

# MISSOULA COUNTY WEED DISTRICT



## *Annual Report* 2021

# MISSOULA COUNTY WEED DISTRICT

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Youth in Restoration Lead

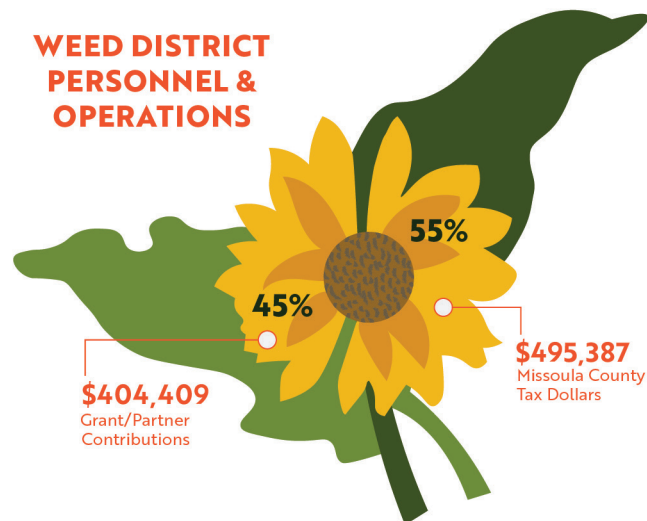
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Biocontrol Technician

Eliza Gillilan  
Big Sky Watershed Corps Member

## Board

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**It is hard to look back on 2021** without getting excited about the opportunities that lie ahead. Missoula County Aquatic Invasive Species District (Montana's first county Aquatic Invasive Species District) began the hard work of defining the role that local government should play in the protection of our water resources from invasive species, building collaborative partnerships with local, state, federal, tribal, and NGO's along the way. Weed District staff has continued to find creative and innovative ways to adapt our programs to a "new normal," including beginning the process of creating a series of self-paced online learning courses to assist Missoula County residents with their property and land management goals. And in May we broke ground on a brand-new facility, The Rocky Mountain Gardens and Exploration Center! This facility will be the future home for us and our partners at the Missoula Conservation District, Missoula County MSU Extension, and the Missoula Butterfly House & Insectarium. Here we will be able to provide a one-stop-shop for landowners and land managers regarding a wide range of conservation-related resources and information. The most important component of all this excitement is you. Not only do partnerships continue to support nearly half of our operations budget, but our partners also help us refine our programs to make sure we are providing the resources our community wants and needs. Thank you to all of you that have been so important in making 2021 a success, and we look forward to working with you in 2022!







# New Invaders and Prevention

## Weed Seed Free Products

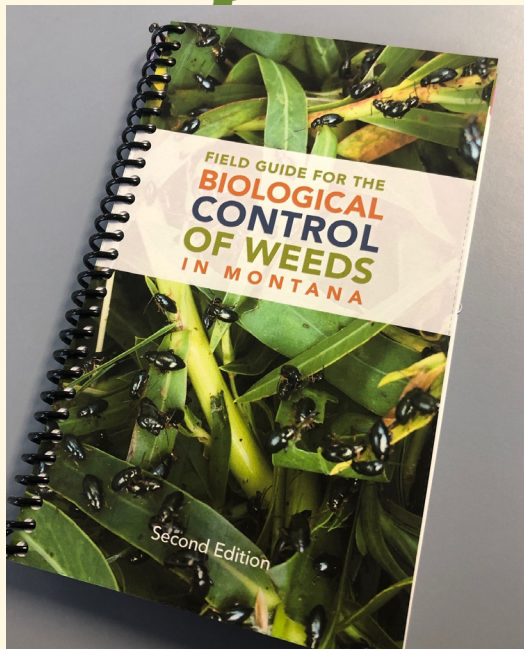
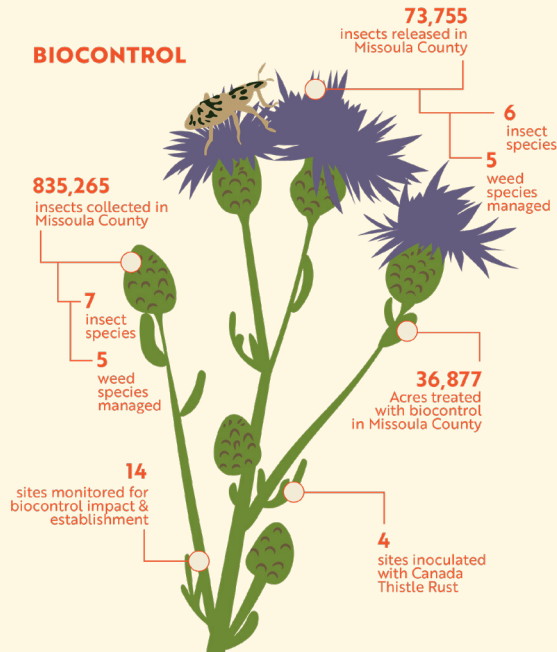
Weed seed-free forage & gravel products within Missoula County's agriculture lands.

