Montana Biocontrol Coordination Project

2023 Annual Report

Montana Biocontrol Coordination Project

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Hannah Lewis, Vice Chair

Natalie West, Science Advisor

STAFF

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Project Coordinator

Cade Ulrich,
Biocontrol Technician

Harper Tipps,
Biocontrol Technician

Meredith Eiden,
Big Sky Watershed
Corps Member

OUR MISSION

Montana Biological Weed Control Coordination Project (MTBCP) is a soft-funded, grassroots effort created to 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.

What a way to wrap-up our 10th year - concluding the Canada thistle rust inoculation & monitoring project, finishing the data collection portion of the houndstongue root weevil monitoring project, identifying some exciting findings through monitoring efforts, completing the biocontrol agent resin project, starting-up an exciting new project for flowering rush (you can get more details on all of this in the following pages), and moving into a beautiful new facility with the first butterfly house in Montana! In addition to all of this, we spent 48 days hosting collection days (a new all-time high) and participated in 24 educational events (this tied our previous all-time high in 2018)!!! In early 2024, we will be conducting a program assessment to ensure we continue to provide the services that you are in need of. We have some ideas of potential new directions, so please complete the assessment to ensure your needs and ideas are accounted for. Thanks for a great 10 years and I hope the next 10 can be as successful and rewarding as the first!

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New Address
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Biocontrol illustrations by Evelyn Neel, www.evelynneel.com

PARTICIPATION

21 in-person workshops/ presentations

3 virtual workshops/ presentations

Outreach **500** biocontrol agent resins created

48 Days Spent Collecting

358 Collection Day Participants

17,574 Miles Traveled For Workshops and Collections

INSECTS

8 species released

8 species collected

9,000 grams Canada Thisle rust harvested

9,438 Acres Treated

108 sites monitored

40 counties received insects

12 States & **4** Tribal Nations received insects

721,835 Insects Distributed

$332,400 Market Value of insects

2023 BREAKDOWN

8% Out of State Coordination

9% Fundraising

33% Collection & Distribution

15% Education

22% monitoring

13% In-state Coordination

Research Projects

That's a wrap!

Houndstongue

Monitoring for non-target impacts of the houndstongue root weevil was initiated in 2020 and the field observation and plant dissection data collection portion of the project wrapped-up in 2023! In early 2024, we will analyze the data and write a summary to share with the funders and interested parties.

Flowering Rush

Flowering rush is a significant problem on Flathead Lake and is also found on the Flathead and Clark Fork River's. In collaboration with the other interested states and organizations, we are working to prepare for field releases of a weevil (currently being reviewed for approval by USDA-APHIS) to aid in the management of this difficult to control weed and hopefully reduce the spread downstream.

Canada Thistle

We began working with the Canada thistle rust in 2017. Since then, we have inoculated and monitored approximately 100 Canada thistle infestations across Montana in hopes of gathering information that will inform why it is an effective management tool at some sites and not others. The monitoring data we gathered has been shared with researchers at MSU for a project that concluded this year. They are currently finalizing the results and preparing them to share with land managers (read more about this project on pg. 10).

In 2023, we...

- worked with partners to develop a monitoring protocol
- began annual pre-release monitoring
- identified an additional monitoring site
- built a soil corer and will begin taking soil cores in 2024
- began conducting monthly site visits
- began fabricating cages for testing that will eventually be used to contain weevils
- began work on establishing artificial ponds for weevil rearing

