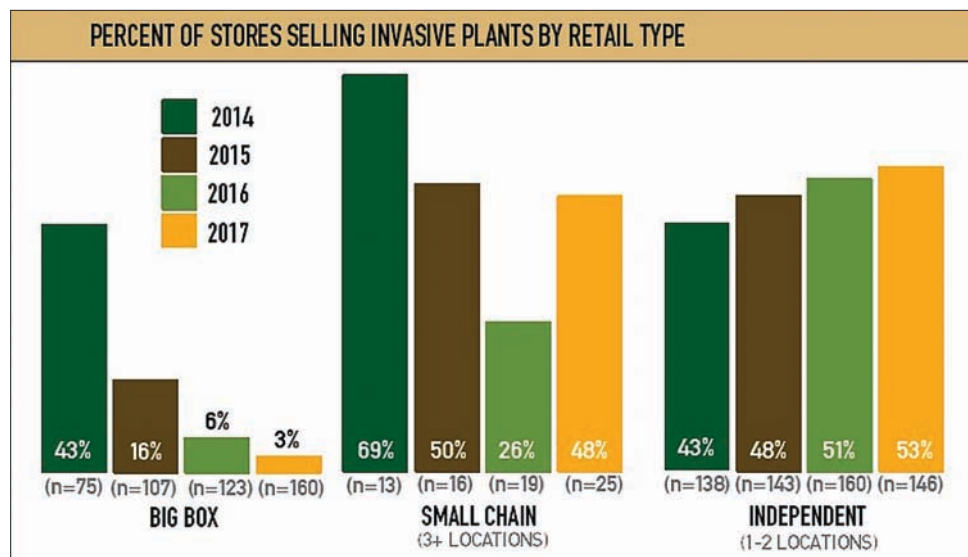
Mexican feathergrass (*Stipa tenuissima*) is the most commonly sold plant from the PlantRight list.

of 2017, the rate has dropped to 29%.

Plants are “retired” from the PlantRight invasive plant list when they are found in fewer than 1% of retail nurseries surveyed for three consecutive years. Being found in 3% of nurseries is the threshold for a candidate plant to be added to the list. Candidate plants must also be listed as invasive in California by Cal-IPC or come out as high-risk for future invasiveness via assessment with the Plant Risk Evaluator (PRE). However, addition to the list is up to a review committee comprising experts from diverse PlantRight partners.

All 16 plant species included in the 2017 survey were found in at least one store during the survey.

Mexican feathergrass, found in 22% of stores, continues to be the most commonly sold plant from our list. (Note: The PlantRight process deems this plant as an “emerging invasive” threat in California, and has added it to our list as a preventive step. The PlantRight process



Big box stores have been the most responsive to requests for removal of invasive species from inventory.



Yellow water iris (*Iris pseudacorus*) was only found at one store on this survey.

bases decisions on science [in the form of the PRE risk rating] and makes decisions by consensus [in the form of the Steering Committee]. The plant has received a “watch” rating by Cal-IPC.) On the other end of the spectrum, yellow water iris (*Iris pseudacorus*) was only found at one store. However, it is often unlabeled, and is more likely to be sold during the summer months after the survey ends. So it may be sold at more stores than recorded in this survey.

