

2020 ANNUAL REPORT

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# MONTANA BIOCONTROL COORDINATION PROJECT







## You have likely heard it many times but what a year 2020 was!

The field season started out with travel restrictions and many unknowns related to our ability to continue with typical biocontrol activities. For the most part, 2020 ended up being a relatively normal year (in terms of work completed), with the exception of not being able to provide much in-person educational programming. The time gained from the lack of in-person education was filled with increasing the number of sites monitored and inoculated with Canada thistle rust (from 17 to 72), starting a houndstongue root weevil monitoring project and working on two educational materials projects (learn more on these projects in the following pages). If there is anything that would help you utilize biocontrol let me know, I am always interested in hearing from the land managers across Montana and making biocontrol more accessible!

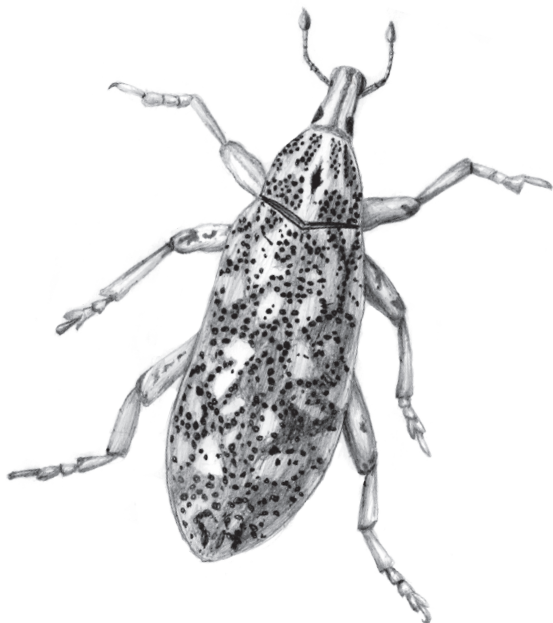
### Melissa Maggio

*MT Biocontrol Project Coordinator*

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## OUR MISSION

Provide the leadership, coordination, and education necessary to enable land managers across Montana to successfully incorporate biological weed control into their noxious weed management programs.

*Cyphocleonus achates*, illustrated by Evelyn Neel  
Cover Photo by Madeline Gaffigan

## PARTICIPATION

**8** in-person  
workshops/  
presentations

**5** virtual  
workshops/  
presentations



Outreach

**1** poster  
created

**1** field guide  
updated

**41**

Days Spent  
Collecting



**357**

Collection Day  
Participants

**22,037**

Miles Traveled  
For Workshops  
and Collections



## INSECTS

**9**  
species  
released

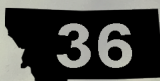


**8**  
species  
collected

**10,117** Acres  
Treated



**107**  
sites  
monitored



**36**  
counties  
received  
insects



**11** States  
Received  
Insects

**1,213,900** Insects  
Distributed



**\$342,350**  
Market Value  
of insects

## 2020 BREAKDOWN



**8%**

Out of State  
Coordination



**15%**

Fundraising

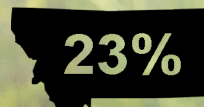


**44%**

Collections  
and Monitoring

**10%**

Education



**23%**

In-state Coordination

*"Biocontrol is where it's at! When I'm old and retired in my rocking chair, biocontrol is what I'll think about sometimes."*

*- Perry Stebbins, Invasive Plants - Kootenai National Forest*



# RESEARCH/MONITORING



In 2020, we initiated two rather time-consuming monitoring projects, which worked out with the reduction of in-person education due to Covid. One of the monitoring projects is related to non-target impacts of the houndstongue root weevil and the other is associated with all of the newly inoculated Canada thistle rust sites.

## Houndstongue Root Weevil Monitoring Project

In 2019, the Montana Invasive Species Council held a Science Advisory Panel to evaluate the feasibility of approving and using the houndstongue root weevil (*Mogulones crucifer*) in the U.S. One of the panel's recommendations was to begin monitoring the root weevil and its impact on non-targets at locations it has naturally established.