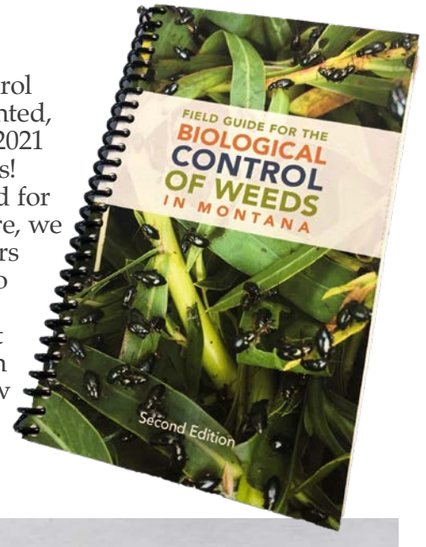
Educational Materials

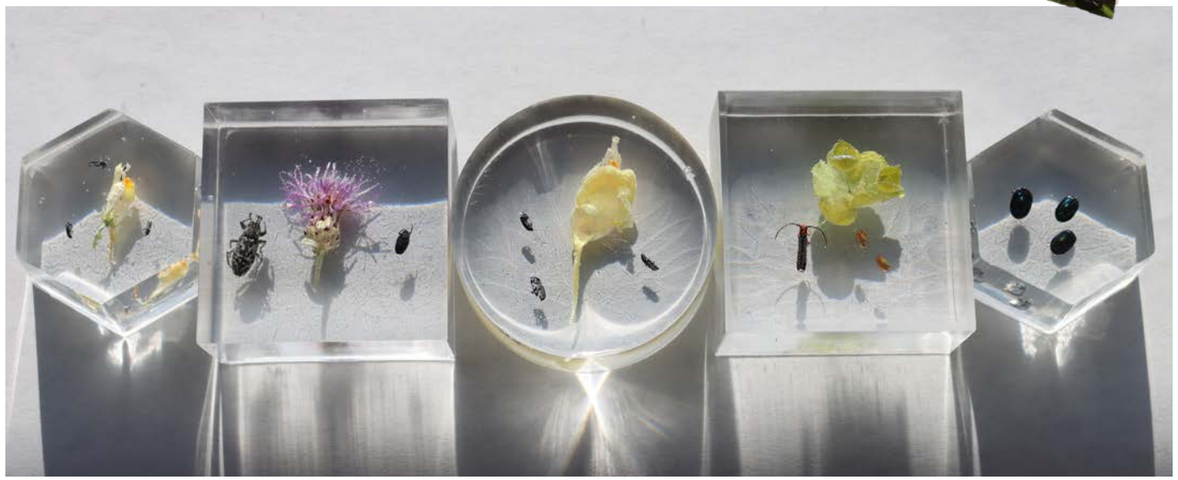
Resin Displays

100 sets of 5 biocontrol agent resins have been completed and are ready for distribution! Reach out if you are in need of these educational tools that can be used as displays at education events, when tabling, or anywhere else. They feature the 5 most common and effective biocontrol systems in Montana (yellow toadflax, Dalmatian toadflax, St. Johnswort, leafy spurge, and spotted knapweed).

Field Guides

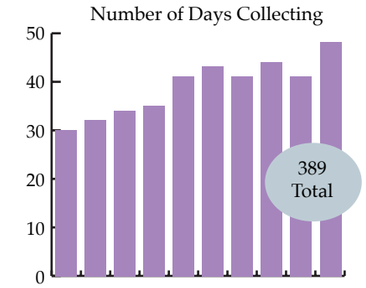
The updated Montana Biocontrol Field Guide was finalized, printed, and distributed beginning in 2021 and we are nearly out of copies! There has been a huge demand for these field guides and therefore, we will be looking for grant dollars and asking for contributions to reprint additional copies for distribution. Be on the lookout for the request for contribution for this project and let us know if you have any additional funding ideas for this project.

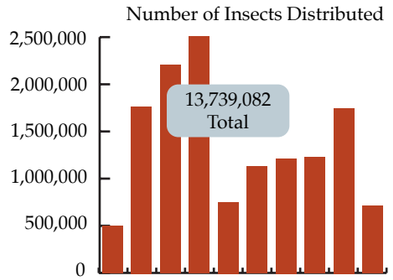


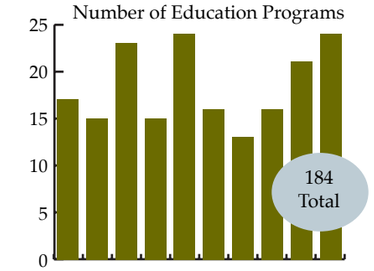


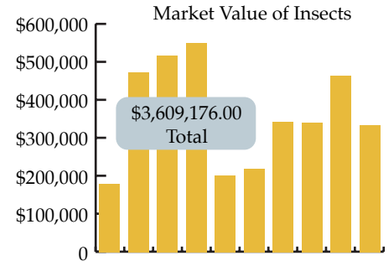
10-year Highlights

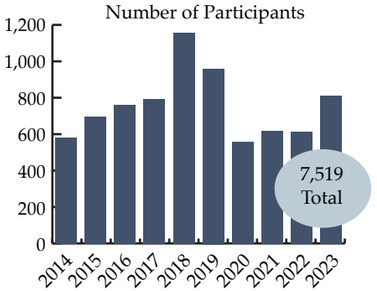
Over the last 10 years, MTBCP has created educational materials and handouts including posters, field guides, stickers, tattoos, boot brushes, resins, and a variety of documents and participated in a variety of biocontrol related research projects on leafy spurge, houndstongue, Canada thistle, and flowering rush. This work is difficult to summarize with graphics but here are some of the project focus areas that can more easily be summarized with numbers and graphs.

