CalEPPC News

A quarterly publication of the California Exotic Pest Plant Council

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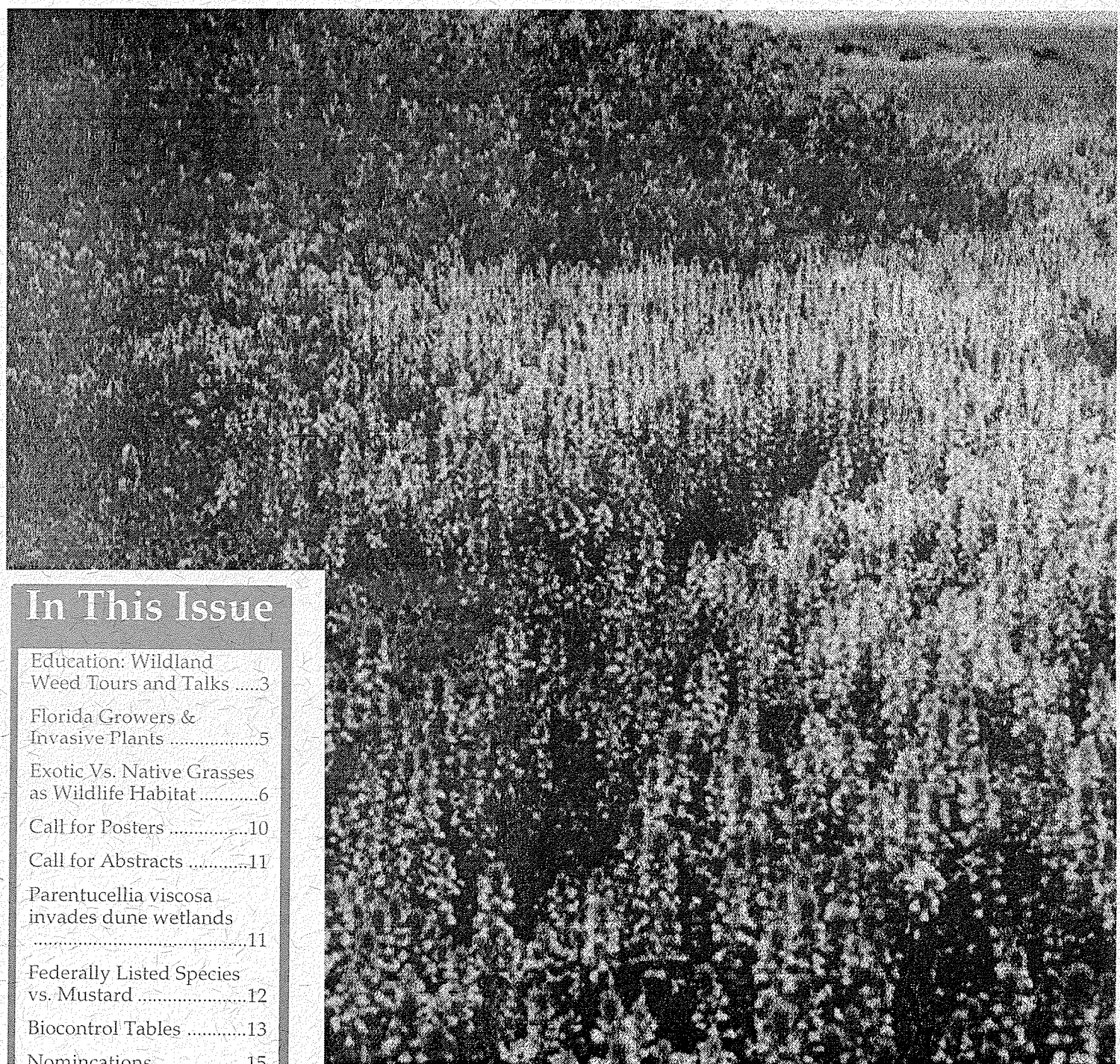
In This Issue



Parentucellia viscosa, or yellow glandweed invading dune habitat at Lanphere Dunes (now part of Humboldt Bay National Wildlife Refuge). *See* page 11

Who We Are

CalEPPC NEWS is published quarterly by the California Exotic Pest Plant Council, a non-profit organization. The objects of the organization are to:

- provide a focus for issues and concerns regarding exotic pest plants in California;
- facilitate communication and the exchange of information regarding all aspects of exotic pest plant control and management;
- provide a forum where all interested parties may participate in meetings and share in the benefits from the information generated by this council;
- promote public understanding regarding exotic pest plants and their control;
- serve as an advisory council regarding funding, research, management and control of exotic pest plants;
- facilitate action campaigns to monitor and control exotic pest plants in California; and
- review incipient and potential pest plant management problems and activities and provide relevant information to interested parties.

Please Note:

The California Exotic Pest Plant Council is a California 501(c)3 non-profit, public benefit corporation organized to provide a focus for issues and concerns regarding exotic pest plants in California, and is recognized under federal and state tax laws as a qualified donee for tax deductible charitable contribution.

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Submission Dates for CalEPPC News

If you'd like to submit a news item, article, announcement, or job opportunity for publicaton in the CalEPPC News, it must be received by the deadlines listed below. Editor reserves the right to edit all submissions. Send your text/disk/email to edtior's address above.

Submission Dates:

Summer . . . July 15 Fall . . . October 15 Winter . . . January 15

President's Message

Education: Wildland Weed Tours and Talks

Mike Kelly

In San Diego we've used both weed talks and tours to raise awareness of the problems caused by exotic weeds in wildlands. As you do these talks and tours, you become known as an "expert" on weeds and often come to the attention of the media. In San Diego this has led to TV coverage of exotic weed work parties, especially of *Arundo donax*, a one-half hour TV special, and newspaper articles. Reporters call to get background information or quotes for an article. Small audiences become big ones.

If I have a choice between a slide show presentation in a meeting hall versus a walking tour outdoors in a park, I choose the latter. Standing in the field in front of a stand of exotic weeds seems to make more of an impact than just talking about it. In both cases, but especially walks, I spend time identifying native plants and habitatsThe public likes it and it drives home that our goal is restoring native biodiversity, not just eradicating exotic weeds — which is the method of achieving the goal.

Spending time on natives also conveys a subtler, but important message: you know your natives and you care about them. This helps, I think, with people predisposed to question your use of a chainsaw or herbicide. It at least conveys the message you've thought this out and not hurting natives is important to you. However, even when I'm leading a general nature walk I make sure to discuss exotic species and their impacts. If there is a native revegetation project in the area I take time to visit it and explain what exotics were replaced, why and the natives that have been restored.

Types of audiences

My audiences have included garden clubs, the California Native Plant Society, Project Wildlife, the San Diego Natural History Museum Covey (museum volunteers), the Professional Tree Care Association, the Weed Science Society of America annual meeting, a City of San Diego Parks and Recreation wetlands symposium (participants from half-a-dozen municipalities, State and County Parks) and Park volunteer groups.

A useful walk was for the Natural History Museum Canyoneers and the Native Plant Society (CNPS). The Canyoneers and CNPS lead nature walks all over the county. These were valuable groups to reach with our weed message.

. . . our goal is restoring native biodiversity, not just eradicating exotic weeds — which is the method of achieving this

A typical weed tour

For the Canyoneers weed tour I chose the upper Peñasquitos Lagoon, part of Torrey Pines State Reserve. It has a rich variety of invasive weeds. During the tour we discussed habitats types present, types of disturbances that impact them — natural and human caused, and the specific weed problems they endure. With coastal sage scrub, freshwater riparian, mixed native/non-native grasslands, and salt marsh habitats we had a lot to discuss.