Each season presents a unique set of hurdles that seems to deviate from a planned project's outcome, this season was no different. The harsh drought and heavy fire season resulted in a product yield of roughly 60% of the normal harvest. Multiple producers were unable to produce enough forage to sustain both their usual harvest and their weed seed-free crop.

Despite the reduction in forage, some good did come from this season. Missoula County Weed District began inspecting and certifying gravel pits within the county. This new program is yet another tool the weed district employs to prevent weed transmission and establishment along roads, by ensuring that weed propagules are not present within the source material for road bases. These large multi-acre gravel pits take roughly 4 to 5 hours to certify and are inspected at a biannual interval during peak weed growth cycles.



# Biocontrol



Two exciting education projects, updating the **Montana Biocontrol Field Guide** and a **Biocontrol Poster** were completed in 2021! These projects were both made possible due to significant contributions (financial and expertise) from partners.

Updating the **Montana Biocontrol Field Guide** was completed in conjunction with the Whitehall Biocontrol Project and was partially funded by the Montana Noxious Weed Trust Fund. This field guide features:

- 10 state-listed noxious weeds and their corresponding biocontrol agents (21 agents in total).
- Pictures and descriptions to help identify and understand the biocontrol agents.
- Illustrations regarding the part of the plant that is attacked and collection methods for biocontrol agents.
- Life cycle graphics for convenient use throughout the year.
- How to's for: determining a good release site, collecting, releasing, and monitoring.
- Information on how to incorporate biocontrol as part of an Integrated Weed Management (IWM) plan with an easy-to-use table informing which management tools can be utilized for which state-listed terrestrial noxious weeds.
- A "Low Impact" table includes the biocontrol agents that are considered to not result in an adequate level of control.
- Useful links for additional biocontrol information.

**This update was made possible by:**

**5** authors    **13** editors  
**1** talented and patient graphic designer  
**18** generous donors

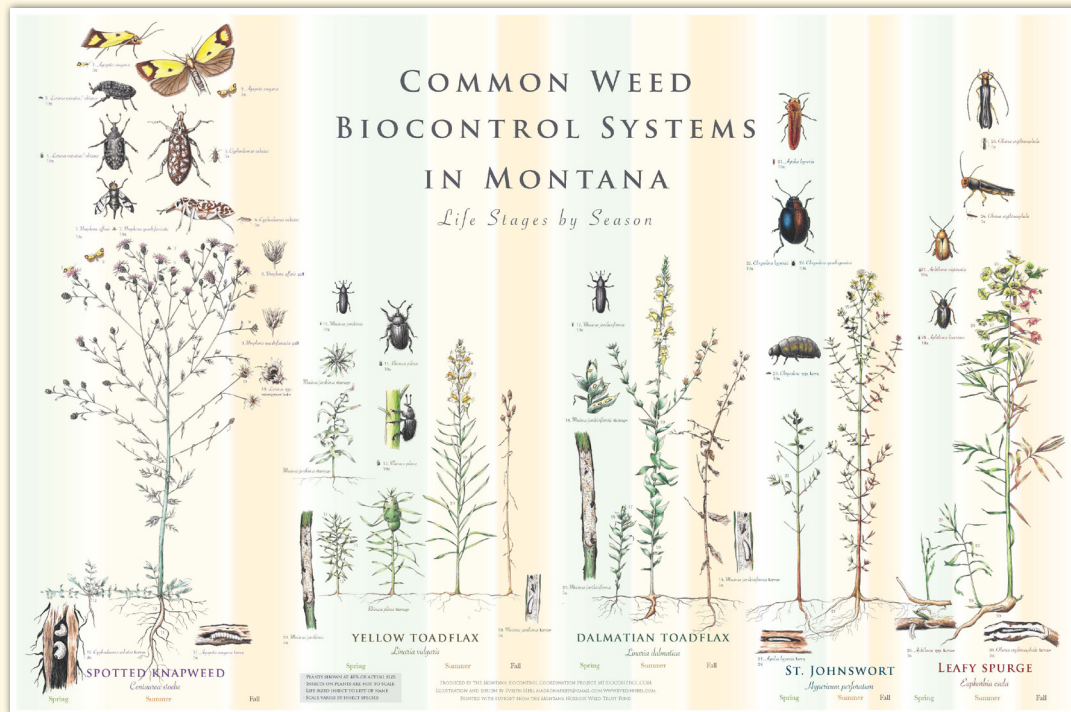
The **Biocontrol Poster** features illustrations of the most common and effective biocontrol systems in Montana. These illustrations depict the target weed and what stage and where you will find the associated biocontrol agents throughout the seasons. Land managers often know when and where to look for biocontrol agents as adults but not when and where to look for agents at other stages. In addition to being a beautiful addition to your wall, this poster is meant to be a tool for identifying biocontrol agents throughout the seasons.