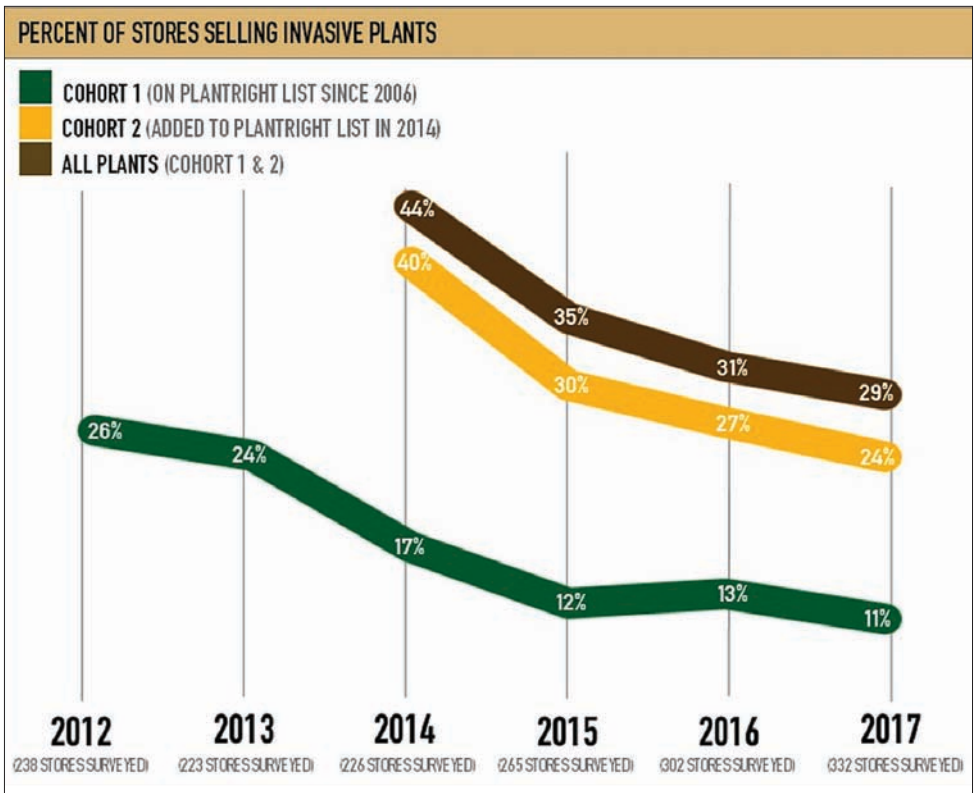
Of the nine candidate plants that were surveyed, four were found at more than 3% of stores: *Centranthus ruber* (red valerian), *Erigeron karvinskianus* (Mexican daisy), *Helichrysum petiolare* (licorice plant), and *Pennisetum alopecuroides* (fountain grass). None of these plants have yet been added to our list of invasive plants. Candidate plants that do not get added to the list are tracked in a PlantRight list of “Plants to Watch.” Each plant on this list has a web page with photos, a description of the plant, why it’s not included on the invasive plant list, and links to more information. Some also have suggested alternatives, making it easier for landscape professionals to avoid these plants if they want to be cautious.

(Continued on page 14)

PLANTS IN 2017 SURVEY

Scientific Name	Common Name
Cohort 1: On PlantRight List Since 2006	
<i>Carpobrotus edulis</i>	Highway iceplant
<i>Cortaderia selloana</i>	Pampas grass
<i>Pennisetum setaceum</i>	Green fountain grass
<i>Vinca major</i>	Periwinkle
Cohort 2: Added to PlantRight List in 2014	
<i>Eichhornia crassipes</i>	Water hyacinth
<i>Iris pseudacorus</i>	Yellow water iris
<i>Stipa tenuissima</i>	Mexican feathergrass
Candidate Plants	
<i>Berberis darwinii</i>	Darwin’s barberry
<i>Centranthus ruber</i>	Red valerian
<i>Erigeron karvinskianus</i>	Mexican daisy
<i>Helichrysum petiolare</i>	Licorice plant
<i>Lamium galeobdion</i>	Yellow archangel
<i>Pennisetum alopecuroides</i>	Fountain grass
<i>Pennisetum villosum</i>	Feathertop
<i>Phalaris arundinacea</i>	Reed canary grass
<i>Plecostachys serpyllifolia</i>	Petite licorice

Plants selected for the 2017 Nursery Survey included all seven species on the PlantRight invasive plant list plus nine candidate plants.



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

2017 SYMPOSIUM IN PHOTOS

In late October, land managers convened in Palm Springs for the 26th annual Cal-IPC Symposium. Four days of talks, posters, discussion groups, trainings and field trips provided vital knowledge exchange for the restoration community. Here are some highlights.



Bob Case



Dana Morawitz

Whitewater River Canyon is a candidate for National Wild & Scenic designation. Attendees hiked through riparian habitat, home to the endangered Southwest willow flycatcher and Bell's vireo, and learned about invasive plant control efforts.



Claire F. Meyler

The Coachella Valley Wildlife Refuge protects the endangered fringe-toed lizard and other wildlife. Dr. Cameron Barrows (far left) manages the refuge, and gave attendees a tour of the amazing diversity of wildlife that makes the dunes their home. Invasive Saharan mustard is one of the top threats.



Bob Case

Nicholas Rasmussen from the Cal. Dept. of Water Resources describes his work managing Brazilian waterweed (*Egeria densa*) and other invasive aquatic plants as part of the Delta Smelt Resiliency Strategy.



