



# Cal EPPC News

**Protecting California's Natural Areas  
from Wildland Weeds**

10, No. 1/2, Summer 2002

Quarterly newsletter of the California Exotic Pest Plant Council



Spring wildflowers on the serpentine habitat of Coyote Ridge, south of San Jose. Tidy tips, goldfields and Lomatium on the ridgetop provide a nectar source for the endangered Bay checkerspot butterfly (below). The Santa Clara County WMA funds mapping and control of Yellow starthistle and Wild mustard on the ridge. [Photos by Cait Hutnik, <http://lightofmorn.com>]



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## California Exotic Pest Plant Council

1442-A Walnut Street, #462  
Berkeley, CA 94709  
(510) 525-1502  
www.caleppc.org

A California 501(c)3 nonprofit organization

### Our Mission

CalEPPC works to protect California's natural areas from wildland weeds through research, restoration, and education.

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dwjohnson@caleppc.org

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## CalEPPC News

Summer 2002 - Volume 10, Number 1/2

Editor: Doug Johnson, dwjohnson@caleppc.org

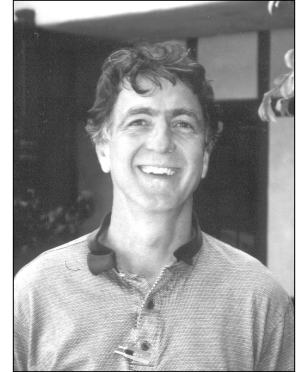
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## President's Message

*Joe DiTomaso, President, CalEPPC Board of Directors*

2002 has brought exciting CalEPPC news and activities. We continue to support the Cape ivy biological control research program, which is progressing toward finding potentially effective agents. Meanwhile, the International Broom Initiative is pursuing biocontrol agents for French broom. The Landscaping Alternatives program has a grant to support collaboration with nurseries to keep wildland invasives off the shelves. Our list of rated invasive plants is being revised. And last, but not least, CalEPPC has hired its first Executive Director.

Planning for CalEPPC **Symposium 2002** is well underway. This year's symposium will be held at the Sacramento Inn on October 11-13. The theme of the symposium is "Cost & Consequences of Invasive Species." Presentations will focus on risk assessments, direct and indirect economic costs, and threats to sensitive plant and animal species. This year's "Working Group" sessions will include invasive species that have not traditionally been discussed. As usual, there will be sessions for members to submit oral or poster presentations—these are designed to allow students and land managers to discuss new research results or successful weed management programs. (To submit an abstract see info on page 4.) More information about the program in the next newsletter.



One of the most significant new developments for CalEPPC this year is the hiring of Doug Johnson as our first Executive Director. Doug brings a wealth of skills and experience, and will play an important role part in future accomplishments of the organization. Along with taking over administrative tasks, he will be involved in fundraising, publications and project coordination. We've already received the first grant from his fundraising efforts, \$8,000 from the Center for Invasive Plant Management for the revision of our invasive plant list.

Through the efforts of board member Alison Stanton, CalEPPC also received a \$15,000 grant this spring to produce a list of landscaping alternatives to invasive ornamental species. Alison will lead this effort, which will provide a valuable resource to nurseries, landscape professionals and homeowners. You will be hearing more about this project at the 2002 Symposium.

A major goal for 2002 is the development of a "risk assessment protocol" for evaluating and ranking invasive species in California. This will form the foundation for revising the list of *Invasive Non-Native Plants of Greatest Ecological Concern in California*. When the committee developing the protocol (chaired by board member Peter Warner) completes this task, it will spearhead a process for evaluating as many species as possible in California in order to produce the new list. The protocol will provide clear criteria for ranking species, making the resulting list more scientifically defensible. The list is being used ever more often by resource planners, and its authority will be strengthened by the development of a systematic protocol.

I look forward to serving as your president this year. I'm excited about the direction CalEPPC is going. Here's to a successful 2002!

# Wildland Weed News

The California Department of Food & Agriculture has issued a "Notice of Proposed Rulemaking" which proposes adding eight species to the state's *Noxious Weed List*. The species included are Spanish broom (*Spartium junceum*), Jubata grass (*Cortaderia jubata*), Giant reed (*Arundo donax*), Saltcedar (*Tamarix chinensis*, *T. gallica*, *T. parviflora*, and *T. ramosissima*), Tocalote (*Centaurea melitensis*), Cape ivy (*Delairea odorata*, syn. *Senecio mikanioides*), Bull thistle (*Cirsium vulgare*), and Tree of Heaven

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*"Let's face it, you know all too well when a plant's too good to be true. If it flowers fast and makes tons of seeds... tolerates drought, flood, sun and shade... sends out runners the minute you turn your back and shows up all over the yard... Give It Up."*

*Ketzel Levine, "Talking Garden" host  
National Public Radio*

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(*Ailanthus altissima*). Inclusion on the Noxious Weed List would add regulatory weight to the control of these weeds. You can voice your support for the proposal by placing a request to have a packet mailed to you (they will be sent sometime this summer), then commenting on the proposal during the comment period. To request a packet, email your mailing address to [noxtimes@cdfa.ca.gov](mailto:noxtimes@cdfa.ca.gov).