We received USFS Biological Control of Invasive Forest Pests funding to monitor for non-target impacts of the houndstongue root weevil. In 2020, we developed the monitoring protocol with the assistance of Dr. Jane Mangold, MSU, Dr. Sharlene Sing, USFS Rocky Mountain Research Station, and Dr. Rosemarie De Clerk-Floate, Agriculture and Agri-Food Canada. We also identified 9 sites in Montana with houndstongue, the weevil and a non-target, and monitored 8 of those sites. All sites will be monitored for 3 consecutive years, collecting data (vegetative form, height, number of flowers, feeding damage, and oviposition scarring) on houndstongue and the non-target individuals found within our 5m x 5m plots. After collecting data in the 3rd year, plants will be destructively sampled to inspect for eggs and larvae.

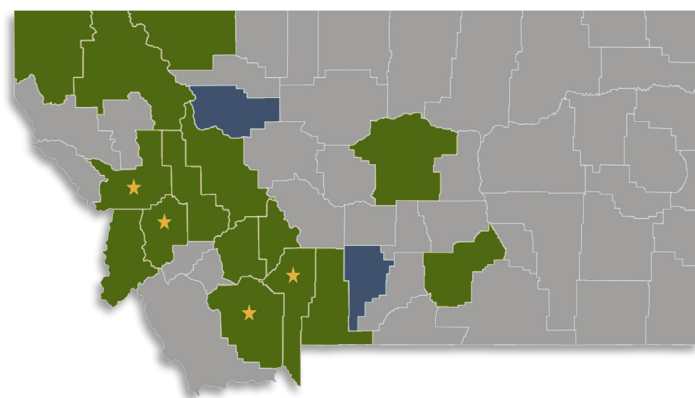
In 2021, we will re-monitoring the 8 sites established in 2020 and expand our monitoring sites to include 2 additional sites in Montana, 5 in Washington, and 5 in Idaho.





*Photos (from left to right): Houndstongue root weevil larvae found in a dissected houndstongue root, Cow covered in houndstongue seeds, Non-target impact monitoring plot*

- WEEVIL SUSPECTED
- WEEVIL PRESENT
- MONITORING SITE



As we search for sites with houndstongue, the weevil and non-target species, we have been able to collect information regarding presence of the weevil. Dr. Jeff Littlefield, MSU is also conducting adventive surveys for the houndstongue root weevil. The map includes counties where the root weevil has been identified or suspected (suspicious feeding damage but no weevils) through either the MSU surveys or the searches for these monitoring sites.



# RESEARCH/MONITORING



2018 - BEFORE

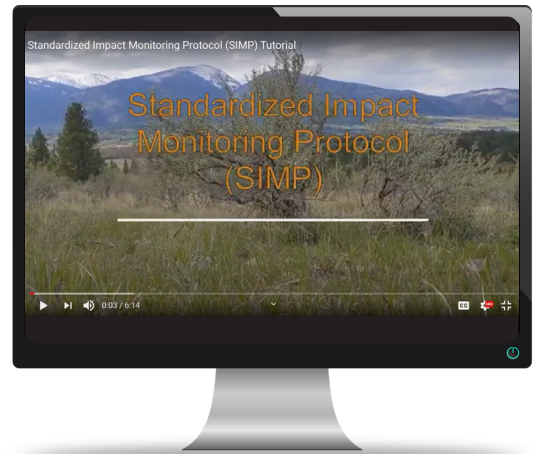


2020 - AFTER

## Canada Thistle Rust Inoculations

In 2019, we were able to harvest enough Canada thistle rust (*Puccinia punctiformis*) to establish a large-scale inoculation and monitoring project in 2020. As with everything else, Covid made our spring/early summer monitoring of inoculation sites a bit more difficult but we were able to monitor and inoculate 72 sites across Montana. This project requires two visits to the sites annually, in the spring to conduct vegetation monitoring and visually inspect for signs of rust infection and in the fall to inoculate the infestations with the rust or harvest infected plant material. Because of the size of our state and the need for 2 annual site visits, we reached out to partners to assist with some of the monitoring and/or inoculations. The Madison Valley Ranchlands Group Biocontrol Project, the Whitehall Biocontrol Project, Rocky Mountain Front Weed Roundtable, USDA Agricultural Research