I like to provide concrete examples of weeds that have a direct impact on native plants and animals, especially rare or endangered ones. One example I get to use a lot is how certain weeds such as mustard (*Brassica nigra*) and fennel (*Foeniculum vulgare*) change the structure of a grassland they invade. These weeds form dense, tall stands that add a height and density component to what was historically an open bunch grassland (often *Nassella pulcra*). While certain rodents enjoy the bountiful seeds of these weeds, this change negatively affects raptors such as Marsh hawks (Nothern harrier) and White-tailed kites. These birds can no longer swoop or drop onto their prey as they once did in the open bunchgrass. If I'm a natural lands manager trying to keep these rare birds in my ecosystem and concerned about over-abundant rodent populations I'll want to manage against these weeds.

By contrast, perhaps I don't want these or other raptors on the edge of my salt marsh because of endangered species in the marsh, both rodents and birds. Exotic trees such as Eucalyptus spp. are common on these edges now, providing raptor perches where it's not thought we had tall trees 200 years ago. I may want the trees out for this reason. For most tour participants such weed impacts are much subtler impacts than they were used to considering.

When I have artichoke thistle (*Cynara cardunculus*) present I explain that it is one of the few weeds capable of significantly invading heavy clay, gabbro type soils that our endangered San Diego thorn mint (*Acanthomintha ilicifolia*) does best in. Avena spp., *Centaurea melitensis* and other annual exotics may be present in these

soils, but don't do as well and aren't as likely to outcompete the natives. They lose their competitive advantantage on these "hostile" soils. However, once Artichoke thistle establishes itself in such grasslands it forms monocultures by clumping out and seeding itself, replacing other grassland species present, including the thorn mint.

I may segway from a discussion of a weed's impact into how to control it. I discuss all the options and give examples of when each works and doesn't work. I explain that while cutting or mowing may work well on some weeds, it doesn't work well on Artichoke thistle. I explain that I use an herbicide on this thistle and the good results I've had with it. I explain when I use a cut stump herbicide application (when near the mint or other native plants) and a spray application (in the big monocultures). I explain how this was done without hurting the endangered mint. For those who have honest questions about herbicides, these tours are a good setting in which to discuss the control methods. They also need to hear from folks who have been carefully using herbicides, and to see the results, the rebounding native habitats.

On weed tours focused on a particular park our audience typically consists of park volunteers, many already weed bashers, park rangers and the general public. I was particularly gratified to have a local homeowner's association represented on one walk. This person was assidously taking notes, especially on her problem species, pampas grass. She even came on a second walk. Notices are sent out to the park volunteers and any non-profit group associated with the park, as well as the media. Sometimes the media carries the notice, sometimes not.

Another reason to spend time identifying native plants is that weeders need to know their natives so as not to make a mistake with their control efforts. I've even had professional botanists and other biologists in the field with me who were ready to kill what they thought was young *Arundo donax*; the young plants were a *Leymus condensatus* (Giant wild rye) and *Phragmites australis* (Common reed) on another occasion. When young, these three species are hard to distinguish and hard to key out. Despite years of experience, I still have to stop sometimes and carefully examine the young Arundo-looking plant to be sure which plant I'm seeing. Plant identification is important so volunteers and staff can distinquish between California holly or Toyon (*Heteromeles arbutifolia*) and Brazilian pepper (*Schinus terebinthifolius*). I think many people, myself included, were ignorant of the latter invading San Diego riparian areas because we thought we were seeing Toyon. From a distance, the plants have a similar gestalt to them.

The Why

Weed talks and tours are a good occasion to discuss how weeds get here and why they become problems. We get into commerce, transportation, nurseries, landscaping, development, edge effects, flood and fire regimes and other issues. These talks and tours can allow you to have a broad, intellectual and stimulating discussion.

One issue we also discuss is when natives become a weed problem. This helps cut across any thought that you might be a xenophobic "plant nazi." For example, we had one Natural History Museum walk where a docent incorrectly identified a *Washingtonia robusta* (Mexican fan palm) as a *Washingtonia filifera* (California fan palm). This docent was wrong on two counts, not just the plant identification. Even if it had been the native species of fan palm, it didn't belong in the City of San Diego. It's never been reported growing naturally in the City. It does grow naturally in the Anza-Borrego Desert State Park. Could it become a problem if planted in the City? Quite possibly. Fan palms are notoriously weedy species.

In San Diego we have a problem with salt marsh habitat converting to fresh water riparian and upland habitat types due to excessive siltation and urban runoff. Native cattails (*Typha* spp.) and willows (*Salix* spp.) are replacing pickleweed (*Salicornia* spp.) and Alkali-Heath (*Frankenia* spp.). As with many exotic weeds the underlying causes must be dealt with. In this case the solution to the loss of salt marsh habitat is first and foremost a cultural and political solution: stopping excessive siltation and urban runoff.

Always have literature on hand, such as CalEPPC's mission brochure, the CalEPPC Pest Plant List, the new Pampas grass brochure, local brochures you might have, perhaps an article reprinted from a popular magazine (Science Sept. 17, 1999 had a good one) and a book. For garden clubs I bring the Brooklyn Botanic Garden book *Invasive Plants: Weeds of the Global Garden*. When the University of California Press brings out the Weeds of California's Wildlands in 2000 I intend to have extra copies of that on hand for immediate sale wherever I go.

Why not try a weed tour or offer a speaker for interested groups in your area. Besides the educational value, it's also a good way to recruit volunteers for your projects.

FNGA Urges Growers To Phase Out Invasive Plants

The Florida Nurserymen and Growers Association (FNGA) is urging nursery growers to phase out production of 11 commercially grown plants thought to be invasive. FNGA, in cooperation with the Florida Exotic Pest Plant Council (FLEPPC), is asking nursery growers to stop propagating, selling, and using 11 species after joint talks have resulted in agreement that the plants are invasive in Florida. Invasive plants are becoming an epidemic problem in some natural areas of Florida. More than 1,000 plants growing in the wild in Florida are non-native. FLEPPC has identified about ten per cent of these that are highly aggressive and have displaced native species due to lack of natural pests and controls. The 11 species identified by the two groups are relatively minor commercial production plants in the Florida nursery market.

According to Ben Bolusky, FNGA Executive Vice President, "Nursery growers in this state have a very good record of environmental responsibility, and recognizing which plants are becoming potential ecological problems. We look forward to continuing the invasive species dialogue and to doing what's right for Florida." FLEPPC Chair Tony Pernas said, "Our organization is pleased to be working with FNGA to identify several non-native species that have ecological effects and should no longer be commercially available. We appreciate this productive relationship that is taking a pro-active approach to addressing the invasive species problem."

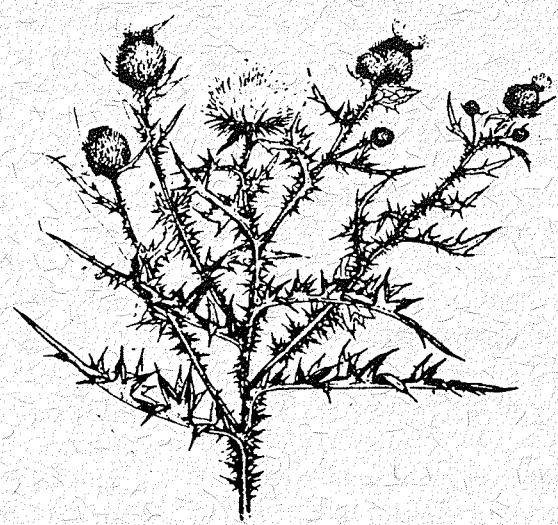
Over the years, plants now becoming invasive have been introduced by the government for erosion control, forage, and other agricultural uses, by nursery growers for their horticultural value and through accidental introduction. Widely known invasive plants are Brazilian Pepper, Australian pine, Chinese tallow, hydrilla and melaleuca. In response to the significant management challenges and expense of controlling numerous invasive non-native species in natural habitats, public land managers in several states and regions have established Exotic Pest Plant Councils, with the first being founded in Florida in 1984. FLEPPC's membership numbers more than 300 public and private land managers, university faculty, citizens, and businesses. FNGA represents Florida's leading 1,900 nursery growers, landscape professionals, garden center retailers and allied suppliers.

