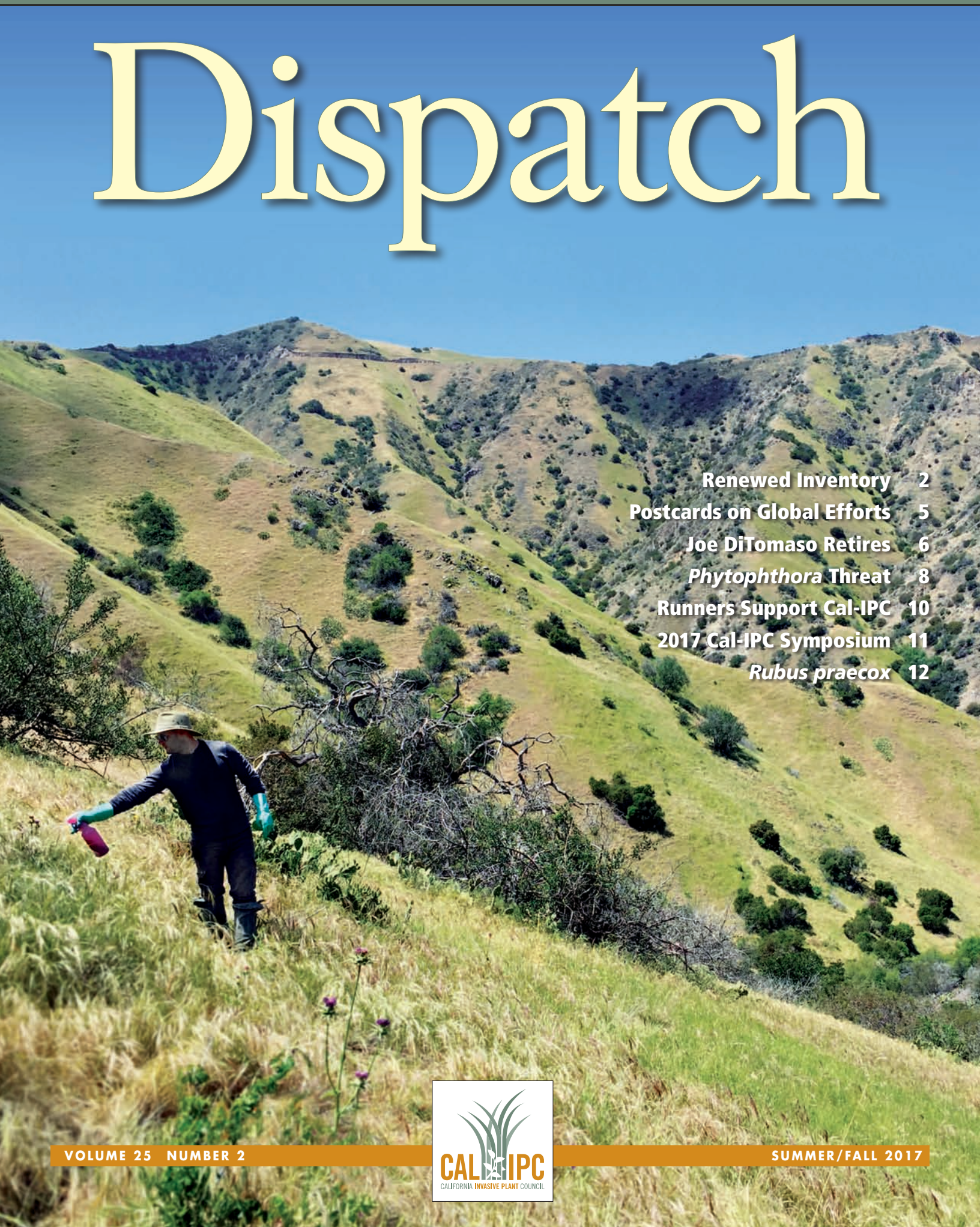
NEWSLETTER OF THE CALIFORNIA INVASIVE PLANT COUNCIL

Dispatch



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Protecting California's environment and economy from invasive plants

Cal-IPC Dispatch
Summer/Fall 2017 - Vol. 25, No. 2
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On the cover:
Catalina Island Conservancy Intern Brian Allen treats a milk thistle population in the China Wall watershed. Invasive plant surveys bring the Conservancy's team to Santa Catalina Island's highest peaks and lowest drainages. Photo by Margie Pfeffer.

FROM THE DIRECTOR'S DESK

Renewing the Cal-IPC Inventory

By Executive Director Doug Johnson

Over the last two years, Cal-IPC has worked to update its list of invasive plants in California. Science Program Manager Ramona Robison and former Science Program Manager Elizabeth Brusati (now with the California Dept. of Fish & Wildlife) led a process that leveraged hundreds of hours of expert review. In the end, we added ten species to the existing list, bringing the total number of species listed as invasive to 225. We also added an important new category to the Inventory—"watch" plants. "Watch" plants are those that were determined to pose a high risk for becoming invasive in the future. Eighty-six species were added in this category, out of 196 species evaluated.


Ramona Robison

Dittrichia viscosa, *false yellowheads, was first found in California in 2014 along a roadside in Solano County. Similar in ecology to* Dittrichia graveolens, *the fast-moving stinkwort many of us are now familiar with, this species is highly invasive in Australia and scored high on the PRE assessment so was added to the Inventory as a "watch" species.*

The "watch" category represents a big step forward. These plant species are, for the most part, already escaped into California's wildlands, and were suggested by land managers as potential concerns. By using a systematic and transparent evaluation system, we categorized plants as low risk, high risk or needing further evaluation. (Primary support for this work came from the US Forest Service, State & Private Forestry.) Anticipating which plants are most likely to pose a problem in the future is additional information for land managers, helping them consider these plants when they set management priorities.