The third *National Invasive Weed Awareness Week* (NIWAW), held in Washington, DC February 25 to March 1, brought a contingent of more than 80 individuals from across the nation to the capitol to discuss weed issues with their representatives. CalEPPC helped to fund travel expenses for Bob Pickard of the Regional Council of Rural Counties (and chair of CalIWAC) to attend from California.

*Ketzel Levine*, radio host on National Public Radio's gardening show, has been publicizing the issue of invasive plants. See "Oh No! Not My Wisteria!" at [www.npr.org/programs/talkingplants/features/2002/020320.invasive.html](http://www.npr.org/programs/talkingplants/features/2002/020320.invasive.html)

The *National Association of Exotic Pest Plant Councils* is formalizing a new Memorandum of Understanding among weed groups across the country. Their most recent meeting drew representatives from EPPCs in Florida, Tennessee, the Mid-Atlantic region, Michigan, Kentucky, and Maui, as well as California. [www.exoticpestplantcouncil.org/nationaleppc.cfm](http://www.exoticpestplantcouncil.org/nationaleppc.cfm)

The *Invasive Spartina Project* has completed mapping invasive and native cordgrass populations in San Francisco Bay. The GIS database will direct a region-wide control project. New infestations have been found in estuaries around Point Reyes National Seashore. [www.spartina.org](http://www.spartina.org)

*Dr. Nelroy E. Jackson*, one of the founding Directors of Cal-EPPC, has been reappointed by Secretary of the Interior Gale Norton to the Invasive Species Advisory Committee for another term. (ISAC advises the National Invasive Species Council pursuant to Executive Order No. 13112.) Nelroy will continue to be an advocate on behalf of California

interests. The first meeting of the new ISAC is scheduled for May in Washington, DC.

A group of weed mapping specialists organized by the California Department of Food & Agriculture is assembling a *Weed Mapping Handbook* for local weed management groups. The handbook will set flexible standards to facilitate data sharing. A draft is due out this summer. For info, contact Steve Shoening at [sschoenig@cdfa.ca.gov](mailto:sschoenig@cdfa.ca.gov).

State agencies, nonprofit organizations (including CalEPPC), and industry representatives have joined together to form CalIWAC, the *California Invasive Weed Awareness Coalition*. This working group will facilitate collaboration on public education about invasives issues. The group has designated July 14-20, 2002 as "California Invasive Weed Awareness Week," with tours planned for elected officials and the public. Plans are also underway for a statewide weed summit to coordinate planning efforts. For info contact Lynette Wilhelm at [lynettw@rcrcnet.org](mailto:lynettw@rcrcnet.org).

The *Golden Gate Biosphere Reserve*, a project of the UN's "People and the Environment" program, has chosen invasive species as their outreach theme for the next year. For info, contact Natasha Benjamin, [nb\\_ggbr@pacbell.net](mailto:nb_ggbr@pacbell.net).

Don't let this happen to you—  
renew your membership today!



If there is a red dot on your address label, it means that your membership is not current for 2002. Please use the form on the back of this newsletter to renew today!

Anderson, Robert L. USDA Forest Service. Image 0364060. [www.invasive.org](http://www.invasive.org). April, 2002.

## Greetings from Doug Johnson

In 1997 I was writing a local park stewardship guide, and somebody told me, "You've got to check with Cal EPPC!" They were right. The organization was a great source of information for that project, and ever since then, I turn to Cal EPPC's publications, symposia and members whenever I need assistance with wildland weed issues.

My experience with wildland weeds comes from field work in Mendocino and the San Francisco Bay Area. In the last two years I have been particularly inspired by the Weed Management Areas I've participated in. Where else can you sit around a table with such a wide range of people and productively discuss a mutual environmen-

*continued next page*



Doug developing tool-less gorse removal techniques for State Parks.

## Cal EPPC Announcements

### Call for Nominations CalEPPC Board of Directors

The vision and strategy of Cal EPPC is set by its 15-member Board of Directors. Terms for half of the seats on the board expire December 31, 2002. Elections for new board members are held each fall, and election results are declared at the Symposium in October.

