

Weed Spotlight

Flowering Rush

Buttomus umbellatus

By: Mindy Wheeler

BEWARE!! HEADED OUR WAY!!

Be on the lookout for this beautiful plant that spells trouble for our waterways! Flowering rush (*Buttomus umbellatus*) is easy to recognize when it is flowering. It has an umbel of 20 to 50 attractive pink flowers atop a 1 to 1.5 meter stem. Although it looks like a true rush (e.g. hard stem bulrush), flowering-rush is in its own family. It can be distinguished by the numerous pink flowers that are perfect (both male and female parts) and symmetrical. Flowers are between 2 and 3 cm across and generally bloom from June to August. The flower has 3 petals, 9 stamens and 6 pistils that are united at the base.

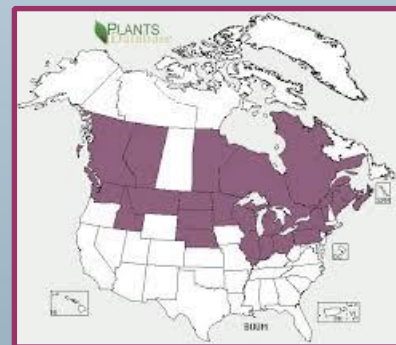


Flowering rush, Photo: Louis-M. Landry

When it is not flowering, and some plants do not flower every year, it is more difficult to identify. Stems are triangular in cross section (similar to American bulrush) and leaves can be either erect or lax and floating on the water. Flowering rush has been found in waters over 6 meters deep! Correct identification is best determined by looking at the rhizomes. Rhizomes are robust and trail along the ground. They are fleshy and friable as compared to other rushes. Tom Woolf, the Aquatic Invasive Species Coordinator for Montana, likens the rhizomes to the texture of Cheetos. These rhizomes tend to initiate growth earlier in the spring than native aquatic plants.

Flowering rush is native to Eurasia and was first introduced first to the eastern United States as an ornamental in the late 1800's. It continues to be

brought in to the country as an ornamental! It has become a problematic aquatic invasive in the northern states. Flowering rush can grow along lake shores, slow moving waters, irrigation ditches and in wetlands. Most troublesome is that the plant is thriving in drawn down areas of reservoirs in Idaho and Montana in relatively high elevations – habitats often found in Utah. It impacts both the ecological and recreational values of shallow water and shorelines and has caused havoc to water delivery in irrigation canals in Idaho. Flowering rush can also adversely impact native fish species by changing the habitat and forming dense stands in waters previously unvegetated or sparsely vegetated by aquatic plants. (Continued on Page 2)>>>



Current distribution of flowering rush

Source: USDA Plants

Inside this Issue

Project Journal:

- Garlic Mustard Control in Salt Lake and Summit (Page 2)

Biocontrol Today:

- Get You Calendars Ready (Page 4)

Ask the Experts:

- Seasonal Development of *Mecinus janthiniformis* (Page 4)

Biocontrol for Flowering Rush

A consortium was formed in 2013 to begin searching for a biocontrol. CABI bioscience is researching a new weevil, *Bagous nodulosus*, that shows promise. This agent may be available in the next few years.



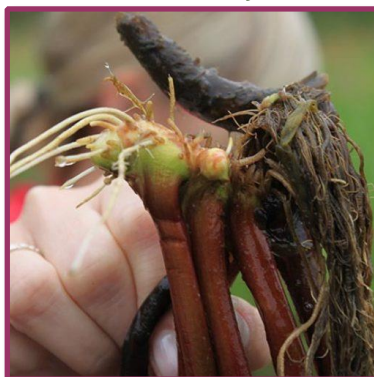
Photo: CABI

Challenges in Controlling Garlic Mustard in Salt Lake County

- Timing of spring and fall herbicide applications; Getting it right with varying precipitation and temperatures.
- Communication between manual/monitoring/chemical crews; Getting the right crews into the right location at the right time.
- Expectations of Private property owners; Dependence on grant funding



Triangular cross section of flowering rush stems. Photo: Gary Fewless



Flowering rush rhizome with bulbils
Photo: State of Washington

Flowering Rush (Continued from Page 1)

Flowering rush occurs as two types: one produces viable seed, and another flowers occasionally, but the flowers are sterile. The fertile type of flowering rush has *four* different methods for reproduction: seed, vegetative bulbils on the rhizomes, vegetative bulbils on the flowers, and fragmentation of the rhizomes. The sterile type generally reproduces by rhizome fragmentation that is enabled by a constriction between a bud and the rhizome to allow sections to break off by motion generated in moving water, waves, passing boats or waterfowl. The spread by fragmented rhizomes is substantial as they are buoyant and can be carried long distances and become established downstream.