Earlier this spring, we posted the draft assessments for a 60-day public comment period. The assessments had gone through internal review by our technical advisory team comprising 18 experts from public agencies, private conservancies, botanic gardens, nurseries and universities. We received about twenty comments, some technical and some philosophical, expressing concern about invasive plant management. We prepared a response document addressing all comments and posted that online. We made minor adjustments to our evaluations based on comments, but none of the plant species changed categories.

The public comment period was one component of a "best practices" process that Cal-IPC has developed with other state councils across the country. These are now posted on the website of the National Association of Invasive Plant Councils. A weed risk assessment group at USDA is building on these guidelines to develop a more formally sanctioned version in the future.

These efforts at standardization have multiple benefits. They strengthen the resources land managers depend on. They will make it easier to knit together the ratings from each state for a regional view. And they will support new guidelines for weed-free landscaping. In California, for instance, the state's model building code is being updated to include water-efficient landscaping requirements. Not using invasive plants is one of the requirements, but defining which plants in horticulture are or may be invasive can be a sensitive issue. Rigorous and transparent procedures are an important piece of moving forward with sensible policies.

We plan to continue updating the Inventory every year, though not at this scale. Our new website will facilitate more robust sorting and filtering of the list. None of this would be possible without your membership support and contributions of expertise. Thank you!

Wildland Weed News

Illustration by Ryan Jones

CAL-IPC UPDATES

Symposium in the desert. Our first Symposium in the desert will be at the Riviera Palm Springs Oct. 24-27. Our program is packed, with a special address by the program lead for the Hawaii Invasive Species Council. *More details page 11.*

State funding. Cal-IPC engaged an environmental lobbying firm in Sacramento to assist in developing new mechanisms for funding invasive plant management at the state level, after working with north coast Assembly Member Jim Wood this spring on an unsuccessful budget request to renew funding to the state's Weed Management Areas (WMAs) this spring.

Tri-national forum. Cal-IPC helped organize a mapping and data-sharing workshop as part of the North American Invasive Species Forum held in Savannah, Georgia in May, and will continue to work with Mexican, Canadian and US partners to develop stronger landscape-level invasive species mapping capacity.

Volunteer trainings. Cal-IPC's trainings around the San Francisco Bay Area reached nearly 200 enthusiastic local volunteer stewards. *More details page 4.*

Volutaria control. We ramped up treatment in Borrego Springs to keep up with the super bloom this spring. While mapping to more thoroughly delineate the infestation, we discovered a huge population at an abandoned agricultural site that will require a major effort to eradicate.

Limonium control. We completed our second year of treatments at fifteen tidal marshes around San Francisco Bay. Next year we hope to expand the effort to include all thirty known sites around the Bay.

Sierra control. We will be working with the California Dept. of Food & Agriculture and Sierra counties to control high-priority invasive plants populations that threaten tree mortality areas.

OTHER NEWS

Restoring grasslands. The UC Dept. of Agriculture and Natural Resources has published a Restoration Manual for Annual Grassland Systems in California, which discusses ways to meet a range of goals, including forage, pollinator habitat, erosion control, and carbon storage.

Glyphosate listing. In July, California added glyphosate, the active ingredient in RoundUp herbicides, to its Prop. 65 list. This is based on the controversial finding by the International Agency on Cancer Research that the substance is a "probable carcinogen." The World Health Organization, evaluating the same studies, concluded that glyphosate is unlikely to cause cancer given real-world exposures. The Prop. 65 listing requires warning labels on products containing glyphosate. The state's Dept. of Pesticide Regulation is currently working to determine levels at which the substance can be used safely. A talk by Joel Trumbo of the California Dept. of Fish & Wildlife will update land managers on this topic at the Symposium in October. *See page 11.*

Salamander ban. Canada has implemented an emergency one-year import restriction on salamanders to prevent the introduction of *Batrachochytrium salamandrivorans* (Bsal) into Canadian ecosystems. Bsal is a chytrid fungus infecting salamanders in North America. The US has not yet restricted imports.

Arctic conservation. An Arctic Invasive Alien Species Strategy and Action Plan has been published, seeking to address an ecosystem increasingly vulnerable to warming climatic patterns and increasing human activity in the region.

Innovation report. A report has been published from the Innovation Summit held in Washington, DC last December by the National Invasive Species Council.

BLM plan. The Bureau of Land Management in northwest California is preparing a new Integrated Resource Management Plan for an eight-county area. A scoping report is available, and preliminary alternatives will be available for review this fall.

Congressional resolution. Representative Mike Thompson from California's north coast introduced a Resolution expressing the House's commitment to "create a comprehensive solution to the threat of invasive species throughout the United States." Thompson co-chairs the Invasive Species Caucus. Other members on the caucus include Reps. Brownley, Garamendi, Lofgren, McNerny, and Napolitano from California.

Letter to Zinke. The Western Governors' Association sent a letter to the Secretary of the Interior to express concern about invasive species and requesting strong partnership from the Dept. of the Interior, especially in stopping the spread of quagga and zebra mussels.

Field guides. CABI (Centre for Agriculture and Bioscience International) has an extensive collection of e-books, including new field guides to invasive plants of Southeast Asia and Eastern Africa.

Killing Tahoe weeds with UV. A pilot program to kill invasive aquatic plants in Lake Tahoe was launched in June by Tahoe Resource Conservation District after two years of lab testing. The new method uses targeted ultraviolet-C light on species such as Eurasian watermilfoil. Initial results have been promising.

