



Cal-IPC News

Protecting California's Natural Areas from Wildland Weeds

Newsletter of the California Invasive Plant Council



Two rare species: Myrtle silverspot butterfly on a coyote mint plant adjacent to an area where European beachgrass was removed. Photo by Point Reyes National Seashore.

INSIDE

- European beachgrass removal at Point Reyes p. 4**
- Cross-border collaboration in the State of Jefferson p. 6**
- Delta collaboration p. 7**
- Report from Tamarisk Beetle Workshop p. 9**
- Arundo on the Salinas River p.10**
- EDRR reports from around the state p.12**



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A California 501(c)3 nonprofit organization
Protecting California's lands and waters
from ecologically-damaging invasive plants
through science, education, and policy.

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Cal-IPC News

Winter 2015 - Vol. 23, No. 1

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From the Director's Desk

Intrinsic or Instrumental?

By Doug Johnson

The modern conservation movement is rooted in an ethical belief that the intrinsic value of wildlife and wild places—those “area[s] where the earth and its community of life are untrammelled by man” as the National Park Service’s Organic Act puts it—make them worth protecting.

And during the last century, philanthropic foundations funded environmental organizations to do just that: protect wildlife and wild places. But in recent years, it has become clear that traditional conservation, important as it is, only gets us so far. The problems are so large, from climate change to population growth, that conservation efforts need to be orders of magnitude stronger to be successful. At the same time, our cultural relationship with wild places is evolving, and not necessarily in a way that supports traditional conservation. We need to engage today’s and tomorrow’s Californians in the work that needs to be done. But how?

A recent report (“Conservation Horizons”, www.calandtrusts.org) examines everything from how Millennials differ from previous generations to trends in pollination. A key finding: “Conservation may be best positioned to receive funding when it helps solve other public priorities and problems—urban parks, improved health, food security, climate adaptation.” These are the issues people care about.

These issues represent our collective self-interest in a healthy environment, what is termed “instrumental” value as opposed to the intrinsic value of traditional conservation. Speaking in terms that tap into our self-interest does help people understand how conservation impacts their life. And putting conservation into economic terms can help politicians decide to do the right thing. But does that backfire when it comes to protecting wildlife or a wild place where there are no clear practical benefits?

The debate has consumed plenty of energy over the years. In a recent opinion piece in the journal *Nature* (Nov. 5, 2014), 240 signatories proposed that we stop arguing the relative merits of these approaches: “We propose a unified and diverse conservation ethic; one that recognizes and accepts all values of nature, from intrinsic to instrumental, and welcomes all philosophies justifying nature protection and restoration, from ethical to economic, and from aesthetic to utilitarian.” Cal-IPC agrees—all arguments are valid, and we need them all—and this will be an evolving part of our messaging in the future.

CNPS Turns Fifty!

Congratulations to the California Native Plant Society for 50 strong years of conservation. Their recent Conservation Conference in San Jose drew close to 1,000 attendees and featured a range of exciting talks. We look forward to decades of continued collaboration on behalf of California’s wildlands!

CNPS celebrated its 50th anniversary during the conference in San Jose, featuring stimulating speakers, field trips, and a banquet with delicious desserts. *Photo by Dana Morawitz*



Cal-IPC Updates

Symposium 2015 set. Mark your calendars for Oct. 28-31 at the San Diego Convention Center! We'll have a special concurrent track on Habitat Conservation Planning. Call for abstracts in April, registration open in June.

Northwest submits eradication proposal. Working with Cal-IPC, partners in Humboldt and Del Norte counties completed an application for funding to the state's Wildlife Conservation Board. The project eradicates knotweeds and other incipient weeds from the region.

National standard for weed lists. At the April meeting of ASTM International, Cal-IPC will lead a team from the National Association of Invasive Plant Councils in presenting a draft standard for assessing environmental impacts of invasive plants.

Wildland-safe

landscaping. For CALGreen, the state's building code, Cal-IPC proposed a tiered structure for keeping invasives out of landscaping. Builders would get credit for not using species listed by PlantRight, and additional credit for not using any species listed by Cal-IPC.

New eucalyptus assessment completed.

Cal-IPC's Tasmanian bluegum assessment has been updated. Though impacts are moderate, overall invasiveness (capacity for spread) is limited.

Cal-IPC on the road. Lots of conferences this spring! Cal-IPC staff and members organized the Invasives track at the CNPS Conservation Conference in January, exhibited at the Society for Range Management conference in February, and will be at the California Council of Land Trust's conference in March.

Online WHIPPET released. WHIPPET provided two National Wildlife Refuges with prioritization for invasive plant eradication. Try it yourself at whippet.cal-ipc.org, or hire Cal-IPC to help you (see announcement at right).



Wildland Weed News

"Bioinvasions in a Changing World."

Cal-IPC served on the team of authors publishing this new report for the National Invasive Species Council. The report describes linkages between invasive species and climate change, with implications for natural resource management. www.invasivespeciesinfo.gov/docs/toolkit/bioinvasions_in_a_changing_world.pdf

PlayCleanGo. Cal-IPC joined the PlayCleanGo campaign to make hikers and other recreationists aware of preventing the movement of invasive species. www.playcleango.org

CalWeedTalk. Post job announcements, weed alerts, or questions to our revived email discussion list. Sign up at www.cal-ipc.org/resources/listservs.php.

New board members. Gina Darin (CA Dept. of Water Resources), Drew Kerr (Coastal Conservancy's Invasive Spartina Project) and Steve Schoenig (CA Dept. of Fish and Wildlife) join the Cal-IPC Board of Directors. Many thanks to departing board members Doug Gibson (San Elijo Lagoon Conservancy) and Kim Hayes (Elkhorn Slough Foundation). New student liaisons Marina LaForgia (UC Davis) and Justin Valliere (UC Riverside) step in for Bridget Hilbig (UC Riverside) and Meghan Skaer-Thomason (UC Davis).

Facebook. Another way to stay in touch with news from Cal-IPC. We recently surpassed 1000 "Likes".

Other News

Invasives in President's agenda. Invasives received high visibility in the President's climate resilience plan for natural resources, released in October. (See excerpt on p. 8.)