## Posters feature:

- 37 individual illustrations
  - o 5 state-listed noxious weeds (spotted knapweed, leafy spurge, Dalmatian toadflax, yellow toadflax, and St. Johnswort)
  - o 14 biocontrol agents in a variety of stages and associated plant damage

## This poster was made possible by:

**1** talented artist      **4** expert reviewers  
 Partial **funding** from the  
 Montana Noxious Weed Trust Fund



Illustrated and designed by Evelyn Neel, [Madronapress@gmail.com](mailto:Madronapress@gmail.com), [www.evelynneel.com](http://www.evelynneel.com)

# Aquatic Invasive Species



## Montana's First County Aquatic Invasive Species District

In 2021, Missoula County began in earnest to develop and formalize the role that a county government can play in the management of aquatic invasive species (AIS) by creating Montana's first County Aquatic Invasive Species District. Created with the intended purpose to coordinate the prevention, survey, monitoring, and management of AIS within Missoula County and to educate the people living and recreating within Missoula County on the identification and impacts of AIS to our economy and environment, this newly created board and district has been hard at work creating the framework that will guide future activities for the County on all things related to aquatic invasive species. These efforts will be divided into four primary goals of 1) increasing public knowledge and engagement in AIS activities, 2) increasing collaboration between agencies, 3) prevention of new infestations of AIS within Missoula County and 4) containment of existing AIS populations that already exist within Missoula County.

This is all in addition to existing AIS work conducted by Missoula County's invasive species districts, including the continued operation of the Clearwater Watercraft Inspection Station, which again in 2021 was the busiest inspection station in the state. With just over **30,600** inspections, roughly **28%** of all the watercraft inspection conducted in Montana during 2021 were done at Clearwater by Missoula County employees. We hope to see you with your Cleaned, Drained and Dried boat pulling through the station in the upcoming 2022 boating season!

