



BIOCONTROL SUMMIT

POWERED BY NAISMA 

2022 NAISMA Annual Biocontrol Summit

Experiences in Implementation of Weed Biocontrol within
Integrated Weed Management Programs in North America

December 1, 2022 from 10:00 am - 2:00 pm (MST)

The North American Invasive Species Management Association's 3rd Annual Weed Biocontrol Summit will be held virtually on December 1, 2022, from 10:00 am - 2:00 pm MST. The Biocontrol Summit communicates the latest in classical weed biocontrol research to North American invasive plant managers and educators and aims to connect researchers to on-the-ground practitioners. This year, NAISMA is highlighting weed management practitioners who utilize weed biocontrol within their integrated weed management programs throughout North America. Managers and researchers will share implementation stories, challenges, and successes. The Biocontrol Summit integrates research and implementation of biocontrol from the regional land managers' perspective and will provide updates on potential upcoming biocontrol agents.

Agenda

10:00am - 10:05 am

Welcome by Christie Trifone Millhouse, NAISMA
Executive Director

Introduction by Jennifer Andreas, Washington State
University and Co-Chair of the NAISMA Classical
Biocontrol Committee

Moderated by Melissa Maggio, Montana Biocontrol
Coordination Project

Keynote Speakers

- 10:05 am - 10:25 am How to incorporate biocontrol into an integrated weed management program, partnerships and cross-agency collaboration supports biocontrol implementation presented by Carol Randall, USDA Forest Service
- 10:25 am - 10:45 am Lessons and humbling experiences in providing technical assistance presented by Carl Jorgensen, USDA Forest Service

Western Region

- 10:45 am - 11:00 am Challenges and successes using biological control Agents on a western Montana Refuge presented by Amy Lisk, USFWS
- 11:00 am - 11:15 am Western weeds and their new agents: Weed biocontrol agents that are in the petitioning process presented by Phil Weyl, CABI Switzerland

Southeast Region

- 11:15 am - 11:30 am Bridging the gap between biological control research and landscape level implementation presented by Carey Minter, University of Florida, Institute of Food and Agricultural Sciences
- 11:30 am - 11:45 am Biological control updates for the Southeast: Development, implementation and follow through presented by Melissa Smith, USDA Agricultural Research Service

Northeast and Midwest Regions

- 11:45 am - 12:00 pm Purple loosestrife biocontrol at 30: managing ecological impacts or manager expectations? presented by Bernd Blossey, Cornell University; co-authors: Stacy Endriss, Cornell University, and Victoria Nuzzo, Natural Areas Consultants
- 12:00 pm - 12:15 pm We the North: biocontrol implementation in Canada presented by Robert Bouchier, Agriculture and Agri-Food Canada; co-authors: David Ensing, Rose De Clerck-Floate, Chandra Moffat, and Hester Williams Agriculture and Agri-Food Canada
- 12:15 pm - 12:25 pm Break

Canada

12:25 pm - 12:55 pm Reflecting on 52 years of spotted knapweed biological control in Canada presented by David Ensing, Agriculture and Agri-Food Canada; co-authors: Robert Bouchier, Rose De Clerck-Floate, and Chandra Moffat Agriculture and Agri-Food Canada and Val Miller and Susan Turner British Columbia Ministry of Forests, Timber, Range and Economics Division, Range Branch

Southwest Region

12:55 pm - 1:10 pm Biological control of *Arundo donax* in the Rio Grande Basin with integration of mechanical control in high priority areas presented by John Goolsby, USDA Agricultural Research Service

1:10 pm - 1:25 pm Biological control research update from the southwestern region presented by Paul Pratt, USDA Agricultural Research Service

Hawaii

1:25 pm - 1:40 pm Ten years after the introduction of *Tectococcus ovatus* bBiocontrol at Waikāne, Windward Ko'olau Mountains, O'ahu: observations and recommendations for its use in wet-to mesic forest restoration projects presented by Paul Zweng, Ohulehule Forest Reserve

