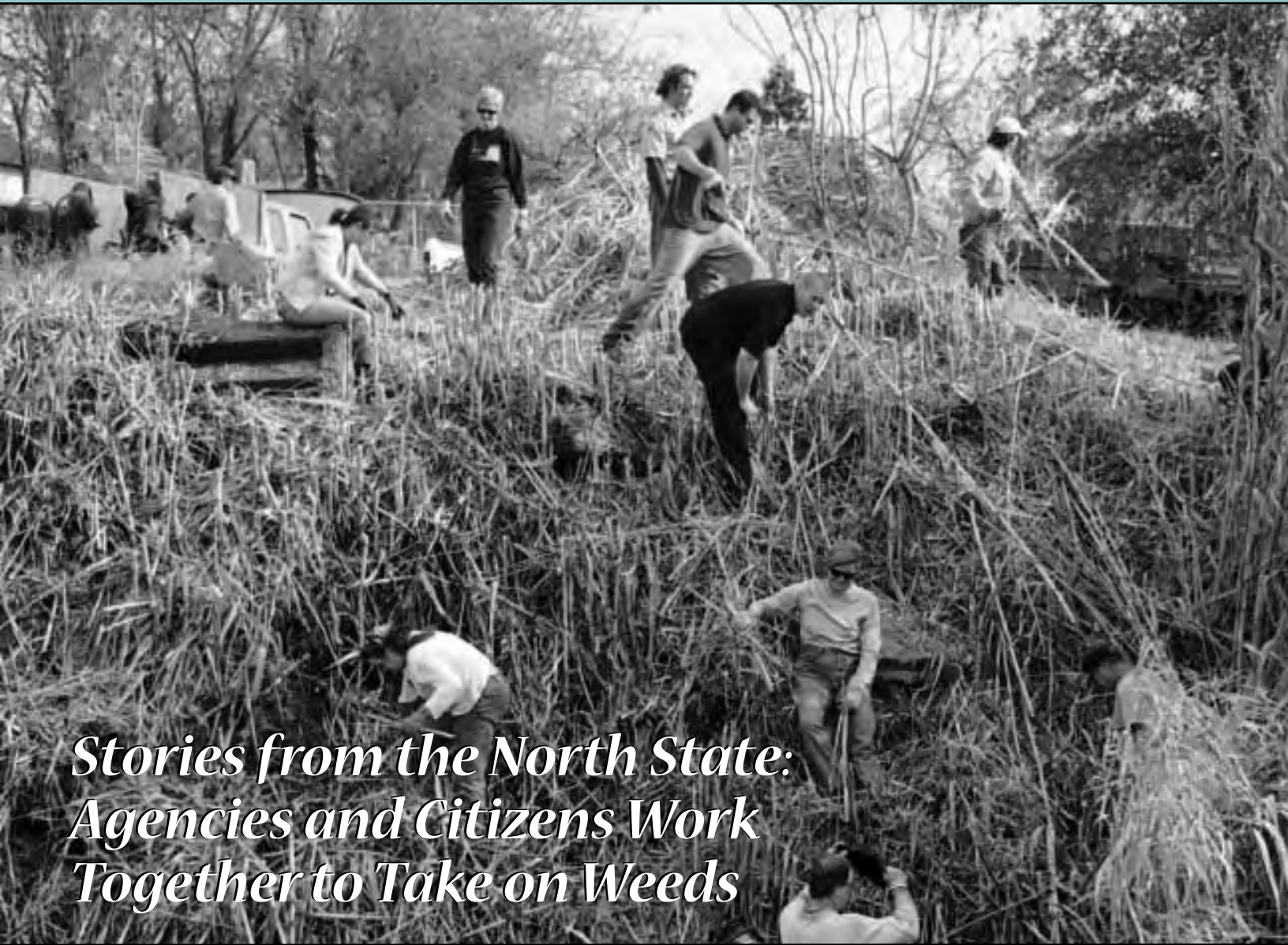




Cal-IPC News

*Protecting California's Natural Areas
from Wildland Weeds*

Vol. 14, No. 4 Winter 2007 Quarterly Newsletter of the California Invasive Plant Council



Stories from the North State: Agencies and Citizens Work Together to Take on Weeds

Volunteers with the Rotary Club of Redding's Stream Team battle Arundo wherever it is found—even on steep embankments like "Reynold's Cliff," near downtown Redding. Photo: Randy Smith, Rotary Club of Redding's Stream Team

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California Invasive Plant Council

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

A California 501 (c)3 nonprofit organization
Protecting California's natural areas
from wildland weeds through
research, restoration, and education.

STAFF

Doug Johnson, Executive Director
dwjohnson@cal-ipc.org

Elizabeth Brusati, Project Manager
edbrusati@cal-ipc.org

Melissa Dozier, Outreach Associate
mdozier@cal-ipc.org

Bertha McKinley, Office Manager
bmckinley@cal-ipc.org

DIRECTORS

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Audubon Canyon Ranch

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Sonoma Ecology Center

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U.C. Cooperative Extension

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Editors: Doug Johnson, Elizabeth Brusati, Melissa Dozier

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From the Director's Desk

Working within the system

In August of last year, Roy van de Hoek was cited for illegally removing trees from a City of Los Angeles open space. The story was picked up widely by the media—who did this guy think he was, killing trees in a park? And why would anyone take time to do that anyway? Eventually, a reporter even called us to get our reaction.

The trees included some from the Cal-IPC Inventory, like castor bean (*Ricinus communis*, Limited) and myoporum (*Myoporum laetum*, Moderate). Van de Hoek is a restoration worker whose frustration with agency inaction got the better of him, so he decided to take matters into his own hands. The impulse is one many of us recognize. We have a hard time going for a hike without pulling a weed or three alongside the trail. Trees, however, require more premeditation. And, dead trees are more likely to get noticed.

Without having all the details of Mr. Van de Hoek's particular case, we can say that it is best to work within "the system," as difficult as that can sometimes be. Working within the system means encouraging agency resource staff to address an infestation, or getting approval to organize a volunteer effort. Not only do you (eventually) address the weeds, you also begin to recruit the people. If you can institutionalize the response, it will be much easier to get action for future weed projects. It may not be most expedient, but it builds the best solution for the future.

Granted, such an approach requires a lot of patience for working with stakeholders and addressing bureaucratic barriers. But this is precisely the challenge we need to address. Unless we bring our fellow citizens and institutions on board, our actions will be insufficient to address the scale of the problem over the long haul.

It is also important to get a range of input when planning any conservation effort, both to make sure that it is designed well and to make sure there is a team of supportive partners. Site-specific factors make easy prescriptions difficult, and too often a casual weed puller is not aware of these factors. Making individual decisions about what species should be removed from public property is poor restoration practice and poor democratic process. Acting alone misses the powerful opportunity for collaboration offered by invasive plants. Our quest is biological at its core, but it is unavoidably cultural as well.



Gorse monster in the Caspar Halloween Parade. Citizens in the town of Caspar in Mendocino County are confronting the invasion of gorse on coastal prairie near town. Story, page 12. *Photo: Rochelle Elkan.*

Correction: In our last newsletter, we ran a photo on this page showing Cal-IPC founders. We reversed the identification of Sally Davis and Jo Kitiz. We apologize for the error.