Water hyacinth thrives in California's drought. The Delta's water hyacinth problems are even worse this year, with higher water temperatures and slower

currents. The Governor's proposed budget would increase funding for hyacinth control by \$3 million. *Contra Costa Times*, Jan. 26.

Smartphone training works. Citizen scientists trained using smartphones are as effective at invasive plant recognition as those trained in person, according to a recent study. Smartphone training also has a broader reach and is less expensive. Public Library of Science (PLOSOne), Nov. 2014.

Guidance for early detection. A new report from the National Park Service and US Geological Survey guides natural resource managers in detecting new invasive plant populations through an active, directed monitoring program. Decision trees and flow charts help determine which methods to choose and when to use them. USGS Scientific Investigations Report 2012-5162.

Tried out online WHIPPET yet?

The powerful tool for prioritizing invasive plant populations is now available in an online version. Select population data from Calflora, define your area of concern, and set parameters for your situation. WHIPPET will rank the species based on their impact, isolation, proximity to vectors of spread, effectiveness of control, and other factors. Try it for yourself, or stay tuned for Cal-IPC webinars on using the tool!

Need a prioritization but don't have time to do it yourself? Hire Cal-IPC to do it. Contact us for details at mapping@cal-ipc.org.

www.whippet.cal-ipc.org.

Remember to check your membership status on the mailing label of this newsletter. You can renew online or with the enclosed envelope. Thank you for your membership!

Removing European beachgrass at Point Reyes

By Lorraine Parsons, Point Reyes National Seashore. Photos by Point Reyes National Seashore.

There are many subtle – and not-so-subtle – threats to our native ecosystems. Dense stands of European beachgrass (*Ammophila arenaria*) have become a common sight to visitors at Point Reyes National Seashore’s Limantour Beach and are perhaps even considered a part of the natural landscape. (I will even admit to once taking a holiday photo of our son amidst the seemingly very scenic flowing tussocks of green grass -- something which I am chagrined to admit now!) However, this non-native, invasive species from Europe and its succulent counterpart, iceplant (*Carpobrotus edulis*) have insidiously encroached over the years upon some very threatened dune habitats at the Seashore. These areas are key to survival for many common and rare species, including some that are threatened or endangered.

These species were already at Point Reyes when the Seashore was established in 1963. But it wasn’t until the park developed its first large-scale vegetation map in the 1990s that the park recognized the extent of the problem. By that time, areas dominated by European beachgrass and iceplant accounted for more than 60% of the 2,200 acres of coastal dune, bluff, and scrub in the Seashore (NPS 2009). The continued encroachment of these species not only resulted ultimately in dense monocultures that supported fewer native dune plant species, but it had potential repercussions on other species as well, including the federally endangered Myrtle’s silverspot butterfly (*Speyeria zerene myrtleae*) that feeds on the nectar on many dune plants and the federally threatened Western snowy plover (*Charadrius alexandrinus nivosus*) that nests in unvegetated shorelines along the foredunes. Beachgrass can creep out into foreshore areas, and it provides cover for potential predators of eggs, chicks, and adults. In addition, beachgrass indirectly impacted endangered dune plants such as Tidestrom’s lupine (*Lupinus tidestromii*)



Biggest sand toys ever. Excavators were used to remove rhizomes and to bury sand contaminated with rhizomes deeply enough that it could not regenerate.

by supporting much higher densities of native deer mice (*Peromyscus maniculatus*) that have been shown to eat as much as 82% of this species’ seed, thereby threatening long-term viability of many of the Seashore’s lupine populations (Dangremond et al. 2010).

In 2001, the Seashore embarked on a program of dune and coastal bluff restoration at Abbotts Lagoon. Initially, removal efforts focused on manually digging up European beachgrass, which has deep rhizomes that can extend more than 12 feet. Because it was difficult to dig deeper than 1.5 to 3 feet manually, the beachgrass rapidly regrew. In 2007, one park staff member estimated that 20% of the treated area re-grew within as little as six months, and some areas required as many 15- 20 repeat treatments before control appeared to be achieved (Charles 2007, Peterson 2004).

These issues encouraged the Seashore to explore other approaches for removing European beachgrass. In 2004, a 20-acre mechanical project was conducted in the same vicinity as the hand removal ones and appeared to be more practical – and

perhaps more effective – than hand removal ones, particularly for larger areas. Excavators were able to dig deeper and than bury and “cap” the rhizome-contaminated materials with clean sand. Because of this success, the park submitted a proposal to the federal government to fund a much more ambitious restoration project that would mechanically remove 132 net acres in an approximately 300 gross acre project area just south of Abbotts Lagoon. Unfortunately, bids for the project came back extremely high, so the project area was reduced to 80 net acres (190-acre gross).

The first phase of the Abbotts Lagoon Coastal Dune Restoration Project moved forward in early 2011. Additional phases were conducted in fall 2011 and 2012 under a separate compliance effort to try and complete the remaining 52 acres of the original 132-acre project area: these focused on chemical treatment of European beachgrass, with mechanical or manual removal in or adjacent to wetlands and adjacent to pastures managed by ranchers as organic.

Pre- and post-restoration monitoring

show that the project appears to be successful from an ecological standpoint. In mechanical areas, average cover of European beachgrass in restoration areas plummeted from more than 80% to 0%, with the very sparse amount of non-native cover now remaining being largely European sea rocket (*Cakile maritima*). However, native species cover also dropped precipitously immediately post-restoration from an average of 31% to 0% and has increased little in the three years since. While it rained considerably during construction in 2012, subsequent years have been very dry. In addition, spring winds have been quite high. The net result is that areas restored mechanically have very little plant establishment even after three years, with beach pea (*Lathyrus littoralis*), beach evening primrose (*Camissonia cheiranthifolia*), beach bursage (*Ambrosia chamissonis*), Douglas's bluegrass (*Poa douglasii*), and the non-native European sea-rocket among the hardy few to persist. Winds have buried most of the park's attempts at revegetation, as well as even some of the adjacent native dune, wetland, scrub, and grassland habitats.