1:40 pm - 1:55 pm Pending biological control releases for forests pests of Hawaii presented by Tracy Johnson, USDA Forest Service; co-author Darcy Oishi, Hawaii Department of Agriculture

1:55 pm - 2:00 pm Closing by Carrie Brown-Lima, New York Invasive Species Research Institute and Co-Chair of the NAISMA Classical Biocontrol Committee

For More Information:

The Annual Weed Biocontrol Summit is organized by NAISMA's Biological Control Committee and is supported with funding from the U.S. Forest Service. NAISMA's mission is to support, promote, and empower invasive species prevention and management in North America. Since 1993, NAISMA has been growing programs that bridge jurisdictional and geographic divides. For more information, visit www.naisma.org and take a look at the [Biocontrol Resources](#) available.

Presentation Abstracts and Speaker Bios:

How to incorporate biocontrol into an integrated weed management program, partnerships, and cross-agency collaboration supports biocontrol implementation presented by Carol Randall, USDA Forest Service.

Presentation Abstract: Biological control works best when it is part of an integrated weed management (IWM) program. In this introduction Carol will cover the basics of IWM, the tools used, and how IWM can be applied to invasive species management. The presentation ends with a brief discussion on how to get started with weed biological control and discusses the importance of engaging with other weed biological control practitioners.

Speaker Bio: Carol Randall is the USDA Forest Service Northern and Intermountain Region Pesticide Use Coordinator, Weed Biological Control Specialist, and Forest Health Protection Invasive Plant Program Manager. She has worked with federal, state, and private land managers interested in incorporating classical weed biological control into their integrated pest management strategies for over twenty years and coordinates a quarterly conference call for western weed biological control practitioners.

Integrating Biological control: Lessons and humbling experiences in providing technical assistance presented by Carl Jorgensen, USDA Forest Service.

Presentation Abstract: A short discussion on some of the lessons learned and humbling experiences while providing biological control technical assistance to weed managers in southern Idaho.

Speaker Bio: Carl Jorgensen is Supervisory Entomologist/Group Leader for the USDA Forest Service, Intermountain Region, Forest Health Protection group (i.e. bugs 'n crud) at the Boise Field Office. In 2019, Carl took on responsibilities as the Boise Field Office Group Leader and led a small team of forest health specialists monitoring various forest pests and assisting with project assistance across Intermountain Region's federal, state and private land management agencies in southern Idaho on a variety of issues. Carl has been with the Boise Field Office since 2003 and prior to 2019 was an entomologist helping land managers understand forest insect and disease biology and management, conducting aerial detection surveys, as well as providing technical assistance to noxious weed biological control.

Challenges and successes using biological control agents on a western Montana refuge presented by Amy Lisk Thomas, U.S. Fish and Wildlife Service

Presentation Abstract: The Bison Range (formerly the National Bison Range) has been a field laboratory for biological control agents since the 1950's. All invasive plants with an approved agent in the state of Montana have had a release with varying levels of success. This short presentation will focus on the successful control of *Hypericum perforatum* and *Linaria dalmatica* primarily crediting the *Chrysolina* species of leaf beetles and the stem boring weevils *Mecinus janthiniformis* respectively. Despite each being a unique path to success, consistent monitoring and integrated tactics are important commonalities. Restored to ownership by the Confederated Salish and Kootenai Tribes on December 27th, 2020, the Bison Range is no longer a National Wildlife Refuge but it continues to be open to the public and a thriving model for success under the Tribes Management.

Speaker Bio: Amy Lisk Thomas is a biologist for the U.S. Fish and Wildlife Service, currently acting as the Manager for Refuges, Wetland Management Districts, and Conservation Areas in northwestern MT. She has a Bachelor of Science in Natural Resource Management from the University of Montana and 23 years of experience in the field. Formerly stationed at the Bison Range, studying and managing invasive plants has been a focus throughout her career, including working with several species of biocontrol agents.