Mechanical control can be done by cutting the plant below the water surface several times per summer and removing all cut parts from the water and soil. However any remaining root fragments can spread and sprout. Chemical control is possible, but still being investigated for most effective results. Prevention and education is our best bet to keep this one out of our state!

Project Journal

Garlic Mustard Control in Summit and Salt Lake Counties

Photo and Article Prepared By: Sage Fitch

The Early Detection Rapid Response (EDRR) project is a grant funded project through the Utah Department of Agriculture, Invasive Species Mitigation Fund. The project is focused on the Class 1B noxious weed Garlic mustard, *Alliaria petiolata*. The Salt Lake County Health Department was awarded \$80,520 for treatments within Summit and Salt Lake Counties.

The project is focused on using EDRR to contain the spread of Garlic mustard in Salt Lake and Summit Counties by implementing an integrated approach, of surveying, mapping, herbicide, hand pulling, and monitoring in the spring and fall.

(Continued on Page 3)>>>



Garlic mustard infestation in Summit Park

Garlic Mustard (Continued from Page 2)

Providia Management Group (PMG) and Ecology Bridge, were contracted to control garlic mustard. Both were focused in three priority areas: Summit Park, Park City, and Synderville. Ecology Bridge was contracted to manually control and monitor infestations prior to treatment by PMG, which was hired for herbicide applications. Treatment by PMG occurred on private and public land. Herbicide rates and combinations were tailored for the location, watershed restrictions, and relationship to sensitive individuals and properties.

This year marks the sixth year of ISM funding to treat garlic mustard. PMG provided the following observations about the season:

“We are making progress in areas we’ve been treating consistently. New areas are much worse. We didn’t cover as many properties in Summit Park as Park City took more of our time. Communication was key. Sara Jo is a great communicator. We sprayed mostly rosettes. During fall spraying, our biggest challenge was weather. It was hot and dry right up until it started snowing and did not give garlic mustard a chance to sprout into rosettes that we could spray. Even with the weather challenge, we were able to spray, or check each site.”



Before and after hand weeding. Photo: Ecology Bridge.

Treatment by Ecology Bridge controlled 97 weed patches and monitored over 219 sites. Seven transects were established. In addition, two weed pull events in brought seven volunteers who pulled 10 bags of flowering garlic mustard.

Monitoring data was collected by UDAF’s Jan Reinhart and Brittany Duncan prior to chemical treatment at three separate locations using sample point cover and line intercept cover.

Brittany reported that the percent cover of garlic mustard is below 2% on all three transects showing a downward trend. We have seen a large increase in Canada thistle. Canada thistle increased to 7% cover with even higher coverage off of the transects. Without additional restoration, such as continued treatment of the thistle or reseeding of beneficial plants, this site will likely become dominated by thistles.

Overall, this project is finding success, in that after six years of treatment we see either a reduction in size or canopy cover in treated infestations. Partners are getting better at using new technologies to collect data, communicate between crews, identify new sites (populations), and prioritize existing sites.



Thanks to all of the Partners for Making the Garlic Mustard Project a Success

- Dave Bingham and Robin Judd, Summit County
- Jan Reinhart and Brittany Duncan, Utah Department of Agriculture and Food
- Jessica Kirby, Snyderville Basin Special Recreation District
- Logan Jones, Park City Municipal Corporation
- Patrick Nelson, Salt Lake City Public Utilities, Watershed Protection
- Reese Gregory, Providia Management Group
- Sara Jo Dickens, Ecology Bridge.