Bob Case

RECON Environmental promoting their services. Thirty sponsoring organizations reached a broad cross-section of the land management community, while helping to defray the costs of the Symposium.



Bob Case

Joe Algiers of the Santa Monica Mountains National Recreation Area was this year's recipient of the Weedzilla award presented by the National Park Service's California Exotic Plant Management Team.



Drew Kerr

Lunchtime and breaks provide valuable time for attendees to share information on their work in land management.



Bob Case

Sarah Minnick of Marin County Parks is the proud new owner of this chainsaw, one of the most popular items in our auction-and-affle fundraiser.



Drew Kerr

Participants gather for a social hour and to consider their options at the raffle-and-auction fundraiser. Thanks to our generous guests, we raised \$15,000 for Cal-IPC's general fund.



Bob Case

Jennifer Prado of the Friends of the Desert Mountains (with Cal-IPC Executive Director Doug Johnson) received the Golden Weed Wrench Award for Land Manager of the Year.



Bob Case

Antonio Solorio (far right), Park Ranger and Youth Program Manager from the Santa Monica Mountains National Recreation Area (SMMNRA), led a panel on engaging diverse communities in land stewardship, with (left to right) Gaby Jimenez from the Los Angeles Conservation Corps, Fernando Villalba from the John Muir National Historic Site, and Ammy Baez from SMMNRA.

Symposium tool sampler

A range of topics were covered at the Symposium, from engaging diverse communities to sharing how the state of Hawaii runs their invasive species programs. For many attendees, the core of the Symposium is learning about tools of the trade. Here is a sampler of some of the presentations on tools.

COMPILING KNOWLEDGE FROM RANGELAND PRACTITIONERS

Tracy Schohr and colleagues from UC Davis used surveys and interviews with more than 200 IPM practitioners to mine their field-tested knowledge of what works for controlling weeds on rangelands. They are compiling best practices for managed grazing, seeding, herbicides and prescribed fire, and will use case studies to show how these approaches can promote productivity and conserve diversity on working lands cost effectively.

CONTROLLING A GRASSLAND WEED WITHOUT HERBICIDE

Andrea Williams and colleagues at the Marin Municipal Water District (MMWD) tested non-chemical control techniques for false brome (*Brachypodium distachyon*), which invades grasslands on their 22,000 acres of watershed lands. The district does not use herbicide, and has had difficulty in implementing prescribed burning, so they tested the effectiveness of available techniques—mowing with a string trimmer, propane flaming, hand-pulling, and scuffle hoeing (hula hoeing)—on serpentine and non-serpentine grasslands. All approaches decreased false brome. Hand-pulling and flaming were the least damaging to native species, and flaming was the one method that resulted in an increase in rare serpentine annuals. MMWD also partnered with Marin County Parks and Open Space to test an organic herbicide (*d*-limonene) at an additional site. It took less time than other methods, but was also less effective.



Nicole Norelli

Calvin Davidson and Gillian Nguyen of the Riparian Invasion Research Lab (RIVRLab - UC Santa Barbara) assist in collecting tamarisk beetles (*Diorhabda carinulata*) from tamarisk in Afton Canyon, CA, July 2017. The collected beetles are used for research being conducted in the RIVRLab and for biocontrol releases by the California Alliance for Tamarisk Biocontrol.

TAMARISK BEETLE NOW IN CALIFORNIA

Nicole Norelli from the California Alliance for Tamarisk Biocontrol (CATB) shared their progress on pulling together collaborators to address immediate needs now that the tamarisk leaf beetles (*Diorhabda* spp.) have moved into California from Arizona. One big

need is to establish a comprehensive monitoring program to track where the beetles are moving. Another big need is to determine which sites require special attention because the native plants there may not be able to naturally regenerate and may require active revegetation. Preparing for such restoration activities means developing the plan for how



Andrea Williams

Marin Municipal Water District monitors effectiveness of non-chemical control methods on an invasive grass.

to do it and the funding to support it. Currently CATB has a grant from the Cal-EPA Department of Pesticide Regulation based on the potential for the biocontrol to reduce the need for herbicide use in tamarisk control.

AERIAL BOOM LIFTS TO TREAT ARUNDO

Mark Newhouser from the Sonoma Ecology Center is currently working to control *Arundo* in the Cache Slough Complex of the Delta. Large populations are often found along leveed waterways, with steep riprap slopes. They have developed an approach that uses aerial boom lifts to direct foliar spray application methodology to effectively control *Arundo* that grows at the base of levees and out onto flood plains.