Nominations are now being accepted for candidates for these seats on the board. The board needs committed individuals with:

- willingness and ability to work collaboratively towards our goals
- knowledge of weed management
- understanding of nonprofit management and fundraising
- familiarity with California agencies, organizations and stakeholders
- vision for promoting public awareness of invasive species issues

*Nomination deadline: August 1*

Please send nominations to Executive Director Doug Johnson at [dwjohanson@caleppc.org](mailto:dwjohanson@caleppc.org)

## Announcing: CalEPPC Symposium 2002

### "Costs and Consequences of Invasive Plants"

October 11-13  
Sacramento, California

Friday, October 11

Session 1: *Laws & Regulations*

Session 2: *Risk Assessment*

Session 3: *Economic Impact*

Working Groups I

Saturday, October 12

Session 4: *Impacts on Native Species*

Working Groups II

Session 5: *Volunteer Programs*

Sessions 6 & 7: *Member Papers*

Sunday, October 13:

Field Trips:

*American River Parkway*

*Sacramento Wastewater Wetland*

*Hedgerow Farms*

*Cache Creek*

REGISTRATION INFORMATION  
COMING IN AUGUST ISSUE

## Call for Abstracts and Posters

We invite members of CalEPPC, colleagues and students to submit abstracts for oral or poster presentations at the CalEPPC Symposium 2002. Oral presentations are 12 minutes with 3 minutes for questions. Students are especially encouraged to present their research findings (student presenters receive a 50% discount on their registration fee). Topics may include, but are not restricted to:

- biology and biogeography of exotic plants
- ecological or economic impacts
- management of noxious weeds
- volunteer and education programs
- development of control methods
- restoration of weed-infested landscapes

Authors have the option of submitting a full-length paper at the time of the meetings, to be published in the Symposium 2002 Proceedings. The abstract deadline is **July 15, 2002**. Directions for abstract submission, and information on this year's meeting, are provided at [www.caleppc.org](http://www.caleppc.org). We hope to see you there!

Tom Dudley, session organizer  
phone: 510-527-7042 or 204-9138  
e-mail: [tdudley@socrates.berkeley.edu](mailto:tdudley@socrates.berkeley.edu)

# Predicting Plant Invasion with Modeling

By Scott Steinmaus

*How do we know whether a non-native plant is likely to invade a particular area? Can we tell when an invasive has stopped spreading—or where it will someday stop—based on geographic factors? Such questions intrigue researcher Scott Steinmaus of Cal Poly San Luis Obispo. Here he describes tools he is developing to find answers.*

As a graduate student, I learned to question assumptions. Michael Barbour taught us to challenge the assumption that we could ever really know the "native" condition of California. Marcel Rejmánek taught me to ask, "Is your invasives problem truly growing over time, or does it just look that way because you are doing a better job of measuring it?" These questions underlie my develop-

ment of models for evaluating the potential for plant invasions.

## Prediction is key

Few would disagree with the philosophy that "prevention is the best cure." Predicting where a plant species might become invasive is a key component of prevention programs.

One technique for making predictions uses empirical models that are based on observations without necessarily understanding the mechanism. These predictions are usually accurate only under a narrow range of conditions within which the observations were made.

A more robust technique for making predictions uses a mechanistic understanding of how and why invasion is successful for a given species. Biological

characteristics alone are often not enough to predict invasion in a particular location because they do not consider the other two components to a successful invasion: site characteristics and the form of disturbance. This is where models become useful.

We look at three components of invasion:

- (1) species characteristics—biological factors make a species invasive, consider native weaknesses as well;
- (2) site characteristics—ecotones, complexity, isolation, and environmental factors; and
- (3) disturbance—any diversion from the native condition that facilitates invasion.

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## Doug Johnson...

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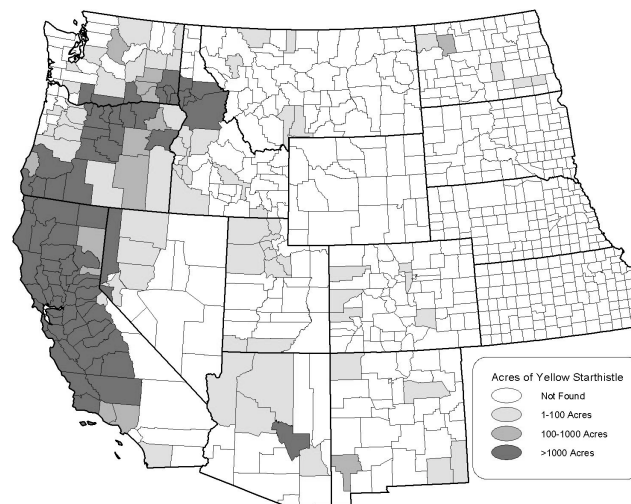
tal problem? Working on wildland weeds presents a special opportunity to work together with partners brought together by concern for the health of the land. With that kind of cooperation, we can make things happen!

In my first two months on the job we've sent out five grant proposals, and just gotten word that the first was funded. Next up is getting this newsletter back on a dependable schedule. We apologize for the inconsistency of publication—the last year has been a challenging transition time for the organization.

A geographer by training, I am especially interested in the role of mapping and GIS analysis in planning for wildland weed control. Scott Steinmaus' feature article in this issue of *Cal EPPC News* illustrates one way these tools can be put to work in the service of useful models that aid our ability to set control strategies.

Please feel free to contact me at [dwjohanson@caleppc.org](mailto:dwjohanson@caleppc.org).

