



NEWS

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Economic Stimulus Could Boost Invasive Species Management



On February 17, President Barack Obama signed the \$787 billion American Recovery and Reinvestment Act (ARRA) of 2009 to stimulate the economy by creating jobs and building infrastructure.

As of March, implications for invasive species management were unclear. The stimulus package includes more than \$3 billion for agencies and programs that will directly affect natural resources. The ARRA spending mandates are very broad and include concepts such as habitat restoration,

watershed improvement, forest health protection, and wildland fire management that may allow funding to flow toward invasive plant management.

States and federal agencies face a May 3 deadline to begin reporting how ARRA dollars will be allocated. Until that time, governors are coordinating state allocations, while regional and national offices of the federal agencies are evaluating needs and deciding how to distribute funds.

Information about individual state and federal ARRA programs – how the dollars are being allocated and progress toward goals – can be found at www.recovery.gov. This website is the primary online portal through which the government will continue to report how ARRA funds are being spent “in a timely, targeted, and transparent manner,” according to the President.

Network Posts Interactive CWMA Map



A national map of Cooperative Weed Management Areas is being compiled by the newly formed National Network of Invasive Plant Centers (NNIPC).

Programmed and hosted by NNIPC partner Center for Invasive Species and Ecosystem Health, the interactive Google map illustrates the broad range of community-led weed management efforts in the United States. All CWMA's are invited to input their data and become a pop-up point on the map.

NNIPC intends to aggregate and synthesize regional information to provide a national perspective for natural resource managers, policy-makers, educators, researchers, and conservationists. As funding allows, it will focus on four areas that

warrant national discussion and coordination: early detection and rapid response, cooperative weed management areas, economic impacts of invasive plants, and invasive plant education.

The six centers comprising NNIPC convened for the first time in January for a two-day meeting hosted by the Midwest Invasive Plant Network, facilitated by CIPM, and funded by a grant from the Western IPM Center. For more information about the network, visit the NNIPC website or www.weedcenter.org.

CWMAs: Working with Volunteers

Enlisting, training, and maintaining volunteers are important elements in cooperative weed management areas (CWMAs) and other locally-led efforts to prevent and manage invasive plants. Three presentations addressing community volunteer programs were presented at the “People-Powered Projects” national CWMA conference held in 2008:

- **Creating & Sustaining the McInnis Canyons Volunteer Program:** Clark Tate (Tamarisk Coalition, Colorado) described how a volunteer program to remove tamarisk from watersheds in Colorado was created and has been sustained for several years.
- **USFWS Refuge Volunteers:** Cynthia Boettner (US Fish & Wildlife Service, Massachusetts) provided information on the US Fish & Wildlife Service’s national volunteer program for refuges and focused particularly on efforts in New England.
- **Invaders of Texas:** Damon Waitt (Lady Bird Johnson Wildflower Center, Texas) discussed enlisting volunteers as “citizen scientists” to combat invasive species.

Book Review: *Plant Invasions: Human perception, ecological impacts and management*



A review by MARCEL REJMÁNEK. Section of Evolution and Ecology, University of California, Davis, CA 95616, mrejmanek@ucdavis.edu.

Plant invasions: Human perception, ecological impacts and management. Edited by B Tokarska-Guzik, JH Brock, G Brundu, L Child, CC Daehler, and P Pyšek. 2008. Backhuys Publishers, Leiden. xvii + 427 pp., 103 figures, 50 tables. Paperback, Euro 126.00, ISBN 978-3-8236-1528-6.

Over the last two decades, plant invasions have become a subject of an increasing number of national and international meetings. This volume presents key contributions from the 8th International Conferences on the Ecology and Management of Alien Plant Invasions (EMAPi) held at the University of Silesia, Katowice, Poland, in 2005. In total, 27 chapters were written by 71 authors from 18 countries and four continents. The volume is divided into four sections: 1 – Human perception and role in biological invasions (four chapters), 2 – Biology, ecology and distribution of invasive species (seven chapters), 3 – Invasibility of habitats and impacts of invasive species (12 chapters), 4 – Control and management (four chapters). As in the previous EMAPi volumes, standardized international terminology is used (Richardson et al. 2000, Pyšek et al. 2004).

