Montana Invasive Species Council

Panel Report

Woody Invasives Species Management Science Advisory Panel

Table of Contents

Suggested Citation:

Ricklefs, S., & Riddle, J. 2024. Panel Report: Woody Invasive Species Management Science Advisory Panel. Prepared for Montana Invasive Species Council, Montana Department of Natural Resources and Conservation, Helena, Montana. 10 pp.

Panel Coordinated and Report Prepared by:

ISAN
INVASIVE SPECIES ACTION NETWORK

215 East Lewis Street, Suite 202
Livingston, MT 59047

Introduction

An ongoing management concern across Montana has been the invasion of woody invasive species, specifically Russian olive (*Elaeagnus angustifolia*); saltcedar (*Tamarix ramosissima, T. chinensis*, and any hybrids thereof); and common buckthorn (*Rhamnus cathartica*). In years' past, management efforts for these species have been wide ranging in size, funding, and geography. Projects intended to research, treat, remove, monitor, and/or report spread have been implemented on individual parcels up to entire watersheds. However, coordination across all of Montana's habitats and watersheds has been identified as an ongoing need, with particular importance that it address more than one woody invader. A core group of invested individuals established the Woody Invasives Core Planning Group due to this need for coordinated woody invasive species management across the state. For years, the Core Planning Group met and worked together with three ultimate goals: 1) make a comprehensive, united effort for all riparian areas and watersheds across the state; 2) seek larger sources of funding that hadn't previously been available; and 3) draft a statewide management plan. In 2023, a grant was awarded through the Noxious Weed Trust Fund (NWTF) to tackle these objectives. Additionally, Montana Invasive Species Council (MISC) formed a subcommittee for Woody Invasives Best Practices. This subcommittee included Jasmine Chaffee, Montana Department of Agriculture (MDA); Liz Lodman, MISC; and Sara Ricklefs, Invasive Species Action Network (ISAN).

As part of the grant's objectives, ISAN submitted a bid for coordination of the Statewide Woody Invasives Management Plan and Woody Invasives Work Group (WIWG). A contract was awarded and fully executed on June 28, 2023. In which, ISAN agreed to (among other obligations) develop and facilitate two formal Science Advisory Panel meetings in partnership with MISC. A contract for the planning and coordination of the Science Advisory Panels was fully executed between ISAN and Montana Department of Natural Resources and Conservation (DNRC) on September 7, 2023.

Initial planning and preparation for the first Science Advisory Panel occurred with the Core Planning Group. The Panel was held on November 20, 2023 in Billings at the Montana Audubon Center (with a virtual attendance option via Zoom). Six technical experts representing academic, research, and management fields served as panelists. Each presenting on relevant topics and facilitating open discussion with attendees. The Panel was attended by 44 stakeholders, representing a wide range of partners, agencies, and land managers. Furthermore, a full audio and visual recording of the Panel along with related materials were provided to the full WIWG so that those unable to attend could benefit from the information provided.

Panel Purpose

The Science Advisory Panel addressed management topics for the focal species. Specifically with the goal to seek expertise on treatment technique applicability, efficacy, and cost, as well as monitoring protocols in relation to both density and species. Panelist experts provided information on the state of the science and emerging technologies in relation to each of their topics.

Panel Outcomes

- Gained a better understanding of current and emerging management techniques for each of the focal species.
- Identified gaps and challenges that have impacted and will impact Montana's managers.
- Collaborated on and discussed successes and challenges experienced in woody invasive species management and treatments within and outside the state's borders.
- Compiled information from technical experts for use in the statewide management plan.

Panelists

Panelists were identified for their technical expertise and, in some cases, relevant research to Panel topics.

- **Casey Cisneros,** Land Stewardship Manager, Larimer County (CO) Land Stewardship Program/Department of Natural Resources

  Casey Cisneros is the Larimer County Land Stewardship Manager. He completed a master's degree in Natural Resources Stewardship with a focus on ecological restoration at Colorado State University and has 20 years of weed management experience. He has planned and implemented restoration projects and weed management in natural areas, rangelands, pastures, and rights-of-way. He has helped remove more than 10,000 invasive exotic woody species such as black locust, common buckthorn, crack willow, Russian olive, Siberian elm, tamarisk, and tree of heaven. He lives with his family in Fort Collins, Colorado where he enjoys camping, cooking, fly fishing, reading, and song writing.