Western weeds and their new agents: Weed biocontrol agents that are in the petitioning process presented by Phil Weyl, CABI Switzerland

Presentation Abstract: Weed biocontrol relies on reuniting specialist herbivores with the weed in the invasive range. We will cover some new agents that are in the petitioning process, these include flowering rush, Russian olive, ox-eye daisy, dyers woad and houndstongue.

Speaker Bio: Philip Weyl joined the weeds team at CABI Switzerland in 2016 from the Centre of Biological Control at Rhodes University in South Africa. Since then, he has been involved in developing weed biological control agents for invasive weeds. Much of his work with CABI has been in western North America.

Bridging the gap between biological control research and landscape level implementation presented by Carey Minter, University of Florida - Institute of Food and Agricultural Sciences

Speaker Bio: Dr. Carey Minter is a 2012 graduate of the University of Arkansas. She is currently an assistant professor of entomology at the University of Florida. Dr. Minter leads research on the biological control of weeds at the Hayslip Biological Control Research and Containment Laboratory in Fort Pierce, Florida where she specializes in invasion ecology and the biological control of invasive plants.

Biological control updates for the Southeast: Development, implementation and follow through presented by Melissa Smith, USDA Agricultural Research Service

Presentation Abstract: The invasive plant research laboratory is one of only a handful of facilities in the United States that can conduct all the steps for a successful biological control campaign – from foreign exploration to host range and efficacy testing in quarantine to mass rearing release. The IPRL currently houses several projects at all levels of progress. We will discuss agents that are currently released and the impacts they're having along with agents that are still undergoing testing to determine their suitability for use as biological control agents.

Speaker Bio: Dr. Melissa Smith is a research ecologist with the USDA's Invasive Plant Research Laboratory in Fort Lauderdale, Florida. Melissa's research focuses on broad ecological interactions of large-scale plant invasions with the native community and introduced biological control herbivores. Some species Melissa is currently working on include *Melaleuca quinquenervia*, *Acacia auriculiformis*, *Lygodium microphyllum* and *Pontederia crassipes*. At the Invasive Plant Research Laboratory, Dr. Smith has delved into many collaborative projects to investigate larger ecological questions (e.g., competition, predation, parasitism, succession) within a biological control context. Most recently, Dr. Smith was awarded an ARS Areawide Project to develop IPM for water hyacinth, the world's "most invasive" weed, but also to elucidate the larger ecological consequences of IPM measures within the community.

Purple loosestrife biocontrol at 30: managing ecological impacts or manager expectations? presented by Bernd Blossey, Cornell University; co-authors: Stacy Endriss, Cornell University, and Victoria Nuzzo, Natural Areas Consultants

Presentation Abstract: Purple loosestrife (*Lythrum salicaria*) has negatively affected North American wetlands for decades. Traditional methods such as chemical treatments failed to produce desirable outcomes and in 1992 two leaf-feeding beetles (*Galerucella californiensis* and *G. pusillalla*) and a root-feeding weevil (*Hylobius transversovittatus*) were released as biocontrol agents, followed in 1994 by a flower-feeding weevil (*Nanophyes marmoratus*). The *Galerucella* leaf-feeding beetles now appear to be widely established and abundant. Data on the abundance and distribution of the root-feeding and flowering-feeding weevils remain sparse. The effect of these insects may vary from site to site, but in many regions across North America—such as the Pacific Northwest, the Great Lakes Region, and the Northeast—biological control of purple loosestrife is now highly effective and economical. For example, long-term data collected from New York document that these insects decrease the density, height, and flower production of purple loosestrife, which in turn allows an increase in native plant diversity—the ultimate goal of management. It is our recommendation to stop interfering with the success of biological control by discontinuing other management options. Interference with biological control, including attempts at eradication, backfires and purple loosestrife is no longer (with very few exceptions) a management problem.