First, browsing through the Contents, we may be somewhat disappointed that only two contributions are from the USA (CC Daehler: Invasive plant problems in the Hawaiian Islands; JH Brock: Ecology and management of *Alhagi maurorum* in Arizona). Nevertheless, because plant invasions are a global problem, we can learn important lessons from studies conducted in Australia, Europe, or Africa. Moreover, several contributions in this volume are of general importance, addressing very basic questions of invasion biology. For example, Daehler’s analysis of major motivations for plant introductions in Hawaii (nostalgia, neophilia, economics, improvement of ecosystem services) could serve as a model for similar studies in other countries. Similarly, approaches used in the chapter by Philip Hulme and co-authors on multiscale analyses of plant invasions to Mediterranean islands could be applied in different parts of the world. Twenty contributions from different parts of Europe serve as examples of a very well-organized research on plant invasions over this continent. Recent publication of the European catalogue of all known invasive species (DAISIE 2009) is an impressive result of cooperation across Europe.

The book is very well edited and packed with interesting data. However, as in the previous volume that I reviewed for Madroño (Rejmánek 2003), one chronic weakness of plant invasion biology still remains: a lack of rigorous evidence for assumed harmful impacts of invasive taxa in natural and seminatural areas. The phrase “ecological impacts” is in the title of this new volume, but only a very few contributors are dealing with this topic. Moreover, if they do, their conclusions are based on descriptions of pairs of invaded and non-invaded plots (space for time substitution). The only exception is experimental study on competition between *Acacia longifolia* and native woody species in Portugal (Christiane Werner et al.).

Although rather expensive for a paperback (\$161), this volume is definitely worth the attention of all botanists interested in plant invasions.

Literature Cited

DAISIE 2009. *Handbook of Alien Species in Europe*. Springer.

PYŠEK, P et al. 2004. *Alien plants in checklists and floras: toward better communication between taxonomists and ecologists*. *Taxon* 53: 131-143.

REJMÁNEK, M 2003. *Review of L Child et al. (eds.) Plant Invasions: Ecological Threats and Management Solutions*. *Madroño* 51: 392-393.

RICHARDSON, DM et al. 2000. *Naturalization and invasion of alien plants: concepts and definitions*. *Diversity and Distributions* 6: 93-107.

Rapport with Research: Implications for Restoration – Interactions Between Exotic Plant, Native Consumers, and native Grass Establishment

John Orrock and Jim Reichman, researchers from the University of California - Santa Barbara and the National Center for Ecological Analysis and Synthesis, and Washington University in St. Louis, Missouri, received a grant from the Center for Invasive Plant Management in 2004 to study interactions between an exotic plant, native consumers, and native grass establishment. They teamed with Martha Witter of the National Park Service and conducted research in the Santa Monica Mountains National Recreation Area, California. After collecting preliminary data, they were able to obtain funding through the National Science Foundation to continue the research in depth. The work resulted in two publications in the journals *Ecology* (volume 89, 2008) and *Restoration Ecology* (volume 17, 2009). Here we provide a summary of the *Ecology* publication, "Apparent Competition with an Exotic Plant Reduces Native Plant Establishment."

Research Findings: 2009 Tamarisk and Russian Olive Research Conference

The 2009 Tamarisk and Russian Olive Research Conference was held in Reno, NV on February 18 and 19. There were a number of excellent presentations covering several topics related to these two invasive plant species. Presentations can be found online at <http://www.tamarisk.colostate.edu/>. Brief summaries for a few select presentations are provided here.