YOUR MEMBERSHIP

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

Cool tool—thistle catcher

Bob Sorenson of Orinda demonstrated the use of an extended hand sickle (affectionately christened as the Skyline Gardens Thistle Catcher) at Cal-IPC's volunteer training, June 3 at the East Bay Regional Park District's Trudeau Conference Center. The tool was developed by Glen Schneider, long time local naturalist and gardener. A Japanese sickle weeder is attached to a 36 inch length of PVC pipe as a handle extender. This allows the weed worker to reach through surrounding vegetation and slice through the base of a weed stalk, without getting stuck or stickered. One pull takes down thistles, fennel, mustard, hemlock and other weeds.

Bob Sorenson of Orinda demonstrates the use of an extended handle hand sickle.

Glen and volunteers developed the tool in the California Native Plant Society's Skyline Gardens project (skylinegardens@ebcnps.org). This is a restoration of a biologically rich area between Tilden Park and Sibley Park in the East Bay Hills that is threatened by Italian thistle and other invasives. The work area is host to more than 250 native species, and is the richest native plant area of its size in the entire East Bay. The Skyline Thistle Catcher is helping immensely with the work. Glen and Bob will be developing a Youtube video on how to make one of these tools.

Volunteer trainings

In June and July, Cal-IPC held four trainings for volunteer stewards around the San Francisco Bay Area. Close to 200 volunteers attended. Agendas included expert presentations, speed talks from a variety of local groups, demonstration of cool tools, discussion groups on management approaches and volunteer coordination, a field trip to a restoration site, and a training on Calflora's Observer smart phone tool. Several activities aimed at regional coordination are envisioned (groups are currently adding their work sites to an online map). Numerous local partners contributed to the trainings—thank you! We look forward to doing it again in 2018.

Cal-IPC volunteer training field trip led by Pamela Beitz, ranger for the East Bay Regional Parks District.

Advocating for science

In March of this year, colleagues Amy Zanne of George Washington University, Steve Allison of UC Irvine, Jennifer Funk of Chapman University (and previous Cal-IPC board member), and Jutta Burger of Irvine Ranch Conservancy (and Cal-IPC Board President) traveled to Washington DC to advocate for the benefits of federal funding for science. Given the proposed cuts to science funding in the new federal budget, they felt it was important as scientists to talk with their elected representatives about how local federally-funded science programs improve the lives of their constituents. They met with staffers working with six House Representatives from southern California and discussed how results from federally-funded research projects are solving problems in their districts.

In addition to their other projects, Jutta and Jennifer are working to create a Cal-IPC Science Advisory Committee.

Kathy Eiler

Pictured from left to right, Amy Zanne (George Washington University), Steve Allison (UC Irvine), Jennifer Funk (Chapman University), and Jutta Burger (Irvine Ranch Conservancy) who traveled to Washington DC to advocate for science.

Postcards: Controlling weeds is a global issue

Controlling invasive weeds is a global issue. Here are a few "postcards" demonstrating that there are lots of other groups out there working hard on controlling invasive species and preserving habitats.

Madagascar—Invasive Trees and Aquatics

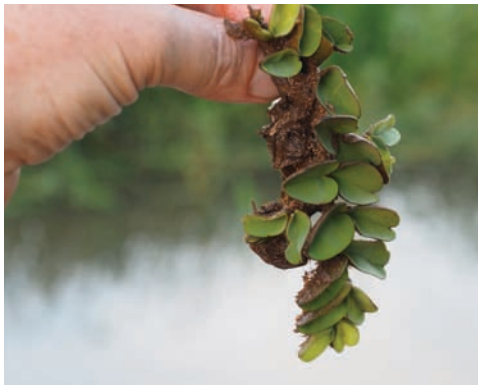
Drew Kerr, Treatment Program Manager for the Coastal Conservancy's Invasive Spartina *Project in San Francisco Bay and Cal-IPC board member, traveled to Madagascar in May 2017. He sent us this report.*

Invasive plants have impacts around the globe, and you can't escape them even if you are on vacation in one of the hotspots of biodiversity on the planet. Madagascar, the fourth largest island on Earth, has much to lose from habitat destruction by invasives since 90% of all the plants and animals are endemic. Unfortunately, the virtues of replanting timber species to create a more sustainable source of fuel and building materials have not yet been embraced by many Malagasy people. Where this practice has caught on, the tree most often planted for charcoal is eucalyptus. However, eucalyptus is not only non-native to Madagascar, it has already proven highly invasive. Andasibe-Mantadia National Park, an area of primary rainforest in the east, is but one example where the adjoining habitat is disappearing rapidly due to thousands of acres planted with eucalyptus and Chinese pine, both of which spread readily into edges and disturbed areas within the rainforest. [see photo]

I also learned of a fascinating (albeit somewhat disturbing) use of biocontrol from our guide at Ankarafantsika National Park. Water hyacinth had invaded the central gem of the park, Lake Ravelobe, completely covering the surface of this shallow lake which is home to endangered species such as the Madagascar fish eagle (just 120 breeding pairs remain on the island). To combat this invasion, which also caused the lake to dry up each year, they introduced another non-native floating aquatic! Apparently, their resource managers thought *Salvinia* would asphyxiate the water hyacinth, and amazingly it appears to have worked. Most of the lake is open water again, with a relatively minor presence of both the non-native plants on the margins. Of course, the long-term consequences of this risky strategy are still to be realized, and the "biocontrol" *Salvinia* could create very similar problems to water hyacinth as it does in other places around the world. This type of introduction would never be approved in the U.S.

Drew Kerr

Primary rainforest in Madagascar being overrun by invasive eucalyptus and Chinese pine (Pinus armandii), *which have been introduced for use as charcoal, building timber, and resin.*



Drew Kerr

Salvinia molesta *introduced into Lake Ravelobe in Ankarafantsika National Park in Madagascar as a biocontrol for water hyacinth.*

Drew Kerr

Salvinia *wrapped around the roots of invasive water hyacinth, which previously covered the surface of the shallow lake and caused it to dry up each year, threatening endangered species such as the Madagascar fish eagle (only 120 pairs remain in the wild). The water hyacinth has been controlled but there are likely to be long-term repercussions from introducing another known aquatic invasive.*

Closer to Home—Sea to Sky British Columbia, Canada

Doug Johnson

Weed control in British Columbia on the Sea to Sky highway from Vancouver to Whistler.