Wildland Weed NewsNewsNewsNewsNews

The California Department of Food and Agriculture announced that **Weed Management Areas in 18 counties have been awarded funding** from the \$1.5 million that was available this year. WMAs that received funding include: Amador; Central Sierra Partnership; Colusa, Glenn, and Tehama; El Dorado; Sierra-San Joaquin; Eastern Sierra; Lake Tahoe Basin; Los Angeles; Low Desert; Mendocino Coast and Inland Medocino Cooperative; Modoc; Santa Ana River and Orange County; San Diego; San Luis Obispo; San Mateo; Santa Clara; Shasta; and Siskiyou. www.cdfa.ca.gov/phpps/ipc/weedmgtaareas/wma_index_hp.htm

Analysis of Australian policy conducted by the Union of Concerned Scientists suggests that **screening imports for potentially harmful foreign plant species is cheaper** than controlling escaped invasive plants. Results show efforts to prevent the import of invasives pay for themselves in just over ten years and yield up to \$1.8 billion savings over 50 years. www.ucsus.org/news/press_releases/screening-for-invasive.html

US EPA issued a **final rule on application of pesticides on and near water bodies**, clarifying an interpretation that has slowed resotration projects for several years. The ruling states that a Clean Water Permit is not required for aquatic application of pesticides registered by EPA for such use. (Implementation of this rule on the ground, however, may still be subject to interpretation by local water quality control boards.) efpub.epa.gov/npdes/home.cfm?program_id=41#pesticides

The USDA is soliciting input from researchers, industry and the public on **protocol for assessing the risk of horticultural plants proposed for import**. They have acknowledged that the "Q-37" regulations are too lax, and unless tightened, will continue to be a significant loophole in the nation's efforts to stop new introductions of invasive plants. Such assessment protocols were the topic of a recent international workshop held in Davis (story page 10). www.aphis.usda.gov/ppq/Q37/revision.html

The Center for Biological Diversity won a lawsuit requiring EPA to **reevaluate the impact of pesticides on the California red-legged frog**, a threatened species under the federal Endangered Species Act. This ruling prohibits the use of 66 pesticides, including some used by restoration workers, in and adjacent to core red-legged frog habitats throughout California until the EPA completes formal consultations with US Fish and Wildlife Service. The ruling does exempt some restoration applications. www.epa.gov/espp/stipulated-injunction.htm

Two companies in Florida are planning **plantations of *Arundo donax* as an alternative energy source**. BioMass Investment Group and Progress Energy Florida plan to grow 20,000 acres of *Arundo* on a Florida farm, then convert the biomass into liquid fuel and burn it in a gas turbine to produce electricity. The Florida Native Plant Society has adopted a policy opposing commercial production of *Arundo* and encouraging eradication of existing stands of the reed. marketplace.publicradio.org/shows/2006/12/06/PM200612068.html, and www.fnps.org

Point Reyes National Seashore announced plans to **cull 75% of the park's exotic deer**. The remaining animals will eventually be eradicated by birth control. The main reasons given in support of the eradication of over 1,000 deer are the growing herds' negative impact on local ecosystems, competition for food with native species and negative economic impact on ranchers. www.ptreyeslight.com/cgi/cover_story.pl?record=179

UC Riverside researchers are **investigating how self-incompatible invasive plants can overcome the limitations of small population size** to take over wildlands. Using the self-incompatible California wild radish as a model, they found that plant populations with a low degree of relatedness have lower rates of reproductive success than populations containing closely related plants. The hope is that by controlling sexual compatibility within an invasive population, we might reduce rate of spread. www.sciencedaily.com/releases/2007/01/070109171349.htm

Cal-IPC Updates

Field Courses...

Registration is now open for this spring's Wildland Weed Field Courses on Control Techniques! See page 11 for details.

2007 Weeds Day at the Capitol...

Join us on March 14 in Sacramento to catch up on the latest policy developments and meet with state legislators about invasive plants. We will be concentrating on keeping (and maybe increasing) the funding for Weed Management Areas that we successfully restored last year. See www.cal-ipc.org for details and to register!

Welcome new board members...

Cal-IPC members elected Jason Giessow (Dendra, Inc.), Bob Case (CNPS East Bay Chapter), Jason "Cas" Casanova (Los Angeles & San Gabriel Rivers Watershed Council), Doug Gibson (San Elijo Lagoon Conservancy), and Bruce Saito (Los Angeles Conservation Corps) to the Board of Directors. The Board appointed Tanya Meyer (Yolo County Resource Conservation District) to fill the position vacated by Jenny Drewitz, who has moved to the Midwest. We will miss her.

Updated Bylaws and Articles...

Members also approved changes to Cal-IPC's Articles of Incorporation and Bylaws, making both documents more current and legally robust.

Amazing new book...

So much good information it took two volumes to fit it all in. *Weeds of California and Other Western States*, from Dr Joseph M. DiTomaso and Evelyn Healy, is now available. See page 14.

Donations of securities...

Cal-IPC is now able to accept donations of stock. Call us at (510) 843-3902 for information.

We will be there:

Cal-IPC will set up its booth at the first annual NorCal Botanists meeting in Chico, January 18-19, and at the annual EcoLandscaping Conference in Sacramento, February 3. Stop by and say hello if you attend!

Shasta County Citizens Take On Weeds

In Shasta County, agency employees are converting regular citizens into dedicated weed workers by teaching them about the plants that threaten the local landscape.

By Melissa Dozier, Cal-IPC Outreach Associate

Considering what Randy Smith has done towards removing Arundo in Redding, it's funny to hear him say that four years ago, he "wouldn't have known Arundo from a hot rock." Invasive plant removal began similarly for Phil and Suzanne Kane, who live about 15 miles outside Burney. The Kanes had noticed, but not thought much about, what Phil described as "a pretty purple flower on our property." Larry Dodds of Burney first learned of invasive plants when letters from Shasta County advised him to remove a noxious weed on his property. Larry allowed the county to spray a few times, but was unsure about the purpose and the possible negative effects of the treatment on his property.

For all of these people, the transformation from regular Shasta county resident to Resident Weed Warrior hapened with education. Phil Kane describes it as a fluke when four years ago, he and his wife Suzanne attended an organized weed tour led by Carri Pirosko of the California Department of Food and Agriculture (CDFA). "We wanted to learn more about our area," Kane says. It was then they learned that the purple flower on their property was *Centaurea squarrosa*, also known as squarrose knapweed, a CDFA A-rated noxious weed. When they learned about the effects of knapweed on the landscape, they decided to take action. To them, it was their obligation as citizens: they own 280 acres of property in Shasta County, and

all of the neighboring lands were susceptible to knapweed. They did not want to add to the weed problems of their neighbors.

More indirectly, it was also through CDFA that Larry Dodds learned about the squarrose knapweed on his property. Dodds

counter. Two years ago, Randy was chair of the Rotary Club of Redding's Environment Committee, and he and a group of volunteers repaired an eroded irrigation siphon on Canyon Hollow Creek. Steve Baumgartner of California Department of Fish and Game told Randy that it was a good project, but that it was a short-lived victory. Smith recalls, "He said that unless we got a handle on Arundo, the 35 named streams in Redding 'would be toast!'" Baumgartner taught Smith about Arundo. To Randy, the worst part was that it crowds out all of the other vegetation, and does not give anything back to the ecosystem. He recalls that in the past two years of removing and wading through Arundo, "I have only seen four birds' nests. Nothing really uses it, and nothing eats it. It has a high silica content that can raise holy hell in



Future Arundo-Free Zone: Creeks like this one, which runs by Blue Mountain Road outside Redding, are the target of the Rotary Club of Redding's Stream Team. *Photo: Randy Smith.*

and Pirosko were friends outside of the weed world. She soon began to talk to him about the letters he received from the county and the knapweed on his property. "Carri helped me identify it, and taught me that it was a problem. Before, I knew starthistle and Italian thistle were problems, but knapweed was just vegetation." When he learned that knapweed chokes out native vegetation, and that it has no nutritional value for local wildlife, he was won over. "I was a cynic, but now I understand the problem."

Randy Smith began his campaign against Arundo in Redding after an eye-opening en-

the GI tract." Smith says that the negative qualities of Arundo have made his removal efforts easier. "Once you know what it does, nobody is a friend of Arundo. I haven't heard from one private landowner who wants it to stay."