Biological control of tamarisk using leaf beetles (*Diorhabda elongata*) – General Information

- There was a general consensus that, with limited resources, more beetles at fewer sites is a better option than fewer beetles at more sites.
- Approximately 10,000 beetles per release is a good goal
- Beetles pupate in litter underneath trees, so spring flooding will wipe out beetle population
- In some southern and southwestern states, ants can be a serious predator on leaf beetles

Biocontrol alters litter chemistry and short-term decomposition in a tamarisk-invaded ecosystem - Uselman S, Snyder K, Blank R, and Jones T (all authors are with USDA-ARS Exotic and Invasive Weeds Research Unit-Reno, NV)

Investigators tested the effects of biocontrol leaf beetles on the quality of tamarisk litter. Leaf litter was collected from trees with and without the leaf beetles, stored and allowed to decompose in mesh bags. Several characteristics often correlated with decomposition rates were then analyzed, including % nitrogen (N), phosphorus (P) and lignin, and ratios of Carbon (C):N, C:P, lignin:N and lignin:P. Results indicated that litter resulting from beetle herbivory had higher nutrient (N and P) content and higher rates of litter decomposition. The researchers speculated that this may lead to changes in nutrient availability at these sites and could have ramifications for the restoration of tamarisk-degraded systems.

Comparative water use by native and non-native riparian species on western U.S. rivers - Nagler PL, (USGS-Southwest Biological Science Center, Sonoran Desert Research Station) and Glenn EP (University of Arizona - Environmental Research Lab)

Contradictory to previously reported results, Nagler and Glenn report that tamarisk evapotranspiration is low to moderate compared to other riparian species. Based on data from moisture flux tower studies, tamarisk water usage on western rivers was calculated to range from 0.75-1.4 m/yr which is less than many native species. Also, in sap-flow studies, native species arrowweed, mesquite and creosote had higher transpiration rates than tamarisk. This suggests that removal of tamarisk and replacement with native species may not result in water salvage. The authors further state that tamarisk provides valuable avian habitat on salinized and regulated rivers that can no longer support native trees, and thus water use cannot be classified as non-beneficial. Finally, the authors suggest that replacement species would be limited by salinity along regulated river stretches that no longer support overbank flooding, and thus without changes in hydrology, tamarisk may be the best species under the current conditions.

Erosional consequence of tamarisk control – Friedman JM (USGS-Boulder, CO), Vincent KR, and Griffin ER.

The authors report that widespread control of tamarisk in riparian areas can result in extreme erosion. In a case study on the Rio Puerco, herbicide was aerially applied to a 12-km stretch where tamarisk, as well as native sandbar willow, was killed. A flood three years later increased mean channel width of the sprayed reach by 84%, and 680,000 m³ of sediment was eroded. While erosion is a natural hydrogeologic process, the authors point out that erosion can be very problematic in certain situations. In this case, tamarisk was intentionally introduced to Rio Puerco to control erosion and prolong the useful life of the downstream Elephant Butte Reservoir. Therefore, removal of the tamarisk in this situation is counterproductive.

Tamarix as habitat for birds: implications for riparian restoration in the southwestern United States – Paxton EH (USGS Colorado Plateau Research Station), Sogge MK (USGS-Flagstaff, AZ), and Sferra SJ (Bureau of Reclamation-Phoenix, AZ).

Many southwestern riparian ecosystems have been invaded by tamarisk raising concerns about the suitability of tamarisk as habitat for birds. The authors state that while tamarisk may support fewer species than native habitats, 49 bird species do use tamarisk as breeding habitat. Furthermore the relative use of tamarisk and its quality as habitat vary substantially by geographic locations and bird species. Few studies have investigated how the use of tamarisk as breeding habitat affects bird survivorship and productivity, but research on the Southwestern Willow Flycatcher showed no negative effects. It is also stated that, given the likelihood that tamarisk removal will not result in replacement with high quality riparian habitat at many sites, restoration efforts could in some cases reduce the net riparian habitat value for some local or regional bird populations. The authors conclude that the goal for any restoration project should be no net loss of riparian habitat.