Sonoma Ecology Center

Arundo plants often grow on steep hillsides above water, and may reach heights of 20 feet or more. On an aerial boom, this worker can carefully spray from above to avoid contaminating the water.

Remembering Don Mayall, 1932-2017

By Doug Johnson, Executive Director, Cal-IPC

Don Mayall of Palo Alto passed away last year. Don made great contributions to Cal-IPC's work to address invasive plants, from leading educational wildflower walks to advocating for state funding for invasive plant programs. He has left his mark on the stewardship of the Peninsula and South Bay, and he certainly left his mark on my life's work. If you met him at one of our Day at the Capitol advocacy events, he may have made his mark on you as well.

In 2001, Don recruited me to map and mow yellow starthistle threatening populations of the federally endangered Tiburon Indian paintbrush on Coyote Ridge, south of San Jose. The site provides rare habitat for serpentine endemics and

the federally threatened Bay checkerspot butterfly that depends on the native plantain that grows here. Nitrogen deposition from auto exhaust has added enough fertilizer that invasive weeds have made inroads. Don and others with the Santa Clara Valley Chapter of CNPS had worked to obtain access to steward the Coyote Ridge property owned by a landfill. The area has since been secured by the Santa Clara Valley Open Space Authority, a victory for Don and his partners.

A year later, Don and his fellow CNPS invasive plant confederate Jake Sigg (Yerba Buena Chapter) connected me to the search committee that was looking for Cal-IPC's first executive director, and I was subsequently hired. In my first years, Don, Jake, and Bob Case (East Bay Chapter of CNPS) served as advisors to me and the Cal-IPC Board of Directors on many subjects. Along with expertise regarding stewardship, they brought expertise on advocacy.

As Cal-IPC engaged in work in Sacramento and Washington, DC to strengthen state and federal programs, Don helped guide our efforts based on his experience from local preservation campaigns. He



Bob Case

Don Mayall (right) with Jake Sigg at Cal-IPC's 2008 Weeds Awareness Day at the Capitol.

understood how to make our issue matter to political representatives with varied interests. In 2006 he helped our initiative that renewed funding to the California Dept. of Food and Agriculture's budget for the statewide Weed Management Area (WMA) program. Don was very involved in the San Mateo County WMA, and knew the power of small grants to support local collaborative projects.

Don loved the land, and found ways to work toward its appreciation and preservation. We thank him, we miss him, and we hold onto his vision for building a society more in balance with the natural world around us.



Coyote Ridge, south of San Jose.

Santa Clara Valley Open Space Authority

California forest pest update

By Doug Johnson, Executive Director, Cal-IPC

On Nov. 15-16, forest experts gathered at UC Davis for the 66th annual meeting of the California Forest Pest Council (CFPC). Land managers need to be aware of the many issues threatening our forests. Here are some highlights.