After learning about the problems caused by invasive plants, all four of these residents have chosen different pathways for removal. Phil and Suzanne Kane have learned how to spray their knapweed population themselves. They know how to identify the developmental stage at which to

spray, and when to spray again as follow-up treatment. In an effort to reduce herbicide use, the Kanes have allowed Baldo Villegas of CDFA to “get involved with his bugs.” In the last few years, Villegas has released three different kinds of biocontrol agents on their property. Phil Kane understands that “we may have to keep spraying for six or seven years,” but also that “we like being involved.” When asked how things are looking now, Kane says that his property has less than 20% of the knapweed coverage it started with.

Dodds now allows Pirosko to come over to spray his knapweed. He says that their personal connection gave him confidence. For Larry, knapweed is now a part of his life. “It’s contagious,” he says. “Once you start pulling it, you’re constantly looking out for it. Every knapweed plant gets pulled – it’s almost an obsession.” He noticed that the high school near his property has knapweed, and that the cemetery next door has knapweed. He went out fishing, and while walking the river, he said, “Oh wow—I’m surrounded by knapweed! I had to stop, collect some samples in plastic bags, and turn them in to CDFA.”

Arundo removal has now taken the center stage in Randy Smith’s work with the Rotary Club of Redding. As a first step, he was trained by a licensed pesticide applicator. Then, he formed a Rotary Club volunteer crew called Stream Team, and in the past two years has recruited the help and knowledge of more than 17 California agencies and organizations. With agency and volunteer help, the Stream Team has located, mapped, and treated both manually and chemically all of the major Arundo outbreaks in the Redding area. Smith says, “we will get Shasta County to be an Arundo Free Zone before 2010.” Next summer, Smith will work with the California Conservation Corps to remove Arundo along 16

miles of Stillwater Creek. “It will be great to have another 20 sets of hands and eyes to get out and fight this. If we did it ourselves, it would take two years.” Smith emphasizes that invasive plant eradication is possible, even with a small budget and a volunteer

because, as Smith says, “The more we accomplish, the more people want to participate.”

The work of these weed warriors compliments the historic commitment to weed eradication by the Shasta County Agricultural Commissioner and CDFA, creating a larger weed workforce and adding new eyes and ears for discovering infestations. This leveraging of community interest should be a goal of all Weed Management Areas in the state.

Along with empowerment of starting their own weed control programs, these Shasta county residents all emphasize that their campaign against invasive plants began only

after they learned what these plants were doing to their county. Dodds sums it up, saying that his conversion happened through education. “I was a cantankerous old guy, but through education and cooperation, I was changed into a weed warrior.”



Volunteers with the Stream Team from Redding’s Good News Rescue Mission show off their favorite Arundo control tools. *Photo: Randy Smith.*

force. In the future, Smith wants to distribute information about his project so that “other groups who feel they are powerless (against invasive plants) can apprehend the error of that mindset. It’s not that it’s not doable—it’s the will.” The Stream Team has become a self-sustaining volunteer project,

Follow-up from the Stream Team of Redding: With Arundo removed, spawning begins!

Apparently, the Redding ecosystem as a whole is feeling the effects of the Arundo removal campaign. In mid-2006, a Churn Creek Bottom resident of Redding called Randy Smith to report a Chinook salmon building a redd in the creek that runs through his ranch. This was the first salmon that the resident had ever seen at this site. It would seem that the double effects of weather (a heavy rain year) and the Rotary Club of Redding’s Stream Team (debris removal and Arundo eradication along this section of creek) have helped convert the creek from a bed of uniform large cobble to a bed with a diverse range of sediment sizes, some of which are favorable for Chinook spawning.

Pseudo-replication, no replication, and a complete lack of control: In praise of dirty data for weed managers

By Janet Klein, Marin Municipal Water District. Adapted from her paper in the 2006 Cal-IPC Symposium Proceedings.

Weed managers sometimes consider data collection to be an uneconomical expenditure of scarce resources, particularly when institutional focus, resource limitations, site conditions, or overarching management objectives preclude our ability to meet the requirements of peer-reviewed research. However, on-the-ground weed managers are in possession of crucial quantitative information regarding weed control efforts. If we take the time to compile this information and supplement it with even the most rudimentary field data, we are able to allocate our scarce resources more efficiently. Perhaps more importantly, we are better able to clearly communicate what is at stake in the struggle to control invasive species.

The Marin Municipal Water District (MMWD) owns and manages approximately 22,000 acres of watershed lands in Marin County. The nearly 19,000-acre Mt. Tamalpais Watershed is located on an urban-wildland interface, immediately adjacent to the communities of Mill Valley, Sausalito, San Rafael, and Fairfax. Over 120,000 acres of public wildlands are immediately adjacent. Included within our holdings are no fewer than 900 acres of land infested with French broom (*Genista monspessulana*). In 2005 the district board suspended the use of herbicide for vegetation treatment.

MMWD faces many of the limitations that land owners experience with regard to our capacity to do research or formal adaptive management as we control weeds. The institutional focus is on drinking water production, not land management or biodiversity protection. The organizational work ethic is that of “getting the job done,” not “studying how to do the job,” leaving few opportunities to develop a study design or collect pre-treatment data. Our weed management objective is sustained weed suppression, so leaving sites unmanaged as “controls” can increase future management costs at those sites and threaten progress made elsewhere when controls produce

propagules.

Out of necessity, we focus our data collection and analysis efforts on getting to the heart of our weed management program. This information is critical not only for MMWD resource management staff, but also indispensable for our board of directors, who hold the purse strings. It is also of great value to adjacent land managers (state parks, national parks, and local open space districts) as well as the local fire fighting agencies. Finally, it's important for the general public. However, due to the limitations of our field crews, we must rely on quick-and-dirty, yet robust, data that get right to heart of what we most need to know. Below are some of our key questions and the methods we used to address them.

How bad is the problem, really?

Distribution mapping: We focus on species, location, approximate patch size, relative abundance, and site conditions. The emphasis is placed on broad characterizations of static management units rather than capturing the boundaries of shifting weed populations. We then translate our map statistics into a metric easily understood by the general public: football fields. To date, we have surveyed approximately 3,000 acres and delineated over 700 acres of French broom within 150 management units. All told, we estimate five percent—or the equivalent of 870 football fields—of the Mt. Tamalpais Watershed is infested with French broom.

Stem density sampling: This approach supplements mapping and provides a rough estimate of broom abundance in particular management units. We decided to measure stem density since it is an easy measure for our district board members to understand and for our primary field data collectors to gather. Field crews (typically teenagers) randomly set out long rectangular quadrats (5m x 0.2m) following a straightforward protocol and count the number of broom stems in 20-40 quadrats per management

unit. The data then undergo strict quality control measures. (“6 million stems” indicates observer boredom rather than high densities.) When combined with our mapping work, stem density data enabled us to quantify the problem and yield the very crude but eye-opening estimate of 24-44 million broom plants on the watershed.

Why is French broom worse than other invasive plants?

French broom grows so much faster than native woody vegetation that it doubles or even triples fuelbreak maintenance costs. To demonstrate this, we did some very quick-and-dirty sampling by measuring the heights of native shrubs (average = 24.2 cm, n=100) and French broom (average = 95.9 cm, n=100) along five miles of fuelbreak that had been mowed six months previously. The results of this one-hour sampling investment have persuaded many in the local fire community that French broom within our fuelbreak system cannot be ignored.

How long will it take to fix the problem?

We can obtain quick-and-dirty estimates of person hours per acre for each broom treatment method by looking at our work order and payroll data, which are organized by vegetation mapping units. With five years of records for 60 sites, we can calculate a reasonably accurate average cost per acre despite substantial differences in site conditions (e.g., topography, weed density, vegetation type). We also measured productivity of volunteer weed workers by counting the number of stems that volunteers pulled in 5 minutes. These data (cost per acre for staff and volunteers), when combined with stem density data, enable us to project how long it would take to clear one acre of established stands of French broom using various treatment methods (e.g., handpulling, mowing, herbicide).