Speaker Bio: Bernd was born and raised in northern Germany. In 1992, he moved to Cornell University, where he is a Professor directing the Ecology and Management of Invasive Plants Program in the Department of Natural Resources. Bernd develops and implements biological weed control programs; among his target plants are purple loosestrife, garlic mustard, water chestnut, Japanese knotweeds and invasive *Phragmites*. An ever increasing focus of his team are investigations into impacts of multiple "stressors" including invasive and native plants, earthworms, slugs and deer on a wide range of native organisms. He is intimately involved in different approaches to deer management at Cornell and in the surrounding municipalities, he has developed a network of deer exclosures to study impact of deer on many species and processes, and is developing bioindicators to assess effects of different stressors, including deer. The ultimate aim of this work is to increase the conservation values of all lands through development of best management practices.

We the North: biocontrol implementation in Canada presented by Robert Bouchier, Agriculture and Agri-Food Canada; co-authors: David Ensing, Rose De Clerck-Floate, Chandra Moffat, and Hester Williams Agriculture and Agri-Food Canada

Presentation Abstract: A brief review of how weed biocontrol agents happen in Canada with updates on the status of new biocontrol agents.

Speaker Bio: Rob is a research scientist in insect ecology and biological control with Agriculture and Agri-Food Canada (AAFC). Specific research interests include: host-plant insect interactions; population dynamics of biological control agents and their hosts; influence of habitat and climate on the impact and dispersal of biocontrol agents; and risk assessment of biological control. He is currently Canadian lead for consortia projects developing new biological control agents for several invasive plants, including knotweeds, phragmites, garlic mustard and swallowworts. As an adjunct professor at the University of Toronto, projects with collaborators and graduate students have included work on the ecology of invasive species and studies to estimate the impact and efficacy of established biocontrol agents.

Reflecting on 52 years of spotted knapweed biological control in Canada presented by David Ensing and Robert Bouchier, Agriculture and Agri-Food Canada; co-authors: Rose De Clerck-Floate, Val Miller, Susan Turner, and Chandra Moffat

Presentation Abstract: Biological control has been used as a weed control tool in North America for more than 70 years, and one of the earliest targets were spotted and diffuse knapweeds. I will use the long-term biological control program for spotted knapweed in British Columbia as a vehicle for discussing the successes and challenges of using biological control on a widespread invasive species across our biodiverse region. This system relies on close collaboration between federal and provincial agencies and demonstrates well how weed biocontrol programmes are managed in Canada.

Speaker Bio: Dr. Ensing is a Research Scientist in Vegetation Ecology with Agriculture and Agri-Food Canada in Summerland, BC, Canada. His research programme at AAFC includes weed biological control, Indigenous food security and sovereignty, rangeland ecology, and vegetation management in managed and unmanaged agro-ecosystems.

Biological control of *Arundo donax* in the Rio Grande Basin with integration of mechanical control in high priority areas presented by John Goolsby, USDA Agricultural Research Service

Presentation Abstract: *Arundo donax*, known as giant reed or carrizo cane, is native to Mediterranean Europe. Genetic studies of *A. donax* indicate it was introduced into the Rio Grande Basin of Texas from Spain. *Arundo donax* has historically dominated these habitats where it competes for scarce water resources, lowers riparian biodiversity, reduces visibility for law enforcement, and facilitates the invasion of cattle fever ticks from Mexico. Two agents, the stem-galling wasp, *Tetramesa romana* and the rhizome-feeding scale, *Rhizaspidotus donacis* are widely established and are having significant impacts in Texas and Mexico. Releases of a third agent, *Lasioptera donacis*, a leaf miner are in progress. Thus far, we have documented a 32% decline in above ground biomass of *A. donax* and return of native vegetation, along the Rio Grande. Economically, the reduction in carrizo cane biomass is estimated to save 6,000 acre-feet of irrigation water per year, and worth \$4.4 million.