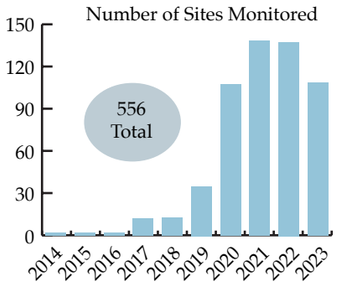








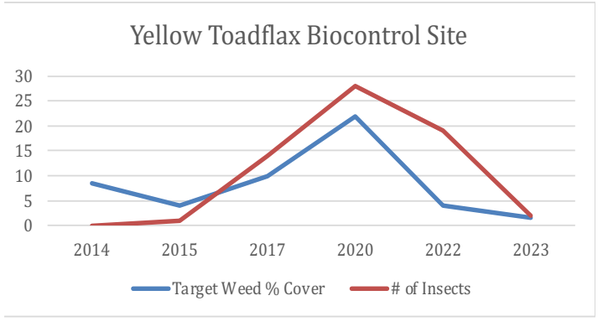




Monitoring Highlights

Long-term monitoring (more than 3 years) can demonstrate very interesting and important results regardless of the weed management tool utilized but is almost always necessary to determine establishment and impact of biocontrol. This past year we identified a few exciting findings from our monitoring activities:

A yellow toadflax site that we first released at and began monitoring in 2014, is showing a significant reduction of yellow toadflax and associated reduction of the weevils but also secondary invasion from spotted knapweed. This information has alerted the land manager to change their focus from management of the yellow toadlfax with biocontrol to managing the spotted knapweed. Without collecting the vegetation data, the secondary invasion could have gone on longer before management occurred.