...continued on page 8

“Dip-and-Clip”: A new treatment for herbaceous weeds

By Jennifer Erskine Ogden, Mark Renz, and Sue Donaldson

Adapted from Erskine Ogden, J., M. Renz, and S. Donaldson. 2006. *A precision method for the control of perennial herbaceous species in sensitive locations*. University of Nevada Cooperative Extension Special Publication 06-09. Available: www.unce.unr.edu/publications/SP06/SP0609.pdf

Researchers at UC Davis, New Mexico State University, and University of Nevada Cooperative Extension have tested a new method that shows promise for controlling small infestations of herbaceous perennial weeds. It may provide an alternative method of control in sensitive habitats where the use of herbicides is a concern. The “dip-and-clip” method was modified from the cut-and-treat technique, where herbicide is applied to freshly-cut stems of trees and large shrubs. Dip-and-clip was tested on infestations of diffuse knapweed (*Centaurea diffusa*), Dalmatian toadflax (*Linaria genitifolia dalmatica*) and perennial pepperweed (*Lepidium latifolium*) in Douglas County, NV, and the Lake Tahoe Basin.

Plants should be treated at the early flowering stage when stems have bolted, but before fruiting has begun. When attempting to control perennial herbaceous species, monitoring and treatment should be performed yearly until the seedbank diminishes and older plants do not resprout. Before using any of these methods, read the label on the herbicide container to ensure correct use in the appropriate habitat. The full report on this method, listed above, contains a table with recommended herbicide concentrations.

The following is an abridged version of the method. Read the full report for additional instructions.

1. Wear personal protective equipment such as gloves and eye protection. Mix the herbicide solution in a container wide enough to accommodate your tool. Select sharp, durable clippers, but avoid anvil-type tools that will crush the stems and prevent the herbicide from moving into the plant. The container and tool should be used only for this purpose. Place the container on a plastic sheet or in a bucket to contain any spilled herbicide.

2. Dip the clipper blades into the solution with the blades in an open position so all cutting surfaces become wet. Hold the plant you intend to cut with the nonclipping hand, and cut the stem with the dipped clippers at the lowest point possible above the soil surface. Clip the stem with the flat surface of the clippers facing downward so that the bottom portion of the stem (the part connected to the root system) receives the most direct application of herbicide.
3. If removing the upper portion of the cut stems, place them directly into a plastic bag. Rinse the clipper blades over the bottle of herbicide to remove chemical residue.
4. Monitor the site regularly and re-treat weeds and sprouts as needed. It may take several years of repeat treatments to eliminate the population.

Researchers compared the dip-and-clip method to spot spraying and cutting alone on Dalmatian toadflax, diffuse knapweed, and perennial pepperweed. Spot spraying provided similar levels of control for diffuse knapweed and Dalmatian toadflax when compared to the dip-and-clip method, but much poorer control of perennial pepperweed. Spraying is problematic in many sensitive locations, as adjacent plants can be damaged. Cutting only, without herbicide application, provided poor control in all cases, and is not recommended for control of these species. Researchers also found that native species recovered better in the treated Dalmatian toadflax sites than in the untreated control sites.

The dip-and-clip method provides a tool for controlling small weed infestations. It can be used where volunteers are available, or by landowners working on their property, and disturbs the soil less than hand-pulling, making this method less likely to promote the spread of invasives in the soil.

Jennifer Erskine Ogden is a UC Davis postdoc and Cal-IPC Treasurer. Contact her at jaerskine@ucdavis.edu. Mark Renz is with New Mexico State University. Sue Donaldson is with U. of Nevada Cooperative Extension.



1. After donning protective gloves, carefully dip the clipper blades into the herbicide solution. Do not let the solution drip onto the ground.



2. Clip plants as close to the soil surface as possible. Avoid touching the blades to the soil.



3. Hold the clippers with the flat surface facing downward to maximize the amount of herbicide applied to the cut stem.

By combining our broom distribution data, broom stem density data, and effort data, we have identified 5000 stems per acre as a rough threshold of success. At this density, using highly selective control methods, we can prevent seed production with less than 16 person hours an acre. It is at this point that we consider reintroducing native perennial species to particularly species-poor sites. Stem density data collected at the same site over multiple seasons does allow us to confirm that we are trending in the desired direction and approaching the restoration threshold.

Which treatments work?

We try everything. Sometimes we conduct a single test, other times more extensive trials. Our focus is on how well a particular method meets our management goals and how it ranks according to a wide range of criteria (cost per acre, retreatment interval, time to restoration, logistical limitations, wildfire risk reduction, ecological protection, and invasive species spread control). The results of trials are often fairly self-evident, requiring only visual inspection. For example, annual winter mowing that results a meter or more of regrowth within six months is clearly not meeting our goals.

Two recent undertakings illustrate the difficulties we often encounter when striving to execute formal studies. In 2001 MMWD conducted a goat grazing trial. The initial study was designed to measure broom mortality in both treatment (grazed) and control (ungrazed) plots. However, the goats exhibited a strong preference for native madrone bark, and did not graze broom as quickly as predicted, leaving half of the treatment plots untreated at the end of the trial. This information contributed to our assessment that, within our management context, other treatment options are preferable to goats.

We also conducted a formal, multifaceted trial of the Waipuna hot foam system in 2006 following a limited trial in 2003. The 2003 trial (unreplicated and without controls), suggested the Waipuna system was between 90 and 100% effective at killing small French broom resprouts. In 2006, we established four replicates of the treatment and controls at three different locations. We then ran the Waipuna machine in produc-

Table 1. Estimated per-acre costs for French broom treatments, MMWD, 2001-2006.

Methods	Labor Source	Person Hrs/Acre	Cost / Acre (1 Treatment)	Cost / Acre (10 Yrs.)
Currently Employed Methods				
Excavator / Tiger Mower	MMWD	5	\$350	\$3,500
Power Brushcutting	Contractor or MMWD	20	\$500	\$4,875
Prescription Burning	MMWD	Insufficient data	\$1,500	\$8,850
Mulching	MMWD	16	\$475	\$1,825
Propane Flaming	Contractor or MMWD	75	\$1,975	\$6,025
Handpulling	Contractor or AWOP or Volunteer	300	\$2,400	\$9,850
Experimental Methods				
Terra Torch	Contractor w/ MMWD	7	\$725	\$2,775
Grazing (goats)	Contractor w/ MMWD	10	\$975	\$5,300
Waipuna Hot Foam	MMWD	110	\$3,550	\$6,800
Suspended Methods				
Cut Stump Treatment	Contractor or MMWD	30	\$750	\$2,825

tion mode for three months, during which time it proved to be prohibitively expensive and slow.

What does it cost?

Using work order and payroll data in combination with density and distribution data enables us to calculate overall costs per acre for each treatment method. Included in these estimates are crew costs, vehicles, fuel, equipment, lease fees, and capital expenditures. For our organization, labor and vehicle use are the most expensive components. Organizations with a different salary structure may have radically different results. We found that of the four major types of workers (MMWD staff, contractors, adult offender work program participants, and volunteers), the contractors were far and away the most efficient. Volunteers are the most costly, but they bring a culture of advocacy and stewardship to the vegetation management program that is invaluable. The estimated value of their labor can also be credited as matching funds for grants. A table comparing costs for each treatment (Table 1) is one of the most valuable tools

we have.

Conclusion

The quick-and-dirty data described here may not satisfy academic research scientists, but such data have helped us improve the efficiency and cost-effectiveness of weed management here at MMWD and inform our district board members and the general public about the costs associated with particular treatments. We currently spend \$250,000 a year for on-the-ground weed control (excluding planning, monitoring, and mapping). The district's board members can make an informed choice about whether to increase spending to \$750,000/year (what it would take to treat all 870 football fields of broom) or improve our efficiency by allowing once again the use of cheaper and more efficient methods such as cut-stump herbicide treatments. Quick-and-dirty data has helped us demonstrate our ability to reduce broom densities to a level where we can begin restoring native plant communities, but only if we have enough funding and the right tools to do so.