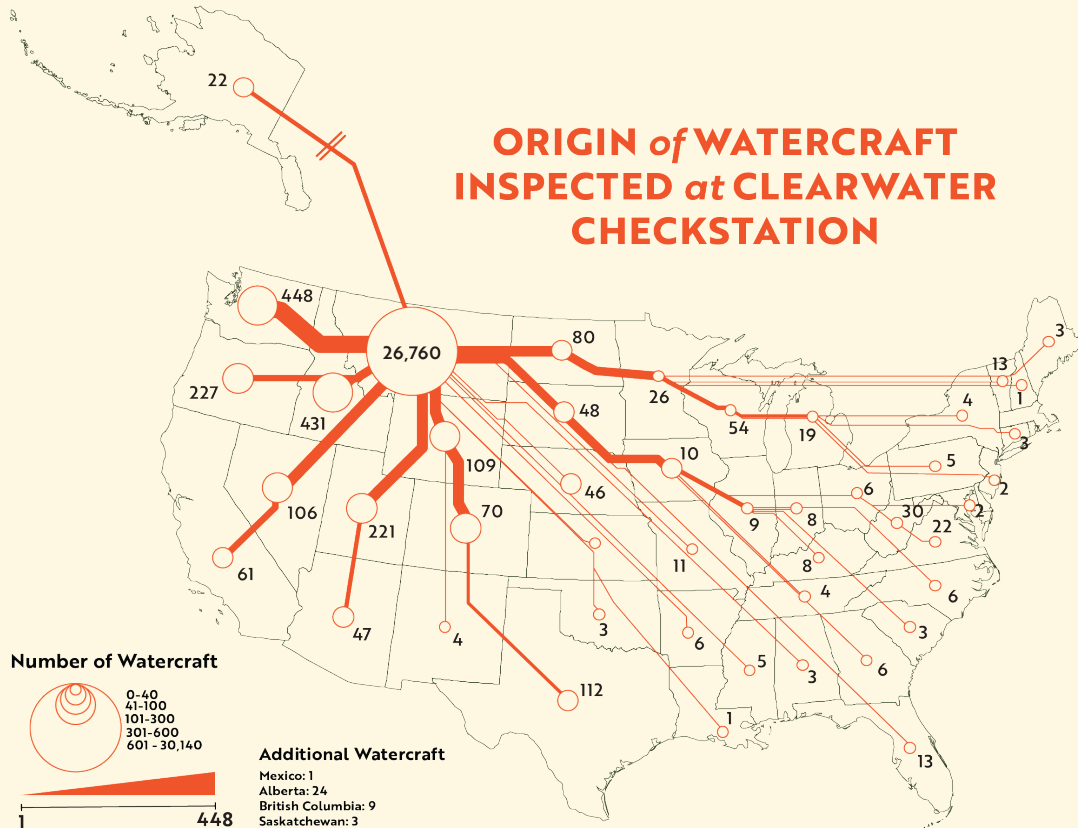


# Aquatic Invasive Species

## Aquatic Invasive Species District Board

Joann Wallenburn – Chair  
Andrew Z Skibo – Vice Chair

Mike Day  
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Russell Hartzell  
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Kate Wilson  
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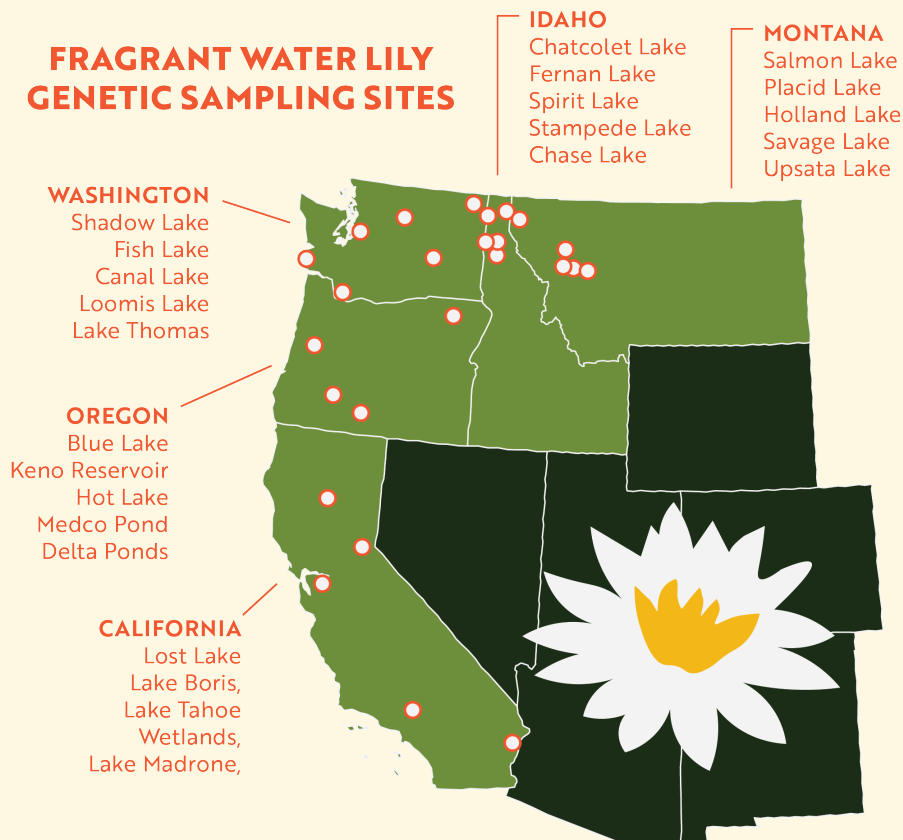


# Aquatic Invasive Species Research

## Fragrant Water-lily Research: Setting a new pace for AIS research

AIS related research projects reached an exciting stride during the 2021 field season. Two FWL-related research projects kicked off with the intended goals of understanding the genetic lineage of the species and its invasive potential. The information that this three-year study will provide will give aquatics managers a better understanding of vectors of invasion as well as the potentials risks FWL presents to native aquatic vegetation.

Both projects began in late June and are currently on pace with their respective objectives. Early observations have shown that FWL persists much longer into the fall season than similar native species, giving it quite the competitive advantage. Genetic sampling has wrapped up and analysis of the samples will continue into the spring/summer of 2022.