However, one species appears to have adapted to this harsh environment quite well. By August 2012, biologists found one of the endangered dune plants germinating in the restored areas well before any fall or winter rains. By 2012, 15,884 Tidestrom's lupine (*Lupinus tidestromii*; FE) individuals were counted, covering approximately 15.8 of the 80 mechanically restored acres in varying densities (Johnson et al. 2012). These numbers continued to grow in subsequent years to approximately 20,500 individuals in 2013 and approximately 74,000 in 2014, 23,000 of which were adult plants. Lupine also expanded in areal extent, colonizing most portions of the mechanically restored dunes and several of the areas treated with herbicide. While other rare plants did not respond quite as dramatically to the restoration, in 2014, approximately 900 beach layia (*Layia carnososa*, FE) and 1,500 curlyleaf monardella (*Monardella sinuata* ssp. *nigrescens*; CNPS List 1B.2) established within both the mechanical and herbicide treated areas.

The project has not only boosted the park's endangered species recovery efforts

by creating new habitat, but it appears to have benefitted existing populations of endangered species. Most of the European beachgrass-dominated mechanical removal areas surrounded a large area of native dunes that supported one of the largest Tidestrom's lupine populations. Prior to restoration, many of the racemes or flowering stalks of Tidestrom's lupine at Abbots were eaten by deer mice, with consumption ranging from 38% to 94% across a six-year observation period (Pardini and Knight 2013). Following restoration, raceme predation rates dropped substantially (Pardini and Knight 2013, E. Pardini, pers. comm.). While rates had dropped slightly prior to restoration, these results do suggest that removal of beachgrass from the perimeter of this population has reduced predation pressure. Numbers of Tidestrom's lupine in this area have increased from approximately 150,000 plants in 2011 to approximately 200,000 plants in 2013-2014, with 20% of the 2014 plants being

three of those were located either in or adjacent to the restoration area (Campbell 2012). In 2013, the nest attempts in or directly adjacent to the restoration area climbed to six of the 21 that year, and, in 2014, those numbers jumped to 20 of 45 nests (Campbell, in press). However, hatching and fledging success continue to be problem in general, with only 10 of the 20 nests hatching and only three of the 10 fledging chicks (Campbell, in press). Ironically, in 2014, one of the plovers decided to lay its eggs directly on top of a Tidestrom's lupine!

Ultimately, it's too soon yet to make a prognosis on the long-term success of this project. So many factors can affect success, and many of them are completely external to the restoration process, including short-term and long-term weather patterns and regional trends in plover abundance and population health. However, park staff are certainly delighted with preliminary results of this project and hope to build on its seeming success



Seaside wallflower (*Erysimum concinnum*), a CNPS-listed rare plant, with construction equipment in the background.

seedlings. This increase appears to have happened even though some of the lupine plants have been buried by remobilized sand from adjacent restored areas.

Another species that may have benefitted from dune restoration is the snowy plover. In general, nesting attempts at the Seashore are believed to have generally declined since a record high of 74 nests in 1987. The years prior to and during restoration saw only 15 nesting attempts for the entire park. In 2012, nesting attempts plummeted to seven, although

through implementing other management actions to benefit listed species, as well as through proceeding with future dune restoration efforts in the Seashore.

Literature Cited

Campbell, C. 2012. Monitoring Western snowy plovers at Point Reyes National Seashore, Marin County, California. 2012 Annual Report. Natural Resource Technical Report NPS/SFAN/NRTR.

...continued page 14

Cross-border collaboration in the State of Jefferson

By Carri Pirosko, Noxious Weed Program, Oregon Department of Agriculture

Carri served northern California as a state Agricultural Biologist (and Cal-IPC as a board member) before moving north. She is now the Integrated Weed Management Coordinator for Southwestern Oregon.

The power of cross-border collaboration is alive in the State of Jefferson, an area in the far reaches of northern California and the southern-most counties of Oregon. Self-proclaimed Jeffersonians still have aspirations of forming the 51st state, autonomous from what is perceived as urban-focused legislation from the capitols in Sacramento and Salem.

Natural resource managers along the California and Oregon border see opportunities in working together despite separation by a state line, differing state laws, and varying weed priority lists. Partners from Roseburg to Redding have formed an “I-5 Working Group” that meets annually to discuss cross-border invasive and noxious weed issues. Other partnerships are cultivated to help stem the tide of further invasion.

Biological control is one area that has rallied partners. (Cross-border collaboration has become even more crucial due to the loss of California’s Weed Biological Control Program in 2011.) Two examples, one from either side of the border, exemplify this partnership.

First, the Siskiyou County Agricultural Commissioner’s Office in California has secured permits to conduct a spring trial release of a pathogen that attacks dyer’s woad, a major weed in the region. Should the pathogen become established in California, Oregon will follow with releases north of the border.

Second, the mother lode of rush skeletonweed emanates from the Roseburg area southward into California. Several biocontrol agents have been released on the Oregon side of the border; the latest is a moth that has shown results in other western states.

At California’s northern border, Cal-IPC has been working with the Siskiyou



Alyssum species (*A. murale* and *A. corsicum*) are the light-colored (actually bright yellow) plants in the foreground, near Cave Junction in 2008 prior to initiation of the eradication campaign. The Oregon State Weed Board listed the species as A-rated weeds in 2009. Photo by Kelly Amsberry, Oregon Dept. of Agriculture, Native Plant Conservation Program.

and Del Norte Weed Management Areas to prioritize weeds for early detection watch lists. Cal-IPC is seeking funds for early detection and control of these and other early invaders, partially based on distribution and impacts documented across the border in Oregon. Japanese knotweed and garlic mustard have devastated many western Oregon waterways, elevating these species for management status in northern California. Likewise, Southern Oregon partners are addressing several early-stage Arundo and Cape-ivy patches, based on decades of lessons learned from California partners.

Beyond the I-5 Working Group, partners attend Weed Management Area meetings in both states, keeping the communication flowing. Email communication throughout the year helps to keep early detection and rapid response timely. Battles in southern Oregon with a new aquatic invader, yellow floating heart,

and a very invasive mustard, yellowtuft alyssum, have resonated with California partners. Likewise, tales of leafy spurge and perennial pepperweed challenges have registered with western Oregon partners.

Looking towards the future, cross-border I-5 partners have developed a list of long-term prevention ideas, including: an outreach campaign to promote regular washing of Departments of Transportation mowing equipment; mapping of weed-free areas for staging of fire camps along the I-5 corridor; strategically-placed equipment cleaning stations; yellow starthistle and rush skeletonweed push-back campaigns; and a dyer’s woad border patrol campaign. Exactly which of these concepts takes root will be played out in the years to come.