Several meetings of the FNGA\FLEPPC ad hoc group focused on plants identified as "invasive, economically important" horticultural species. Discussions identified plant species that had become established in natural areas; the mode of spread and reproduction of the plant; specific varieties of a particular species that are invasive (where differences among varieties exist); and potential alternative plants to be substituted for the highly invasive ones.

Twenty-four plant species were identified by FLEPPC as being both invasive and available in the horticultural trade. Through dialogue with FNGA nursery growers, 11 of the 24 were identified as being of relatively minor value in the current market. The 11 plants are *Albizia lebbeck* (Woman's tongue), *Bauhinia variegata* (Orchid tree), *Bischofia javanica* (Bischofia), *Cupaniopsis anacardioides* (Carrotwood), *Macfadyena unguis-cati* (Cat's claw vine), *Melia azedarach* (Chinaberry), *Nephrolepsis cordifolia* (Sword fern), *Psidium guajava* (Guava), *Rhoeo spathacea* (Oyster plant large variety), *Syzgium cumini* (Java plum; jambolan), and *Thespesia populnea* (Seaside mahoe).

Due to conservation problems associated with these species and their limited economic significance to the industry, FNGA recommends these 11 species no longer be propagated, grown or marketed in Florida. For other species, which may also threaten conservation areas and are economically important to the industry, further recommendations are pending until information being developed by the University of Florida Institute of Food and Agricultural Sciences. Regional recommendations also may be developed as a result of that information.The Florida Nurserymen & Growers Association represents Florida's environmental horticulture industry, with a value added economic impact of $5.3 billion. For more information, contact FNGA at 1533 Park Center Drive, Orlando, FL 32835 or call 407/295-7994; e-mail FNGA@aol.com; www.fnga.org.

[Reprinted from *Wildland Weeds*, quarterly magazine of Florida Exotic Pest Plant Council, 3301 Gun Club Rd., West Palm Beach, FL 33406.]



Exotic Vs. Native Grasses as Wildlife Habitat

Daniel Strait, U.S. Fish and Wildlife Service

[Editor's note: **Readers should find a good case for the value of protecting and restoring native grasslands in this article.** Native grasslands receive little attention and are infrequently the focus of mitigation projects for loss of habitat due to development, probably because their role in our ecosystems is poorly understood. We hope this article will spread the word about native grasslands. *Reprinted with permission* from Grasslands, Volume IX, No. 2 Spring 1999. publication of the Calif. Native Grass Association, POB 72405, Davis, CA 95617.]

One of the frequent arguments for using native plants in revegetation projects is that they provide better wildlife habitat. The argument goes like this: because native wildlife species have evolved along with native plants, restoration of native plant habitat should provide the best and most diverse source of food, nesting sites, cover, and other wildlife needs. With respect to grasslands, when a native stand is invaded by non-natives, many wildlife species may be unaccustomed to the seeds and other foods that the exotic species produce and may find that the relatively uniform stature of the new community offers poor cover. There is evidence that stands of native perennial grasses support a greater variety and abundance of native plants and animals than non-natives.

In their study of grasslands in Arizona, Bock et al. (1986) found that: 1) grasshoppers were 44% less abundant on non-native grasslands; 2) birds as a group were detected more often in patches of native grasses during both summer and winter; and 3) rodents generally were either more common in native grasslands or did not differ in number between native and non-native grasslands. They postulated that native animal species have evolved specific dependencies on the native flora so that exotic grasslands are less habitable.

Beginning with the arrival of European settlers and their livestock in the 1700s, native California grasslands have undergone perhaps the greatest percentage loss of any habitat type in the state. The purpose of this paper is to point out the importance of native grasslands to California wildlife and how revegetating an area with native grasses can enhance the value of that area for wildlife.

The Native Advantage

Before non-native annual grasses invaded California and largely out-competed the native annuals and perennials, the hills of California in June during a normal rainfall year would have looked quite different than they do today. Perennial grasses, because of their deep and complex root systems, can draw from a deeper and longer lasting wet zone beneath the soil than can annual grasses whose dense, shallow root systems typically deplete moisture from the surface layer of the soil soon after the rainy season ends. Furthermore, perennial grasses can raise the groundwater in and adjacent to riparian and wetland areas so that the areas stay wet longer. With greater moisture, flowers, shrubs, and trees are less stressed and can grow larger providing more food and cover for wildlife. Because perennial grasslands stay greener longer into the year, they can provide more palatable food later into the season for rodents, lagomorphs, ungulates, and other herbivores and omnivores. A non-native annual grassland, on the other hand, greens up rapidly at the start of the rainy season, typically reaching maximum size and seed production by early spring, and browns into dormancy by early summer. This means that herbivorous wildlife has to range further because of a shortage of green forage in late summer. Late summer is a particularly important time for the growth of young, for birds when preparing for migration, for mammals when preparing for hibernation, and for adult ungulates that breed at year's end and need high quality forage in order to be at their sexual peak.

Of Diversity and Food Webs

Unquestionably, plant species diversity is the key to enhancing wildlife habitat in grasslands. As each new plant species is added to the mix, a grassland can support additional wildlife species. As put forth by Ricklefs (1979), if the variety of resources in an area are increased, additional animal species can be added to the resource continuum without diminishing the ecological range of the species already present. Because of the tendency for non-native plant communities to become dominated by one or a few species, the greatest benefit to wildlife that can be achieved from the reintroduction of native grasses is the restoration of plant species diversity. Grasses and other ground cover plants support the base of the food web. Small rodents, rabbits, other small mammals, reptiles, and birds that are the prey of larger carnivorous

mammals and birds eat the vegetation and seeds of grass and other low-lying plants. Insectivorous mammals such as bats and shrews, and insectivorous birds, reptiles, amphibians, and others subsist on insects that the plant community supports. Restoring native grasslands can be a benefit for each of these glades of species.

For example, restoring a native plant community made up of many native perennial grasses and forbs would increase the number, kinds, and seasonal availability of seeds compared to a less diverse annual stand. The more complex structure of the plants and the greater diversity of food can support a greater number and variety of small mammals, and therefore more mammalian and avian predators. Finally, it can provide more diverse food and cover for insects and other invertebrates. Chung-MacCoubrey (1996) reported that more than 1,200 insect species from 11 orders feed on grasses in the soutern United States. This would indicate that there are significant opportunities for increasing the diversity of insects in California by increasing the diversity of grasses on a site. For example, I and others (Anderson, pers. comm.) have seen large numbers of ladybird beetles (*Hippodamia* spp.) overwintering in clumps of deergrass (*Muhlenbergia rigens*) in Yolo County, California.

Specific Wildlife Benefits

The purpose of this section is to describe some of the specific wildlife benefits that may result when non-native annual grasslands are replaced with native grasses and forbs. Under the headings that follow, I explore how different groups of wildlife utilize grasslands, how habitat for those wildlife groups can be enhanced by reintroducing native perennial grasses, and how an increase in the diversity of plants can result in an increase in the numbers of wildlife species and the number of individuals using the site.