# Aquatic Invasive Species Research

## FRAGRANT WATER LILY

Genetics  
Sampling

13

Partnering  
Agencies

25 Lakes

5

States

500

samples  
collected



Research

108

research  
replicates

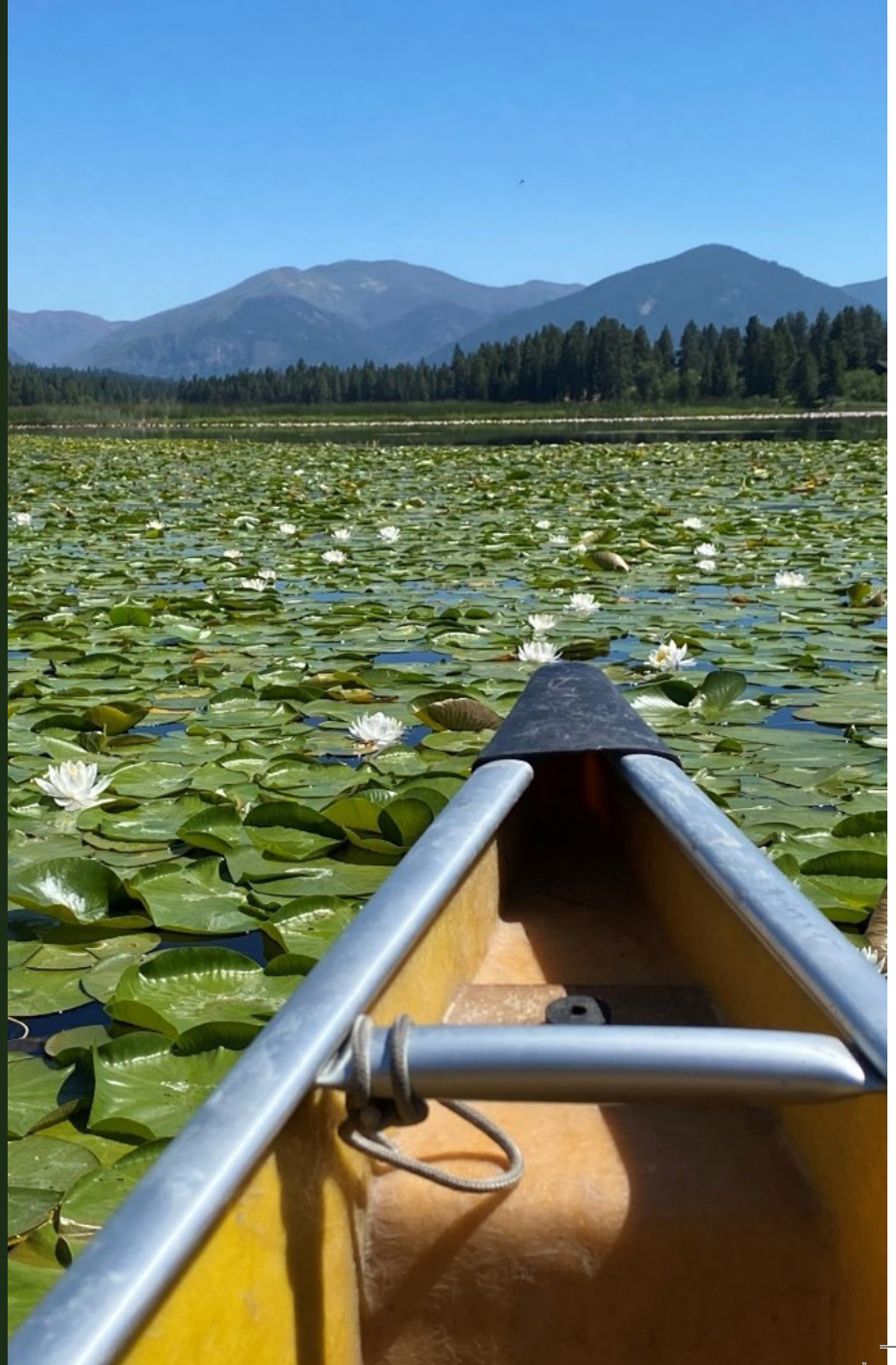


4

Lakes



within  
Missoula  
County



# Mapping Missoula

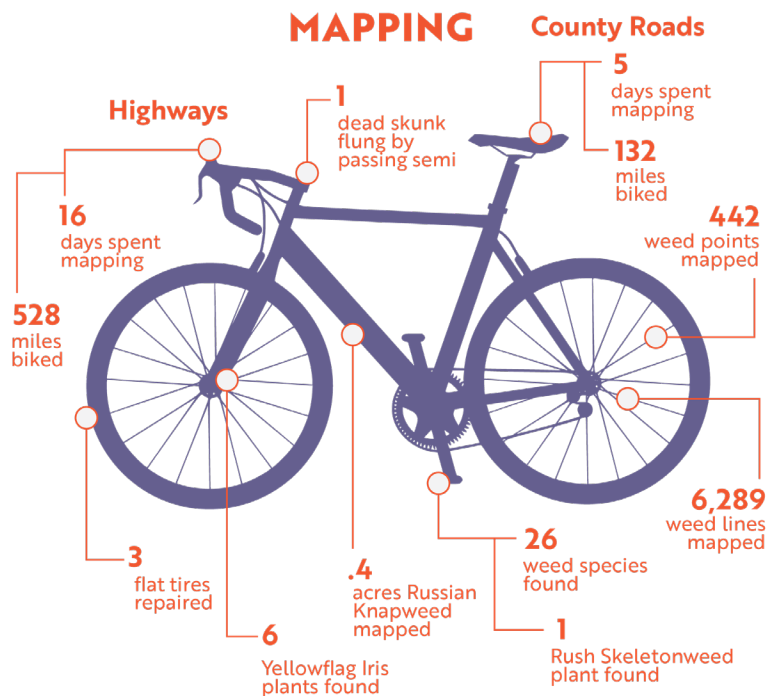
## 2021 was another banner year

for noxious weed treatments on Missoula County's river systems. We walked the banks and floated the Blackfoot, Bitterroot, Clark Fork, and Clearwater Rivers hunting for weeds to map and spray. While we wish we could treat every weed, our goal on these projects is to prevent the establishment and spread of weeds that are new or are not in great abundance on each particular river. We target leafy spurge on the Lower Blackfoot, perennial pepperweed on the Clark Fork, purple loosestrife on the Clearwater, and yellowflag iris on the Bitterroot, Clark Fork, and Clearwater Rivers.

On the Blackfoot River, **385** patches of leafy spurge were treated between Johnsrud and the Weigh Station, for a total of just over an acre of treatment. This section of the Blackfoot has undergone a dramatic transformation since we originally mapped and began treating leafy spurge on it back in 2002. When we first mapped the spurge on these sections in 2002, we found nearly **44** acres. While a few dense patches remain, most of the leafy spurge being treated there now are little, hard to see, baby plants.

We have been treating yellowflag iris and purple loosestrife on the Clearwater River between Salmon Lake and the Blackfoot River for many years with great success. This year we found **31** purple loosestrife and **133** yellowflag iris plants, which is a small decrease from last year, continuing a downward trend.