Biocontrol Calendar:

Dalmatian Toadflax
Collection Days
May 20th and May 21st
Location TBD

Purple Loosestrife
Collection
May 28th, Duchesne

Leafy Spurge Biocontrol
Available
June 15th

Diffuse, Spotted and
Squarrose Knapweed
Field Day
June 25th, Tintic

Canada thistle Biocontrol
Available
Gall Fly
June 15th
Stem Mining Weevil
August 1st

Field Bindweed Mites
Available upon request
throughout 2019

Russian Knapweed Gall
Midges Available
Mid-June
(Contact Amber
Mendenhall for
availability)

It is time to place orders
for commercial vendors if
you plan to purchase any
biocontrol agents in
2019.

Biocontrol Today

Get Ready For the 2019 Field Season

By: Amber Mendenhall

We're gearing up for an exciting field season in 2019! Plan on collection and field days for some of the more common noxious weeds like field bindweed and Dalmatian toadflax. As our biocontrol program expands, we will be adding new species of biocontrol for Canada thistle and Russian knapweed. Our program is moving toward an interstate cooperation strategy with all of our neighboring states in the western region. We will also focus on monitoring biocontrol sties in 2019. Start getting your calendars ready by penciling the dates provided here.

Ask the Experts

Seasonal Development of the Biological Control Agent of Dalmatian Toadflax, *Mecinus janthiniformis* (Curculionidae: Coleoptera), in Utah: Phenology, Overwintering Success and Mortality

An Abstract from Sam Willden

By outcompeting desirable vegetation, invasive weeds can dominate field crops and rangelands, drastically reducing yield and land value. One option in controlling the impact and spread of such weeds is reuniting them with their natural insect herbivores, a process called biological control. When successful, biocontrol can be the cheapest way to provide long-term control of invasive weeds, but continual monitoring of insect and weed activity is required to ensure success.

(Continued on page 5)>>>



Dalmatian toadflax weevil (Continued from Page 4)

Dalmatian toadflax is an invasive weed that occurs widely throughout the northwestern U.S., and that is spreading south each year to warmer and drier regions, including sites in Utah. Although successful in the northwest, biocontrol of Dalmatian toadflax using a stem-mining weevil, *Mecinus janthiniformis* Toševski and *Caldara* (Coleoptera: Curculionidae), has been slow to occur at sites in Utah and elsewhere in the weevil's current southern range. By making field assessments of insect activity at sites in Utah, this study aimed to evaluate the limitations of weed control in these southern regions including inadequate timing of biological events (phenology) and the mortality of adult weevils during the winter and of individuals during summer development to adulthood.



M. janthiniformis parasitoids including adult Eupelmidae wasp (left), Pteromalidae endoparasitoid adult, (center), and emergence hole from Eupelmidae wasp (right). Photos: Sam Willden

This study found that weevils at sites in Utah were synchronized well with the biology of Dalmatian toadflax, but the sexes differed in their phenology in that males emerged from overwintering sites considerably earlier than females (a phenomenon called protandry). Overall survival of weevil adults during winter, and larvae during summer development to adulthood was high, (83% and 65%, respectively). The majority of *M. janthiniformis* deaths (51%) in live stems during the summer were the result of attack by parasitoid wasps. These wasps, and adult weevils, were found in association with exit holes observed in live Dalmatian toadflax stems during the summer. Overall survival of weevils from larval development in the summer, to adult emergence from overwintered stems in the following spring, was >50%.

Although suppression of Dalmatian toadflax was slow to occur at Utah sites, this study indicates that the phenology and low mortality of *M. janthiniformis* in Utah should contribute to effective biocontrol. Although other factors that may limit weed control were not considered in this study, *M. janthiniformis* appears to be capable of surviving and controlling Dalmatian toadflax in southern regions of North America. Phenology models and estimates of mortality of *M. janthiniformis* generated in this study can contribute to the implementation of future biocontrol control programs for Dalmatian toadflax.

Willden, Samantha A., "Seasonal Development of the Biological Control Agent of Dalmatian Toadflax, *Mecinus janthiniformis* (Curculionidae: Coleoptera), in Utah: Phenology, Overwintering Success, and Mortality" (2017). All Graduate Theses and Dissertations. 6043.