Contact the author at jklein@marinwater.org.

Who do you want to reach?

By Bree Richardson, Cal-IPC Board and Outreach Committee member

Understanding of the invasive species issue has grown considerably among the public, land managers, and policy-makers in recent years. There is, however, a lot of education left to do. Whether you want to encourage gardeners not to plant weeds or train volunteers to control weeds, materials produced by Cal-IPC and other organizations are available to help. This is a sample of what's available to you for your invasive plant education efforts. Information on Cal-IPC materials can be found on page 14 and at cal-ipc.org.

General public

The first task in invasive plant outreach is explaining the problem and why people should care. Cal-IPC's *Biological Pollution* brochure provides an introduction to invasive plant impacts in California. Many local Weed Management Areas have also printed brochures highlighting the worst weeds in their region. Ecovisions (www.ecovisions.org) produces the *Plant Invaders* video, which includes specific examples and describes volunteer efforts in order to encourage participation in control efforts. In 2005, National Geographic and PBS (www.pbs.org) broadcast *Strange Days on Planet Earth*. Available on DVD, the first episode of this four-part series focuses on invasive species in a global context. Both of these videos are suitable for presentations to classes or local clubs.

Gardeners

The majority of invasive plants in California were introduced as ornamentals, and each year we hear reports of more species "jumping the fence." Gardening is reputed to be Americans' #1 hobby, so what better way to connect with people about invasives?

To recruit gardeners' help in stopping invasive plants, Cal-IPC has worked with partners to develop *Don't Plant a Pest!* brochures for different regions of the state (and more are in development). These brochures recommend alternatives to invasive ornamental plants, and are good for starting a conversation about the role of gardeners and other local citizens in stopping the spread of invasives. The Los Angeles and San Gabriel

Rivers Watershed Council has produced wallet-sized WeedWatch cards to promote non-invasive alternatives for Southern California. Their template is available for others to use in developing cards for their own region (www.lasgrwc.org).

Restoration volunteers or classes

Audiences that have a general understanding of invasive plants may require technical information on specific species and their management. The resources below can be helpful when preparing presentations to college classes, Native Plant Society chapters, agriculture groups, or landowners, and can also help you answer questions on specific plants of local concern.

For biology and impacts, refer to Cal-IPC's *California Invasive Plant Inventory*, which ranks 200 invasive plants as threats to California's wildlands. Our online database contains detailed information on each plant, including regions and habitats invaded in California, and citations for additional information. For identification, you can't beat books and CDs produced by Dr. Joe DiTomaso. Start with *Weeds of California and Other Western States*, a two-volume (plus CD!) masterpiece of western weed identification and plant-specific information. *Aquatic and Riparian Weeds of the West* focuses on species found in and around waterways. Two CDs are designed to aid in identification: *Grass and Grass-Like Weeds of California* and *Broadleaf Weeds of California* allow you to identify plants using characteristics visible to the naked eye.

For management techniques, the standard reference remains *Invasive Plants of California's Wildlands*, which provides information on some of the worst weeds in California. It is posted in its entirety at cal-ipc.org. Two 2006 reports, *The Use of Fire as a Tool for Controlling Invasive Plants* and *Yellow Starthistle Management Guide*, are helpful for presentations focused on control methods. The *Weed Workers' Handbook*, also available online as a pdf, describes management techniques along with helpful hints on organizing a volunteer program.

The Nature Conservancy's *Weed Control*

Methods Handbook contains control techniques, including extensive information on herbicides, while their *Element Stewardship Abstracts* are useful management summaries written by TNC land managers (tncweeds.ucdavis.edu). Ecovisions produces the video series *Managing an Invasive Alien Species*, with episodes focused on brooms, yellow starthistle, and pampasgrass. These videos focus on prevention and control of California's most pervasive weeds, while seeking to engender a deeper land ethic in the audience (www.ecovisions.org).

Sources for photos

A picture is worth a thousand words. Here are some resources for photos that will wow your audience: The TNC **Invasive Species Initiative's photo gallery** arranges photos by species. High-resolution versions suitable for printed materials are available for some photos (tncweeds.ucdavis.edu). The **Center for Invasive Plant Management's** Image Gallery page lists links to many online photo galleries (www.weedcenter.org). Those who purchase *Weeds of California and Other Western States* receive a CD of 3,000 copyright-free photos that may be used for educational presentations. Also, photos on federal government websites are free of copyright when used for educational purposes. Finally, many local Weed Management Area have photos of local interest.

Contact Bree Richardson at breemerr@yahoo.com or Cal-IPC Outreach Coordinatory Melissa Dozier at mdozier@cal-ipc.org.

❖ Reaching Garden Clubs ❖

Bring a Cal-IPC speaker to your local garden club! Our gardener-specific presentation addresses the basics of invasive plants and provides alternatives to invasive ornamental garden plants. Our speakers are dedicated Cal-IPC members, many with years of experience in invasive plant work. To find a speaker for your local audience, contact a Regional Coordinator listed below, or email mdozier@cal-ipc.org.

SF Bay Area: Bob Case, bobcase@astound.net; **Central Valley, South:** Becky Waegell, bwaegell@cosumnes.org; **Central Valley, North:** Susan Mason, (530) 892-1666; **Northern California:** Carol Gibbs, cgibbs@ca.blm.gov; **Central Sierra:** Wendy West, wkwest@ucdavis.edu; **Central Coast:** David Chang, dchang@co.santa-barbara.ca.us

Where will weeds go?

Cal-IPC launches Weed Risk Assessment project with international workshop

We all know an ounce of prevention is worth a pound of cure, especially for weeds. But how can we know which new weeds to look out for? Which weeds already in California are most likely to expand into new areas? Which non-native plants might present a threat if introduced to California?

Such topics are the focus of the sub-discipline of Weed Risk Assessment (WRA). Cal-IPC's Inventory uses a criteria system based on WRA principles to assess the severity of weeds already in the state. A new grant gives Cal-IPC the opportunity to begin work on answering more complex questions that will help weed workers' ability to prevent weed spread and new introductions.

The grant, through Dr. Joe DiTomaso at UC Davis and the UC Integrated Pest Management Program (UC IPM), funds modeling of invasive plant distribution in California using climate and other factors. (See articles in Spring 2002 and Spring 2003 issues of Cal-IPC News for examples of predictive modeling.) Modeling will focus on 36 plants from our Inventory, choosing species that represent a range of severity and current distribution in California, as well as some chosen because they are sold as ornamentals.

To kick off the project, Cal-IPC organized the California WRA Workshop at UC Davis on October 30-31 to discuss methods for predicting the spread of invasive plants in California. The invited participants included leading researchers from Australia, Hawaii, and Florida who have been at the forefront of developing tools to assess how severe a problem plants will become. The two-day meeting served to get Cal-IPC staff and others in the California weed community up to speed about what's being done here and abroad. (Special thanks to Rick Roush and the UC IPM program for sponsoring the meeting.)

The program covered three main areas—the science upon which WRA rests, the techniques used in WRA, and the policies for implementing WRA findings. For more information on the program and notes on discussions, please see the proceedings at cal-ipc.org.

At the end of the session, participants developed priorities for action. Because many entities worldwide are working on the same challenging issue, there is a great need to for sharing of information, both on specific plants and on effectiveness of predictive techniques. Hawaii and Florida have tested the Australian system that is used to screen all imports in that country, while USDA is revising our national screening protocol for horticultural introductions (Cal-IPC is submitting comment during their stakeholder input period). It is an important time to be engaged in this issue.

As we begin modeling, our first step is to compile information on the current distribution of weeds in California. Remarkably, there is little comprehensive statewide information, even for most major weeds. Thus we will be conducting a survey through county WMAs to collect rough data on which weeds are present in each area. This will provide a much-needed baseline. Distribution maps from the surveys will be posted online.

