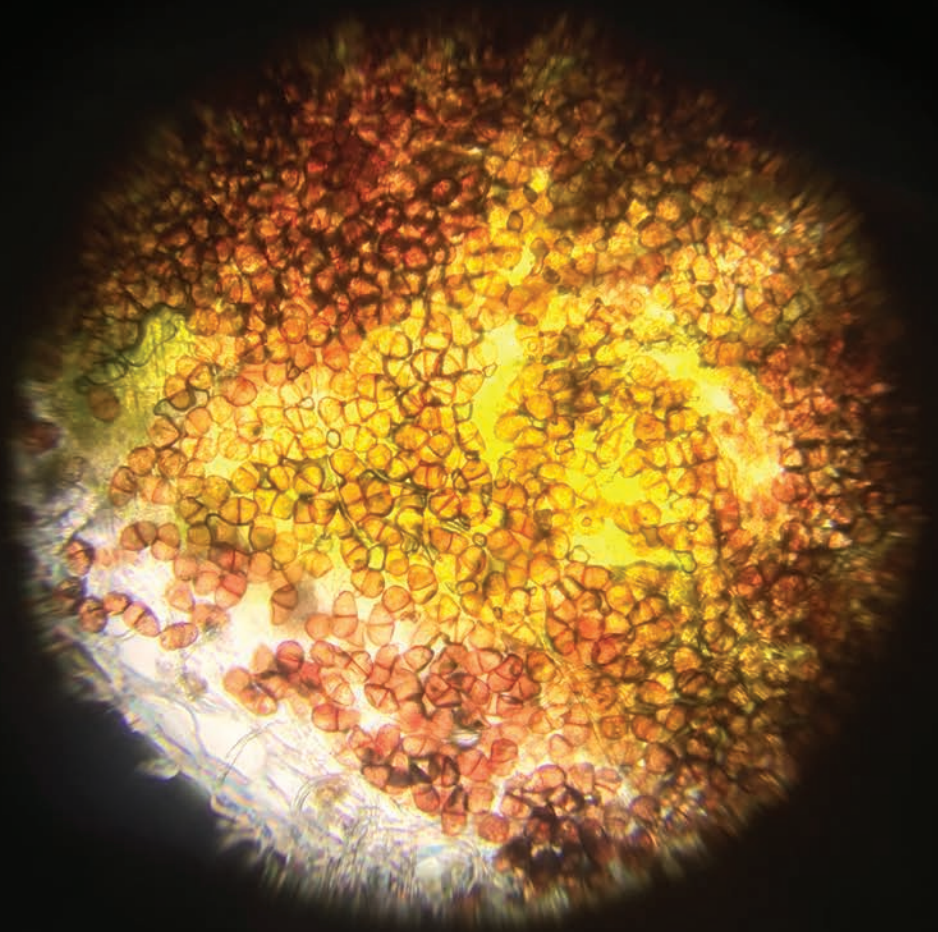
Montana Biocontrol Coordination Project



ANNUAL REPORT | 2019

2019 was an exciting year!

We were awarded Plant Protection Act funding, which enabled us to increase capacity and allowed for the expansion of the previously very limited ability to monitor biocontrol releases. We discovered houndstongue root weevils in a number of houndstongue infestations and found significant infection of the Canada thistle rust at sites previously inoculated! We completed a five year program assessment to determine how we can improve the Montana Biocontrol Coordination Project (MTBCP) and better address the needs of the land managers within our state. This assessment will also help direct our focus for the next five years. We are always looking for ways to improve MTBCP and provide you with the coordination, tools, and trainings that will support your biocontrol efforts, so please do not hesitate to contact me if you have ideas.

Melissa Maggio
MT Biocontrol Project Coordinator
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mtbiocontrol.org

Cover Photo: Canada thistle rust spores as seen through a microscope

Biocontrol illustrations featured throughout this report were produced by Evelyn Neel as part of a poster project that will be produced in the near future.

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

PARTICIPATION

16 Work shops/ presentations

525 Workshop attendees

43 Days Spent Collecting

432 Collection Day Participants

8730 Miles Traveled For Workshops and Collections

INSECTS

11 species released

8 Species Collected

10615 Acres Treated

35 Sites Monitored

41 counties & 6 out of 7 Reservations recieved insects

11 States Received Insects

1,128,750 Insects Distributed

$219,000 Market Value of insects

2019 BREAKDOWN

10% Out of State Coordination

17% Fundraising

15% Workshops

31 % Collections and Monitoring

27 % In-state Coordination

"I have greatly increased my knowledge of biocontrols working with MTBCP! You are an excellent resource."