As the saying goes, “Weeds know no boundaries,” and neither should cross-border collaboration.

Contact Carri at cpirosko@oda.state.or.gov.

Early detection leads to collaboration in the Delta

By Shakoora Azimi-Gaylon, Sacramento-San Joaquin Delta Conservancy

In 2013, a large-leaved plant was reported growing along the banks of a State Parks property near Walnut Grove, CA. Samples were collected in 2014 and confirmed to be taro root (*Colocasia esculenta*). This plant had not been previously collected in the wild in California, so a weed alert was prepared and sent out to determine if the species is more widespread in the San Joaquin Delta or elsewhere in California. At that time there was no organization or agency tracking invasive plants throughout all the counties in the Delta which could be notified.

In order to address this gap, the Sacramento-San Joaquin Delta Conservancy (deltaconservancy.ca.gov) convened a workgroup to coordinate and share information for effective invasive species management in the Delta. In California no one agency has lead responsibility for managing all invasive species. Several agencies work to control the different species. The Invasive Species Council of California represents the highest level of authority in the state government regarding the invasive species. The Council is an inter-agency organization that provides guidelines for cost effective and environmentally sound state activities regarding invasive species. The Department of Fish and Wildlife is responsible for preventing introductions of alien species into the ecosystem and for managing non-native fishes that may harm native populations. The Division of Boating and Waterways of California State Parks is responsible for controlling certain aquatic weeds. The US Coast Guard regulates shipping and, in theory, ballast water discharge (as does the Marine Invasive Species Program of the California State Lands Commission). A California Aquatic Invasive Species Management Plan was adopted in 2008, but it requires complex coordination among agencies for its implementation and no implementation has occurred yet.

The goal of this coordination is to provide a forum for connecting agencies and

organizations to facilitate discussions of invasive species issues including information management, data gaps, research priorities, and when possible, leverage funding and resources to benefit all participants. Participating agencies include the Delta

Conservancy, Department of Water Resources, Department of Fish and Wildlife, California State Parks Division of Boating and Waterways, Department of Food and Agriculture (also representing the Invasive Species Council of California), US Department of Agriculture, US Fish and Wildlife Service, and UC Davis.

The coordination group met twice in 2014 and plans quarterly meetings in 2015. To date the group has discussed objectives of this coordination effort which include: strategic planning, education and outreach, funding, research and data management. The group's current



Taro root (on right) can be confused with the native arrowroot (*Sagittaria* spp., on left). Below, taro root at Delta Meadows. *Photos by Ramona Robison, California State Parks.*



focus is data management and sharing data sharing with scientists, resources managers and the public to facilitate effective control, public education, and outreach.

For more information please contact Shakoora Azimi-Gaylon at sagaylon@deltaconservancy.ca.gov or 916-375-2086.

Mark your calendar for the...

2015 Cal-IPC Symposium

San Diego Convention Center
Oct. 28-31, 2015



www.cal-ipc.org/symposia

President's plan for climate resilience cites invasives

President Obama formed a Council on Climate Preparedness and Resilience, and tasked them with identifying priority actions. Their report was released in October, of 2014. The excerpt below commits to a coordinated Early Detection and Rapid Response plan with an emergency fund within the next year. Cal-IPC will be working with other groups to support federal agencies in fulfilling this mandate.

“One of the most pervasive threats to resilience is the establishment and spread of invasive species – these non-native plants, animals, and pathogens not only displace native species and disrupt ecosystems, but also cause economic

harm. A program designed to identify and find invasive species before they have spread, and eliminate them before they have caused significant harm, is both ecologically effective and cost effective. Within twelve months, the Secretary of the Interior, working with other members of the National Invasive Species Council, including Department of Commerce (NOAA), EPA, and USDA, will work with states and tribes to develop a framework for a national Early Detection and Rapid Response (EDRR) program that will build on existing programs to assist states and tribes in forestalling the stress caused by the establishment and spread of additional invasive species populations,

thereby improving the resilience of priority landscapes and aquatic areas. This will include the development of a plan for creating an emergency response fund to increase the capacity of interagency and inter-jurisdictional teams to tackle emerging invasive species issues across landscapes and jurisdictions.”

The report, “Priority Agenda: Enhancing the Climate Resilience of America’s Natural Resources,” is available from the White House website at www.whitehouse.gov/sites/default/files/docs/enhancing_climate_resilience_of_america_natural_resources.pdf.

Biocontrol of saltcedar: Tamarisk Beetle Workshop

By Bill Neill, Riparian Repairs

On January 21, the Tamarisk Coalition, based in western Colorado, sponsored a Tamarisk Beetle Workshop in Phoenix. The audience of about 85, mostly from Arizona, attended to learn about the history, introduction, spread and monitoring of the tamarisk leaf beetle, a biocontrol agent introduced by USDA a decade ago. (See cover article in the Winter 2008 issue of *Cal-IPC News*.) The USDA research unit that developed the biocontrol is located in Albany, CA, and is partnering with Cal-IPC on development of biocontrol agents for other invasive plants. Major topics at the workshop included the potential effects of the beetle on wildlife, including endangered bird species that nest in tamarisk, and successful riparian restoration techniques.

I encourage readers to view the Tamarisk Coalition's colorful map, posted at www.tamariskcoalition.org, showing the beetle's spread across the western United States during the past decade. Since introduction to the Colorado River watershed near Moab in 2004 and St. George in 2006, the beetle has spread downstream through the Grand Canyon and along Lake Mead to the southern tip of Nevada; and it been introduced to the Arkansas River, Pecos and Rio Grande watersheds to the east. Though not shown on the map, the beetle has been introduced in the Cache Creek watershed in northern California as well.

The Tamarisk Coalition's website also shows photos of tamarisk trees defoliated by the beetle after three to four years of activity. The persistent defoliation reduces the tree's vitality, curtails flowering, and may eventually cause death, allowing native shrubs and trees to re-establish.