## Yellow starthistle distribution in the West



County-wide data obtained in 2001 from a survey of western state weed coordinators and compiled by Eric Lane, State Weed Coordinator for Colorado and chairman of the Western Weed Coordinating Committee (WWCC). Data has also been assembled at the quarter-quad level through a survey funded by the Invasive Species Council. These maps are intended for use in developing a regional noxious weed management plan and coordinating regional efforts to eradicate and contain yellow starthistle as well as leafy spurge. More info at [weedcenter.org/wwcc](http://weedcenter.org/wwcc))

## Predicting invasions...

*continued from previous page*

### Species characteristics

Biological characteristics of an exotic species have been used to predict invasiveness. Two systems of criteria appear least prone to error: Reichard's risk assessment system for woody plants in North America, and the Australian weed risk assessment system for all plants (White and Schwartz 1998). The two systems use essentially the same criteria:

- (1) a history of invasive behavior elsewhere;
- (2) closeness of biological relationship to another species that is invasive;
- (3) climatic/ecological similarity of introduction area to original home range;
- (4) aggressive traits such as allelopathic chemical release or extremely competitive;
- (5) biological attributes such as vegetative reproduction, vine-like growth habit, short juvenile period, habitat generalist, easy germination/establishment patterns.

### Site characteristics

Cronk and Fuller (1995) provide general hypotheses that explain common plant invasions. These may be used to develop characteristics of sites that lend themselves to invasion. Susceptibility can be based on:

- (1) an absence of predators;
- (2) poorly adapted natives with low reproductive vigor;
- (3) low biodiversity on site; and
- (4) empty ecological niches.

### Disturbance

Some invasives are aggressive enough to establish an infestation in an intact native habitat. Most, however, are opportunistic and favor the opening afforded by some type of anthropogenic disturbance. These can be:

- (1) chemical changes such as fertilizer, sewage, and nitrogen deposition;
- (2) physical disturbance such as erosion, bare ground, roads and construction;
- (3) biological disturbance such as removal of niche plants; and

- (4) hydrologic disturbance such as irrigation and groundwater pumping.

### The modeler's job

Explaining and predicting invasion is a multidimensional process involving many variables. In developing a model it is important to identify, quantify, and incorporate the most significant mechanistic variables. Including too many variables can lead to unreliable predictions because of problems associated with error propagation and dependencies among the variables. Thus, the modeler's job is to find the optimal set of variables that give the most useful predictions.

Discriminant analysis is one statistical method that we can use to classify a species as invasive or noninvasive based on its characteristics. For example, working with *Pinus* species, Rejmánek (1995) determined which biological characteristics contributed most significantly to a discriminant function and thus were the best predictors for invasive behavior in pines:

- (1) small mean seed size with a short chilling requirement;
- (2) minimum juvenile period;
- (3) short interval between production of large seed crops; and
- (4) maximum opportunity for dispersal by vertebrates.

Similar lists of most significant characteristics can be developed for other species.

### Buckaroo Bonzai tackles gorse

My graduate students have taken to calling our approach to model development the "Buckaroo Bonzai" method because we incorporate combinations of eclectic elements, depending on what is most useful. We use biology of the

invasive species, a climatic matching model, and ordination methods to incorporate environmental characteristics of currently infested sites.

Our overall goal is to design a system with sufficient flexibility that one can assess the risk of invasion for any weed in any location in California. To start, though, we needed one good question to test such a system. We decided to analyze the likelihood that gorse (*Ulex europaea* L.) would be an aggressive invader in San Luis Obispo County. The county's WMA was trying to decide whether to plan for an imminent invasion from Monterey County to the north, and we thought maybe we could help.

### Climate modeling

Many factors can potentially explain a successful plant invasion, but if the climate at a given location is not conducive for growth then it is highly unlikely that a successful invasion will ever occur.

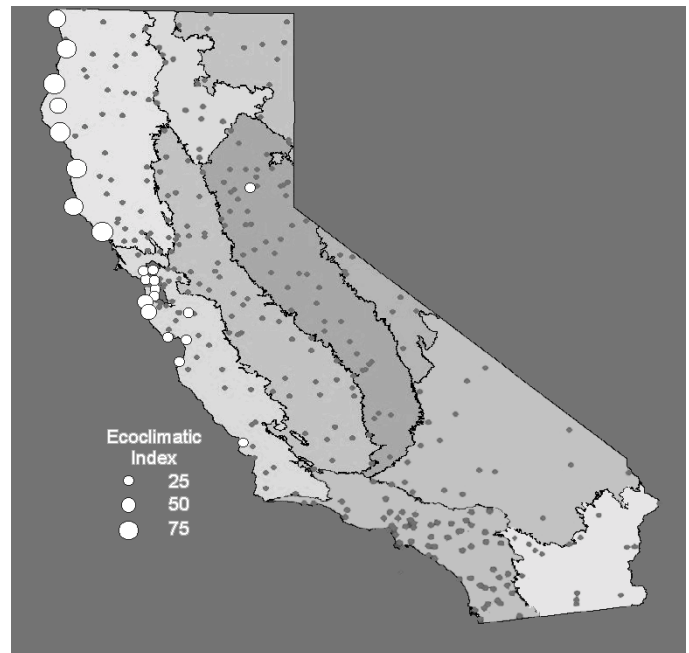


Figure 1. Ecoclimatic Index for gorse suitability in California. Higher values of EI indicate higher suitability. Dots represent sites tested in the model (sites are determined by presence of a local weather station).