TREE MORTALITY

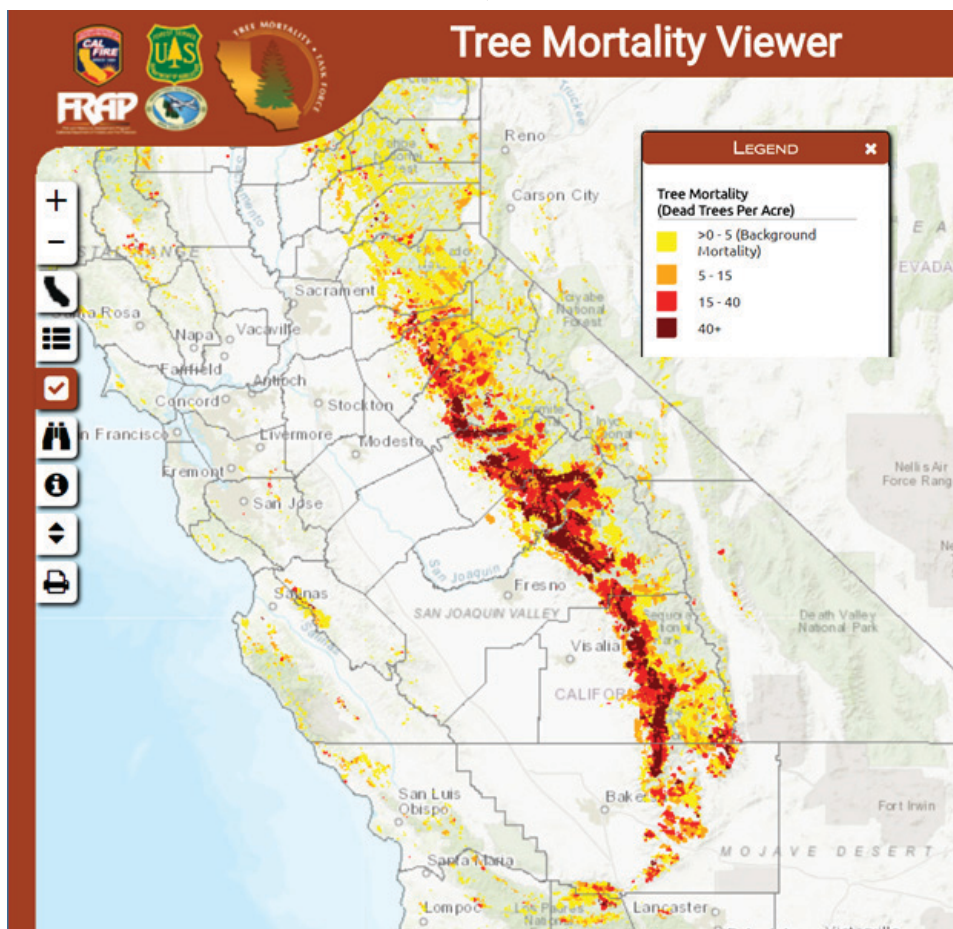
Over the last several years, more than 100 million trees have died in the Sierra from a combination of drought and native bark beetles. Decades of fire suppression have resulted in dense “overstocked” forests, which can exacerbate competition for water, speed the spread of beetle infestations, and contribute to more intense wildfire.

In 2015, the Governor declared a state of emergency, creating California’s Tree Mortality Task Force. Eighty partners are



If only these were simply “fall colors.” Tree mortality in Madera County.

High Country News



More than 100 million trees have died from the one-two punch of drought and bark beetles.

participating, including state and federal agencies, local governments, utility companies, and other stakeholders.

Dr. Scott Stephens of UC Berkeley studies Sierra ecosystems in comparison to montane systems in Baja California that have not been managed intensely, and concludes that the Sierra die-off is not a “natural” phenomenon. As dead snags fall in the next 10-15 years, catastrophic wildfire could lead previously forested areas to become a more shrub-based system. Stephens recommends that we tend to intact areas and manage for diverse-age stands to avoid the risks of homogeneity.

SHOTHOLE BORERS

Several shothole borers from Taiwan are vectoring a fusarium disease, killing a broad range of trees in southern California (see *Dispatch* Summer 2016). John Kabashima, a retired University of California Cooperative Extension specialist, warns that these pests will come to northern California soon. Millions of trees, urban and wild, are under threat. In one well-documented case, 144,000 trees along the Tijuana River were killed in one year,

destroying habitat for the endangered Bell's vireo. *Arundo* and tree tobacco quickly filled the disturbed riparian zone.

Unfortunately, there are, as yet, no effective management strategies other than removing diseased trees. Researchers from UC Riverside are using USDA funds to explore potential biocontrols from the pests' home range. Because this is an "orphan pest"—an invasive that has no responsible agency for whom control is mandated—we are in dire need of a more coordinated approach to addressing the situation. USDA funding through the Farm Bill, which is reauthorized every five years, would ideally be expanded to cover regional biosecurity. Getting political support will require courting urban Democrats for state policy and rural Republicans for federal policy.

To help prevent inadvertent spread, Calfire has instituted new rules for washing their firefighting engines that travel around the state. Another challenge is disposing of biomass from cleared dead trees. New cogeneration plants that produce fuels and energy from excess biomass may be a part of the solution.

PHYTOPHTHORA

P. ramorum and other soil pathogens (see *Dispatch* Summer/Fall 2017) have been found on more native plant species. Five new native plants are affected at the East Bay Regional Parks District Botanical Garden, and manzanita (*Arctostaphylos* spp.) have been found infested on coastal bluffs far from any trees, indicating that manzanita may be a stronger host than previously believed. This is especially a concern for rare species like the pallid manzanita.