The tamarisk leaf beetle has not been introduced to the Gila River watershed of southern Arizona, out of concern over the impact on endangered birds that nest in tamarisk, including the Southwestern Willow Flycatcher and



Beetles climbing along a tamarisk branch. Photo by Tom Dudley

Yellow-Billed Cuckoo. But because the beetle is expected to move into southern Arizona from adjacent areas within several years, planning is underway to clear some tamarisk infestations mechanically and then plant native trees that will provide nesting habitat after the beetle arrives.

This concern for endangered bird species in southern Arizona has also precluded federal approval for introduction of the beetle to southern California; but after the beetle reaches California along the Colorado River near Needles, possibly as early as next year, transporting the beetle to coastal and desert watersheds of southern California should become feasible.

Among the information I learned at the conference:

- A successful introduction requires hundreds of beetles, collected and transported as adults, not as eggs or larvae.
- Some native leaf beetles are similar and not easily distinguished from the tamarisk beetle (*Diorhabda* sp.)
- Collecting tamarisk beetles involves brushing them off green foliage, so that they drop into buckets or onto tarps.
- Tamarisk foliage suffering herbivory emits chemicals, and feeding adults emit pheromones, that attract beetles to green foliage from long distances.

...continued page 14

Tamarix biocontrol moving toward southern California

by Tom Dudley, UC Santa Barbara

During the 2014 field season the tamarisk beetles originally introduced in 2006 to the Virgin River in St. George, UT, had made it to Laughlin, NV, just below Davis Dam on the lower Colorado River. They had progressed fairly slowly along Lake Mohave owing to a sparse distribution of their host plants, and beetles over-wintered adjacent to Big Bend State Park in Nevada. Below this point extensive stands of tamarisk start up again, so I anticipate that the beetles will build up very large populations in the 2015 season, the over-wintering adults probably coming out in March or April and this year's generations building up probably in May or early June. This southward establishment is the result of the beetles synchronizing their diapause—insect-style hibernation—with day length at increasingly southern latitudes.

Big Bend State Park is only about 10 miles from the California border (near Avi Casino and Ft. Mojave) so I anticipate that we will have establishment on the lower Colorado River within California this year, and possibly through the whole of Mojave Valley to the Needles area, including Topock Marsh.

We have developed the male-produced aggregation pheromone which attracts both male and female beetles, and have been using that compound on sticky traps to detect new movements of beetles. I'll be setting those up again in May or June at sites along the lower Colorado (and in other areas, including the Owens River, Ivanpah and the Mojave

...continued page 14

Canes of Wrath: Farmers and conservationists working together to transform the Salinas River

By Ilima Segoviano and Paul Robins, Resource Conservation District of Monterey County; Jason Giessow, Dendra, Inc.

The Salinas River is a dynamic hydrological system that ranks as the ninth largest in California, running 175 miles from San Luis Obispo to Monterey Bay. Along the way it meanders through vast tracts of agricultural row crops supporting one of the largest agricultural centers in the state, as well as numerous rural towns and urban centers.

The river is also, unfortunately, the second most *Arundo*-invaded watershed in the state with over 1,470 gross acres (Cal-IPC mapping data 2012). As is widely recognized, *Arundo* causes severe flooding and fluvial modification of invaded riverine systems, particularly when stands reach the size of those found on the Salinas River. No one knows this better than those that live and work on the river.

Addressing the issue clearly requires a collaborative approach, and the Resource Conservation District of Monterey County (RCDMC), Monterey County Ag Commissioners office (MCAC), Monterey County Water Resources Agency (MCWRA), California Wildlife Conservation Board (WCB), and The Nature Conservancy (TNC) came together to work with local landowner and agricultural industry groups.

This past year a substantial portion of the river (>15 miles) had initial *Arundo* treatments. This achievement took years



Dense *Arundo donax* stands in the Salinas River (above) and stream land management crew conferring next to the arundo mower with widespread mulched arundo canes (below). *Photos by Paul Robins*

to initiate and represented two separate but complimentary programs. The first program, led by the RCD, is based on what is becoming a standard approach for watershed-based *Arundo* control: develop a watershed-scale plan, and then get programmatic permits to start work at the top and work your way down. A number of programs in other watersheds (San Luis Rey, Santa Margarita, Santa

Ana, Carlsbad, Ventura, San Dieguito, San Diego and others) follow this model.

With support from MCAC, RCDMC engaged Dendra, Inc. to set this approach in motion by obtaining mapping data (from Cal-IPC surveys), permits, and funding. This process took three years and included:

- Program development through careful coordination with relevant local organizations, agencies and landowners,
- Pursuit of numerous grant sources (ARRA stimulus, Integrated Regional Water Management, Natural Resources Conservation Service (NRCS)) and finally acquisition of \$1.1 million in grant funding from the Wildlife Conservation Board (matched by local government and landowner resources),
- Posting CEQA documentation (for a Mitigated Negative Declaration) and acquiring a range of necessary permits and authorizations including: Army Corps of Engineers (consultation), US Fish and Wildlife Service (Technical Assistance Letter), National Oceanic and

Atmospheric Administration/National Marine Fisheries Service (Technical Assistance Letter), State Water Resource Conservation Board (National Pollutant Discharge Elimination System permit), and Cal. Dept. Fish and Wildlife (1600 Lake and Streambed Alteration permit).

Then, what is usually a difficult task—getting permission from landowners along

10 miles of river—took only days! This was a positive outcome of the long-standing collaborative approach maintained during program development. The RCD had already built relationships with key landowners and farmers who wanted the improved flow conveyance that *Arundo* control provides. Besides, there's not much love lost on *Arundo*.