So climate is the primary characteristic we use in assessing a site's vulnerability to invasion by a particular plant.

Our literature searches provided us with the native and current invasive distribution range for gorse. Gorse is native to Europe, centering on Ireland,

and has been invasive in cool, moist areas including tropical latitudes at high elevations (New Zealand, southeast Australia, Hawaii, Yucatan highlands, as well as the Pacific coast of the US).

For the initial stage of our model development, we focused on the distribution of the species in its native region. We assume that the species has had every opportunity to establish throughout the entire native region, so sites where the species does not grow provide as much information as those sites where it does. From distribution maps of gorse and close relatives in its native Ireland, we deduced gorse's constraints and preferences for temperature and moisture.

In order to assess the suitability of the San Luis Obispo climate for gorse we utilized CLIMEX, software that uses weather station data (Sutherst *et al* 1999). Only 14 of the CLIMEX database's 2,400 weather stations worldwide were in California, so we acquired additional data from a NOAA database that has 321 stations in the state.

CLIMEX computes an Ecoclimatic Index (EI) for the modeled species with values between zero (no survival) and 100 (highly suitable climate). The EI is the combination of a Growth Index (GI) and a Stress Index (SI). The GI incorporates climatic preferences for a species and determines the abundance of a species for a particular location. The SI incorporates climatic constraints that describe the conditions a species cannot tolerate and determines a species' distribution. The predictive model includes parameters such as the temperature above which development occurs for gorse (i.e. its "base temperature"). Similarly, thresholds and rates were estimated for moisture levels based on gorse's native distribution. (Nonlinear responses to temperature and moisture can be incorporated with interactions amongst the variables. Values for these parameters can be determined experimentally in controlled atmosphere chambers, extracted from the literature, or inferred from native distribution.)

With climate and other factors all figured together, our model gives a clear prediction that gorse should have only marginal success south of Monterey County (Figure 1). With this evidence

we recommended that a relatively low priority be given to gorse management in San Luis Obispo except for cooler, wetter microclimates in the coastal valleys. This guidance will help the WMA plan its approach to gorse.

### Other environmental variables

Canonical correspondence analysis (CCA) is a dimension-reducing ordination method used to determine the environmental variables that best explain a species' distribution (Ter Braak 1987). This method is insensitive to many of the violations required by general linear models (such as ANOVA and multiple regression), and is not hampered by high correlations among species or environmental variables. If CCA finds that moisture and temperature are the most significant factors in explaining species distribution, then CLIMEX may be the only model you need for predictions.

We gathered information for several gorse-infested sites along the coast, using GPS coordinates to take information such as soil type, elevation and aspect from existing GIS layers. Running a CCA on these sites, we deduced that gorse prefers, in order of significance: highly disturbed sites (burn or grazed); north facing slopes; moderate cover (using leaf area index in  $m^2$  leaf/  $m^2$  ground); moderate riparian character; low pH soils; and high sand content soils. The CCA tells us that gorse is associated with broom, and avoids pine species. (We did not include climate in this particular CCA because we were attempting to decide which additional environmental variables to measure for an extensive sampling session in the future.)

### Cape ivy prediction

We also used CLIMEX to predict cape ivy invasivity throughout California. Our original model required that we account for the higher water availability that exists in riparian environments where Cape ivy

typically grows. We did this by artificially increasing moisture levels in the NOAA and CLIMEX databases, which uses only precipitation for moisture. Once we parameterized a model that predicted growth in the locations where it grows in its native South African habitat we applied the model to California.

With this model, we found suitable



Figure 2. Ecoclimatic Index for Cape ivy suitability.

climates all along the California coast just as Mona Robison has found with her field surveys and distribution mapping (Figure 2). We also predicted that a few cape ivy populations could succeed in the Central Valley. Infestations in these locations have just recently been found and reported on Mona's distribution map. These findings speak well for the accuracy of our work.

### Assessing biocontrols

We can also use CLIMEX to assess the suitability of an infested location for a biocontrol agent. Insect biological control agents are at a higher trophic level (i.e. primary consumer) than the pest (i.e. primary producer). Therefore, they are typically more sensitive to the climatic nuances of a new habitat than the plant pest is. Predicting the suitability of a climate for a biocontrol agent could make lab and field efforts to assess suitability more efficient.

*continued on page 9*

# In Print

## Readings & Resources

### WHAT'S "WEED" IN SPANISH?

Thomson's English/Spanish Spanish/  
English Illustrated Agricultural  
Dictionary

by Robert P. Rice, Jr.