Doug Johnson, Cal-IPC Executive Director, noticed this sign last summer. Japanese knotweed, the species being treated here, is one of the species Cal-IPC is treating in our North Coast Knotweeds project in Humboldt and Del Norte Counties. The sign had information on what herbicide was used, what management plan the work is under, and who to contact. It was from the Sea to Sky Invasive Species Council. Visit their website (www.ssisc.info/blog) to see how they are working with the community to combat invasive plants.

If you notice interesting weed control efforts on your travels that you'd like to share, take a couple of pictures and send us a description at info@cal-ipc.org with subject line "Postcards for Dispatch."

Weed worker legend Joe DiTomaso retires

By Elizabeth Brusati, Sr. Environmental Scientist, California Dept. of Fish & Wildlife, Invasive Species Program

Legendary UC Davis Weed Specialist Dr. Joseph DiTomaso retired on June 30. Joe served on the Cal-IPC board from 1997 to 2005, including as President in 2002-03. I met Joe when I began at Cal-IPC in 2004, and appreciated his patient guidance through updating 200 plants on the Cal-IPC Inventory. He helped Cal-IPC become more scientifically rigorous. He developed field courses, advised on predictive range modeling, was the lead author on two Cal-IPC management guides, and oversaw development of the PRE (Plant Risk Evaluation) system used in the recent Inventory update. He was also our reliable information source whenever someone emailed a blurry photo asking, "What is this plant and what do I do about it?"

Joe calls weed work a fun career because it allowed him to solve problems. He entered the field through an interest in plant taxonomy while a Wildlife Biology student at Humboldt State University. With few jobs available in pure taxonomy, an advisor at the UC Davis herbarium recommended Weed Science as an alternate path. Land managers across the western United States have benefited from the research conducted by Joe and his collaborators.

Joe said Cal-IPC's strength has been its ability to bring enthusiastic young people into the field.

Joe in the field for the yellow starthistle water project. He is the lead author on Cal-IPC's Yellow Starthistle Management Guide.

Dr. Joe DiTomaso, legendary UC Davis Weed Specialist.

Two projects stand out as particularly memorable to him. The first was learning how to control medusahead successfully with burning, after realizing that the key factor was having enough fuel to generate a fire that would kill the seeds. Second was developing an integrated approach for yellow starthistle, after the initial hypothesis of using herbicide followed by burning was wrong. An effective control instead requires burning first to stimulate starthistle seedling growth, followed by herbicide application. (Learn more by reading his 146 scientific articles or 39 book chapters.)

His dedication to expanding knowledge on invasive plants led to four books incorporating years' of data. Fellow UC Davis Weed Specialist Guy Keyser recalled, "One of my best memories of Joe is from the time he was working on *Weeds of California and Other Western States*, and he was collecting photos of weeds from everywhere in the state. So anytime we drove to Modoc County, or Lompoc, or anywhere else, he'd be looking out the truck window identifying weeds at highway speed, and if he saw something he needed for the book he'd have me pull over. This sometimes meant getting onto the shoulder of I-5 and backing up for half a mile to get to the specimen. Once he was laying on his stomach by an off-ramp

near Stockton, getting some photos, and CHP pulled up saying that other drivers had reported seeing a body."

During 22 years at UC Davis, Joe served as major advisor to 25 graduate students and on the committees of many others. He calls having a role in bringing out their full potential one of his proudest accomplishments. The admiration is mutual. Former student Gina Darin (M.S. 2008) said, "Joe DiTomaso has had a profoundly positive impact on my life… He guided me through my Master's program and we developed a tool (WHIPPET!) that land managers continue to use. I use Joe's publications in my current job at the Department of Water Resources on a daily basis. Joe continues to support me as now I'm on the path to become President of Cal-IPC and follow in his footsteps." Mona Robison (Ph.D. 2006), now Cal-IPC's Science Program Manager, remembers, "He had so much energy… He remained approachable and supportive throughout grad school and always attracted eager and interesting grad students who I was lucky to be able to work with. Since he was extension, people were always calling with questions and he would answer the phone pleasantly and help them out however he could—he really has a weed management encyclopedia in his head."

Joe advised and mentored many students at UC Davis over the years. Here he is with former student Gina Darin, M.S. 2008, who is now vice-president of Cal-IPC's board of directors.

"He's going to be missed. Honestly, it's hard to imagine invasive weed management without him at the helm."

When asked what changed the most in the weed management field during his career, Joe pointed out that the issue of invasive plants has become much better known among land managers, scientists, and policy makers. He has also seen an increased interest in integrated approaches that use ecology to inform management and that include a variety of management tools. During two decades of Cal-IPC Symposia, he has watched land managers report on increasingly sophisticated, thoughtful programs, including those that integrate social science.

Looking back at his work with Cal-IPC, Joe said Cal-IPC's strength has been its ability to bring enthusiastic young people into the field. His advice for Cal-IPC's future is simply "to continue to be open minded and recognize that you accomplish things best with everyone at the table."

Joe's retirement plans include cooking, improving his Italian, spending more time with family, reading, exercising, and taking up golf again. He even plans to work on a winery. He is not leaving the invasive plant world entirely, as he will continue consulting, such as on a new study examining water use by yellow starthistle (described in the Spring 2017 *Dispatch*). He is also updating his guide to weeds in the northeastern United States. He promises to attend the occasional Cal-IPC Symposium.