The predictive modeling compares climate parameters from areas where the plant is known to grow globally with those from California habitats. This will give us a conservative estimate of where these plants are likely to spread in the future (the estimate can be refined using other parameters, such as soil type). Modeling software can also run predictions under scenarios for global climate change, allowing us to generate more realistic predictions. Previous work, such as the study of potential

gorse distribution in California conducted by Jon Hall and Dr. Scott Steinmaus of Cal Poly San Luis Obispo, will guide our efforts.

This project support several other efforts. Our work with the nursery industry will be greatly aided by developing a basic system for screening potential imports. Our Inventory will benefit from improved distribution information. Most importantly, this study will provide a roadmap for early detection efforts throughout the state by showing which weeds might turn up where.

For more information, see the new page on our website under "Research" or contact Doug Johnson at dujohnson@cal-ipc.org or Elizabeth Brusati at edbrusati@cal-ipc.org.



Participants from California and beyond at the October 2006 Weed Risk Assessment workshop at UC Davis.

New and Contributing Members

Thank you for your generous support! This list reflects new members and donors since the last newsletter.

New Members

Crystal Acker (Sonoma Co. PRMD, Santa Rosa), **Donna Ball** (H.T. Harvey & Assoc., San Jose), **Shawn Brumbaugh** (Santa Rosa), **Kerry Byrne** (UC Davis, Davis), **Shayna Carney** (Roseville Parks & Recreation Dept., Roseville), **Justin Davila** (Mill Valley), **Ann Jones** (San Geronimo Valley Planning Group, Woodacre), **Bobby Kamansky** (Kamansky's Ecological Consulting, Three Rivers), **Robert Kirkwood** (Palo Alto), **Noel Kortzen** (Los Angeles), **Jeremiah Mann** (Davis), **Wendy Mazzotti** (Bishop), **Marnie McKernan** (Michael Brandman Assoc., San Bernadino), **George McMenamin** (Boulder Creek), **Sean Micallef** (Zentner & Zentner, Oakland), **Christal Niederer** (Foster City), **Rich Rodeck** (Marin Co. Open Space District, San Rafael), **Weena Sangkatavat** (BonTerra Consulting, Costa Mesa), **Bailey Smith** (San Francisco), **Carl Thoelecke** (Marin Co. Open Space District, Kentfield), **Rob Thompson** (Thompson Wildland Management, Monterey), **Andrea Vona** (Palos Verdes Peninsula Land Conservancy, Rolling Hills Estates), **Ruth Wash** (Larkspur), **William Winchester** (University of Kansas, Lawrence, KS)

Contributing Members

Doug Allshouse (Friends of San Bruno Moun-

tain, Daly City), **Tom Dodson** (Tom Dodson Assoc., San Bernadino), **Wilma Follette** (Sausalito), **Davis Fross** (Native Sons Nursery, Arroyo Grande), **John and Hermi Hiatt** (Red Rock Audubon Society, Las Vegas, NV), **Larry Jones** (Richmond), **Audrey Miller** (Ferndale), **Don Stiver** (CNPS, El Cerrito), **Stephen Underwood** (CA State Parks, Hydesville)

New Life Member

Robert Kirby, Jr. (Berkeley)

Donations

Brian and Joyce Bender (Napa), **Joe and Gina Darin** (Davis), **Harriet Dhanak** (El Cerrito), **Bruce Delgado** (BLM, Marina), **Nancy Harris** (CNPS, Huntington Beach), **Renita Herrmann** (San Francisco), **Ken Himes** (CNPS, Belmont), **Mark Lawless** (Poway), **Eliza Maher** (Center for Natural Lands Management, Riverside), **Tamia Marg** (Berkeley), **Audrey Miller** (Ferndale), **Susan Sanders** (Nevada City), **Susan Schwartz** (Friends of Five Creeks, Berkeley), **Jake Sigg** (CNPS, San Francisco), **Jennifer Tillman** (Encinitas), **Annette Wheeler** (Los Altos Hills)

Donations for Cape Ivy Biocontrol

June Bilisoly (Portola Valley), **Boz Williams** (Guerneville), **CNPS Monterey Chapter**

8th Annual Monterey "War on Weeds" Symposium

The theme of this year's War on Weeds (WOW) symposium at California State University-Monterey Bay was "A Symphony of Weed Management Strategies." The many parts of this symphony included eighteen speakers, tool demonstrations in the parking lot (the famous "tool tailgate"), exhibits, discussion groups, and weed alerts. The movements of the symphony ranged from the action packed (such as a live flaming demonstration from local weed-control guru Ken Moore) to the heartwarming (a series of afternoon talks on how to eradicate weeds with a crew of volunteers or local students).

In addition to the symposium, WOW featured two field trips. Dr Joe DiTomaso of UC Davis, also the WOW Keynote Speaker, led a group to Clear Creek, a remote site in San Benito County with a two-year-old yellow starthistle management project. On Saturday, the field trip headed to the Fort Ord backcountry to examine the impact of invasive plants on California's coastal ecosystem.

One of the most inspiring aspects of WOW was the local focus; for Central Coast weed warriors, all aspects of the symposium were relevant. Many talks covered on control methods for locally problematic species, including *Lepidium*, *Eupatorium*, cape ivy and purple starthistle. We all still remember the talk by Bruce Delgado, commander in chief of the War on Weeds, on "My Summer at Yellow Starthistle Camp." In addition, local representatives from State Parks, Fort Ord, the Elkhorn Slough Foundation, and the Monterey County WMA gave updates on new and ongoing weed projects. To top it off, the symphony of management strategies gave way to an actual symphony: local weed warriors on the accordion and the clarinet serenaded attendees during registration and breaks.

2007 Cal-IPC Field Courses

Registration open for March and April Courses! Others opening soon...

Find your way out of the iceplant, artichoke thistle, or arundo and come to a Cal-IPC field course near you. Courses provide hands-on, practical demonstrations of weed control methods, and training in the latest integrated management strategies. Courses are taught by local instructors with years of on-the-ground experience.

Control Techniques: March 21

Paramount Ranch, Santa Monica Mountains National Recreation Area

Control Techniques: April 12

Turtle Bay Exploration Park, Redding

Control Techniques: May 17

Rancho San Antonio Preserve, Los Altos

Plus, NEW! Weed Mapping Course

Pre-Symposium: September 19

San Diego

Courses are \$125 for Cal-IPC members, and \$145 for non-members. More information and registration at cal-ipc.org, or call Melissa Dozier at 510-843-3902.



Mendocino community considers gorse treatment

Caspar, a small community on the Mendocino coast south of Fort Bragg, has a major problem with gorse. A dense infestation next to town, as well as lesser infestations on adjacent coastal bluffs, present a serious fire threat. (A similar coastal community in Bandon, OR, burned to the ground in 1936.) Its seeds, like those of other leguminous weeds (such as brooms), remain viable for decades. The gorse in Mendocino was almost eradicated in the 1940s, but has rebounded vigorously from the seed bank in the absence of vigilant ongoing follow-up efforts. In recent years, Caspar residents have strongly resisted the use of herbicides for controlling weeds. With rising awareness of the gorse threat, and an increasingly active WMA on the coast, the community may be ready to tackle this thorny problem.

Note: The resolution reprinted below requests that the Mendocino County Agricultural Commissioner treat gorse in the county as an A-rated noxious weed. While the office does not have discretion to alter the rating (set by the state at B), it does have discretion to declare an eradication effort. This is untenable, both because of the scale of the infestation, and property rights issues. We share the resolution as illustration of the community's mounting concern, which we hope will lead to effective collaboration between public and private partners.

Resolution of the Caspar Community to County of Mendocino Commissioner of Agriculture

Whereas: The citizens and property owners of Caspar are threatened by the rapid proliferation of non-native noxious weed, Gorse (*Ulex europaea*), as a major fire hazard and environmental threat with exponential growth forcing out native plants.