\$27.95 Paperback 150pp  
1993 Thomson Publications  
(559) 266-2964 in Fresno

The book is set up in three distinct sections. The first is an illustrated section coupling drawings with the corresponding phrase. It covers everything from domestic farm animals to garden tools to plant anatomy (cambium, meristem, vascular system, etc.). It also discusses pesticides and spray equipment.

Section Two is an English-to-Spanish dictionary of words and short phrases. Nothing on language structure, syntax, or any language lessons, just a dictionary. Section Three is the opposite of section two—Spanish to English.

I am a fairly fluent Spanish speaker and have been working in agronomy for most of my life. This book is invaluable if you are going to be working with people who are primarily Spanish speakers.

- Rick Austin, Santa Clara  
Valley Water District

### THE BIG PICTURE

**A Plague of Rats and Rubbervines: The  
Growing Threat of Species Invasions**

by Yvonne Baskin

\$25.00 Hardcover, 330pp  
2002 Island Press: A Shearwater Book  
<[www.islandpress.org](http://www.islandpress.org)>

From songbird-eating snakes in Guam to cheatgrass in the Great Plains, "invasives" are wreaking havoc around the world. In *A Plague of Rats and Rubbervines*, widely published science writer Yvonne Baskin draws on extensive research to provide an engaging and authoritative overview of

the problem of harmful invasive alien species. She takes the reader on a world-wide tour of grasslands, gardens, waterways, and forests, describing the troubles caused by exotic organisms that run amok in new settings and examining how commerce and travel on an increasingly connected planet are exacerbating this oldest of human-created problems. She offers examples of potential solutions and profiles dedicated individuals worldwide who are working tirelessly to protect the places and creatures they love.

While our attention is quick to focus on purposeful attempts to disrupt our lives and economies by releasing harmful biological agents, we often ignore equally serious but much more insidious threats, those that we inadvertently cause by our own seemingly harmless actions. *A Plague of Rats and Rubbervines* takes a compelling look at this underappreciated problem and sets forth positive suggestions for what we as consumers, gardeners, travelers, nurserymen, fishermen, pet owners, business people—indeed all of us who by our very local choices drive global commerce—can do to help.

- Island Press



### THE BIGGEST WEED

from "America's Largest Weed"  
Ted Williams, *Audubon*, Jan 2002  
<[http://magazine.audubon.org/incite/  
incite0201.html](http://magazine.audubon.org/incite/incite0201.html)>

"I stuck my hand in euc leaf and bark litter and couldn't find the bottom; in California it can be four feet thick because the microbes and insects that eat it are in Australia. Native plants that manage to push through the litter often

## Legislative Update...

### State

**AB 1811** (Richman) Agriculture: Invasive Species

This bill states findings and declarations of the Legislature concerning the nature of invasive species and the threat they pose to California. It would require the Department of Food and Agriculture to keep all inspection stations open 24 hours per day, and to develop rapid response teams with the U.S. Department of Food and Agriculture and the county agricultural commissioner to address arrivals of invasive species in a timely manner. This bill was heard in Assembly Agriculture in late March, it was held over in order for the author to explore potential amendments.

- Susan LaGrande

### Federal

**S 198** (Craig, ID and Daschle, SD) and  
**HR 1462** (Hefley, CO) The Harmful  
Nonnative Weed Control Act

The federal invasive weed bills are still alive, with various groups working to increase sponsorship and support. Unfortunately, the concern over anti-terrorism and biosecurity issues has pushed action on weed items lower down the priority list. If passed, these bills would provide additional federal funding (\$100 million has been proposed) through the states to local weed management programs.

- Nelroy Jackson

get poisoned; as a natural defense against competition, eucs exude their own herbicide, creating what botanists call "eucalyptus desolation"... Eucs give nesting birds a false sense of security, creating population sinks. For example, the Point Reyes Bird Observatory has found that in eucs, 50 percent of the Anna's hummingbird nests are shaken out by the wind. In native vegetation the figure is 10 percent."



## Lassen County Wins Award

Lassen County's Special Weed Action Team (SWAT), a consortium of more than two dozen agencies, organizations and businesses, received a "Public-Private Partnership Award" by the National Fish & Wildlife Foundation. The award was presented in Washington, D.C., as part of National Invasive Weed Awareness Week in February.

Congressman Joel Hefley of Colorado presented the award to Carolyn Gibbs, the Bureau of Land Management's representative on Lassen SWAT. "The award recognized our group for having a strong educational component, and commended us for treating more than 10,000 weed-infested acres last year," says Gibbs. "We are trying to address the weed problem on a landscape level, and for the long term."

SWAT's largest undertaking is the Susan River Tall Whitetop Project, which involves private landowners, students and organizations. The project aims to control the 644,000-acre infestation of



### How many partners does it take to control *Lepidium latifolium*?

The perennial pepperweed project sponsored by hunting group Pheasants Forever and local radio station KSUE uses a volunteer and his tractor who work with a Lassen County Agriculture employee driving a BLM truck equipped with a CDFA herbicide spray tank! Says SWAT coordinator Carolyn Gibbs, "Coordination and cooperation work."