Joel Trumbo of the California Department of Fish and Wildlife summarized the feelings of many who have benefited from Joe's knowledge, "Joe's contribution to… and influence on…the science of invasive weed management has been immense. It's not just the research, and books and scientific papers… which have been absolutely invaluable…it's also how he's brought up a new generation of weed scientists through the university. Joe's mentoring and his leadership have been way beyond significant. Plus, he has that easy-going, very approachable style. He's going to be missed. Honestly, it's hard to imagine invasive weed management without him at the helm."

Finally, to end with Joe's own words, here is his advice for those beginning a career in invasive plant management, "Listen to everybody. Recognize there are different points of view when finding solutions. That way you come up with mutual solutions. Persevere. Change is slow. Incremental change is how things happen."

Guy Kyser,
UC Davis Weed Science Group

Some things I learned from watching Joe in action:

1. It doesn't cost anything to share the credit for a project.
2. Don't give up too quickly if an act of Nature causes an apparent project failure. You can almost always recover some information.
3. Don't take things too personally and don't hold grudges. You might have a professional disagreement with someone, but if you can let this roll off you'll be able to work with that person in the future.

Beyond sudden oak death—*Phytophthora* in California native plant nurseries, restoration areas and habitats

Susan J. Frankel, USDA Forest Service, Pacific Southwest Research Station, and
Janice Alexander, UC Cooperative Extension, Marin County

Note: This article is taken from information on the Phytophthoras *in Native Habitats Work Group website, www.calphytos.org.*

THE PROBLEM

Over the past several years, numerous *Phytophthora* (pronounced Fie-TOF-ther-uh) plant pathogens have been detected in California native plant nurseries and habitat restoration sites. *Phytophthora*, which means "plant destroyer," is a genus of microscopic water molds, fungal-like organisms that are most closely related to diatoms and brown algae (Kingdom Stramenopila). The genus *Phytophthora* is large, with more than 100 described species, including the sudden oak death pathogen *(Phytophthora ramorum)* and other destructive pathogens of agricultural, ornamental, and forest plants.

Why the concern? During the past several years, a first-in-the-USA detection of *Phytophthora tentaculata* occurred in several California native plant nurseries and in restoration areas on outplanted sticky monkey flower (*Diplacus aurantiacus*), toyon (*Heteromeles arbutifolia*) and coffeeberry (*Frangula californica*) nursery stock and more than 10 other native plant species. Preliminary follow-up investigations have identified more than 30 *Phytophthora* species in native plant nurseries or associated with outplanted restoration stock. These findings include new, hybrid and additional first-in-the-USA detections. Additionally, the threatened Ione manzanita (*Arctostaphylos myrtifolia*) and pallid manzanita (*A. pallida*), the endangered coyote ceanothus (*Ceanothus ferrisiae*), and other native species including madrone and chinquapin have been recognized as dying from *Phytophthora* infestations that have been introduced into their habitats. Inadvertent planting of *Phytophthora*-infected nursery stock into native habitats has the potential to introduce these pathogens into wildlands. Furthermore, many of these *Phytophthora* species appear to have wide host ranges, capable of causing disease on plants across many families. However, there are many unknowns about the impacts of *P. tentaculata* and other introduced *Phytophthora* species in California. We are working from an abundance of caution developed from experience with *P. ramorum*, the sudden oak death pathogen, which has killed more than 3 million oaks in CA since its introduction on nursery stock about 30 years ago.

Janell Hillman

Excavated Coyote ceanothus seedling (container stock) showing reduced root mass due to Phytophthora cactorum *root rot.*

Inadvertent planting of *Phytophthora*-infected nursery stock into native habitats has the potential to introduce these pathogens into wildlands.

THE RESPONSE

Native plant nurseries and vegetation ecologists in California have reached out for assistance to state plant health regulators, plant pathologists and others to: 1) understand pathways for pathogen spread, 2) determine which native plant hosts can be infected by *P. tentaculata* and other *Phytophthora* species that have been detected in nursery-grown plants, 3) determine the extent of the infestations, 4) review and evaluate sanitation procedures in both the nursery and field settings, and 5) develop and adapt best management practices to minimize the likelihood that native plant nursery stock will be infected with exotic *Phytophthora* species.

A Working Group for *Phytophthoras* in Native Plant Habitats has formed to determine steps needed to protect wildlands and assist the restoration industry. Participating organizations include: California Native Nursery Network, California Native Plant Society, California Department of Food and Agriculture, Golden Gate National Parks Conservancy, Presidio Trust, USDA Forest Service–Pacific Southwest Research Station, University of California Cooperative Extension, Marin Municipal Water District, Midpennisula Regional Open Space District, Phytosphere Research, San Francisco Public Utilities Commission, Santa Clara Valley Water District, National Ornamentals Research Site at Dominican University of California and others.

FOR MORE INFORMATION

For more information about *Phytophthora* and the *Phytophthora* Working Group see their web site: www.calphytos.org.

IMMINENT THREAT: *PHYTOPHTHORA* IN THE FIELD

Phytophthora plant pathogens are affecting restoration projects in the San Francisco Bay Area including those installed by the Midpeninsula Regional Open Space District (MROSD) and the Santa Clara Valley Water District. While the MROSD has not yet begun testing sites (scheduled for winter 2017), they have already been greatly affected by the *Phytophthora* problem. They cancelled all planting for two years, and are now working closely with their partner nursery, Grassroots Ecology, to implement new best management practices and produce clean and *Phytophthora* free plants.

The Santa Clara Valley Water District (SCVWD) has been dealing with the problem longer than MROSD and has already done extensive testing on their revegetation sites and has started to take remedial actions. Their experience provides a case study for other land managers working to restore native habitats and wildlands.