Herptofauna

Reptiles and amphibians use grasslands differently depending on how they move around and whether they are adapted to moist or dry environments. While dense vegetation is often found around wetland and riparian areas and can be preferred by amphibians, dense vegetation does not benefit reptiles that are adapted to drier environments where native perennial and annual grasses grow in a more sparse, open manner. Many desert areas, with their low rainfall and often poor soil, typically support a more sparse growth of grasses with perennial plants such as sagebrush (*Artemisia* spp.), saltbush (*Atriplex* spp.), cacti (*Opuntia* spp.). Those open habitats are favored by reptiles, particularly lizards, that require runways free of vegetation. Scott (1996) reported that the invasion of non-native grasses has been a significant cause for the decline of lizard species in brushland and dune habitats. Therefore, revegetating a densely overgrown area to perennial bunchgrasses interspersed with a sparse growth of annual grasses and other native plants can be an excellent habitat enhancement if desert reptiles are the focal species.

Snakes and lizards, while both common inhabitants of western grasslands, have developed different strategies for mobility. The adaptation of leglessness by snakes has been very successful for exploiting dense uniform grasslands. Reintroducing native perennial grasses to an area of dense annual grasses, therefore, is unlikely to directly benefit snakes. On the other hand, the introduction of perennials may enhance the diet for snakes because the increased plant diversity will increase the attractiveness of the area for insects and other small prey animals.

Lizards are most common in grasslands where there are openings between plants such as on rocky outcrops, tree trunks, and on bare ground (Scott 1996), or in open areas around bunchgrasses. Converting a dense stand of non-native annual grasses to a more open stand of natives (with, for example, open ground between bunches) would be a significant enhancement for species such as the collared lizard (*Crotaphytus collaris*) and leopard lizard (*Crotaphytus wislizenii*) that favor more open ground. This may also be true for the blunt-nosed leopard lizard (*Gambelia silus*), a species listed as endangered under the Federal Endangered Species Act.

In general, activities that reduce the habitat complexity of an area usually will decrease the number of reptile species. The conversion of complex plant communities to monotypic stands of dense annual grasses is a primary threat to the habitat for the collared lizard and other lizard spe-

Grassland-associated reptile species that occur in California

Collared lizard (*Crotaphytus collaris*)
Leopard lizard (*Crotaphytus wislizenii*)
Western whiptail (*Cnemidophorous tigris*)
Ringneck snake (*Diadophis punctatus*)
Racer (*Coluber constrictor*)
Gopher snake (*Pituophis melanoleucus*)
Common kingsnake (*Lampropeltis getulus*)
Long-nosed snake (*Rhinocheilus lecontei*)
Night snake (*Hypsiglena torquata*)
Western rattlesnake (*Crotalus viridis*)
Sources: Behler and King 1979; Scott 1996

cies. Management should focus on maintaining patches of diverse native grassland of sufficient size to provide refugia for lizards, particularly for several of the species of whiptail (*Cnemidophorus* spp.) that are thought to be dependent on native plant communities (Scott, 1996). Routine manipulation of revegetated areas through burning, livestock grazing, herbicide application, or other management methods will be critical to maintaining quality habitat for lizards. If those measures aren't taken and the area is left alone to be reinvaded by a dense growth of non-native annual grasses, it cannot be expected to provide quality habitat for lizards.

Birds

Most land-based birds in California undoubtedly use grasslands to some degree for foraging, nesting, or resting during migration. However, relatively few are primarily grassland-associated. Davis and Baldridge (1980) cited a study reporting that of the 55 species of bird that use grasslands to some extent, only six species use it as their preferred habitat. These are the Burrowing Owl (*Athene cunicularia*), Horned Lark (*Eremophila alpestris*), Western Meadowlark (*Sturnella neglecta*), Savannah Sparrow (*Passerculus sandwichensis*), Grasshopper Sparrow (*Ammodramus savannarum*), and Lark Sparrow (*Chondestes grammacus*). Since 1980, grassland bird species as a group have shown steeper, more consistent, and more geographically widespread population declines than any other group of bird species in North America (Kershner and Bollinger 1996).

One of the factors contributing to declines of grassland bird species is the loss of structural diversity of grasslands. Davis and Baldridge (1980) report that grassland birds species each exploit a different niche based on the height and density of the vegetation. It follows that restoring plant species diversity to grasslands is an effective way of enhancing the quality of habitat for these species.

There are a number of other ways that reintroducing native perennial grasses can enhance the value of the habitat for birds in general. A greater diversity of grasses can result in a greater diversity and abundance of flying insects, the main prey of kingbirds (*Tyrannus* spp.), swallows, and Common Nighthawks (*Chordeiles minor*) that hunt on the wing. A greater abundance of insects on the ground will enhance the habitat for the Western Meadowlark (*Sturnella neglecta*), Grass–hopper Sparrow (*Ammodramus savannarum*), Horned Lark (*Eremophila alpestris*), and other insectivorous ground-oriented birds. Species such as the Loggerhead Shrike (*Lanius ludovicianus*) that prey on grasshoppers and small mammals will find better foraging in a diverse perennial grassland. For seed eaters, particularly sparrows, a diverse grassland results in a greater variety of seeds and better nutrition through that greater variety. Reintroducing native perennials improves the habitat for raptors by increasing the diversity of rodent species, and in some cases the abundance of rodents.

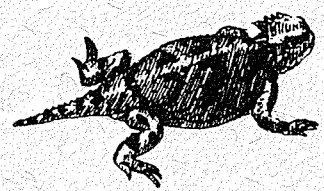
According to the U.S. Department of Agriculture (USDA) Neotropical Migrant Reference Book (1994), a number of sparrows rely on habitat features provided by bunchgrasses or open grasslands. The Rufous-crowned Sparrow (*Aimophila ruficeps*) is associated with needlegrass (*Nassella* spp.) in Southern California. This species nests in grass bunches, feeds on grass-supported insects, and eats grass seed. There are two populations of Vesper Sparrows (*Pooecetes gramineus*) in California, one

Grassland-associated bird species that occur in California

Killdeer (*Charadrius vociferus*)
Long-billed Curlew (*Numenius americanus*)
Common Snipe (*Gallinago gallinago*)
Northern Harrier (*Circus cyaneus*)
Red-tailed Hawk (*Buteo jamaicensis*)
Swainson's Hawk (*Buteo swainsoni*)
Ferruginous Hawk (*Buteo regalis*)
American Kestrel (*Falco sparverius*)
Ring-necked Pheasant (*Phasianus colchicus*)
Mourning Dove (*Zenaida macroura*)
Greater Roadrunner (*Geococcyx californianus*)
Common Barn Owl (*Tyto alba*)
Short-eared Owl (*Asio flammeus*)
Burrowing Owl (*Athene cunicularia*)
Common Nighthawk (*Chordeiles minor*)
Western Kingbird (*Tyrannus verticalis*)
Cassin's Kingbird (*Tyrannus vociferans*)
Horned Lark (*Eremophila alpestris*)
Northern Rough-winged Swallow(*Stelgidopteryx serripennis*)
Barn Swallow (*Hirundo rustica*)
Mountain Bluebird (*Sialia currucoides*)
Loggerhead Shrike (*Lanius ludovicianus*)
Grasshopper Sparrow (*Ammodramus savannarum*)
Vesper Sparrow (*Pooecetes gramineus*)
Savannah Sparrow (*Passerculus sandwichensis*)
Song Sparrow (*Melospiza melodia*)
Lark Sparrow (*Chondestes grammacus*)
Brewer's Sparrow (*Spizella breweri*)
Western Meadowlark (*Sturnella neglecta*)

*Waterfowl species are not included on the list because their only substantial association with grasses is as nesting cover. Generally, they are not particular about which species they nest in, as long as it provides dense cover.