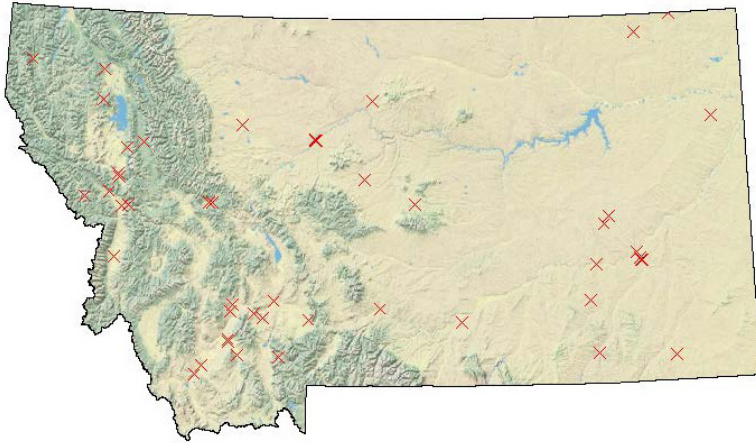
The SIMP Monitoring  
YouTube video created to  
provide training to partners  
helping with Canada thistle  
inoculation site monitoring  
can be viewed at: [https://  
youtu.be/cn1YXgcZqEI](https://youtu.be/cn1YXgcZqEI)



Before and after photos of a Canada thistle rust inoculation site in Madison county. It was inoculated in the fall of 2018 and by the fall of 2020 we saw near eradication of Canada thistle from the site.



## 2020 *Puccinia punctiformis* Sites



Service, Powder River County, Yellowstone County, Flathead National Forest, and a few private landowners all helped get sites established in 2020 and some will continue to manage these sites into the future. I owe them a huge thank you, without their help we would not have been able to inoculate nearly as many sites in this challenging year!

In 2021, we will continue to monitor, inoculate, and/or harvest sites established in 2020. These sites will continue to be monitored and inoculated until the rust establishes or the end of 5 years. Next year, we will also begin a partnership with Dr. Tim Seipel, MSU and Dr. Lisa Rew, MSU to utilize all of the data we are collecting to develop predictive tools for determining optimal sites for use of Canada thistle rust as a weed management tool. I am very excited to have their help to utilize all of the data we are collecting to develop a tool that will enable land managers to make informed decisions when managing Canada thistle with the rust.

*The aeciospore stage (top photo) is the first visible spore stage (late spring to early summer). The urediniospore stage (bottom photo) is the second spore stage is a visible just following the aeciospore stage (early summer).*





# EDUCATION PROJECTS

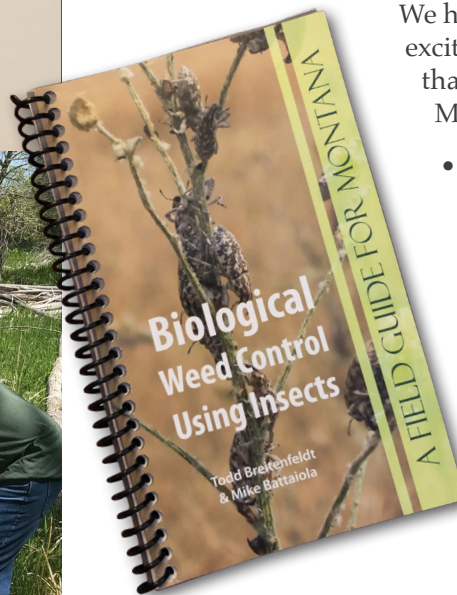


As has been mentioned, 2020 was not a typical year and biocontrol education came in different forms than it has traditionally. We had many really exciting in-person educational programs planned that were all cancelled after March. We were able to participate in 8 in-person education opportunities before March but after that we:

- Conducted 3 in-person, socially distanced monitoring trainings with Canada thistle rust partners
- Created a YouTube video to provide monitoring training for our Canada thistle rust partners who we were not able to meet up with in person
- Presented virtually for Kiwanis
- Provided interviews for a MWCA educational video, an invasive species website, and Northern Ag Network

We have also been working on 2 very exciting outreach material projects that are partially funded through the Montana Noxious Weed Trust Fund.