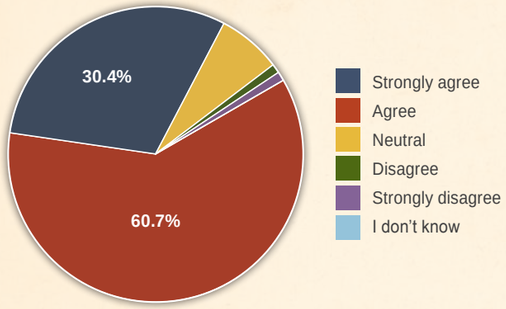
— MTBCP assessment respondent

2019 MTBCP PROGRAM ASSESSMENT

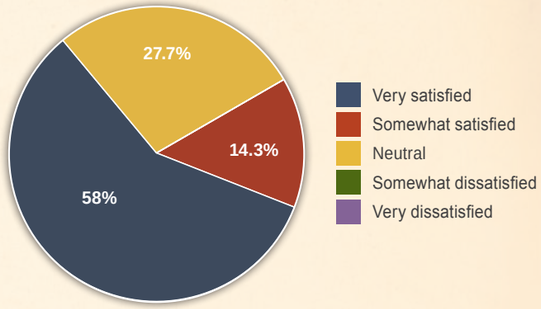
All assessment results are based on 112 responses.

In early 2019, we conducted a program assessment to help evaluate the impacts of the program for land managers and landowners throughout Montana. MTBCP is exclusively funded through grants, contributions, and cooperative agreements. This data helps us demonstrate to our funders the value of having a statewide biocontrol program. It also helps us understand if we have been on the right track the last 5 years or if we need to redirect our focus to new priorities. The following graphics demonstrate a few of the results. To see the complete assessment results, visit mtbiocontrol.org and look under resources.

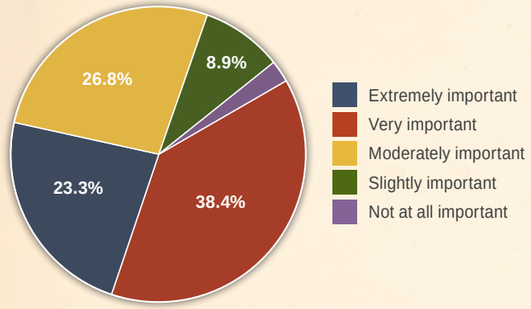
Biocontrol is effective for controlling invasive species.



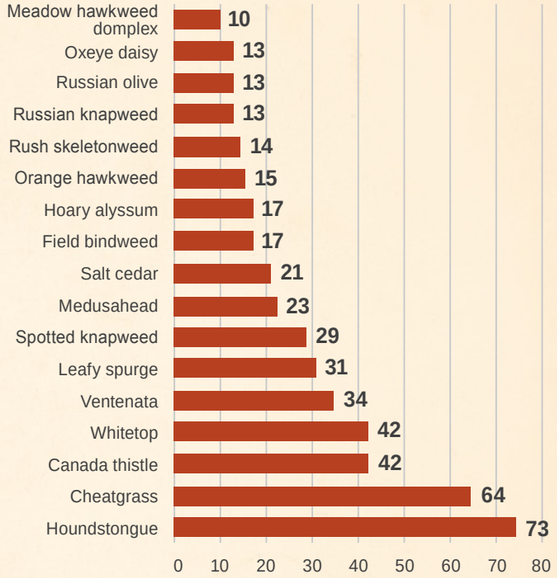
How satisfied are you with your interactions with MTBCP?



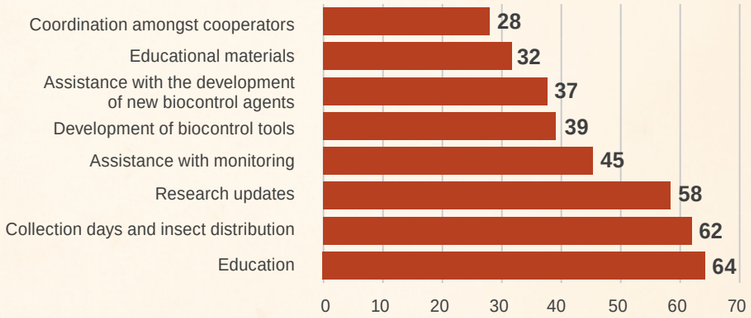
How important do you consider biocontrol use as part of your integrated weed management plan?



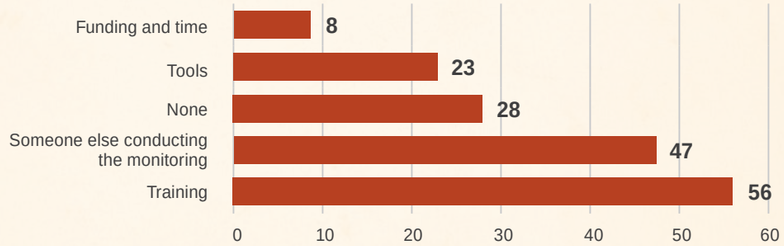
Weeds that should be targeted for development of new biocontrol agents



What services would you like MTBCP to provide?