Sources:
Bock and Bock 1988;
Brown 1985;
Grinnell and Miller 1944;
Herkert 1994;
Kantrud and Higgins 1992;
Small 1974;
USDA 1994.



wintering and one breeding, that favor areas of sparsely covered or open grasslands. The Savannah Sparrow requires overhead grass for cover (USDA 1994), a feature that the larger perennial grasses are better at providing because annual grasses tend to be short and often lay down during summer. In Southern California, Grasshopper Sparrows are associated with bunchgrasses and are seldom found in areas of non-native weeds. These birds nest at the base of bunchgrasses and their nests are built of grass. The Lincoln's Sparrow (*Melospiza lincolnii*) builds nests concealed in clumps of tall grass in wet meadows or riparian areas. During the breeding season a mix of shrubs and grass is essential for the species, being the preferred source for cover and feeding. Therefore, shrubby areas interspersed with reintroduced tall perennial grasses would provide some of the best habitat for Lincoln's Sparrow nesting, roosting, resting, escape cover, and as lookouts and singing perches.

Mammals

Revegetating a site with native grasses may not enhance the habitat for all mammals, but it can enhance the habitat for certain species. Grant and Birney (1979) found that dense non-native annual grasslands support high numbers of the type of small herbivorous rodents (e.g. meadow voles (*Microtus* spp.)) that make runways in the litter layer, have high reproductive rates, and subsist on large amounts of relatively low energy food. On the other hand, they found that open bunchgrass habitats are favored by some small mammal species, particularly seed eaters, that find it easier to forage where grass is bunched or sparse. Furthermore, plants of deserts and open-habitats tend to put more of their energy into seed production, resulting in larger seeds that are preferred by kangaroo rats (*Dipodomys* spp.) (Grant and Birney 1979; Parmenter and Van Devender 1995) and other ground-dwelling species. Therefore, if the intent is to manage an area to favor open habitat-associated small mammals such as ground squirrels (*Spermophilus* spp.) and kangaroo rats, restoration of stands of native perennial grasses and forbs having larger seeds could be beneficial.

Bats are another group of animals that can benefit from the reintroduction of native grasses. Chung-MacCoubrey (1996) identified several species of bat commonly associated with Southwestern grasslands; the Small-footed *Myotis* (*Myotis ciliolabrum*), California Myotis (*Myotis californicus*), Cave Myotis (*Myotis velifer*), Pallid Bat (*Antrozous pallidus*), Western Pipistrelle (*Pipistrellus hesperus*), and the Mexican Free-tailed Bat (*Tadarida brasiliensis*). These are all species that can be found throughout much of California. Different species of bat favor different insect prey sizes and have different feeding strategies. Some pluck individual insects out of the air, others fly through swarms of insects with their mouths open. By increasing the kinds of insects in an area by increasing the diversity of its grasses, an increase in the diversity of bat species using the area can be expected.

The benefits of native grasses to deer, elk, and other ungulates are less clear. The hoofed wildlife of California generally fall into two groups; those whose dietary strategy is to consume large quantities of low-nutrient forage ("grazers") and those whose dietary strategy is to eat smaller amounts of higher-nutrition forage ("browsers"). Of the ungulate grazers, the species endemic to California are the elk (*Cervis elaphis*) and the bighorn sheep (*Ovis canadensis*). The elk's diet is similar to that of the domestic cow (Strait 1991). While elk will browse on forbs and brush to seek additional vitamins and minerals to enhance reproduction or survival at critical times of the year, during much of the year they prefer to eat grass. While bighorn sheep primarily graze on grass and forbs, they will eat other vegetation depending on availability (Lawson and Johnson 1982).

The reestablishment of perennial grasslands at the expense of existing non-native annual grasslands is unlikely to do anything to enhance the habitat for grazers. Indeed, it may decrease the quality of the habitat for elk and bighorn sheep if dense stands of annual grasses are replaced by more open stands of bunchgrasses that require the animals to expend more energy ranging to find food. However, if the intent is to enhance the habitat browsers, replacing a near monoculture of non-native annual grasses with a more diverse plant community having a variety of native perennial grasses and forbs that green up earlier in the fall will benefit those ungulates.

Concluding Remarks

This article has attempted to demonstrate the potential benefits of native grass restoration to some wildlife species, based on what we know about the feeding behaviors and habitat preferences of those species. It is my contention that the primary reason that native perennial grasslands provide better habitat for wildlife species is because of the greater diversity of the plant community (in both species abundance and structure) compared to near-monoculture annual grasslands.

Yet, even without conclusive evidence that individual native grass species will directly benefit a

given wildlife species, I would argue that by opening up and "disturbing" areas, the mere act of restoration itself has wildlife benefits. For support of this contention, I turn to the time honored wildlife management concept of "edge" (Shaw 1985), traditionally defined as the zone of contact between two or more habitat types, such as a forest and a cultivated field. The common observation that game species were more abundant along habitat edges led Leopold (1933) to conclude that the more edge per unit area, the higher the production of game. This is the "edge effect," or law of interspersion, a major principal in wildlife management. It holds that the greater the amount of edge, the greater the diversity of wildlife (Shaw 1985). Since opening up a dense stand of annual grasses to reintroduce perennial grasses and forbs creates more edge, it should therefore should support a greater number and variety of wildlife.

So, for the sake of wildlife, open up areas dominated by non-native annual grasses and revegetate them with native grasses and forbs. Every day in California we lose more acres of wildlife habitat to human encroachment. We need to make every acre of habitat count for wildlife, and that means restoring native plant diversity to our remaining grasslands.

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Call for Posters CalEPPC Symposium 2000

WANTED: Posters addressing all areas of exotic pest plant control in wildland ecosystems of California. Members, colleagues, and students are invited to display posters regarding research, control methods, tools, or other related topics at CalEPPC Symposium 2000.

Posters will be displayed throughout the symposium and are a great way in which to stimulate dialog, collaborate, and network. Poster authors are encouraged to 'present' their posters (i.e., stand by your poster and field questions) during the Poster Session and Social following the general session on the first day of the conference.

For more information on how you or your group can present a poster, please contact Carri Benefield at 916-654-0768 or email to: cbenefield@cdfa.ca.gov

Parentucellia viscosa invades dune wetlands of northern California

**Andrea Pickart and Kyle Wear,
U.S. Fish and Wildlife Service**

In spring 1996 we sent out a call for information through this newsletter for the introduced *Parentucellia viscosa*, or yellow glandweed, which we had observed proliferating in seasonal dune hollow wetlands at the Lanphere Dunes (now part of Humboldt Bay National Wildlife Refuge).

Parentucellia is listed by CalEPPC as in need of more information. We have now completed a year-three research program on this hemiparasitic annual, with some interesting results. Parentucellia invasion is apparently a highly localized phenomenon restricted to herbaceous dune hollows of the North Spit of Humboldt Bay. Although the plant was found in or near other dune wetlands in northern California and southern Oregon, it was not invasive at these sites. The other sites lacked the most common host for Parentucellia at Humboldt Bay, the annual native *Lotus purshianus* var. *purshianus*. Parentucellia plants parasitizing Lotus at the Lanphere Dunes were larger and produced more fruits than those on other host species. However, our research did not directly examine whether this was due to host preference or simply to similar habitat preferences of the two species.