CASE STUDY: SANTA CLARA VALLEY WATER DISTRICT

Santa Clara Valley Water District discovered the *Phytophthora* problem in 2014 when a pilot planting of rare Coyote ceanothus (*Ceanothus ferrisiae*, Federally Endangered) in a Coyote Ridge introduction site in the Mt. Hamilton Range foothills failed. The failure of the nursery grown stock was found to be due to *P. cactorum* and led SCVWD to test other sites—some recent, some much older restoration sites. A riparian revegetation project in downtown San Jose was found to be infected with 14 species of *Phytophthora.* Tests from 40 additional sites documented 50 terrestrial taxa and 6 additional taxa from water samples, with most sites infected with multiple species of *Phytophthora*.

Treatment, prevention, and mitigation were the next steps and are ongoing. SCVWD is solarizing infested planting sites where possible and considering alternative methods in areas where solarization isn't feasible. They initially instituted a short-term moratorium on nursery grown stock and have since upgraded standards for seed/propagule collection, contract growing and outplanting, and are using more direct seeding and cuttings rather than relying solely on container stock. They are also developing internal best management practices and helping others via the *Phytophthoras* in Native Habitats Work Group to prevent future infestations.

Janell Hillman

Solarized basins on Coyote Ridge mitigation site following removal of contaminated plant stock.

The *Phytophthora* problem is potentially devastating. Because these pathogens are so damaging, affect so many plant species and native habitats and are so easily spread, they require widespread efforts to combat. SCVWD is working on the problem with concerned stakeholders including plant pathologists, nursery/horticulturists, restoration practitioners/land managers, regulators, home gardeners, and the general public.

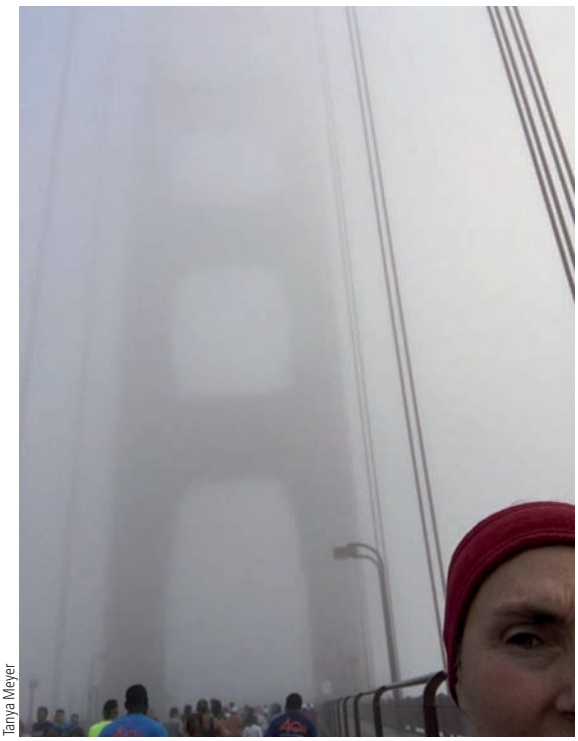
Run Wild California: runners support Cal-IPC in the SF Marathon

This year Cal-IPC organized its second team for the San Francisco marathon. The runners raise funds and awareness for conservation work in California and beyond. Our team was called Run Wild California 2017.

We had eight runners registered and seven participated in the race. Unfortunately, teammate Brian Aguilar suffered a training injury and was unable to run. Meet the runners!

Alexander Goldschmidt lives in Davis where he works as a plant geneticist for a seed company. "This year I decided to help as much as I can and to do my part to protect the beautiful and really unique nature around the country and specifically here in California."

Danielle Lee lives in Siskiyou County (the real northern California). "The entire region is a special ecosystem full of endemic species. The important work of Cal-IPC will continue to protect these rare and sensitive species from invasive competitors and noxious weeds."



Tanya Meyer

"The most magical and exhilarating moment occurred while running over the Golden Gate Bridge and the first tower emerged above me through the fog."—Tanya Meyer

Andrew Paolucci is a soil scientist and gardener in Sonora, running his first race for charity. "My love for the environment and background in natural resource management drew me to Cal-IPC. I strongly support their mission and recognize the importance of invasive species management. In order to keep the open spaces of California healthy, organizations like Cal-IPC need our support."

Nancy Smith is an Associate Professor of Marine Science at Eckerd College on Florida's gulf coast. She is splitting her proceeds with the Florida Exotic Pest Plant Council, the first state invasive plant council in the country (a forerunner of Cal-IPC).

Chris Velez and **Nancy Fluharty** work for the Sierra Foothill Conservancy, which protects land in the Central Sierra with preserves and conservation easements. Nancy is from Mariposa and has moved back after spending 15 years working in education. Chris grew organic vegetables at Stella Luna Farm for 13 years before joining the Conservancy. The funds they raised through the marathon will be split between Cal-IPC and the Conservancy.