  Casey Cisneros presented on Russian olive and saltcedar management.

- **John Leary,** Restoration Coordinator, RiversEdge West

  John Leary is a Restoration Coordinator at RiversEdge West where he coordinates the White River Partnership and previously coordinated the Desert Rivers Collaborative. These are two collaborative partnerships made up of federal, state, tribal, local government, academic, and non-profit entities working together to restore healthy river ecosystems through tamarisk and Russian olive removal and re-establishing diverse native plant communities. Prior to working at RiversEdge West, he worked a variety of seasonal jobs throughout the West, including managing restoration crews on the Verde and Gila rivers in Arizona.

  John Leary presented on monitoring at both the project and landscape levels.

- **Dr. Clayton Marlow,** Professor/Regional Coordinator, Montana State University Department of Animal and Range Sciences, Western Sustainability Agriculture Research & Education (SARE)

Clayton Marlow is a Professor of Range Sciences at Montana State University. His research focuses on investigating the role of herbivory and wildfire patterns on riparian function and process, which necessitates secondary research on grazing behavior of wild and domestic ungulates and the interaction between herbivory and soil/vegetation recovery following wildfire. Since 2020, he has also served as the Regional Coordinator for the Western Sustainable Agriculture Research Education Program. Previous roles include serving as an Associate Dean in the College of Ag at MSU and as a staff forester for the Tennessee Valley Authority.

Clayton Marlow presented on grazing in preventative and treatment applications.

- **Dr. Mike Schuster**, Researcher, University of Minnesota Department of Forest Resources/Minnesota Invasive Terrestrial Plants & Pests Center

  Mike Schuster is a researcher with the Department of Forest Resources at the University of Minnesota and the Minnesota Invasive Terrestrial Plants and Pests Center. His work focuses on invasive plant species ecology and management. Since 2016, Mike has led the Cover It Up project, working to improve the long-term resilience of forest understories to invasion by buckthorn and other non-native species.

  Mike Schuster presented on common buckthorn management and revegetation and restoration efforts at previously infested buckthorn sites.

- **Dr. Sharlene Sing,** Research Entomologist, U.S. Forest Service Rocky Mountain Research Station

  Sharlene Sing is a Research Entomologist with the USDA Forest Service's Rocky Mountain Research Station (RMRS), and works at an RMRS research facility located on the campus of Montana State University – Bozeman. Her research focus is biological control of weeds, primarily toadflax, Russian olive, and saltcedar. Sharlene also serves as the Chair of the Technical Advisory Group (TAG) for Biological Control Agents of Weeds. The TAG evaluates petitions and test plant lists, making recommendations to USDA APHIS Plant Protection and Quarantine on the safety of candidate weed biocontrol agents proposed for release in the U.S.

  Sharlene Sing presented on biocontrol methods as a management tool.

- **Dr. Natalie West,** Research Ecologist, USDA Agricultural Research Service Northern Plains Agricultural Research Station

  Natalie West is a research ecologist with the USDA Agricultural Research Service in Sidney, Montana. She studies weed population biology and integrating low input weed management strategies, with an emphasis on biological control.

  Natalie West presented on revegetation and restoration efforts.

Questions for Panelists and Key Recommendations

Questions were compiled from input provided by members of the WIWG and its Core Planning Group. The questions informed requested presentation topics of the panelists. Between each presentation, a 10-minute period was allotted for open discussion of the presentation topic. The final session of the Panel was an open discussion amongst all panelists and attendees. The questions were:

- What is the best practice for treating saltcedar at different age ranges (e.g., juvenile vs. mature)?
- How do we best raise awareness for and ability of landowners to identify common buckthorn?
- What are the costs, effectiveness, and negative impacts of various management tools?
- What should be considered for treatments across low-, medium-, and high-density populations of invasive woody species?
- How could one use biocontrol and other control methods within the same area as part of an integrated management practice?
- Is there a best treatment time to cut, apply herbicide, or masticate the woody species?
- If mastication is used, could the wood mulch stay onsite, or would it need to be burned or disposed of in some other means?
- What impacts to water quality and/or quantity are caused by the invasion of these species?
- What would an integrated weed management toolbox or plan look like if a county district and/or landowner were to implement one?
- Some in previous meetings mentioned revegetation as being an integral part of removing the woody invasives along stream corridors. How, why, and what methods could be offered as guidance for someone (whether agency or landowner) to follow?
- What impacts do these species have on Montana riparian areas?
- Based on the research previously discussed and due to the hybrid varieties of saltcedar present across the state, are we using the correct biocontrol species for saltcedar in Montana?
- How can grazing be used as a management tool for prevention, containment, and/or eradication of these woody invasive species?
- What is the status of biocontrol methods for common buckthorn and Russian olive?
- How can/should monitoring be implemented on a landscape level?
- When is revegetation appropriate and what should be considered when planning revegetation/restoration efforts?