What assistance would you need to conduct periodic monitoring of release sites?



COORDINATION AND COMMUNICATION

While we continue to provide the education and insect collections/distribution that land managers remain interested in, the results of the assessment provided new directions for MTBCP to pursue. The top 3 weeds you are interested in developing new biocontrol agents for are houndstongue, cheatgrass, and Canada thistle. In the following sections you can read about the progress in developing biocontrol agents for houndstongue and Canada thistle. Through increased capacity as a result of the Plant Protection Act Funding, we were also able to provided additional support for monitoring assistance in 2019.

Montana Invasive Species Council Assembles Science Advisory Panel on Mogulones crucifer

We provided input and support for the Mogulones crucifer science advisory panel, in an effort to gain a better understanding regarding the potential of this insect to be utilized as a weed management tool for houndstongue in the future.

Canada began releasing the biological control agent Mogulones crucifer, a weevil, in 1997 for the control of houndstongue, a highly invasive nonnative weed that is a serious nuisance for ranchers and outdoor enthusiasts. The weevil has had lasting and population level impacts on houndstongue in Alberta and British Columbia. While these weevils have naturally moved into Montana from Canada, they are not an approved agent in the United States. It is currently illegal to facilitate their redistribution through non-natural means due to concerns that these weevils may feed on federally protected non-target plant species.

Considering the absence of other effective control methods for houndstongue, along with the lack of negative ecological impacts and positive management outcomes associated with the release of this agent in Canada, the Montana Invasive Species Council enlisted assistance from the scientific community and formed a science advisory panel to evaluate the feasibility of approving and using Mogulones crucifer in the U.S. by reviewing new or additional information available since its approval and introduction in Canada.

The panelists met on April 30-May 1 with agency staff and stakeholders to discuss a series of questions related to the current status of Mogulones crucifer. The goal of the workshop was to come to consensus on a set of recommendations for how and if to pursue petitioning the weevil as a biological control agent in Montana.

The panel's recommendations include:

- Develop consistent protocol for monitoring M. crucifer and non-targets
- Develop mitigation strategies to follow on science-based decisions where needed
- Petition be developed and submitted to regulatory agencies for release of M. crucifer in the U.S.
- Fully utilize all new field and laboratory data that are available to support petition decisions being made based on the ecological host range of M. crucifer

Key findings and a complete summary of the recommendations can be found at misc.mt.gov.

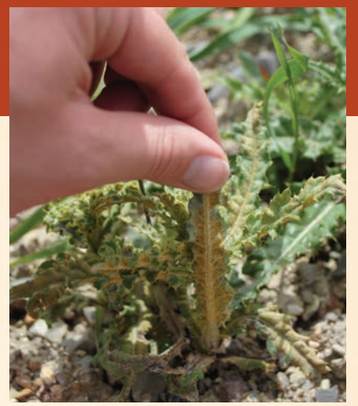
Canada Thistle Rust Infections Found in Montana!

Canada thistle is a deep rooted, long lived perennial in which control depends on killing the extensive root system. The difficultly of control is why work began on a naturalized rust fungus, Puccinia punctiformis. This rust can only complete its life cycle on living Canada thistle plants and in the process the root system becomes permanently infected.

In 2013, the Colorado Department of Agriculture (CDA) began to implement and track the impact of P. punctiformis across Colorado. By 2016, data from Colorado demonstrated the rust was impacting Canada thistle patches. Work continues within Colorado to determine the factor or factors that enhance the efficacy of the rust.

The initial success in Colorado, has led to the initiation of a multi-state program supported by the US Forest Service through the Biocontrol of Invasive Plants program. Weed and resource managers in seven additional western states have been instructed on the use of the rust for Canada thistle control.

Beginning in 2017, we have annually received P. punctiformis from Colorado



to inoculate Canada thistle infestations in Montana. Over the last three years, we have inoculated 17 different sites (many of them have been reinoculated 2 or 3 times) throughout the states. When monitoring our inoculated sites in the spring of 2019, we found 5 infected sites. We revisited all of these sites in the fall to determine if there were enough spores to collect. We were able to harvest infected Canada thistle stems from 2 of the 5 infected sites. These stems were brought to a greenhouse to dry and were then ground up into the inoculum that we will spread to new sites in the fall of 2020. The current recommendation from CDA is to inoculate with 75 grams of ground up infected Canada thistle foliage. We have over 100, 75 gram portions to disperse within Canada thistle infestations in 2020! We will be able to help some land managers inoculate and monitor but we will be looking for partners that are willing to commit to annual monitoring to receive inoculum. Annual monitoring is the best way to determine if the rust has infected the Canada thistle infestation and we can harvest infected Canada thistle stems in the fall. If we do not have sites to harvest, we will not have rust to disperse the following year.