OTHER INSECT PESTS

Gypsy moths have been a major scourge in eastern states. Egg masses are typically



A gypsy moth lays her eggs.



The gold-spotted oak borer damages coast and black oaks.

transported on shipping containers. The California Dept. of Food & Agriculture routinely sets traps around the state's deep water ports and around urban areas. Two moths were found this year in Santa Cruz, and each find results in extensive local trapping (20,000 traps in a packed grid for two years, changed every six months) to isolate the problem.

Balsam wooly adelgid infests fir species in Oregon. Heavy stem infestations can kill a tree in 3-5 years, while crown deformities can kill a tree more slowly. Eventually, this can change species dominance in the forest, which affects everything from wildlife habitat to snow retention. Managers are using a stand-level severity index rating system to help plan management actions.

Gold-spotted oak borer (GSOB) spread seems to have been stopped in San Diego, Orange and Riverside counties. They mainly damage coast and black oaks. Survey work continues to track spread, and heavily infested trees—"amplification" trees—are removed.

Uninfested high-value trees may be sprayed to prevent infestation. Both the Cleveland and Angeles national forests have removed trees, and neighborhood associations in key areas have organized to help the effort on private property. One population in Orange County burned this year, and the post-fire recovery will be tracked to gauge the level of ongoing impact from GSOB.

BLACK BEARS

Since the 1980s, California's black bear population has tripled, and ecologists are concerned that high numbers will damage forest ecosystems. In the spring, bears strip bark for food, sometimes girdling and killing trees. Each bear can strip 70 trees a day and redwood regeneration is of special concern. Surveys are being conducted in regions across

the state, using barbed wire around bait to collect hair samples for DNA. The surge in population is compounded by a 2012 state bill that outlawed the use of dogs in sport hunting of bears, resulting in significant decreases in the number of bears taken each year.



A full-grown black bear can girdle 70 trees a day while looking for food.

Presentations are posted on the CFPC website: caforestpestcouncil.org/

Washington State Department of Agriculture

Center for Invasive Species Research

Matt Elyash, courtesy of the California Dept. of Fish and Wildlife

2017 Central Coast Invasive Weed Symposium (CCIWS)

Ramona Robison, Science Program Manager, Cal-IPC

The Central California Invasive Weed Symposium (CCIWS) is an annual workshop designed to encourage active engagement in the conservation of California wildlands. First held at California State University, Monterey Bay in 1999, this symposium provides a venue to share information about invasive weed control, native plant restoration, and stewardship for Monterey and Santa Cruz counties. It provides an opportunity to meet and network with other like-minded people working (both paid and unpaid) to stop the spread of invasive plants, visit project sites where weed control efforts are in full swing, hear success stories, and earn continuing education units. CCIWS is a joint effort of the Monterey and Santa Cruz County Weed Management Areas.

Cal-IPC often sponsors CCIWS and attends or presents at the meeting. The theme of the 2017 event was “The Worth of Weed Control: Ecosystem Services, Economics and Invasive Weeds.”

The keynote speech, presented by Becky Chaplin-Kramer, the lead scientist at the Natural Capital Project, summarized the

It’s safe to estimate that the economic impact of invasive plants in California is well over a billion dollars each year.

state of knowledge about invasive plant costs to ecosystems as well as the costs for management, but highlighted the gaps in our knowledge regarding specific details. For instance, she is interested in more detailed comparisons of the functional attributes such as water use of invasive plants compared to natives.

Ramona Robison, Cal-IPC’s Science Program Manager, contributed to the theme with a talk about the cost of invasive plant management in California. In 2008, Cal-IPC and Sustainable Conservation surveyed agencies and organizations to gather a rough estimate of the cost of work conducted on invasive plants, and determined the amount to be \$82 million. This seemed like a low estimate at the time, but is the best synthesis we currently have. For comparison, in early 2017, the state of Washington published an economic analysis of invasive weed impacts. Only 12 plant species were considered, and the estimated costs added up to \$286 million of direct impacts, plus another \$411 million in lost economic activity, for a total of nearly \$700 million per year. California is twice the size of Washington, and has an economy 5 times larger, so it’s safe to estimate that the economic impact of invasive plants in California is well over a billion dollars each year.