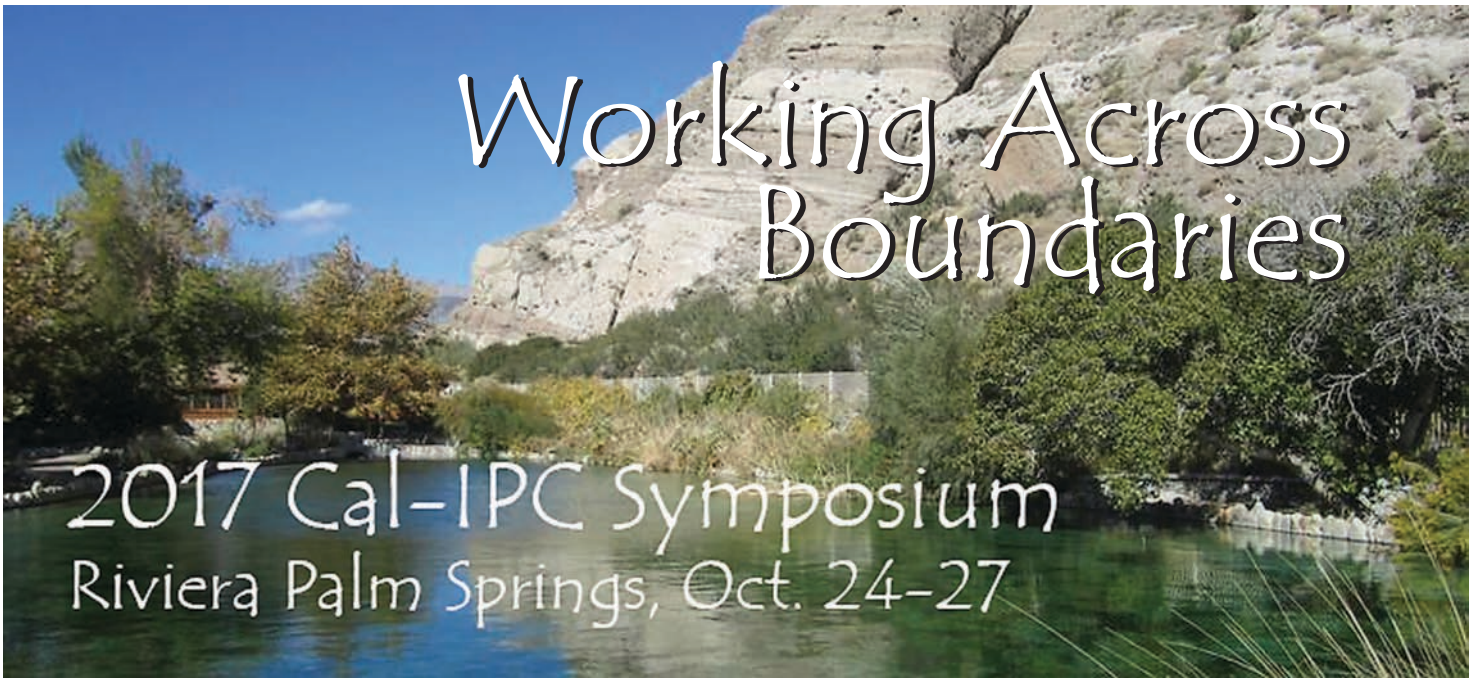
Tanya Meyer works for the Yolo County Resource Conservation District, which works with public and private landowners to restore parks, farm edges and waterways in Yolo County. Tanya grew up in the foothills of the Sierra, and went to UC Davis and works with restoration practitioners, weed warriors, educators, students, farmers and ranchers. She served on the Cal-IPC Board from 2007-2010.

Thank you, runners!

Doug Johnson

Nancy Smith and Gina Darin relaxing after Nancy's first full marathon.

Tanya Meyer celebrates after successfully completing the half marathon.



Join us in the desert this year to catch up on the latest in invasive plant science and management!

OUR PROGRAM

Trainings on Invasive Plant Management 101 and Calflora Weed Manager

Field trips to Joshua Tree National Park, Coachella Valley Preserve, and Whitewater Preserve

Sessions on Invasive Plant Management in the California Desert, Coastal Zones, Grasslands, and the San Francisco Bay/Delta; Biological Control; Tools & Techniques; Federal and State Programs; Soils; Early Eradication; Restoration; Engaging Diverse Communities; Botanic Gardens; and more…

Special Speaker Joshua Atwood from the Hawaii Invasive Species Council will describe the range of invasive species affecting Hawaii and the state's efforts to address them.

Campfire Circle with Ken Layne of Desert Oracle Radio.

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Rubus praecox: a newly recognized invasive European blackberry in California

By Marcel Rejmánek, Department of Evolution and Ecology, University of California, Davis

The genus *Rubus* (blackberry, raspberry) includes more invasive species than any other genus of woody plants (Rejmánek and Richardson 2013). Almost all invasive *Rubus* species are difficult weeds, and their control/eradication is a major challenge (see, for example, the US Forest Service weed control guide "Field Guide for Managing Himalayan Blackberry in the Southwest" available online).

Until recently, seven native and four invasive *Rubus* species have been recognized in California. The most common and most influential invader is *Rubus armeniacus* Focke (Himalayan blackberry), a species native to the Eastern Transcaucasian region. *R. armeniacus* is also established and invasive in Oregon, Washington, and British Columbia (Gaire *et al.* 2015). However, botanists searching for potential blackberry biocontrol agents recently concluded that a morphologically similar European species, *Rubus praecox* Bertoloni is also present in Oregon and is perhaps as common as *R. armeniacus* (Bruckart *et al.* 2017). Also, *R. praecox* seems to be the correct name for the species that Clark *et al.* (2013) named *R. anglocandicans* A. Newton in their microsatellite and chloroplast DNA analyses of *Rubus* populations in the Western United States. The major morphological differences between *R. armeniacus* and *R. praecox* are summarized in Table 1.