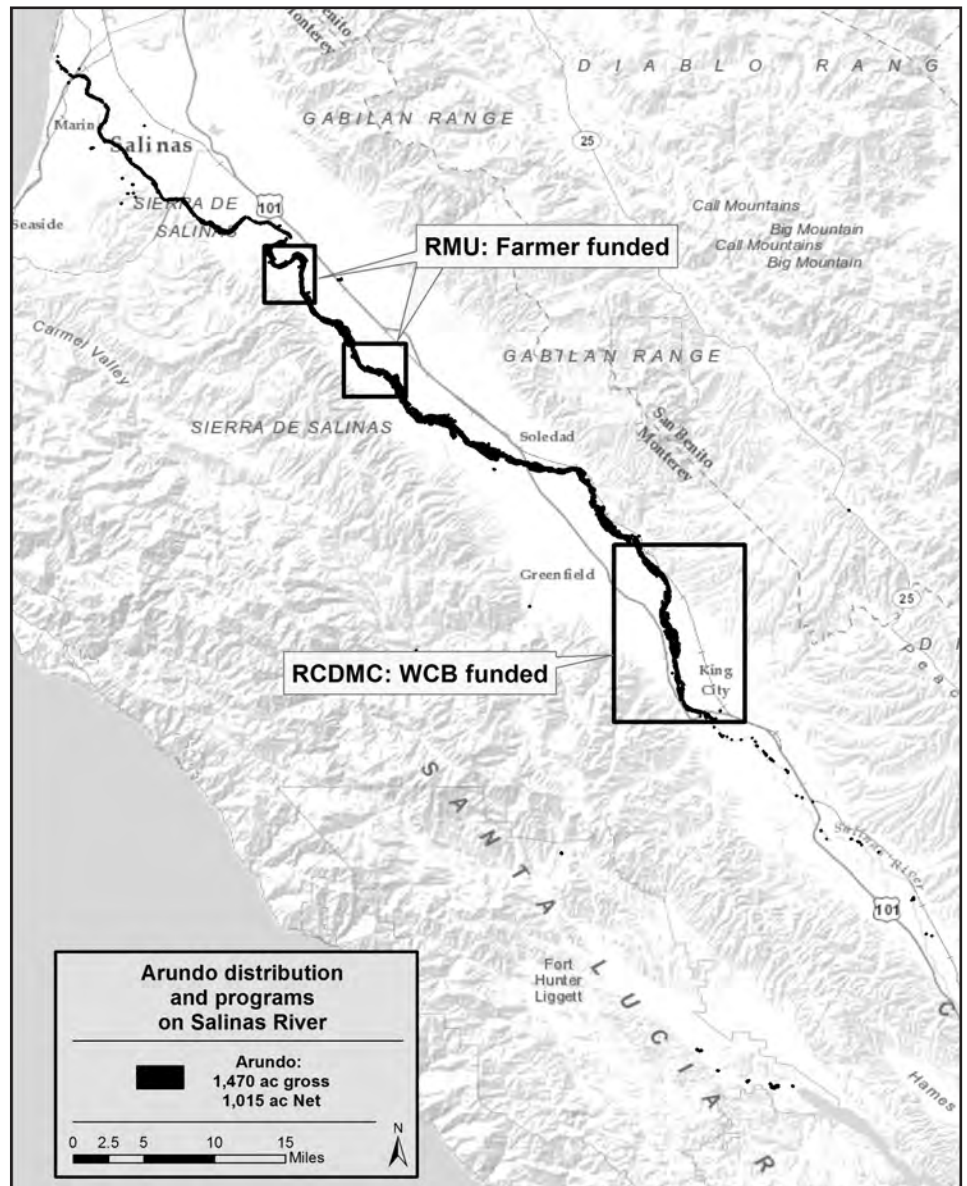
The second program is a demonstration project of the Salinas River Stream Maintenance Program (SMP), which focused on improving channel flows with managed secondary channels and *Arundo* control, in coordination with the RCD's *Arundo* program. This program, fully funded and implemented by landowners (with permits and planning funded by TNC and MCWRA), was launched by a collaboration between TNC, MCWRA, Conservation Collaborative, the Salinas River Channel Coalition (landowners) and the Grower Shipper Association of Central California. The program worked on 11.5 miles of river in the first year at various downstream locations.

Working together, the two programs will build and expand to cover the entire river at a faster rate than has ever been achieved by an *Arundo* control program. The entire river could be under active treatment in five to ten years!

In fall 2014, the RCDMC initiated reduction efforts on private lands in the Greenfield area of the Salinas River using ACS Habitat Management and Washburn Grove Management. Foliar herbicide applications were originally planned, but due to the severe drought conditions and resulting dormancy and early dieback of aboveground biomass, the first year treatment method was shifted to mowing to reduce standing growth. Being flexible in treatment approach is critical, and one has to build this into permits beforehand.

The dieback of aboveground *Arundo* biomass is an opportunity comparable to a fire where biomass is 'reduced for free'. Here the program got three years of extreme plant stress resulting in dead canes. This was a good time to start work—hit the *Arundo* when it's weak.

Approximately 109 acres of *Arundo* and some individual tamarisk plants were mowed along 4.5 miles of the Salinas River. During the next growing season



this approach will force mowed plants to re-sprout with lush new growth that will respond much better to the herbicide when it is treated in late summer/fall.

Being as persistent as it is, *Arundo* was observed re-growing in the early parts of December after mowing ended, but nature provided extra bang for our buck because these re-sprouts were killed off by a short bout of frost in January 2015, meaning further reduction in energy reserves in the below-ground root tissues for no extra cost!

The SMP operated in two 'River Management Units' along 11.5 river miles and included treatment of over 20 acres of *Arundo* in the cleared bypass channels and another 30 acres as mitigation for early successional willow scrub removed in those channels. The RCD and Dendra

consulted with the SMP on *Arundo* treatment methods and provided the coordination of biological monitoring for that work in addition to the monitoring required for the WCB-funded work. This program will expand to cover much of the river and will aid in long term re-treatments of *Arundo*, a critical component in achieving eradication at the watershed scale.