Although Parentucellia was present in all of the dune hollows of the North Spit, it was most abundant in those at the Lanphere Dunes. These hollows are uniquely broad and flat, and dominated by herbaceous vegetation with abundant *Lotus purshianus*. Our research documented that Parentucellia occurs in a one-meter-wide band at the lowest elevations of our dune hollows, where it is highly correlated with *Lotus purshianus*. Elevation was not the sole predictor of abundance, and we would expect this elevational band to fluctuate in response to annual rainfall variation.

We mapped the extent of Parentucellia on Lanphere Dunes in 1989, 1995 and 1999, and determined that the areal extent increased almost 300% over the first six years, but then declined in the following four year period, for a net increase of 200%. This trend was closely tied to the extent of herbaceous hollow habitat available for colonization. Herbaceous hollows had increased dramatically on the site during the first interval, and then declined as vegetation succeeded to a woody condition. We also examined the effect of Parentucellia invasion on dune hollow species composition. We found that the vegetation changes accompanying invasion are not unlike those that occur during the naturally rapid succession of dune hollows. No native species were negatively correlated with Parentucellia. We established that Parentucellia has an abundant, persistent seedbank, and that fecundity is very high, with an average plant producing 12,000 seeds. As expected, this makes control extremely difficult, and our experimental efforts at manual and mechanical control were ineffectual. We conclude that Parentucellia is indeed an invasive species, but that, given its restriction to a narrow range of habitat conditions and the relatively benign nature of the invasion, it does not merit management. We will continue, however, to monitor this species in the future as part of our overall dune hollow monitoring program.

Call for Abstracts CalEPPC Symposium 2000

The California Exotic Pest Plant Council Symposium 2000 will be held on October 6-8 2000 in Concord, California.The theme of this year's symposium is "Exotic Plants in the Landscape: Processes and Patterns."

We are encouraging members, colleagues, or students to submit an abstracts for oral presentation (15 minutes). Topics could include, but are not restricted to, aspects of the biology, ecology, impacts, and prevention or management of noxious weeds.Management issues can include use of volunteers and development or implementation of control techniques or strategies. In addition, topics associated with restoration of weed-infested rangelands or wildlands are also welcome. Authors will have the option of submitting a full-length paper at the time of the meetings.These papers will be published in the Symposium 2000 Proceedings.

Directions for abstract submission. Abstracts should be no more than 250 words.Indicate the title, all authors with address, phone number, and email address of presenter, and text.Use scientific names for all species at the first mention. Send abstracts by mail to Joe DiTomaso, Weed Science Program, Robbins Hall, University of California, Davis, CA 95616 or through email to ditomaso@vegmail.ucdavis.edu.

Abstract deadline is June 21. Graduate or undergraduate students are encouraged to present their research. All students presenting a research paper will receive 50% discount on their registration fee.

Federally Listed Species vs. Mustard

[**Editor's note**: Jo Kitz's letter reprinted below raises an important issue regarding weed control after natural or human-caused disturbances.]

September 12, 1999

John Tiszler, Plant Ecologist
National Park Service
401 West Hillcrest Drive , Thousand Oaks, CA 91360

Re: *Astragalus brauntonii* weeding on Zuma Ridge

Dear John:

Thank you for letting us know about the 'find' of *Astragalus brauntonii*, a federally listed endangered species on the NPS Zuma property. We, members of the California Native Plant Society and a representative of the California Department of Fish and Game, appreciated our visit to the site which is a hand-line cut that was then burned in preparation for a prescribed burn. The County later declined to participate in the prescribed fire citing its features to make it impractical. However, seeing how the Astragalus was being impacted by an invasive non-native species we requested permission to return.

Two principles emerged:

1. Obligate seeders cannot be burned frequently. There is no seed bank left as Ceanothus produces a one-year seed supply and if that is eliminated, type conversion follows (personal communication Dr. Steve Davis, Pepperdine University).

2. Any disturbance to non-pristine lands must be followed with invasive species removal. A small, select dedicated group of three weed warriors from the California Native Plant Society spent 21 hours clearing mustard (Brassica geniculata aka Hirschfeldia incana) from the part of the hill where Astragalus is present.

The ridge above the Astragalus site and the down-slopes are still covered with thick dense stands of mustard, so, another clearing day would be in order. And then, of course, after the rains, many returns will be necessary to prevent the complete colonization of the hill by the mustard. The mustard had dried, so seed will have dropped. We can expect a healthy crop of mustard seedlings as well as the regrowth of the mustard that is there since it seems to have redefined itself as a perennial.

One principle became blatantly clear during the clearing. Whenever there is a disturbance, be it prescribed fire, wildfire, flood, equipment activity or even trail maintenance, a program must be built into the activity to remove the non-native invasive species that are bound to follow. That slope should be a mixture of the astragalus, summer-blooming native species (cliff aster, twiggy-wreath plant, morning glory, tar weed), a cover of healthy Ceanothus seedlings (I saw none, Betsey saw 2), and the less dominant perennials in the unburned slopes (toyon, nightshade, buckwheat, yucca, laurelsumac and mountain mahogany). What we actually see there is a robust crop of mustard and a lot of scraggly looking, failed-to-thrive native species scrunched under and dominated by the mustard.

I am sure that the CNPS official recommendation will evolve to be that any disturbance, be it from natural causes or from human activity, must have a 5-year non-native invasive species control elemnt. Breaking the land and not having an invasive species control element as part of the plan is ecological irresponsibility which will result in the loss of species diversity through type conversion

Thank you for giving us this opportunity to work with the National Park Service in monitoring and protecting this federally-listed endangered species.

Yours truly, Jo Kitz
Vice-president, Los Angeles/
Santa Monica Mountains Chapter California Native Plant Society

[Editor's Note: This table was accidentally omitted from our article on bio-controls in our Summer/Fall 1999 issue.