In order to determine if *R. praecox* is present in California, I examined *Rubus* herbarium specimens at UC Berkeley and UC Davis. I found several specimens of *R. praecox* misidentified and filed as *R. armeniacus* or *R. discolor* (a misapplied synonym of *R. armeniacus*), all of them either from Butte or Humboldt Counties. I then used specimen label-data to

Rubus armeniacus *from Butte Co., California; infrutescence and central part the first-year stem.*

	Prickles on first year stems	Prickles on inflorescence rachis	Petals length x width (mm)	Stamens
***R. armeniacus* Focke**	**stout**, straight, erect or slightly declining, rarely somewhat curved, **red at the base**, contrasting with green surface of the stem*, 8-11 mm long, **3-7** prickles per 5 cm	mostly **straight**, declining	pale pink, 13–20 x 10–15	very long, up to twice as long as styles
***R. praecox* Bertol.**	**stout**, straight, usually slightly declining or slightly curved, **colored like stem** (green or dark violet)*, 7-11 mm long, **3-6** prickles per 5 cm	strong, mostly **curved**, (falcate)	white or pale pink 10–14 x 7–11	usually only slightly long longer than styles
R. bifrons Vest**	**slender** but strong, straight or, rarely, slightly curved, colored like stem (usually dark violet), 6-8 mm long, **10-15** (20) prickles per 5 cm	**slender**, subulate (awl-shaped), declining	pale pink to vividly pink, 9–12 x 7–8	only slightly longer than styles

Table 1. Attributes of *Rubus armeniacus, R. praecox*, and *R. bifrons*
*This character is clearly visible on young stems, particularly on the side away from the sun.
**Leaves on the first-year stems of *R. bifrons* are distinctly pedate (palmately divided with petiolules of basal leaflets growing out of the petiolules of the leaflets above them), often 3- or 4-foliate; leaves of other two species are always quinate (arranged in groups of five).
Based on Trávníek and Zázvorka (2005), Weber (1995), Zielinski (2004), Bruckart *et al.* (2017), and personal observations.

A stand of Rubus praecox *in Butte Co., California.*

relocate stands of *R. praecox* in Butte County in October, 2016. This species was already familiar to me based on my studies in northern Patagonia in Chile where it is very common and regularly found growing in the wild associated with native fleshy-fruiting trees (Rejmánek 2015).

I expect that *R. praecox* is more common in California than herbarium specimen data would currently indicate, however it is likely that it is less common in California than in Oregon. Previous research on the distribution of the pathogenic rust, *Phragmidium violaceum*, in California may provide clues as to the breadth of *R. praecox*'s current distribution. In the context of potential biological control of the Himalayan blackberry, Osterbauer *et al.* (2005) reported *P. violaceum*, on what they assumed was *Rubus armeniacus*. However, Bruckart *et al.* (2017) conclusively proved that only *R. praecox* and *R. laciniatus*—cutleaf blackberry, another non-native species that has escaped cultivation in California and the Pacific Northwest—are susceptible to the rust disease and *R. armeniacus* is not. Earlier, Morin *et al.* (2013) reported the presence of *P. violaceum* on "*R. armeniacus*" in Washington, Oregon, and northern California. Because their positive locations in California include Del Norte, Humboldt, Mendocino and Santa Cruz Counties, this is a good indication that *R. praecox* is present in those counties.

Finally, a comment on the contemporary taxonomy of this group of *Rubus* species (ser. *Discolores*) in North America is needed. In the "Flora of North America," Vol. 9, Alice *et al.* (2014) synonymized *R. armeniacus* and *R. bifrons* Vest., using the name of the second species for both. This is unfortunate, because *R. bifrons*, a European species currently known from the northeastern United States, is morphologically very different (see Table 1). Unfortunately, some state and local floras have already started to use the name *R. bifrons* for plants that may be *R. armeniacus*, *R. bifrons*, or *R. praecox*.

Rubus praecox *from Butte Co., California; infrutescence – note the falcate (curved) prickles on the rachis.*

Ellen Dean, John Randall and Bohumil Trávníek provided valuable comments on the first draft of this article. Contact the author at mrejmanek@ucdavis.edu.

REFERENCES

Alice, L.A. *et al.* 2014. RUBUS. In Flora of North America Editorial Committee, eds., New York and Oxford. Vol. 9, pp. 28-56.

Bruckart, W.L., Jami, L.M., Sochor, M. & B. Trávníek. 2017. Invasive blackberry (*Rubus fruticosus* Agg.) and susceptibility to rust disease. Invasive Plant Science and Management (in press).

Clark L.V., Evans, K.J. and M. Jasieniuk. 2013. Origins and distribution of invasive *Rubus fruticosus* L. agg. (Rosaceae) clones in the Western United States. Biol. Invasions 15:1331–1342.

Gaire, R. *et al.* 2015. The biology of Canadian weeds. 154. Himalayan blackberry. Can. J. Plant Sci. 95: 557-570.

Morin, L. *et al.* 2013. Invaded range of the blackberry pathogen *Phragmidium violaceum* in the Pacific Northwest of the USA and the search for its provenance. Biol. Invasions 15: 1847-1861.

Osterbauer, N. *et al.* 2005. The first report of *Phragmidium violaceum* infecting Himalaya and evergreen blackberries in North America. Plant Health Progress doi: 10.1094/PHP-2005-0923-01-BR.I

Rejmánek, M. 2015. Invasion of *Rubus praecox* (Rosaceae) is promoted by the native tree *Aristotelia chilensis* (Elaeocarpaceae) due to seed dispersal facilitation. Gayana Botanica 72:27-33.

Rejmánek, M. and D.M. Richardson (2013) Trees and shrubs as invasive species - 2013 update of the global database. Diversity and Distributions 19: 1093-1094.

Trávníek, B. and J. Zázvorka. 2005. Taxonomy of *Rubus* ser. *Discolores* in the Czech Republic and adjacent regions. Preslia 77: 1-88.

Weber, H.E. 1995. Rubus. In: Hegi G. (ed) Illustrierte Flora von Mitteleuropa, Ed.3, 4/2A: 284–59, Blackwell Wissenschafts-Verlag, Berlin.

Zielinski, J. (2004) The genus *Rubus* (Rosaceae) in Poland. Polish Botanical Studies 16: 1-300.

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From "Invasive plants to devastate annual wildebeest migration" on CABI Invasives Blog, June 16, 2017

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