*Lepidium latifolium*, also called perennial pepperweed, along the Susan River. Herbicide (Telar™), goat grazing, and revegetation are methods in use.

The group works with Lassen High School, Lassen College, and local scout troops to engage youth in weed projects and to incorporate weed information into

the classroom. An annual community weed pull is publicized with newspaper articles and library displays. The Lassen County Cattlemen cap off the event with a barbecue and awards presentation.

For more info, contact Carolyn Gibbs at [Carolyn\\_Gibbs@ca.blm.gov](mailto:Carolyn_Gibbs@ca.blm.gov).

## Predicting invasions...

*continued from page 7*

### A tool in development

The models described here are intended to aid human intuition, not to replace it. They should be used as tools, and considered as a project in process—always open to improvement. A model is only as good as its assumptions and input data, and is only an approximation to reality.

We are currently compiling a larger weather database with data from vineyard and farm weather stations, and incorporating other variables into CLIMEX and CCA. We are also introducing stochastic elements into these climatic models, since

to date they are based solely on annual averages, and we all know there is no such thing as an "average year" in California's climate. As we learn how to better apply such sophisticated computer tools, we can begin to develop a better sense for the larger patterns of non-native species invasions.

### References

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*Dr. Scott Steinmaus is Assistant Professor of Horticulture & Crop Sciences at Cal Poly San Luis Obispo. He can be reached at [steinma@calpoly.edu](mailto:steinma@calpoly.edu).*

# Progress with the Nursery Industry

## St. Louis collaborative seeks to nip invasives in the bud

*This project provides a great example of wildland protection interests working together with the nursery industry to reduce "escapes." CalEPPC is currently undertaking a landscaping alternatives program with the California nursery industry. California Department of Food & Agriculture has also proposed listing eight additional species on their Noxious Weed List—see page 3.*

A group of botanical garden representatives, nursery professionals, landscape architects, garden clubbers and government experts recently gathered at the Missouri Botanical Garden in St. Louis to explore new ways of fighting unwanted species.

As a follow-up to the December conference, the group has released the St. Louis Declaration on Invasive Plant Species along with a set of guidelines for all types of growers referred to as Draft Voluntary Codes of Conduct.

To get the word out, the group has

created a website (at [www.mobot.org/iss](http://www.mobot.org/iss)) where gardeners, botanists, landscape architects and nursery operators - anyone who grows plants - can learn more about how to stop the spread of invasives.

The Missouri Botanical Garden and the Royal Botanic Garden at Kew, England, convened the St. Louis workshop. Other participants include the American Association of Botanical Gardens and Arboreta, the American Nursery and Landscape Association, the American Society of Landscape Architects, The Nature Conservancy, the Garden Club of America and others.

The workshop's findings set forth a list of principles—"The St. Louis Six"—which seeks to provide professional and amateur growers with a blueprint for preventing the spread of harmful exotics. These guidelines call for:

1. Plant introduction protocols that reduce the chances of bringing in nuisance plants;
2. Adherence to national goals and standards while taking regional differences into account;
3. Promoting prevention and early detection as the most cost-effective methods of fighting invasives;

4. Added emphasis on research, public education and professional training;

5. Organizing a cooperative campaign that includes leaders from horticulture, the nursery industry, weed science, ecology, conservation, botanical gardens, garden clubs, the media, schools, landscape architecture, foundations and government agencies; and

6. Formulation of an overall strategy based on voluntary action, sound management practices and appropriate legislation.

Invasives have serious economic implications, and there is growing awareness of the problem among nursery operators. Craig Regelbrugge of the American Nursery Landscape Association said his industry is committed to implementing voluntary guidelines and educating nurseries and consumers.

The Florida Nurserymen and Growers Association has already taken steps to thwart the spread of exotics, said FNGA representative Hugh Gramling. Three years ago, the group asked Florida producers to stop growing and distributing 13 plant species—today, that list has grown to include 45 species considered invasive in the state.

## Quotable:

“We've got a pest problem. But, it is more than that. It is an environmental problem and an economic problem that, according to a 1999 Cornell University Report, is costing Americans as much as \$137 billion each year.

“Today, it is estimated that there are over 30,000 of these exotic species in the U.S. They can be devastating to the environment and they are major factors that lead to the decline of many sensitive native species. This is a serious problem, not only for Idaho, but for all of the United States.”

*From Idaho Governor Dirk Kempthorne's remarks to the inaugural meeting of the Idaho Invasive Species Council on March 5, 2002.*

“When you throw extremists into the mix, things get rocky...this will help explain why a heretofore little-known city group that toils under the name of the Natural Areas Program has a bulls-eye on its back...[The group] has veered off into all sorts of misadventures... including, in some cases, the destruction of groves of trees that it took to be interfering with the precious native plants the program has vowed to protect... the program's most active staffers and volunteers are zealous native plant enthusiasts who see eucalyptus, Monterey pines and cypress trees as evil invaders that should be uprooted to make way for sand dunes, grasslands and other habitats they prefer.”