Local perspective was presented by Chris Coburn, Executive Director of the Santa Cruz Resource Conservation District, who spoke about ecosystem services and why conservation matters. He mentioned the “tragedy of the commons,” in that we all benefit from the ecosystem services provided by our environment, but who pays for managing the ecosystem? One solution may be to consider incentives to landowners for the public benefits their land provides. The Santa Cruz RCD, working with other local entities, is interested in increasing the pace and scale of conservation in Santa Cruz County, and Chris presented several examples of projects the RCD is working on to achieve this goal.

CCIWS is famous for their delicious, locally produced lunch, which was as wonderful this year as in the past. Lunch is followed by field trips to areas of local interest. This year, participants

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Tim Hyland, Environmental Scientist, California State Parks leading a CCIWS field trip on the role of weed control strategies in the management of a rare sunflower *Holocarpha macrodenia*, Santa Cruz tarplant, at Twin Lakes State Beach, Santa Cruz, California.

Romulea rosea: a new Watch plant and notes on management

Ramona Robison, Science Program Manager, Cal-IPC
Lucie Adams, Stewardship Director, Sacramento Valley Conservancy

In June 2017, Cal-IPC added more than 80 new plants to our Inventory, as part of a new category called “Watch”. These plants are naturalized in California, and were assessed with a risk analysis method developed by UC Davis and University of Washington. Cal-IPC assessed 200 plants, and those which scored as High Risk in the analysis were added to the new “Watch” category, meaning they have the potential to spread in California and become invasive. When plants are documented as becoming invasive in California and causing impacts, we assess them with a Plant Assessment Form (PAF) and add them to the Inventory as High, Moderate, or Limited, if there is enough information to do so.

Rosy sandcrocus, *Romulea rosea*, was one of the plants added to the Watch category. This low-growing, pink-flowered plant with long narrow leaves is a perennial herb in the Iris family (*Iridaceae*). This native to southern Africa is found in the grasslands and woodlands of the San Francisco Bay area, Sacramento Valley and north and central coast ranges of California. It spreads via corms that build up in the soil locally and may also be propagated by seed. In Santa Cruz County, rosy sandcrocus is found in some of the most diverse coastal prairie, and has significant overlap with Ohlone Tiger Beetle populations (Tim Hyland, California State Parks).

We recently received an inquiry on rosy sandcrocus, asking about the best strategies for management. Cal-IPC often receives such requests, and we do our best to provide information and connect people with the appropriate experts on the plants in question. Toward this end, we contacted Lucie Adams, Stewardship Director of the Sacramento Valley Conservancy (SVC). I knew from personal experience that her organization has been working hard

sandcrocus thrives in open, disturbed, compacted habitat, such as along roads and in cattle shoot areas and corrals. It is possible that rosy sandcrocus was introduced to Deer Creek Hills through the cattle operation, but recreation could also have been the vector.

In Sacramento County, rosy sandcrocus germinates in February or early March and starts blooming in early March. Flowering continues into April. Leaves are waxy. The plants are low-growing and hard to see when they are not blooming. Flowers typically open at noon and stay open only until 1 or 2 pm.

In the first year of treatment, SVC staff tried Roundup, which did not work and killed other competitors, increasing rosy sandcrocus available habitat. Next, they tried digging the plants out. This also did not work, as it disturbed the soil, opened up habitat, and spread the seeds and bulblets. Now, the preferred method of treatment is burning with a propane torch. This work is labor intensive as it needs to be done on almost a daily basis, starting at noon when

the flowers open. The treatment season is typically March 1 to mid-May, and in 2017 they started treatment on March 11. Burning kills the plants. Afterward, the area tends to be dominated by filaree (*Erodium* spp.), but this is considered preferable to rosy sandcrocus.



Neal Klamer

Romulea rosea, or rosy sandcrocus is one of the plants added to the Watch category of the Cal-IPC Invasive Plant Inventory.

to try and manage this species, since it is relatively uncommon in the Central Valley. Lucie filled me in on some aspects of the species biology and management, which I'll summarize below.

Lucie manages an area called Deer Creek Hills, located in eastern Sacramento County. It is valley and foothill grassland, with scattered Valley oak trees, is managed with cattle grazing, and is also open to the public for recreation and guided tours. Rosy

If you have information about managing this species, please send it to us at info@cal-ipc.org!

CCIWS Symposium

(Continued from page 12)

visited Twin Lakes State Beach and Arana Gulch to view management for the Federally-listed threatened Santa Cruz tarplant (*Holocarpha macradenia*). Another trip showcased restoration techniques at Watsonville Slough and Ellicott Slough in the Watsonville area.