For Complete
Thesis See:
[https://digitalcom
mons.usu.edu/etd/
6043](https://digitalcommons.usu.edu/etd/6043)

Mark Your Calendars:

Sanpitch CWMA Tour
June 12, 2019

Squarrose CWMA Tour
June 6, 2019

UWSA Summer Meeting
June 18-19, 2019

References

Toševski, I., R. Caldara, J. Jović, G. Hernández-Vera, C. Baviera, A. Gassmann, and B. C. Emerson. 2011. Morphological, molecular and biological evidence reveal two cryptic species in *Mecinus janthinus* Germar (Coleoptera, Curculionidae), a successful biological control agent of Dalmatian toadflax, *Linaria dalmatica* (Lamiales, Plantaginaceae). Syst. Entomol. 36: 741–753.

The Invader -Utah
Weed Supervisor's
Association
Newsletter

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article submissions or
ideas please email:

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Getting to Know

Award Recipients - 2019 Utah Weed Control Conference

By: UWCA Awards Committee

Outstanding Weed Supervisor: Dave Bingham, Summit County

Dave is past president of the UWCA, board member of the Utah Weed Supervisors and sits on the North American Invasive Species Management Association board. Dave is a driving force in the noxious weed community. He is involved in projects large and small from backpacks to helicopters. Dave manages projects from EDRR to Sage Grouse and takes on assignments with enthusiasm.



Outstanding Weed Worker: Scott Ziedler, Utah Division of Forestry

Scott participates with the Weber River CWMA to promote healthy, weed free forests in Northern Utah. As a member of the CWMA, he has assisted landowners with advice, funding assistance and direct treatment of weeds. Last year Scott organized a spray day for garlic mustard at East Canyon State Park. This year Scott helped East Canyon to apply for an ISM grant to continue the work that he started. Scott's enthusiasm and dedication is greatly appreciated as he works to conserve forests – one of the most valuable natural resources in Utah.

Weed Board of the Year: Daggett County

The Daggett County Weed Board held regular quarterly meetings and served as an active board through difficult times and big changes. As a board, all members take an active role in promoting weed awareness throughout the county. The weed board is united in support of the County Weed Supervisor. They always maintain a position of mutual cooperation and are supportive of moving the noxious weed program forward.



Excellence in Industry: Scott Pratt, Providia Management Group

Scott has an entrepreneurial vision. He has continued to innovate in the weed control field by using new equipment and technologies to improve efficiency. Scott has cooperated with multiple agencies across Utah in participation with difficult to solve weed issues.

Biocontrol Award: Carol Randall, US Forest Service

Carol is a vital part of biocontrol in Utah. Carol facilitates regionwide coordination and helps Utah stay at the forefront of biocontrol. No matter how busy Carol is, (and she's always busy), she takes time to make sure all of our needs are met.



Conference Review

Utah Weed Control Association Conference

By: Amber Mendenhall

The Utah Weed Control Conference took place in St. George in February 2019. Three inches of snow closed schools and delayed travel in Washington County. In spite of the weather, the conference was attended by over 170 people. Vice President, Bruce Johnson scheduled many great speakers including keynote speaker, Scott Nissen from Colorado State University. Scott discussed building new paradigms for managing invasive weeds. Loralie Cox was elected as the next vice president. Jody Gale conducted a successful meeting including discussions about aquatic invaders, pesticide law and industrial hemp. Attendees were given the opportunity to confer with many vendors including Wilbur-Ellis, PMG, Nufarm, and many others. Thanks to the many people that put countless hours into making this a great conference.



Photo: Nate Belliston

Utah's County Weed Supervisors

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UTAH WEED SUPERVISOR ASSOCIATION

160 North Main
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Utah Weed Supervisors Association Newsletter

The Invader



*Dalmatian Toadflax
Photo: Morgan Mendenhall*



*Flowering Rush
Photo: Louis M. Landry*

What's Inside?

Weed Spotlight:
Flowering Rush

Project Journal
Garlic Mustard

Ask the Experts
Dalmatian Toadflax
Biocontrol