Over the next five years the grant with the Wildlife Conservation Board will directly support follow-up herbicide treatment on the acreage mowed in 2014 and additional acreage between the San Luis Obispo-Monterey County line and Soledad for cumulative treatment

...continued page 14

Early detection/rapid response around the state

South Coast



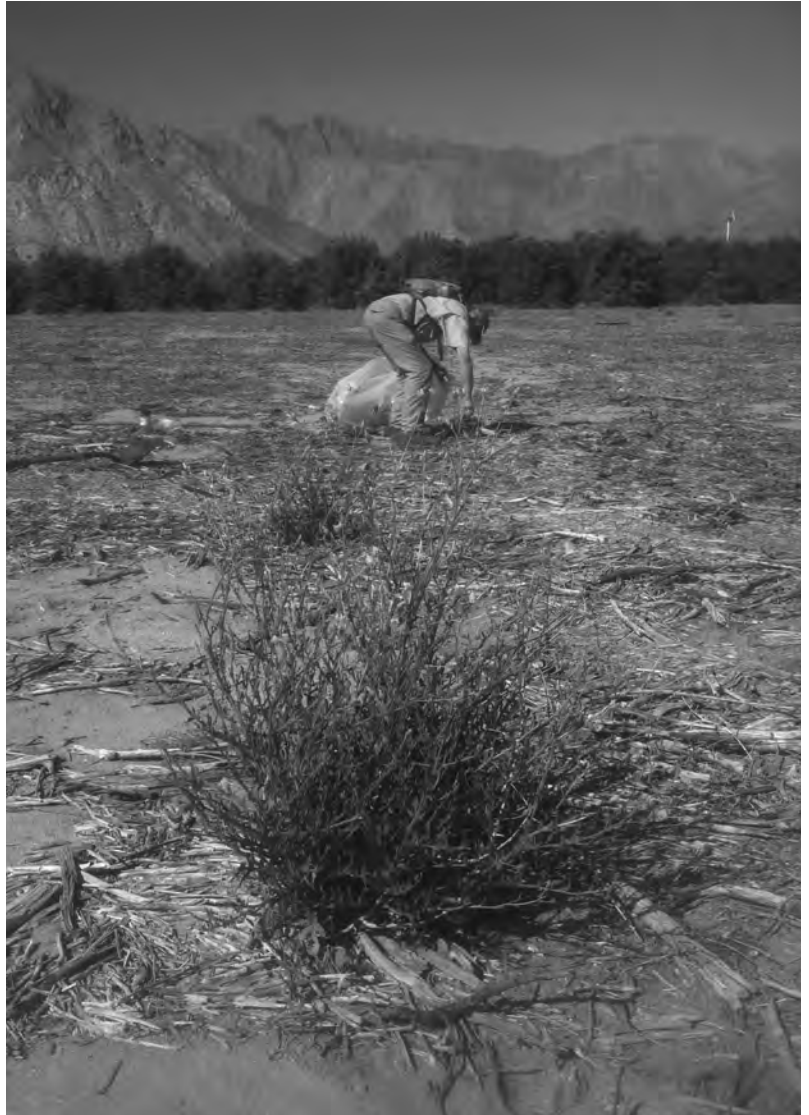
Spotting Bitou bush (*Chrysanthemoides moniflora* ssp. *moniflora*). Only the second population known in the state, found near the mouth of Aliso Creek in Orange County by Ron Vanderhoff, Orange County Chapter of CNPS. The plant is native to South Africa, and has become invasive in Australia and New Zealand. *Photo R. Vanderhoff.*

Central Sierra



Controlling Scotch thistle in Calaveras County. Work to eradicate incipient weed populations such as this one is funded by Cal-IPC through a grant from the National Fish and Wildlife Foundation. Scotch thistle has become a major weed in northeast California. *Photo courtesy of Kevin Wright, Calaveras County Agricultural Commissioner's Office.*

Desert



Hunting Canary Island knapweed at Anza-Borrego State Park. *Volutaria canariensis* has been spreading in Borrego Springs for five years, doing well despite the drought. The plant is native to the Canary Islands, and not known to have been found elsewhere in the world. Volunteer Mac McNair searches out plants in a fallow field where the species has been spreading. *Photo by Frank Harris.*

We all know that EDRR is cost-effective. It's being put into action across California as land managers and volunteer stewards identify and control new problems right away. Cal-IPC serves as an important hub for this work, connecting those on the ground with others who can verify identification or help with removal. Got your own EDRR story? Let us know!

Report from Vegas: Western Weed Coordinating Committee

By Doug Johnson, Cal-IPC

I know, what happens in Las Vegas is supposed to stay in Vegas. But for the annual meeting of the Western Weed Coordination Committee it makes more sense to share the information. Here are some highlights from the three-day meeting in late November, attended by state weed coordinators from 15 western states, including Dean Kelch of the California Department of Food and Agriculture.

HR 3994 – the “Federal Lands Invasive Species Control” bill, authored by Rep. Bishop of Utah, now chair of the House Committee on Natural Resources, proposes that 75% of all funding to federal land-managing agencies must be used for on-the-ground management, and that invasive species management get a Categorical Exclusion from NEPA. Though Cal-IPC would like to see additional resources for on-the-ground management and more streamlined NEPA

compliance, we have joined others in asking for a more thorough study of which program areas could lose funding under the proposal, and what the implications of such a NEPA exclusion could be.

Biocontrols – Wyoming and other states have opened direct channels with weed biocontrol researchers at CABI labs in Europe to develop tools for controlling their weeds. These states send some \$500,000/year abroad for this research and development. Biocontrols are key for getting a handle on widespread weeds across the west, and are a focus of the North American Invasive Species Managers Association (NAISMA, www.naisma.org).

Oregon economic study – The Oregon Dept. of Agriculture published a study on the economic costs of top invasive plants. The bottom line – 25 weeds cause an estimated annual loss of

\$83.5 million to the state’s economy. The figure could be well over a billion dollars without current control efforts by state, county, and federal weed programs. The study examined two widespread weeds, Scotch broom and Himalayan blackberry, plus 23 species with more limited distribution. Factors considered include impact on agricultural commodities and loss of fishing and hunting opportunities. (www.oregon.gov/ODA/programs/Weeds/Pages/WeedsResources.aspx)

Greater Sage Grouse – There was much energetic dialogue about the anticipated listing of the Greater Sage Grouse under the Endangered Species Act. Management of the bird’s leks, or breeding grounds, is already a primary factor in land management throughout the Great Basin, but federal listing will add new requirements and protocols.

Rangeland conservationists meet in Sacramento

By Dana Morawitz, Cal-IPC

The 10th Annual Rangeland Summit of the California Rangeland Conservation Coalition was held in conjunction with the Annual Meeting of the Society for Range Management (SRM), Jan. 31 to Feb. 6 in Sacramento. SRM is the professional society dedicated to supporting those who work with rangelands and have a commitment to their sustainable use. The Rangeland Coalition brings together ranchers, conservationists, and state and federal agencies to find common ground for conserving working rangelands and the plants and animals that depend on them.