Other presentations at CCIWS this year included:

Patrick Moran, Research Entomologist, USDA, discussing Cape-ivy biocontrols;

Jen Michelsen, Environmental Programs Manager, San Lorenzo Valley Water District on Challenges of Invasive Species Management in Santa Cruz Sand Parkland Habitat;

Mike Nelson, Maintenance Supervisor, CalTrans, on Vegetation Management along California State Highways in Monterey County; and

John Chapman, Vegetation Program Specialist, Santa Clara Valley Water District, on the challenges presented for vegetation management during the wet 2017 growing season

PlantRight update

(Continued from page 5)

After more than a decade of being led by the nonprofit Sustainable Conservation, the PlantRight program is seeking a permanent home (with long term funding) where it can continue its collaborative, science-based, and voluntary work. This is in keeping with Sustainable Conservation's *modus operandi* of spinning off projects and practices once they have been proven successful—ultimately benefitting both industry and environment. "Home ideas" proposed so far include: within the University of California (Agricultural and Natural Resources) system; a coalition of botanic gardens;

a conservation NGO; or possibly the California Department of Food & Agriculture. During 2018, PlantRight will remain the nursery trade's go-to educational resource on horticultural invasive plants, while exploring potential new homes in California.

Of the plants on the current PlantRight invasive plant list, most are approaching retirement (reached when consistently found at fewer than 1% of retail outlets). A longer list of "retired" plants is also maintained, but not prioritized since the plants are not common in horticulture.

LIST OF RETIRED PLANTS (FOUND IN FEWER THAN 1% OF RETAIL NURSERIES SURVEYED FOR THREE CONSECUTIVE YEARS):

Capeweed (*Arctotheca calendula*)
Arundo, giant reed (*Arundo donax*)

Jubata grass (*Cortaderia jubata*)

Scotch broom (*Cytisus scoparius*)

Portuguese broom (*Cytisus striatus*)

Russian olive (*Elaeagnus angustifolia*)

Blue gum eucalyptus (*Eucalyptus globulus*)

French broom (*Genista monspessulana*)

Crystalline iceplant (*Mesembryanthemum crystallinum*)

Myoporum (*Myoporum laetum*)

Bridal veil broom (*Retama monosperma*)

Scarlet wisteria (*Sesbania punicea*)

Spanish broom (*Spartium junceum*)

Saltcedar (*Tamarix ramosissima*)

Chinese tallow tree (*Triadica sebifera*)



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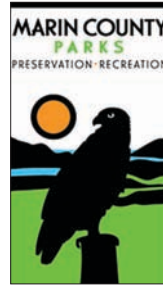
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conference.cnps.org

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www.tamariskcoalition.org

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February 24-25
Intro to CA lichens, Jesse Miller
March 22-25
50 Plant Families in the Field, Linda Biedleman
March 24-25
Intro Plant Morphology, Allyson Ayalon & Javier Juaregui Lazo
March 30 – April 1
Intro Plant Families, Allyson Ayalon & Anna Larsen
View the full schedule online
ucjeps.berkeley.edu/workshops

California Native Grasslands Association Field Day

April 20, Winters, CA
cnga.wildapricot.org

SERCAL

May 9-11, San Diego, CA
www.sercal.org

Cal-IPC Bay Area Volunteer Trainings

Spring and Summer dates TBD
www.cal-ipc.org/volunteers

Cal-IPC Symposium

November 7-10, Monterey, CA
www.cal-ipc.org/symposium

California Association of Resource Conservation Districts Annual Conference

November 15-18, Sacramento, CA
www.carcd.org

“Sustainable” was the word for the optimistic late ‘90s, when we might have kept things the same. “Resilient” is a word for when you know it’s too late. Resilient is a word that says disaster is coming and asks if you are ready.

From “A Tale of Two Buzzwords” by Brendan Buhler in Bay Nature Oct.-Dec. 2017 issue

“By failing to adequately limit population growth, reassess the role of an economy rooted in growth, reduce greenhouse gases, incentivize renewable energy, protect habitat, restore ecosystems, curb pollution, halt defaunation, and constrain invasive alien species, humanity is not taking the urgent steps needed to safeguard our imperiled biosphere.”

From “World Scientists’ Warning to Humanity: A Second Notice” by 15,000+ scientists from 184 countries in Bioscience Nov. 13, 2017