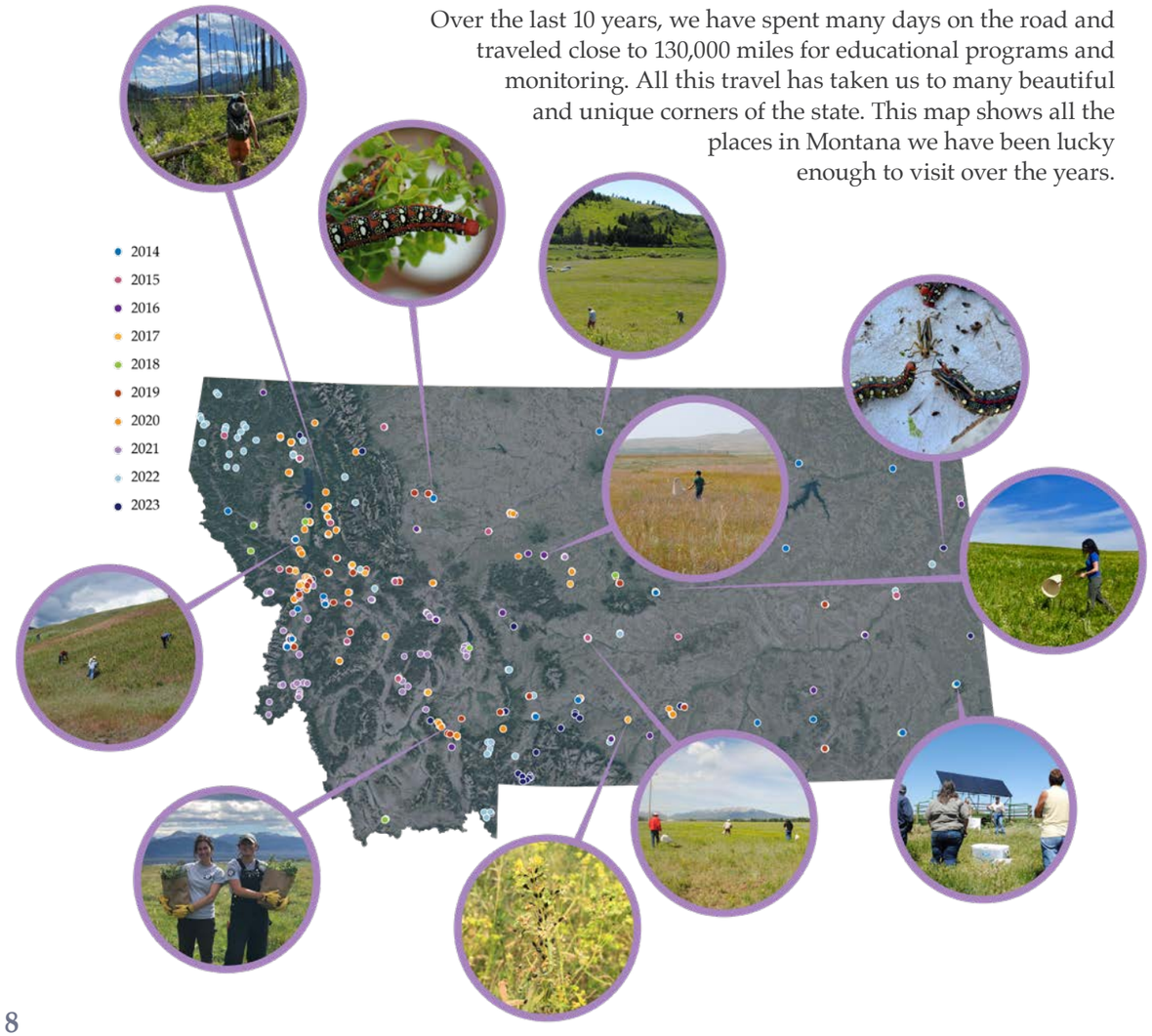


As a part of our monitoring agreement with USDA-Forest Service, Region 1, we assist Forests in assessing past release sites for establishment. This year we identified 5 potentially collectible leafy spurge sites and 4 potentially collectible Dalmatian toadflax sites (based on standardized insect counts). This is especially exciting on a year that we struggled to collect biocontrol agents for these target weeds at our typically plentiful collection sites.

Sweep	Number of flea beetles
1	100+
2	200+
3	38
4	70
5	75
6	100

TRAVEL OVER THE YEARS

Over the last 10 years, we have spent many days on the road and traveled close to 130,000 miles for educational programs and monitoring. All this travel has taken us to many beautiful and unique corners of the state. This map shows all the places in Montana we have been lucky enough to visit over the years.



"I have learned so much throughout my time with MTBCP. Through hands on experience, I learned about a variety of biocontrol agents, the noxious weeds they inhabit, and how impactful it can be for integrated weed management. I appreciated the amount of time I got to spend outdoors whether it be collecting insects, monitoring transects, or travelling to new places across Montana and camping in beautiful places. Every week held something new and taught me that having variability in the workplace is something very important to me. Of course, fieldwork slowly comes to an end, which led to the start of my final project, creating biocontrol agent resins. This project took a lot of teamwork, problem solving, and trial and error. After all the road bumps, seeing the final products turn out beautifully has been so satisfying."

-Big Sky Watershed Corps Member, Meredith Eiden

Partner's Perspective

Since 2021, the Montana Biocontrol Coordination Project (MTBCP), USDA Forest Service, and Montana State University (MSU) researchers have worked together on Cirsium arvense (Canada thistle) control using Puccinia punctiformis (thistle rust), an obligate fungal pathogen. The goals of this collaboration were to evaluate thistle rust's landscape distribution, assess the effect of thistle rust on Canada thistle in different environments, and use these outcomes to develop a predictive tool on the efficacy of thistle rust as a biocontrol agent across the landscape. Since the collaboration began, 134 Canada thistle infested transects at 100 sites have been monitored, and 80 transects at 60 of the sites have been inoculated with thistle rust spores. While analysis is ongoing, initial results indicate that signs and symptoms of thistle rust infection are more abundant in cooler and wetter areas and systemic infection increases with elevation. Likely indicating that biocontrol efforts using thistle rust would be most effective in these locations, where the rust is most likely to establish and flourish. Canada thistle is also less abundant when experiencing competition from surrounding vegetation and this impact is greater on thistle rust infected individuals. For example, in 2022, MSU researchers published a peer-reviewed journal article on Canada thistle management using thistle rust, where they found thistle rust infection reduced Canada thistle above- and belowground biomass, and this effect was greater when thistle rust infection was combined with competition with other plants.

Tim Seipel, Chris Larson, and Dan Chichinsky
Montana State University

THANK YOU!

A big THANK YOU for the financial and technical support we received in 2023! 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
Beaverhead County Weed District
Big Sandy Conservation District
Blaine County Weed District
Bureau of Land Management
Carbon County Weed District
Cascade County Weed District
Eastern Sanders Conservation District
Fergus County Weed District
Gallatin County Weed District
Golden Valley County Weed District
Granite County Weed District & Extension
Jefferson County Weed District
Jefferson Valley Conservation District
Lake County Weed District
Lewis & Clark County Conservation District
Liberty County Weed District
Lincoln Conservation District
MT Department of Natural Resources & Conservation
MT Fish, Wildlife, & Parks
MT Noxious Weed Trust Fund
MT Department of Transportation
MT State University
Madison Valley Ranchlands Group
Mineral County Weed District
Missoula County Conservation District
Missoula County Department of Ecology & Extension
Musselshell County Weed District
Park County Weed District
Petroleum County Conservation District
Pondera County Conservation District
Powell County Weed District
Prairie County Weed District
Richland County Weed District
Sanders County Weed 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 States Forest Service – Region 1
Wibaux Conservation District

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!

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