Perennial pepperweed is moving down the Clark Fork River from major infestations in the Deer Lodge area. We are proudly holding it in check in Missoula County



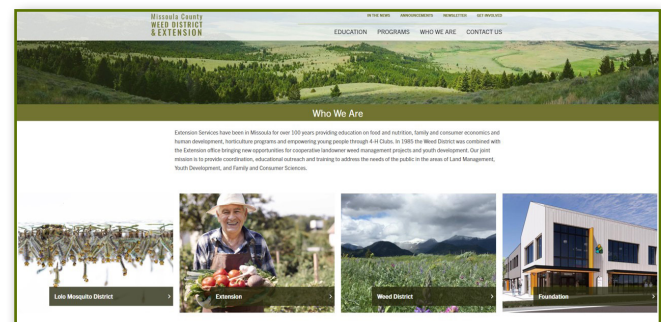
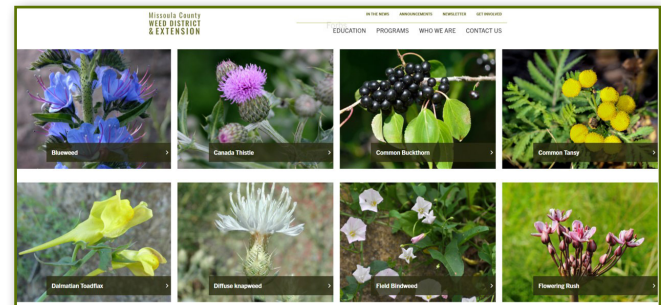
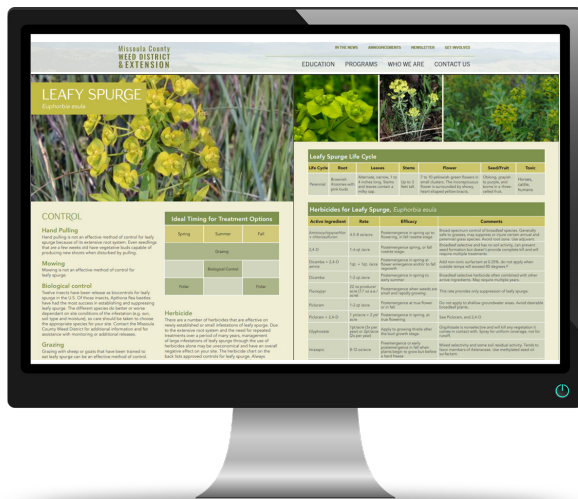
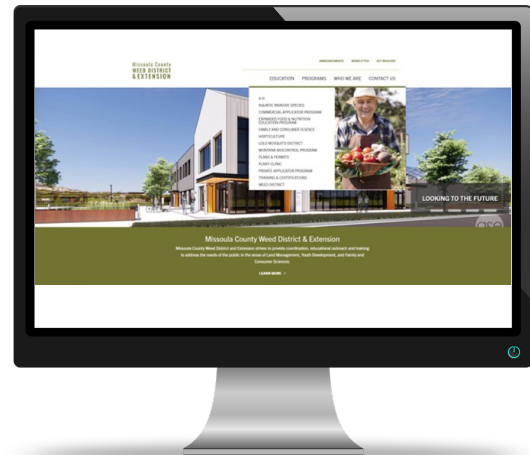
to keep it from spreading to our downstream neighbors. This year we treated **744** pepperweed plants, nearly half as many as the year before. After a number of years of hard work on large, dense patches of pepperweed on the river stretches above its confluence with the Blackfoot River, we are finally seeing a sharp reduction in the number of plants in those areas!

The Bitterroot River is our main source for yellowflag iris, the seeds float into every hard-to-reach backwater. This year we treated **88** yellowflag iris plants on the Bitterroot and Clark Fork Rivers, down from **142** the year before. We seem close to eliminating from the main channels but keep finding it hiding in the thickets of old back channels and other hard-to-reach places.

# Education and Outreach

As we progress with technology and the demand for information the Missoula County Weed District and Extension refurbished our old website to simplify and expand on offering education, programming, and research/information transfer at the click of the mouse. This is an ever-expanding demand, and we hope to continue to provide easier ways to access the resources individuals find valuable. Check out our website for the latest information on trainings and classes, newsletters, plant and pest diagnostics, and more: [www.missoulaeduplace.org](http://www.missoulaeduplace.org)

Things to look for in the coming year, are a return of in-person workshops, self-paced online learning modules focusing on land management including, plant identification, herbicide use, monitoring, and publicized stories of success from local individuals about their experiences managing the vegetation on their own property.