Table 1: All Weeds that have Approved Biological Control Agents

Weed	Scientific Name	Bio-Control Agent	BC Agent Role	Distribution	Infestation	Control
Alligatorweed	Alternanthera philoxeroides	Agasicles hygrophila	Leaf feeding beetle	No establishment	Moderate	Poor
Broom, Scotch	Cytisus scoparius	Apion fuscirostre	Seed weevil	Widespread	Moderate	Poor
Broom, Scotch	Cytisus scoparius	Leucoptera spartifoliella	Twig mining moth	Widespread	Heavy	Poor
Gorse	Ulex europaeus	Exapion ulicis	Seed weevil	Widespread	Slight	Unknown
Gorse	Ulex europaeus	Tetranychus lintearius	Spider mite	Widespread	Slight	Unknown
Hydrilla	Hydrilla verticillata	Bagous affinis	Tuber feeding weevil	Limited		
Hydrilla	Hydrilla verticillata	Hydrellia pakistanae	Leaf mining fly	No establishment		
Klamathweed	Hypericum perforatum	Agrilus hyperici	Root boring beetle	No establishment	Light	Unknown
Klamathweed	Hypericum perforatum	Chrysolina hyperici	Leaf feeding beetle	Widespread	Unknown	Unknown
Klamathweed	Hypericum perforatum	Chrysolina quadrigemina	Leaf feeding beetle	Unknown	Heavy	Excellent
Klamathweed	Hypericum perforatum	Zeuxidiplosis giardi	Bud gall midge	Widespread	Light	Poor
Knapweed, Diffuse	Centaurea diffusa	Bangasternus fausti	Seedhead weevil	Limited	Slight	Unknown
Knapweed, Diffuse	Centaurea diffusa	Larinus minutus	Seedhead weevil	Limited	Light	Unknown
Knapweed, Diffuse	Centaurea diffusa	Sphenoptera jugoslavica	Root boring beetle	Limited	Heavy	Unknown
Knapweed, Diffuse	Centaurea diffusa	Urophora affinis	Seedhead gall fly	Widespread	Light	Poor
Knapweed, Diffuse	Centaurea diffusa	Urophora quadrifasciata	Seedhead gall fly	Widespread	Slight	Poor
Knapweed, Spotted	Centaurea maculosa	Agapeta zoegana	Root boring moth	Limited	Slight	Unknown
Knapweed, Spotted	Centaurea maculosa	Cyphocleonus achates	Root boring weevil	Limited	Slight	Unknown
Knapweed, Spotted	Centaurea maculosa	Larinus minutus	Seedhead weevil	Limited	Light	Unknown
Knapweed, Spotted	Centaurea maculosa	Terellia virens	Seedhead fly	Limited	Light	Unknown
Knapweed, Spotted	Centaurea maculosa	Urophora affinis	Seedhead gall fly	Limited	Light	Poor
Knapweed, Spotted	Centaurea maculosa	Urophora quadrifasciata	Seedhead gall fly	Widespread	Slight	Poor
Loosestrife, Purple	Lythrum salicaria	Galerucella calmariensis	Leaf feeding beetle	Widespread	Unknown	Unknown
Loosestrife, Purple	Lythrum salicaria	Galerucella pusilla	Leaf feeding beetle	Initial release	Unknown	Unknown
Loosestrife, Purple	Lythrum salicaria	Hylobius transversovittatus	Root boring weevil	Initial release	Unknown	Unknown
Loosestrife, Purple	Lythrum salicaria	Nanophyes marmoratus	Flower bud weevil	Initial release	Unknown	Unknown
Puncturevine	Tribulus terrestris	Microlarinus lareynii	Stem boring weevil	Initial release	Heavy	Excellent
Puncturevine	Tribulus terrestris	Microlarinus lypriformis	Fruit boring weevil	Widespread	Heavy	Excellent
Prickly Pear	Opuntia spp.	Dactylopius opuntiae	Stem feeding mealybug	Widespread	Unknown	Unknown
Ragwort, Tansy	Senecio jacobaeae	Longitarsus jacobaeae	Root/Defoliating flea beetle	Widespread	Heavy	Excellent
Ragwort, Tansy	Senecio jacobaeae	Pegohylemyia seneciella	Seedhead fly	Widespread	Unknown	Unknown
Ragwort, Tansy	Senecio jacobaeae	Tyria jacobaeae	Defoliating moth	Unknown	Light	Excellent
Sage, Mediterranean	Salvia aethiopis	Phrydiuchus tau	Crown/root boring weevil	Widespread	Moderate	Unknown
Skeletonweed	Chondrilla juncea	Cystiphora schmidti	Stem/leaf gall midge	Widespread	Moderate	Poor
Skeletonweed	Chondrilla juncea	Eriophyes chondrillae	Bud gall mite	Widespread	Moderate	Fair
Skeletonweed	Chondrilla juncea	Puccinia chondrillina	Rust fungus	Widespread	Moderate	Excellent
Starthistle, Yellow	Centaurea solstitialis	Bangasternus orientalis	Seedhead weevil	Widespread	Light	Poor
Starthistle, Yellow	Centaurea solstitialis	Chaetorellia australis	Seedhead fly	Widespread	Slight	Poor
Starthistle, Yellow	Centaurea solstitialis	Eustenopus villosus	Seedhead weevil	Limited	Heavy	Good
Starthistle, Yellow	Centaurea solstitialis	Larinus curtus	Seedhead weevil	Widespread	Light	Unknown
Starthistle, Yellow	Centaurea solstitialis	Urophora jaculata	Seedhead gall fly	Limited		
Starthistle, Yellow	Centaurea solstitialis	Urophora sirunaseva	Seedhead gall fly	No establishment	Moderate	Poor
Thistle, Senderflower	Carduus tenuiflorus	Rhinocyllus conicus	Seedhead weevil	Widespread	Heavy	Good
Thistle, Bull	Cirsium vulgare	Urophora stylata	Seedhead gall fly	Widespread	Slight	Unknown
Thistle, Canada	Cirsium arvense	Altica carduorum	Leaf feeding beetle	Initial release		
Thistle, Canada	Cirsium arvense	Ceutorhynchus litura	Crown/Root weevil	No establishment		
Thistle, Canada	Cirsium arvense	Urophora cardui	Stem gall fly	No establishment	Unknown	Poor
Thistle, Italian	Carduus pycnocephalus	Rhinocyllus conicus	Seedhead weevil	Limited	Heavy	Good
Thistle, Milk	Silybum marianum	Rhinocyllus conicus	Seedhead weevil	Widespread	Heavy	Poor
Thistle, Musk	Carduus nutans	Rhinocyllus conicus	Seedhead weevil	Widespread	Heavy	Excellent
Thistle, Russian	Salsola tragus	Coleophora klimeschiella	Leaf mining moth	Widespread	Heavy	Poor
Thistle, Russian	Salsola tragus	Coleophora parthenica	Stem boring moth	Widespread	Heavy	Poor
Waterhyacinth	Eichhornia crassipes	Neochetina bruchi	Crown/Petiole boring weevil	Widespread		
Waterhyacinth	Eichhornia crassipes	Neochetina eichhorniae	Crown/Petiole boring weevil	No establishment	Unknown	Poor
Waterhyacinth	Eichhornia crassipes	Sameodes albiguttalis	Stem boring moth	Limited		
				No establishment		

[Editor's Note: This table was accidentally omitted from our article on bio-controls in our Summer/Fall 1999 issue.