Whereas: Gorse now heavily infests hundreds of acres bordering our community with approximately 75% of this land owned by the State of California and managed by State agencies who have been unable to control the spread of Gorse on Jug Handle State Reserve or the Caspar Headlands.

Whereas: Gorse growth is expanding and creating a seed reservoir and home base for many new infestations appearing elsewhere in the coastal community.

Whereas: Many responsible residents and property owners are becoming overwhelmed by the increasing labor and expense of trying to keep Gorse away from their homes and land.

Whereas: Gorse is highly flammable, easily ignited and nearly impossible to extinguish. Burning Gorse produces 30 foot flames with intense heat, and roots of the plant can carry fire underground. A Gorse fire burned the town of Bandon, Oregon killing eleven people and destroying 480 buildings. Gorse is expanding rapidly on both sides of busy California Highway 1 where such a disaster could be ignited in our own community.

Whereas, the Caspar Community has in regular meetings discussed the infestation of Gorse, consulted with local biologists on Gorse growth, and referred the issue of Gorse expansion for review to the Mendocino Coast Cooperative Weed Management Area, and whereas the results of these meetings, consultations and reviews have been useful and informative.

Whereas: Gorse is now ranked as a Category B Noxious Weed; and the Mendocino County Agricultural Commissioner has discretionary authority to raise its priority to Category A, thus offering various additional options in addressing this urgent problem.

Therefore: The Caspar Community requests the Commissioner of Agriculture use discretionary authority to manage Gorse as a Category A Noxious Weed and bring resources of the Commissioner's office, to our aid and assistance to contain and eradicate this infestation.

So resolved this 11th day of August 2006 by The Board of Caspar Community Caspar, California

Gorse Wine

12 cups of gorse flowers
1 gallon of water
4 cups of sugar
1 1/2 cups seedless white raisins
2 oranges
2 lemons (or 1/4 oz. citric acid)
2/3 cup strong tea or 8 drops grape tannin
2 heaping teaspoons all-purpose wine yeast
1 teaspoon yeast nutrient

Put the flowers into the fermenting bucket immediately. Boil half the water, half the sugar and the chopped raisins together for 1 to 2 minutes, then pour over flowers. Thinly peel the rind from the oranges and the lemons, and add to the bucket. Squeeze out the juice and add that too. Add the cold tea or the tannin and stir thoroughly. Make up to 1 gallon with cold water, or cooled boiled water if you prefer. This should give you a tepid mixture, about right for adding the yeast from the starter bottle. Add the yeast and yeast nutrient, stir well and cover. Ferment for one week, stirring daily. After two or three days, when fermenting well, add the remaining sugar and stir to dissolve. Strain through a sieve or cloth and siphon into a gallon jug or bottle. Fill up to the neck or the jug with cool, boiled water, if necessary (the less surface area exposed with all wines the better), fit a fermentation lock or secure a plastic garbage bag with a rubber band over the neck of the jug. Rack when clear, bottle and keep for six months.

Reprinted from casparcommons.org/Gorse/Wine.htm

Readings & Resources

Taxonomic Names: Not sure if a plant you read about is the same as one with a different name in The Jepson Manual? The Jepson Herbarium at UC Berkeley has an online **Index to California Plant Names** that cross-references names used in various sources with those used in the Jepson Manual and its upcoming revision. ucjeps.berkeley.edu/jepson_flora_project.html

Database: The Jepson Herbarium has also launched a new **Ecological Flora of California**. EFCal will serve as a comprehensive database of ecological characteristics including life history, phenology, morphology and other traits for the California flora. A pilot database is online. ucjeps.berkeley.edu/efc/

Website: The 2006 Tamarisk Research Conference has posted extensive materials online, including abstracts, presentations and posters, and breakout session summaries. www.weedcenter.org/tamarisk_conf_06/conference_home.html

Online key: A draft **interactive key and plant character data set for U.S. wetland monocots** is available for testing on-line or by downloading the PLANTS Identification-Wetland Monocots application. Unlike a traditional dichotomous key, this key makes identification easier by letting you select multiple characters simultaneously. npdc.usda.gov/technical/plantid_wetland_mono.html

Book: *Measuring Plant Diversity: Lessons from the Field*, by USGS ecologist Tom Stohlgren, presents field and analysis methods that can more accurately describe plant biodiversity and help evaluate vulner-

ability to invasion. www.oup.com/us/catalog/general/subject/LifeSciences/Ecology

Reference lists: **Annotated Bibliographies on the Ecology and Management of Invasive Species**. From Garry Oak Ecosystems Recovery Team in British Columbia. www.goert.ca/resources/biblio.htm

Weed Photos: Trying to identify a weed? The Center for Invasive Plant Management has a list of websites with **photo galleries**. www.weedcenter.org/inv_plant_infolimage_galleries.html

Recipes: If you can't beat 'em, eat 'em. *The Invasive Species Cookbook* by J.M. Franke (subtitle: Conservation Through Gastronomy) features gourmet recipes by top chefs, along with information on each species. Have pasta with garlic mustard pesto and Japanese knotweed pie for dessert. Available for resale by nature centers and similar institutions. \$24.95. www.bradfordstreetpress.com

Book Review

American Perceptions of Immigrant and Invasive Species: Strangers on the Land, by Peter Coates

University of California Press, 2006, 256 pp., hardcover \$39.95, www.ucpress.edu.

Invasive species have gained more attention in the past few years, from President Clinton's Executive Order on Invasive Species to last year's cover article in *National Geographic*. *American Perception of Immigrant and Invasive Species* shows that American interest in (and controversy surrounding) the effects of introduced species reaches back more than a century. It traces the history of introductions, the struggles to stop them when things went wrong, and Americans' attitudes to invasive species since the 1800s. It focuses on the 1890s to 1920s, then jumps to the most recent 30 years. This book serves as both an entertaining history to put modern weed work in context, and a thought-provoking discussion of how work against invasive species has sometimes been confounded with racist and nativist attitudes. Extensive footnotes in the back give additional details on the facts and quotations used throughout the book. Cal-IPC rates a mention in several places.

The book is divided into five chapters,

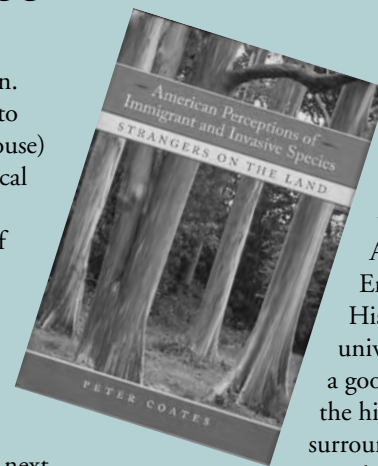
with the first serving as an introduction. The second describes birds brought into the US, focusing on the English (or house) sparrow, an ill-fated attempt at biological control against canker worms that by the late 1800s had become a symbol of what are now called invasive species. The third chapter contrasts the work of "plant explorers" searching for new agricultural and horticultural species with policy developments of the early 1900s such as USDA's Q-37 rule on inspection of imported plants. The next chapter concentrates on an example familiar to most Californians: eucalyptus, specifically its shifting history from a "miracle" plant, to a not-very-useful but still familiar part of the landscape, to recent battles over removal projects.

Finally, Coates examines the language used in describing invasive species and the charges that those who are against invasive species are by extension against all non-natives, whether plant, animal, or human. He also covers some of the metaphors and strong expressions commonly used

to describe invasions.

The author, who teaches American and Environmental History at a British university, offers a good overview of the history and issues surrounding attitudes towards invasive

species. This is a useful book for weed workers interested in the context of their work, or who need to consider the implications of the language they use in public outreach. Coates concludes, "Attitudes to immigrant people and actions against them may parallel and resemble attitudes to immigrant flora and fauna and policy toward them. But that does not mean that they are invariably identical or directly comparable or that there is a clear causal relationship between them."