Monitoring Assistance Pilot Project

We were able to gather enough funding through the Plant Protection Act award and partner contributions to pilot a biocontrol monitoring project! We hired a seasonal employee, who had assistance from a Big Sky Watershed Corps Member and a Montana Conservation Corps Intern. They were able to monitor 35 transects (some newly established and some remonitored) in addition to helping with insect collections and distribution.

We plan to expand on this project in 2020 in 2 ways: in an effort to get the houndstongue weevil approved as a biocontrol agent, we will include monitoring of the weevil and any potential nontarget impacts it is having in Montana (this was a recommendation from the Science Advisory Panel) and to provide monitoring assistance to some of the Montana Forests within Region 1. This expansion is dependent on increased funding from cooperative agreements and grants. If this monitoring effort continues to be successful and needed we will expand the capacity to serve other forests and land managers throughout Montana.

"One of my favorite parts of the experience was making connections with community members. From meeting small-scale gardeners at the Clark Fork Market, to visiting ranchers in eastern Montana, I was amazed by how interested everyone was in caring for their land. Everywhere, Montanans look for the most efficient practices to keep their land healthy and productive."

— Tess Kendrick, Montana Conservation Corp Intern

"Following the phenology of the biocontrol agents, we picked, prodded and scraped our way across the western Montana landscape to collect various agents, flower head feeders, root borers and fungi, included."

— Haley Gamertsfelder, Big Sky Watershed Corp Member

PARTNER'S PERSPECTIVE

Madison Valley Ranchlands Group (MVRG) Weed Committee

Melissa Griffiths, *MVRG Weed Committee Project Coordinator*
Liz Davis, *Madison County Biocontrol Project Leader*

The Madison Valley Ranchlands Group's Weed Committee has worked with Melissa Maggio and the Montana Biocontrol Coordination Project for many years. This partnership has proven to be invaluable to us here in Madison County. Melissa has become an exceptional resource not only for facilitating collections, but for providing up to date information and training in regards to biological control and monitoring as well. Additionally, we're so excited that she is working hard to include Montanans in up-to-date research on the Canada thistle rust fungus, Puccinia punctiformis.

We were thrilled to participate in trials utilizing the rust here in Montana. Canada thistle plants at 2 sites in Madison County were inoculated in fall of 2018. Recognizing that there's much to learn about this new biocontrol agent, we monitored this year in the hope of finding SOME sign that the rust had survived. This fall we were ecstatic to find that the rust had not only survived, but had spread and infected plants throughout the area around the initial release site. Melissa visited the site with us and determined that the rust was adequately established that we could harvest infected plants! Because of this, the MVRG Weed Committee and MTBCP were able to collect 34 bags of leaves from infected plants. The rust spores on these leaves will be used to produce inoculum for more Canada thistle control trials in Montana.

The MVRG Weed Committee is so very pleased to be a part of this new research, putting Madison County and Montana in the forefront of developing new technologies to fight noxious weeds. We are most grateful to Melissa and the Montana Biocontrol Coordination Project for making this opportunity possible, as well as the ongoing support of our biocontrol program. The work being done by MTBCP further ensures that biological control efforts on behalf of many individuals and organizations across the state continue into the future!

THANK YOU!

A big THANK YOU for the financial and technical support we received in 2019! Without such supportive partners, the Montana Biocontrol Coordination Project would not be possible.

APHIS' Plant Protection and Quarantine
Beaverhead County Weed District
Broadwater Conservation District
Bureau of Land Management
Carbon County Weed District
Custer County Weed District
Fergus County Weed District
Flathead County Weed District
Flathead National Forest
Gallatin County Weed District
Glacier County Weed District
Hill County Weed District
Judith Basin County Weed District
Lewis & Clark Conservation District
Liberty County Weed District
Lincoln Conservation District
Lincoln County Weed District
Lolo National Forest
MT Department of Natural Resources & Conservation
MT Noxious Weed Trust Fund
Montana Department of Transportation
Madison Valley Ranchlands Group
Mineral County Weed District
Missoula County Weed District
Missoula County Extension
Park County Extension
Park County Weed District
Powder River Conservation District
Powder River County Weed District
Powell County Weed District
Prairie County Weed District
Richland County Conservation District
Stillwater 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 Conservation District
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 Weed Control Working Group. THANKS to all of the members for your support and assistance on a variety of topics!

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