- Continuing to work with artist Evelyn Neel to create a biocontrol poster that should be completed and printed in early 2021
- Updating the Montana Biocontrol Field Guide in conjunction with Todd Breitenfeldt and the Whitehall Biocontrol Project





*"As an advocate of diversifying control methods, this job was a dream come true for me. I loved to spend my day zoning in on one species, watching how they interact with the plant, and scooping them up to send them across the U.S. to work their 'magic.'"*

*- Madeline Gaffigan, Big Sky Watershed Corp Member*

*"Biocontrol is more than forming an appreciation with the insects and the landscapes you interact with. It brings differing communities and people together to focus on a common goal, which taught me more than I could have imagined!"*

*- Elizabeth Hecker, Biocontrol Technician*





# PARTNER'S PERSPECTIVE



## Improving Leafy Spurge Management through Biocontrol Research

**Natalie West**, *Research Ecologist, USDA-ARS  
Pest Management Research Unit, Sidney, MT*

The MT Biocontrol Coordination Project (MTBCP) is a crucial collaborator for my biological control research program. Their extensive network of cooperators and logistical organization allows us to cover far more ground, a wider range of habitats, and serve a broader stakeholder base than would be possible from our perch at the far northeastern corner of the state. MTBCP has trained and facilitated biocontrol agent and vegetation sampling in western Montana for the past two summers for our Forest Service-funded project evaluating habitat factors affecting leafy spurge biocontrol efficacy.

The goal of this research project is to improve biological control of leafy spurge in the many habitats and regions where biocontrol management is not currently effective. It builds on work started by TEAM Leafy Spurge and implemented by land managers in the 1990s. Fifty sites throughout Montana have been sampled for soil characteristics and genetic analysis and are monitored annually for plant community composition and biocontrol agent presence. MTBCP coordinates the monitoring of all 16 sites in western Montana.

Melissa Maggio and MTBCP continue to be instrumental in coordinating field collections, particularly through their work with Youth Conservation Crews, and are an important source as well as pipeline for biocontrol knowledge and user feedback. We are lucky to have such a great program in Montana. MTBCP serves biological control management through many different avenues, and I appreciate their valuable partnership in moving the science forward.





# THANK YOU!

A big THANK YOU for the financial and technical support we received in 2020! Without such supportive partners, the Montana Biocontrol Coordination Project would not be possible.

Agricultural Research Service  
APHIS' Plant Protection and Quarantine  
Beaverhead County Conservation District  
Big Sandy Conservation District  
Broadwater Conservation District  
Bureau of Land Management  
Carbon County Weed District  
Cascade County Weed District  
Daniels County Conservation District  
Daniels County Weed District  
Fergus County Weed District  
Flathead County Weed District  
Gallatin County Weed District  
Glacier County Weed District  
Granite County Weed District  
Jefferson County Weed District  
Lake County Conservation District  
Lake County Weed District  
Lewis & Clark Conservation District  
Liberty County Weed District  
Lincoln Conservation District  
Lolo National Forest  
MT Department of Natural Resources & Conservation

MT Noxious Weed Trust Fund  
MT Department of Transportation  
Madison Valley Ranchlands Group  
Mineral County Weed District  
Missoula County Extension  
Missoula County Conservation District  
Missoula County Weed District  
Park County Extension  
Park County Weed District  
Pondera County Conservation District  
Powder River Conservation District  
Powell County Weed District  
Prairie County Weed District  
Richland County Weed District  
Stillwater Valley Watershed Council  
Sweet Grass County Weed District  
Teton Conservation District  
Teton County Weed District  
Toole County Weed District  
United State Forest Service – Region 1  
Valley County Weed District  
Wheatland County Weed District  
Whitehall Biocontrol Project  
Wibaux Conservation District  
Wild Sheep Foundation

Majority of the TECHNICAL SUPPORT we receive comes from the Montana Biological Control Steering Committee. THANKS to all of the members for your support and assistance on a variety of topics!



A close-up photograph of a green, spiny plant, likely a species of thistle or similar. The plant has several stems with serrated, spiny leaves. Some of the leaves and stems show significant damage, with large, irregular brown spots and areas of discoloration, suggesting a fungal or bacterial infection. The background is a dense field of similar green plants.

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