Cal-IPC attended the trade show and 2.5 days of this action-packed annual meeting. In addition to learning the latest in rangeland management technologies and honoring achievements in rangeland

careers, there was a strong emphasis on welcoming high school and college students who will lead the rangeland profession in the future.



Favorite sessions included: Integrating Ecological and Socioeconomic Factors into Restoration Decision-Making and Outcomes; Rangeland Social Science I: Planning and Economics; Vegetation Management and Restoration; Invasive Species Monitoring and Management; Invasive Species Management: Medusahead and Cheatgrass; and, last but not least, the one day session that was the 10th Annual California Rangeland Coalition Summit, that focused on Collaborative Conservation. SRM Annual Meeting: www.rangelands.org/sacramento2015/ CA Rangeland Summit: carangeland.org/news-events/annual-summit/

Beachgrass from page 5

Campbell, C. in press. Draft - Monitoring Western snowy plovers at Point Reyes National Seashore, Marin County, California. 2013 Annual Report. Natural Resource Technical Report NPS/SFAN/NRTR.

Campbell, C. in press. Draft - Monitoring Western snowy plovers at Point Reyes National Seashore, Marin County, California. 2014 Annual Report. Natural Resource Technical Report NPS/SFAN/NRTR.

Dangremond, E.M., E.A. Pardini, and T.M. Knight. 2010. Apparent competition with an invasive plant hastens the extinction of an endangered lupine. *Ecology*. 91(8): 2261-2271.

Johnson, W. C., S. L. Minnick, and L. Parsons. 2012. Tidestrom's lupine (*Lupinus tidestromii*) census at Abbotts Lagoon dunes and B Ranch – July 2012. Revised Nov. 5, 2012. Point Reyes National Seashore, Point Reyes Station, CA.

NPS. 2009. Abbotts Lagoon Area Dune Restoration Plan: Environmental Assessment. Point Reyes National Seashore, National Park Service.

Pardini, E. A., and T. M. Knight. 2013, February 20. Memo: Benefits of dune restoration at Abbotts Lagoon to two federally listed endangered species, Tidestrom's Lupine and Beach Layia.

Pardini, E. Professor. Washington Univ., St. Louis, MO. Personal communication dated August 11, 2014 .

Peterson, B. 2004. The Use of Heavy Machinery (Excavators) to Remove *Ammophila arenaria* (European beachgrass) from Native Sand Dunes at Point Reyes National Seashore. Pp 58–61 in Proceedings of the California Invasive Plant Council Symposium.

Contact Lorraine Parsons at Lorraine_Parsons@nps.gov.

Tamarisk workshop from page 9

- The lifespan of beetles is five to six weeks, so Colorado has two or three generations per growing season, whereas Texas has five to six generations per growing season.
- In defoliated areas, birds that normally nest in tamarisk trees have been observed to shift to native trees and tamarisk shrubs that have retained foliage.
- Some insectivorous birds feed on tamarisk beetles (and also on a non-native tamarisk weevil of unknown origin that has less impact on tamarisk abundance).
- The beetles can feed on athel trees, or evergreen tamarisk (*T. aphylla*), but prefer the deciduous, brushy saltcedar foliage.
- Species of the *Diorhabda* genus occupy different latitude ranges in Eurasia, which affect their placement on this continent, because latitude controls day length which determines when the beetles start winter dormancy.

Thanks to the Riverside/San Bernardino Chapter of the California Native Plant Society for contributing to my travel expenses; and to Tom Dudley with UC Santa Barbara for additional information.

Contact Bill Neill at bgneill@earthlink.net.

Beetles from page 9

River). We've also started a collaboration with Jorge Ramirez (University of Baja California, Mexicali) to establish monitoring stations in the Colorado River Delta in Mexico.

When the beetles do move into southern California, land managers may want to consider transporting them to other target locations for saltcedar control but we urge caution to avoid surprises and unintended consequences. Over the next year or so this can be done in a coordinated fashion, with good monitoring. We will be working with desert WMAs, Cal-IPC, and state and federal partners to structure this approach.

Contact Tom at tdudley@msi.ucsb.edu.

Salinas River from page 9

of a minimum of 200 acres of *Arundo* distributed across 1,300 acres of riparian habitat in the upper watershed.

In addition to pursuing continued investments from grant sources and local volunteers, we are eager to engage Farm Bill support through NRCS to extend our work, given the significant ownership by agricultural interests in the valley. To date, aligning local farmers with funding support from NRCS for *Arundo* control has remained a challenge, but based on successes elsewhere, we hope to build a pathway to more substantially engage NRCS in this broad partnership for work that meets a multitude of resource challenges in a river system that desperately needs the help and a community so motivated to do the work.

Contact Paul Robins at paul.robins@rcdmonterey.org.

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THE WILDLAND WEED CALENDAR

Science for Parks Summit
March 25-27, UC Berkeley
parksforscience.berkeley.edu

National Wildflower Week
May 4-10, nationwide
www.wildflower.org/mww

SERCAL
May 12-14, San Diego
www.sercal.org

National Adaptation Forum
May 12-14, Saint Louis, MO
www.nationaladaptationforum.org

South East EPPC and North Carolina IPC
May 26-28, Chapel Hill, NC
nceppc.weebly.com

California Invasive Species Action Week
June 6-14, statewide
www.wildlife.ca.gov/Conservation/Invasives/Action-Week

Ecology & Mgmt of Alien Plant Invasions
September 20-24, Waikoloa, HI
www.emapi2015.hawaii-conference.com

N. American Invasive Spp. Mgmt. Assoc.
October 18-21, Vancouver, Canada
www.naisma.org

Nevada Medusahead Symposium
October 26-29, Reno, NV
agri.nv.gov/Plant-Industry

Cal-IPC Symposium
October 28-31, San Diego
www.cal-ipc.org/symposia

Tamarisk Coalition
February 9-11, 2016, Grand Junction, CO
www.tamariskcoalition.org

“As we change from looking to the past to preparing for the future in restoration ecology, one wonders if creating future-proof plant communities is more ‘prestation’ than restoration.”

~ K. Havens and co-authors, “Seed sourcing for restoration in an era of climate change,”
Natural Areas Journal, January 2015