# Youth Education



## YOUTH EDUCATION: Leave No Weeds

As COVID protocols relaxed in schools, the Leave No Weeds program was able to once again be conducted in person. With safety precautions in place, the education team created modified classrooms in outdoor spaces to provide the concepts needed to understand why we should care about invasive species, and how they impact the habitats that so many living things rely on. With this introduction, students are offered the opportunity to use personal experiences



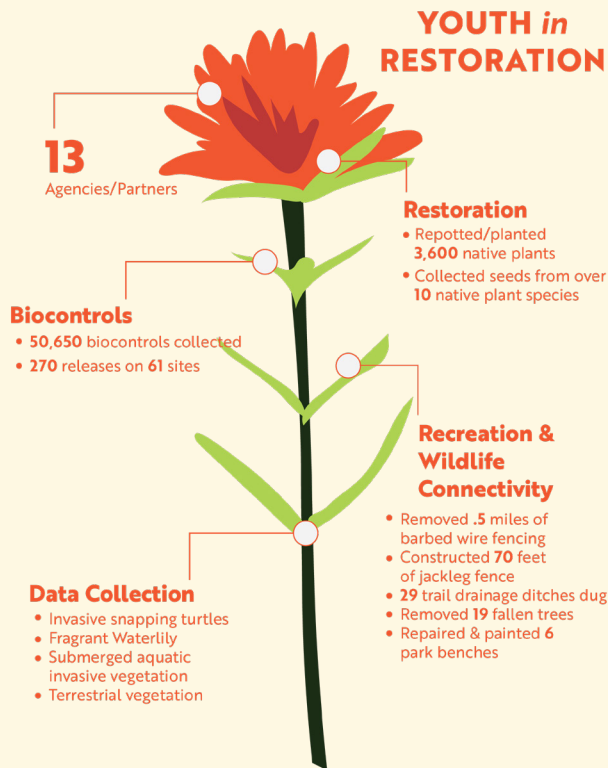
# Youth Education



and knowledge to direct the instruction and conversation. Even when the masks only show their eyes you can tell when a connection is made, and learning is taking place. Teachers, parent volunteers, and students welcomed the visit and the opportunity to get outside to learn the flora of Missoula County during difficult times.



# Youth in Restoration



With a twinkle in their sleepy morning eyes, the 2021 youth crew members set out to learn the importance of land conservation, restoration, and management through the Youth in Restoration Program this past summer. The crew consisted of sophomore Mya Asanovich, senior Neva Andrews, sophomore Loudon Marchioni, senior Marion Jones and was directed by Sawyer Meegan. With rotating weekly preparatory morning tasks of filling the water jug, organizing tools, refreshing the first-aid kit, and creating travel playlists for their assigned week the youth crew spent 8 weeks traveling around Missoula County to offer support in management activities with partnering agencies and organizations. Of the many skills learned, teamwork was a top priority and obligation to make the season a successful one. One crew member remarked, "teamwork is always hard for quiet people, but we managed." Each week brought a diversity of projects from searching for the invasive snapping turtle to hand collecting biological controls for distribution to painting park benches. No project was deemed too difficult or too easy as each partner program relies on conducting these activities to enhance and expand upon their land-use and conservation management responsibilities. As in years past, the partners and professionals that work with the youth crew make the Youth in Restoration program a valuable experience for both the crew and partner organizations.





# Youth in Restoration



## Partner Perspective

Molly Anton, Restoration and Propagation Technician, City of Missoula Conservation Lands

*"Working with the Youth in Restoration crew is one of the highlights of our summer. In 2021, we had a great time working in our conservation greenhouse, weeding, and seed collecting. The level of engagement, curiosity, and work ethic that this group of young folks brings to their work is wonderful! I hope to work with them more in the future."*

# Reflections from: the 2021 Big Sky Watershed Corps Member Eliza Gillilan

I started working with the Missoula County Weed District during a very turbulent time in the world. I had recently moved back to Missoula from southwest Montana amid a global pandemic to start my second term as a Big Sky Watershed Corps member. Despite these strange circumstances, the team at the Weed District instantly made me feel more comfortable in my new home and began teaching me valuable skills in the field of invasive species management.

Going into the position, the education component made me most wary—mainly because it is a test of how much I knew on the concept or topic I was trying to impart to the kids. Within days of learning the true definition of a weed (any plant that is out of place), I was teaching the concept to kids during Leave No Weeds. My favorite portion of the program was the field trips. Again, my abilities were put to the test, and I quickly learned the identification and information about 30+ plant species on Mt. Jumbo. It turns out ten fifth graders can ask a lot of questions about plants and the other aspects of the natural world, and by the end of the program, I was finally able to answer most of them thanks to Steffany's top-notch example. I can confidently say that my time assisting with the Leave No Weeds program not only helped increase my confidence as an environmental educator but allowed me to learn more about the ecology of western Montana in the process.

The hot summer was spent in the field, collecting and releasing biocontrol agents and monitoring sites for the impact and presence of previously released agents. In the process, I got to travel throughout western Montana



and beyond, allowing me to explore many parts of the state that I had never even heard of prior. Additionally, before this position, I knew very little about biocontrol as a method of invasive species management and even less about the numerous insects (and fungi) that do all the hard work. After handling what felt like millions of insects this summer, like many people, I fell most in love with the spotted knapweed root weevil (*Cyphocleonus achates*) for its chunky body and its unexpectedly strong grip (among other traits). Learning more about *Cyphocleonus* and all the other biocontrol agents opened my eyes to

the endlessly fascinating world of beneficial bugs and also helped me understand the concept of Integrated Weed Management at a deeper level. As the name suggests, the Montana Biocontrol Coordination Project is a remarkable display of coordination in the state, and it was an amazing experience to learn firsthand how much goes into ensuring land managers not only receive biocontrol but are informed about this seemingly magical, but strongly scientific, method of invasive species control.