To accelerate the decline of *A. donax* we have integrated biological and mechanical methods. Topping of *A. donax* at 1 meter is a method to improve visibility for law enforcement and accelerate the decline of this invasive weed. Topping increases the production of side shoots that are preferred oviposition sites for the arundo wasp, *Tetramesa romana*. In a study from Jan. 2017 to Feb. 2018 at the U.S Fish and Wildlife, Lower Rio Grande Valley National Wildlife Refuge, we found that topping increased solar penetration and significantly increased the diversity and abundance of native plant species as compared to untopped controls. Integration of mechanical and biological control methods accelerates the decline of *A. donax* and restoration of the native riparian plant community. Methods for large scale implementation of these methods using tractors with boom hedgers have been developed and transferred to the U.S. Border Patrol and USDA Cattle Fever Tick Eradication Program for use on the Rio Grande.

Speaker Bio: John Goolsby is a Senior Research Entomologist with the United States Department of Agriculture-Agricultural Research Service (USDA-ARS) in Edinburg, Texas. He specializes in biological control and integrated pest management methods (IPM) of weeds. Dr. Goolsby has evaluated and released three biological control agents for invasive carrizo cane, *Arundo donax*, which are now established in Texas on the Rio Grande and having significant benefits to national security and water conservation. Prior to Weslaco, he was director of the USDA-ARS, Australian Biological Control Laboratory in Brisbane, Australia. His research in Australia focused on exploration for biological control agents of the Old

World climbing fern, and Australian paperbark tree, both of which are native to Australia/Southeast Asia and invasive in the Florida Everglades. Research. He was the 2020 recipient of the Arthur T. Potts award for significant contributions to Rio Grande Valley Agriculture and the 2021 recipient of the Hidalgo County Farm Bureau – Service to Agriculture Award. He is the ARS delegate to the USDA-APHIS Technical Advisory Group for Biological Control of Weeds.

Biological control research update from the southwestern region presented by Paul Pratt, USDA Agricultural Research Service

Presentation Abstract: Status update for candidate biological control agents targeting weeds in the west and southwest regions of the USA.

Speaker Bio: Dr. Paul Pratt is the Research Leader of the USDA's Invasive Species and Pollinator Health Research Unit, located in Albany, California.

Ten years after the introduction of *Tectococcus ovatus* Biocontrol at Waikāne, Windward Ko'olau Mountains, O'ahu: observations and recommendations for its use in wet-to mesic forest restoration projects presented by Paul Zweng, Ohulehule Forest Reserve

Presentation Abstract: Observations and recommendations for the use of *Tectococcus ovatus* biocontrol in wet-to mesic forest restoration projects following ten years of restoration at Waikāne, Windward Ko'olau Mountains, O'ahu.

Speaker Bio: Paul Zweng is the Managing Member of 'Ōhulehule Forest Conservancy, LLC. Since 2012, Mr. Zweng has led an all-volunteer program to preserve and restore native Hawaiian forest in the upper half of Waikāne Valley, windward Ko'olau Mountains, O'ahu.

Biocontrol research for Hawaii and Pacific Islands presented by Tracy Johnson, USDA Forest Service

Presentation Abstract: A brief review of projects underway, regional partnerships, and prospects for increasing capacity for biocontrol research to serve Pacific Islands.

Speaker Bio: Tracy Johnson is a research entomologist in charge of the weed biocontrol program at the USDA Forest Service's Institute of Pacific Islands Forestry. He oversees work in the quarantine facility at Hawaii Volcanoes National Park and collaborates with international researchers to develop and evaluate biocontrol for invasive plants such as strawberry guava, miconia, clidemia, cane tibouchina, and albizia. He received an MS and PhD in entomology from North Carolina State University, training in insect ecology and integrated pest management.