Biocontrol of tamarisk in the western United States: an event underway with significant ecological and societal implications – Hultine KR (University of Utah-Department of Biology)

In this presentation the authors discussed many of the ramifications of using the tamarisk leaf beetle (*Diorhabda elongata*) to control tamarisk in the western United States. Two items of particular interest were discussed: impacts on large scale evapotranspiration changes and impacts on avian habitat. First the authors presented evidence that the amount of water used by tamarisk is ~17 gal/day and not the 200 gal/day as has been frequently reported. Therefore, they state that the amount of water potentially salvaged as leaf beetles defoliate tamarisk is much less than many models predict. Second, the authors discussed the degradation of avian habitat by the leaf beetles. They showed that as tamarisk is defoliated, birds are less likely to use it for habitat, and nests will be abandoned.

Riparian plant establishment limited by tamarisk insect herbivore interactions – Siemion G (Grand Canyon Wildlands Council) and Stevens L (Museum of Northern Arizona)

Researchers experimentally investigated interactions between a non-native tamarisk insect herbivore (leafhopper, *Opsius stactogalus*), tamarisk litter microorganisms and riparian vegetation recruitment. They found that the honeydew secreted from the leafhopper increased fungal colonization of cottonwood, *Baccharis* species (?), as well as tamarisk seeds, and thereby decreased seed viability. It was demonstrated that multi-trophic interactions may inhibit the establishment of native species under tamarisk canopies. A schematic of the relationship is shown below.

[Join the Global Garlic Mustard Field Survey](#)

Do you want to be part of the largest ever international effort to study an invasive plant? Join a joint cross-continental field study on garlic mustard (*Alliaria petiolata*). Download instructions, sample data sheets, and a policy on co-authorship. View survey website.

[Share Your Phragmites Samples and Location Data](#)

Dr. Bernd Blossey at Cornell University is soliciting contributions of samples and data on native and invasive locations of common reed (*Phragmites australis*). In particular, Blossey is hoping to receive more data from western states, which currently are poorly represented in his database. Blossey and his colleagues will use the data to prepare a distribution map so that more targeted searches can be done in certain states. They also hope to launch a web-based approach that will allow volunteers or states to update data remotely. Contact Dr. Bernd Blossey.

CIPM Store: Featured Products



\$1.00 OFF! Invasive Plants of Western North America – This pocket naturalist field guide produced by the Center for Invasive Plant Management and Waterford Press includes drawings and brief descriptions for identifying invasive weeds in the Western North America. Regular price is \$3.50. Discounted price of \$2.50 includes shipping and handling. Send an email to weedcenter@montana.edu to place your order (item #4456) and receive your discount. Offer good until June 30, 2009.

CIPM Online

The following briefs, resources, events, and job listings have been added to our website since the last issue of this newsletter.

UPDATES TO THE CIPM RESOURCE DIRECTORY

The online resources featured in this section are archived within CIPM's online resource directory. Visit our website to browse extensive resources for funding opportunities, invasive plant information, management, education, CWMA's, and agencies and organizations.

Natural Areas Conference 2008 Presentations – Audio/video recordings of presentations from this October 2008 meeting are available for viewing online. If you want to revisit a special session that you attended, or view one that you were unable to attend in Nashville, this is your opportunity. Don't miss the session on Cooperative Weed Management Areas, co-facilitated by Kate Howe (MIPN) and Janet Clark (CIPM).

Ecology and Management of Invasive Species – Part of the USFS Rocky Mountain Research Station's Wildlife and Terrestrial Ecosystems Program, this website offers a list of peer reviewed publications with links to several full papers.

CIPM Restoration Resource Database Now Part of the Global Restoration Network – Hosted by the Society for Ecological Restoration, this database can be searched to find resources on restoration, particularly relating to invasive plants. View restoration database.

ADDITIONS TO THE CALENDAR

View our CALENDAR page for more upcoming events.

Natural Areas Conference

15-18 September 2009 | Vancouver, WA (USA).

Odum Conference

30 April–1 May 2009 | Rensselaerville, New York (USA).

International Miconia Conference

4-7 May 2009 | Maui, Hawaii (USA).

International Conference on Marine Bioinvasions

24-27 August 2009 | Portland, Oregon (USA).