Publications Available from Cal-IPC

Order at www.cal-ipc.org or call (510) 843-3902.

CA tax and shipping costs will be added.

Now Available!

Weeds of California and Other Western States (two volumes)

Joseph M. DiTomaso and Evelyn Healy
UC Agriculture & Natural Resources, 2006
Identification guide to 750 weed species, with 3000 color photos. Detailed descriptions of morphology and biology. Includes a CD-ROM with all photos. \$100.00



Aquatic and Riparian Weeds of the West

Joseph M. DiTomaso and Evelyn Healy
UC Agriculture & Natural Resources, 2003
Comprehensive identification guide to the West's riparian weeds. Photos, identification keys. 440 pp. \$40.00



Grass and Grass-like Weeds of California

Joseph M. DiTomaso.
California Weeds, 2004
Menu-driven CD-ROM identification guide to more than 200 invasive grasses and native perennials used in restoration. Requires Windows 95 or higher, 650 MB free hard-drive space. \$32.00



Broadleaf Weeds of California

Joseph M. DiTomaso.
California Weeds, 2006
Expert computer-based identification guide to 722 broadleaf weeds of California. Requires Windows 95 or higher. \$40.00
BUY BOTH CD-ROMS FOR \$60.00



Don't Plant a Pest! brochures

Wildland-safe alternatives to invasive plants sold at nurseries. 14 panels. Choose: San Francisco Bay Area, Southern California (English or Spanish), Central Coast, Central Valley, Sierra Foothills, Tahoe Basin, or Trees. \$30.00/100 brochures [up to 10 free]



Biological Pollution brochure

Describes ecological and economic impacts of invasive plants in California for a general audience. Tri-fold. \$12.00/100 brochures; \$110.00 /1000 brochures [up to 10 free]



Invasive Plants of California's Wildlands

Carla C. Bossard, John M. Randall and Marc C. Hoshovsky, Eds.
University of California Press, 2000
Biology and control information on 70 of the state's worst wildland weeds. Maps, photos, illustrations. 360 pp. \$25.00



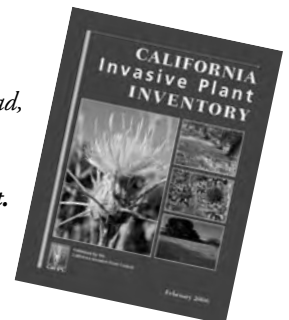
The Weed Workers' Handbook

Cal-IPC and The Watershed Project, 2004
Biology and control information on 25 SF Bay Area wildland weeds, plus background on organizing local projects. Illustrations. 120 pp. \$9.20



California Invasive Plant Inventory

Cal-IPC, 2006
Summarizes the impacts, potential for spread, and distribution of more than 200 non-native plants that invade wildlands in California. 39 pp. Currently out of print. Online pdf at cal-ipc.org.



The Use of Fire as a Tool for Controlling Invasive Plants

Joseph M. DiTomaso and Douglas W. Johnson, Eds., 2006
Captures current state of knowledge on the use of fire to manage invasive plants in wildlands. Also available as online pdf. 49 pp. \$5.00



Yellow Starthistle Management Guide

Joseph M. DiTomaso, Guy B. Kyser, and Michael J. Pitcairn, 2006.
Comprehensive overview of treatment methods for yellow starthistle. Also available as online pdf. 78 pp. Free (shipping charge applies)



The WILDLAND WEED CALENDAR

Know of an event that should be posted here?
Please contact edbrusati@cal-ipc.org.

Evolutionary Change in Human-Altered Environments: An International Summit

February 8-10, 2007
UC Los Angeles

International summit of evolutionary biologists, conservation practitioners, and policy makers to synthesize current knowledge and develop plans to mitigate impacts.

www.ioe.ucla.edu/CTR/ioesymposium.html

National Invasive Weeds Awareness Week

February 25-March 2, 2007
Washington, D.C.

Weed workers from across the country descend on the Capitol to bring invasive plants to the attention of Congress.

www.nawma.org/niwaw/niwaw_index.htm

Invasive Weeds Day at the Capitol

March 14, 2007
Sacramento

Join weed workers from around the state to visit legislators, advocate for WMA funding, and hear the latest on invasive plant policy initiatives.

www.cal-ipc.org/policy/state/ciwad.php

Cal-IPC Field Courses: Control Techniques

March 21, 2007
Paramount Ranch, Santa Monica
Mountains National Recreation Area

April 12, 2007
Turtle Bay Exploration Park, Redding

May 17, 2007
Rancho San Antonio Preserve, Los Altos
Info and registration at www.cal-ipc.org.

CA Native Grasslands Association

May 17-19, 2007
Santa Barbara
CNGA's annual conference, held this year jointly with the Cal-Pacific Society for Rangeland Management.

www.cnga.org

Society of Wetland Scientists

June 10-15, 2007
Sacramento
This year's theme is "Water, Wetlands and Wildlife: Resolving Conflict and Restoring Habitat." Abstracts due February 15.

www.sws.org/sacramento2007/index.html

Spring Garden Tours

Across the state, local groups are organizing annual tours of environmentally-friendly gardens. Some gardens use all native plants, others are just resource efficient, but invasives are never welcome. Let us know if you have a tour in your area, or start your own!

Bay-Friendly Garden Tour

Alameda County, April 29, 10am-4pm
Features more than 40 public and private gardens using "bay-friendly" landscaping techniques. www.BayFriendly.org

Bringing Back the Natives Tour

East SF Bay, May 6, 2007
Self-guided tour showcases native plant gardens, with a schedule of free talks throughout the day.

www.bringingbackthenatives.net

Theodore Payne Native Plant Tour

Los Angeles, April 28 & 29, 2007
www.theodorepayne.org/Tour/tour.html

Ecological Society of America & Society for Ecological Restoration, Joint Annual Meeting

August 5-7, 2007
San Jose

More than 3000 ecologists will gather to discuss "Ecological Restoration in a Changing World." www.esa.org

9th International Conference on the Ecology and Management of Alien Plant Invasions

September 17-21, 2007
Perth, Australia

Abstracts due February 16.
www.congresswest.com.au/emap9

Cal-IPC Symposium & Pre-Symposium Mapping Field Course

September 19-22, 2007
La Bahia Resort Hotel, San Diego

This year's Symposium will be held in sunny San Diego. Call for papers will be published this spring. www.cal-ipc.org

Quotable

"Whenever I think of that night's talk with the kudzu pioneer, I have a special feeling of pride in what might be called our American willingness to try something new."

David Fairchild, USDA Section for Foreign Seed and Plant Introduction, early 1900s, in American Perceptions of Immigrant and Invasive Species (reviewed page 13.) Fairchild introduced the navel orange, pistachio, and seedless grape to California.

"Bob Niekum with Progress Energy Florida says most environmental groups favor the project [to grow *Arundo donax* for biofuels production]. But the Florida Native Plant Society and a few other groups oppose it. He says their fears are unfounded. 'There are always going to be people that are against things. I call them COVE, which is Citizens Opposed to Virtually Everything.'"

Report on biofuels on Marketplace, National Public Radio, December 6, 2006.

Cal-IPC Membership Form

We're working to protect California's wildlands from invasive plants—join us!

Cal-IPC's effectiveness comes from a strong membership that includes scientists, land managers, policy makers, and concerned citizens. Please complete this form and mail with check or credit card number. Additional donations support our projects. We are a 501(c)(3) non-profit organization, and donations beyond regular membership rates are tax deductible. **Join or donate online at www.cal-ipc.org.**

2007 Individual Membership

- Regular \$35
- Family \$60
- Contributing \$75
- Life \$1,000
- Joint Cal-IPC/SERCAL \$60
- Joint Cal-IPC/CNGA \$70
- Cal-IPC/SERCAL/CNGA \$100
- Student/Volunteer \$15

2007 Institutional Membership

- Regular \$150
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