*Columnist Ken Garcia in "S.F. residents battling plant lovers" San Francisco Chronicle, April 23, 2002, page A13*

# The WILDLAND WEED CALENDAR...

*"Restoring and Managing Central Valley Native Grasslands"*, joint meeting of the *California Native Grass Association* and the *CALPAC section of the Society for Range Management*

June 6-8, 2002

Santa Nella, CA (Hwy 5 near Los Banos)

History and management of the Central Valley grasslands. Speakers from BLM, State Parks, USFWS, UC Berkeley, The Nature Conservancy, Hedgerow Farms.

<[www.cnga.org](http://www.cnga.org)> or (530) 759-8458

## *Invasive Plant School*

June 18-19, 2002

San Diego, CA

Responsible use of herbicides for wildland weed control. Includes weed biology and ecology, herbicide basics such as labeling, classification, application timing, mode of action, degradation, and adjuvants, and environmental compliance.

Email Carl Bell at <[cbell@ucdavis.edu](mailto:cbell@ucdavis.edu)>

## *Invasive Species Symposium*

June 18-19, 2002

Davis, CA

Marking the dedication of the University of California Contained Research Facility, which has been designed to provide a secure environment for research on new or re-emerging pest and disease organisms affecting agriculture and our natural environment.

<[www.cevs.ucdavis.edu/Cofred/Public/Aca/ConfHome.cfm?confid=130](http://www.cevs.ucdavis.edu/Cofred/Public/Aca/ConfHome.cfm?confid=130)>

*"The Power of Nature"*, the 29th Annual Conference of the *Natural Areas Association (NAA)*

October 2-5, 2002

Asheville, NC

Focusing on conservation of biodiversity in natural areas, adaptive ecosystem management, and designing cohesive nature reserve systems. One session deals with setting priorities for management of invasives.

<[www.naa.org](http://www.naa.org)>

*"Costs & Consequences of Invasive Plants"*, *CalEPPC Symposium 2002*

October 11-13

Sacramento, CA

[see page 4 for details]

*"Restoration with a View: Sustaining Fragile Habitats"*, the 9th Annual Conference of the *California Society for Ecological Restoration (SERCal)*

October 24-27, 2002

North Lake Tahoe, CA

Sessions on soil and water quality in the Tahow basin, public use of restoration areas, forest dynamics, montane riparian

and wetland restoration, invasive species management, and native grasslands.

<[www.sercal.org](http://www.sercal.org)>

## *Invasive Plants in Natural and Managed Systems*

November 2003

Early notice on a conference that will be a joint effort of the Weed Science Society of America, The Ecological Society of America, EPPCs from around the country, the Natural Areas Association, Society for Range Management, and the Society for Ecological Restoration. Nelroy Jackson and Carla D'Antonio are Co-Chairs for the conference.

## Letters

### *Weeds—Cancers of the plant world?*

As a surgeon, I have spent much of my career dealing with cancer. During that career, I found that using the behavior of weeds, especially crabgrass, very useful in explaining how cancers act, and in discussing the various available treatments. (*Cancer* is the common Latin name for crabs and the scientific name for their genus.) Now that I have retired from active practice, I find myself using the reverse analogy: cancer is very effective in discussing the destructive behavior of invasive exotic plants and animals in ecosystems.

Just as cancers drain a patients' resources, the rapid growth of weeds depletes soil of nutrients necessary for the health of native plant communities. Both can interfere with vital functions through their sheer bulk. The early growth of cancer is often slower, as is the initial establishment of a weed infestation. If conditions are suitable, then there is a rapid growth phase, which may level off towards maturity. But where limiting factors are missing or weak, the invading species or tumor overwhelms the host location or individual, resulting in

degradation or death.

Control strategies for weeds and cancer also have parallels. Maintaining healthy, intact ecosystems, discouraging the introduction of invasive exotics, and pursuing early removal can all help prevent major infestations. In much the same way, maintaining good health, avoiding known carcinogens such as tobacco, and early detection and removal of cancer can often result in recovery. In cases of major infestations with invasive plants, manual removal often needs to be supplemented by chemical control, just as in cancer where chemotherapy and radiation are often needed.

The comparison of invasive plants with cancers is not meant to trivialize the impact of cancer, but to emphasize the real threat these aliens pose to agricultural, horticultural, and native plant communities.

Charles Blair, MD, FACS  
Santa Barbara County

*Views expressed are those of the authors, not necessarily those of CalEPPC. Send letters to CalEPPC News, 1442-A Walnut St. #462, Berkeley CA 94709 or email to [dwjohanson@caleppc.org](mailto:dwjohanson@caleppc.org). Letters may be edited for brevity.*

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