My time with the Missoula County Weed District and Montana Biocontrol Coordination Project taught me so much during the past year. I learned how to communicate about weeds and native plants more effectively with a range of audiences from kids to adults in the land management field and feel more aware of natural resource problems and solutions in the state. I am excited to return to the Weed District next year to continue learning and assisting in the great work that happens here!

# Rocky Mountain Gardens

The Missoula County Weed District and Extension office is partnering with the Missoula Butterfly House and Insectarium and the Missoula County Conservation District to build the premier center for scientific education and community-centered learning in the Rocky Mountain West. The Rocky Mountain Gardens and Exploration Center will be a one-of-a-kind place to connect people of all ages with the natural world, housing Montana's first tropical butterfly house, insectarium, indoor and outdoor classrooms, and over 2.5 acres of education gardens that will include many different themed areas that will allow for a variety of hands-on educational workshops, classes, presentations,

and tours. One of the major focuses of the gardens will be the incorporation of native plant and pollinator plant species which will enhance and expand on educational opportunities for utilizing these species in restoration. The facility is scheduled for completion in the spring of 2023 and we are currently working on the development of multiple community partnerships that will support the installation and maintenance of the gardens into the future.

You can follow along with the progress at this live construction feed: <https://jointhebuzzmissoula.org/live-construction/>



## Missoula County Education Gardens Mission

An educational facility featuring hands-on activities and innovative programs that help the human spirit learn about growing and preparing vegetables, fruit, and herbs through plant research, education and display, while encouraging a lifelong interest in pollinators, gardening, nutrition awareness, and opportunities to connect with nature.  
SCHEMATIC DESIGN - APRIL 2018

# 2021 Partnerships

Beaverhead County Weed District  
Big Sky Watershed Corps  
Bitterroot Biocontrol Project  
Bitterroot National Forest  
Blackfoot Challenge  
Blaine County Weed District  
Bureau of Land Management  
CABI-Swiss  
City of Helena  
City of Missoula – Conservation Lands  
Clark Fork Coalition  
Clearwater Resource Council  
Climate Smart Missoula  
Confederated Salish and Kootenai Tribes  
Fergus County Weed District  
Five Valleys Land Trust  
Flathead Biological Research Station  
Flathead County Weed District  
Flathead National Forest  
Gallatin Valley Land Trust  
Golden Valley/Musselshell County Weed Districts  
Granite County Weed District  
Lake County Weed District  
Lee Metcalf Wildlife Refuge  
Lewis & Clark Conservation District  
Lewis and Clark County Weed District  
Lolo National Forest  
Lolo Mosquito District  
Lower Rock Creek Weed District  
Madison Valley Ranchlands Group  
Missoula Butterfly House and Insectarium  
Mineral County Weed District

Missoula Conservation District  
Missoula County Community and Planning Services  
Missoula County Parks and Trails  
Missoula Snowgoers  
Montana Department of Transportation  
Montana Invasive Species Council  
Montana Land Reliance  
Montana Natural History Center  
Montana State University Extension  
Montana State University - LRES  
Montana Weed Control Association  
MPG Ranch  
MT Association of Conservation Districts  
MT Department of Agriculture  
Department of Natural Resources & Conservation  
MT Noxious Weed Education Campaign  
MT Noxious Weed Trust Fund  
MT Fish Wildlife and Parks  
MT Wildlife Habitat Improvement Program  
National Bison Range  
National Forest Service – Region 1  
National Wildlife Federation  
Natural Resource Collaborative Working Group  
Natural Resource Conservation Service  
Ninemile Ranger District  
North American Invasive Species Management Association  
Northern Rockies Invasive Plant Council  
Park County Cooperative Weed Management Area  
Powell County Weed District

Ravalli County Weed District  
Ravalli County Extension  
Rocky Mountain Elk Foundation  
Sanders County Weed District  
Seeley Lake Ranger District  
Seeley Lake Regional Outdoor Center for Kinetic Sports  
Soil and Water Conservation Districts of Montana  
Stillwater Valley Watershed Council  
Swan Lakers  
Swan Valley Connections  
Sweet Grass County Weed District  
The Nature Conservancy  
Teton County Weed District  
UM Franke College of Forestry & Conservation, Human Dimensions Lab  
University of Montana – Natural Areas  
Upper Columbia Conservation Commission  
USDA Forest Service – Rocky Mountain Research Station  
US Fish and Wildlife Service  
USDA - Agricultural Research Station  
USDA –Animal and Plant Health Inspection Service  
Watershed Education Network  
Wheatland County Weed District  
Whitefish Lake Institute  
Whitehall School Project  
Wild Sheep Foundation  
Working Dogs for Conservation  
Yellowstone County Weed District  
Zoom & Microsoft Teams



## MISSOULA COUNTY WEED DISTRICT

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