Table 2: Accidental Introductions and Others

Weed	Scientific Name	Bio-Control	BC Agent Role	Distribution	Infestation	Control
Broom, French	Genista monspessulana	Aceria genistae	Gall mite	Limited	Unknown	Undetermined
Broom, French	Genista monspessulana	Uresiphita reversalis	Defoliating moth	Widespread	Moderate	Undetermined
Broom, Scotch	Cytisus scoparius	Agonopterix nervosa	Shoot tip moth	Unkown	Unknown	Undetermined
Broom, Scotch	Cytisus scoparius	Arytainilla spartiophila	Sap sucking psillid	Widespread	Heavy	Undetermined
Gorse	Ulex europaeus	Aceria genistae	Gall mite	Limited	Unknown	Undetermined
Gorse	Ulex europaeus	Agonopterix nervosa	Shoot tip moth	Unkown	Unknown	Undetermined
Halogeton	Halogeton glomeratus	Coleophora klimeschiella	Leaf mining moth	No establishment		
Halogeton	Halogeton glomeratus	Coleophora parthenica	Leaf mining moth	No establishment		
Hemlock, Poison	Conium maculatum	Agonopterix alstroemeriana	Defoliating moth	Widespread	Moderate	Undetermined
Knapweed, Diffuse	Centaurea diffusa	Puccinia jaceae	Rust fungus	Limited	Slight	Poor
Knapweed, Squarrose	Centaurea squarrosa	Bangasternus fausti	Seedhead weevil	Initial release	Unknown	Unknown
Knapweed, Squarrose	Centaurea squarrosa	Cyphocleonus achates	Root boring weevil	Initial release	Unknown	Unknown
Knapweed, Squarrose	Centaurea squarrosa	Larinus minutus	Seedhead weevil	Initial release	Unknown	Unknown
Knapweed, Squarrose	Centaurea squarrosa	Urophora affinis	Seedhead gall fly	Limited	Slight	Poor
Knapweed, Squarrose	Centaurea squarrosa	Urophora quadrifasciata	Seedhead gall fly	Limited	Light	Poor
Nutsedge, Purple	Cyperus rotundus	Bactra verutana	Crown boring moth	Widespread	Heavy	Unknown
Purslane, Common	Portulaca oleracea	Hypurus bertrandiperris	Leaf mining weevil	Widespread	Unknown	Undetermined
Purslane, Common	Portulaca oleracea	Schizocerella pilicornis	Leaf mining sawfly	Widespread	Heavy	Excellent
Starthistle, Yellow	Centaurea solstitialis	Chaetorellia succinea	Seedhead fly	Widespread	Moderate	Undetermined
Thistle, Artichoke	Cynara cardunculus	Terellia fusicornis	Seedhead fly	Limited	Heavy	Undetermined
Thistle, Bull	Cirsium vulgare	Puccinia sp.	Rust fungus	Widespread	Unknown	Poor
Thistle, Canada	Cirsium arvense	Rhinocyllus conicus	Seedhead weevil	Limited	Unknown	Poor
Thistle, Milk	Silybum marianum	Terellia fusicornis	Seedhead fly	Limited	Light	Poor
Thistle, Plumeless	Carduus acanthoides	Rhinocyllus conicus	Seedhead weevil	Limited	Unknown	Unknown
Thistle, Scotch	Onopordum acanthium	Rhinocyllus conicus	Seedhead weevil	No establishment		
Thistle, Slenderflower	Carduus tenuiflorus	Puccinia carduorum	Rust fungus	Widespread	Unknown	Poor
Toadflax, Yellow	Linaria vulgaris	Gymnetron antirrhini Terellia	Seed weevil	Limited	Unknown	Undetermined
Starthistle, Purple	Centaurea calcitrapa	viridis	Seedhead fly	Initial release	Unknown	Unknown
Starthistle, Purple	Centaurea calcitrapa	Larinus minutus	Seedhead weevil	Initial release	Unknown	Unknown
Starthistle, Purple	Centaurea calcitrapa	Urophora affinis	Seedhead gall fly	Initial release	Unknown	Unknown
Starthistle, Purple	Centaurea calcitrapa	Urophora quadrifasciata	Seedhead gall fly	Initial release	Unknown	Unknown

Italian Thistles: an Ominous Threat

Bruce Cowan
Environmental Landscape Consultant, Pacific Grove

[**Editor's note.** An informal debate has progressed within CalEPPC ranks over Italian thistle. Some say don't worry about it, because it eventually "drops out." Others say it may drop back in a dry year, but over time steadily builds up a seed bank and each time it explodes again it increases its range and density. What's your experience? Does anyone have any hard data? Cowan's suggestion that we try to keep out known invasives when they first appear is a good one. 'Course, that's his opinion. What's yours?]

Often, no one does much about potentially damaging weeds which are new to an area because of other priorities. Later, when the new weed has spread enough to cause a problem, it may be too late to eradicate it.

Italian thistle arrived in our area about five years ago. I'd never seen it before. Heavy infestations and smaller populations are showing up along Highway One from Santa Cruz to Carmel, and near the Monterey-Salinas Highway. Italian thistle is a tall, skinny thistle with very spiny winged stems and leaves, with clusters of tiny purple flowers at the tips. Actually two species seem to be involved: *Carduus pycnocephalus*, the true Italian thistle, and *C. tenuiflorus*, differentiated mainly by the numbers of flowers in each cluster. For all practical purposes they are the same (Hickman 1993).

Italian thistle is invading the Big Sur coast where it threatens to cover the grasslands and wildflower meadows in the same manner that yellow-star thistle (*Centaurea solstitialis*) has covered thousands of square miles of the Central Valley foothills. Once it takes over wildflower habitats on a large scale, it can be difficult to control it. Herbicides which kill thistles may also kill wildflowers and native grasses.

In 1998 I saw a few dozen Italian thistles along a trail up toward Rocky Ridge at Garrapata State Park, with one of the most spectacular wildflower areas remaining in California. This spring, on the same hike, the thistle had filled in approximately a quarter-acre, and small patches and individuals were spread over a ten-acre area. The thistle was also getting established along the Big Sur coast highway adjacent to the park, mainly in eroded areas and El Niño caused landslides. Thistle seeds are dispersed by the wind on little parachutes. Sensing eminent danger to wildflower habitats, I returned with heavy leather gloves, a bucket in which to collect the flowers and seed heads, and a tool with which to dig them. I recruited my wife Judy, some volunteers from the California Native Plant Society (CNPS), and State Parks personnel to help. CalTrans was also contacted.

In May and June, 1999, at least 60 person hours were involved in pulling Italian thistle. We got almost all of them at Garrapata State Park before it went to seed. But it will return. We need to be diligent about keeping them out of Garrapata and other state parks, the Del Norte Forest, and other valuable open space, beginning now and continuing the program every year.

I have two main principles of weed control:

1. Eliminate the seed source.
2. Be more persistent than the weeds.

If you can't do these two tasks, you may have lost the battle. Be on guard as we will see a lot more of Italian thistle within the next few years.

Hickman, J., ed. 1993. The Jepson Manual: Higher Plants of California. U.C. Press, Berkeley.

June 21 Deadline for Nominations

It's that time again when we seek nominations for Officers and members of the Board of Directors of CalEPPC. Officers are elected for one-year terms, while Directors serve for two years. All would take office Jan. 1, 2001.

The officers are President, Vice-president, Secretary, and Treasurer. Five (5) director seats. There are typically about 5 Board meetings per year plus the annual symposium. Travel expenses to and from Board meetings are covered by CalEPPC when institutional support is not available. Meetings are held in Southern California, the Bay Area and Davis/Sacramento on a rotating basis.

You may place your own name or someone else's in nomination. They must be a dues-paying member of CalEPPC. Please include a contact phone number and email address for the person so they may be contacted to confirm their acceptance of the nomination. Send nominations to Mike Kelly at mkellysd@aol.com or mail to: 11591 Polaris Dr., San Diego, CA 92126. If you have questions email or call Mike (858-566-6489).

Outside of defined responsibilities for officer positions, Board members are simply asked to be as active and take on tasks as their schedule permits. In addition, some Board members defacto serve as laisons with institutions that are important to weed management in California's wildlands.

Welcome Members

The following new members have joined from January - March 2000.

Ingrid Hogle, Reginald Lucas
Kimberly Reever Morghan
Valerie Prehoda
Zoological Society of San Diego

2000 CalEPPC Membership Form

If you would like to join CalEPPC, please remit your calendar dues using the form provided below. All members will receive the CalEPPC newsletter, be eligible to join CalEPPC working groups, be invited to the annual symposium and participate in selecting future board members. Your personal involvement and financial support are the keys to success. Additional contributions by present members are welcomed!

Individual		Institutional	
❑ Low Income*	$15	N/A	
❑ Regular	30	❑ Regular	$100
❑ Family	40	❑ Contributing	250
❑ Contributing	50	❑ Patron	500
❑ Sustaining	100	❑ Sustaining	1000
❑ Lifetime	1000		

* Includes students

Please make an additional contribution in my name to:

Student/Low Income membership $____

Cape Ivy Biocontrol Fund $____

Please make your check payable to CalEPPC and mail with this application form to:

CalEPPC Membership
c/o Sally Davis
32912 Calle del Tesoro
San Juan Capistrano, CA 92675-4227

Name _____

Affiliation _____

Address _____

City/ State/ Zip _____

Office Phone _____ Home Phone _____

Fax _____ email _____

*Students, please include current registration and/or class schedule

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