Extensive discussion was had between presentations and during the open discussion at the end of the Panel. Discussions covered a wide range of topics, including anecdotal observations in treatment, the importance and nuances of (timing of and audience for) education and outreach efforts, impacts from changes to historical fire and grazing regimes, engaging volunteers in management efforts, and maximizing limited resources to implement phases of management based on priority.

Key takeaways and recommendations from the presentations:

- **Common Buckthorn Management:**
    - Common buckthorn management needs to be implemented with multiple methods and followed up with monitoring. Repeat treatments should be expected. Follow-up is key to success.
    - Mechanical removal methods can be a great tool in certain areas:
        - Uprooting buckthorn is a great option for volunteers because of its shallow root system and safety (in comparison to chainsaws or heavy equipment usage). However, it can increase erosion and takes a lot of time and physical effort.
        - Mulch as a byproduct of forestry mowing does not suppress seedbanks of buckthorn, but can interfere with native plant seeding and germination success. Forestry mowing has great cost (as it needs to include herbicide treatment in tandem). It may not be accessible in all terrains and will likely require a professional contract.
        - Cutting and treating buckthorn has variable success with potentially greater success during critical periods.
            - If, culturally, people are concerned about removing standing biomass from the landscape, practitioners can girdle the tree. This will result in dead, standing buckthorn trees.
    - Burning buckthorn trees requires a hot fire. In a forest setting, this is difficult because there is likely little to no fuel on the forest floor due to dense shading and competition from buckthorn. In grasslands, it's likely to only top-kill established plants and there will be resprouts.
- **Russian Olive & Saltcedar Management:**
    - When implementing treatment for Russian olive and saltcedar, be sure to address the problem and not the symptoms. Understanding hydrology and other site-specific factors will be key.
    - When utilizing cut stump methods, immediately apply herbicide with a tracer dye and be sure the sawyer does not outpace the applicator.
    - In foliar applications, never apply to trees greater than 6' in height and only apply during the active growing season for proper translocation.
    - Girdling, like in buckthorn management, may be preferred when standing biomass is regarded (potentially for wildlife habitat).
    - Mastication or grinding may make it difficult for follow-up herbicide application when

attempting to locate all stems for treatment.
    - When choosing herbicides, consider potential for leaching, selective nature for non-target species, and plant back intervals to match your project goals. Read the label and use surfactants as necessary.

- **Biocontrol:**
    - Biocontrol for the three species can be summarized as Yes (saltcedar), No (common buckthorn), and Maybe (Russian olive).
    - Biocontrol with *Diorhabda carinulata* (northern tamarisk beetle) has had success with stands of Montana's hybrid saltcedar (*Tamarix ramosissima* x *T. chinensis*). The beetles defoliate the plant, which inhibits water regulation, causing desiccation and reduced root system carbon storage. Mortality can be achieved after multiple years of defoliation. Beetles have to be reared as interstate transport is no longer permitted.
        - Best practices and recommendations for releasing field populations in Montana are in development. To date, releases have occurred on the Musselshell, Yellowstone, and Missouri Rivers.
    - Thus far, identification of biological control agents for common buckthorn have been unsuccessful due to lack of host specificity.
    - *Aceria angustifoliae* is a mite that restricts reproduction in Russian olive by targeting flowers and fruits of host plants. This is significant for Montana due to cultural views of Russian olive as it does not affect the aesthetics or utility of Russian olive, only its spread. The petition for use of the mite is currently under Tribal review.

- **Grazing:**
    - Grazing cannot be used as a silver bullet in woody invasives management. However, it can enhance the impact of other treatment methods, lower condition of the invasive plants, and help contain or control levels of infestation. With proper stocking and recovery time, native species can compete with invasives.
    - Targeted grazing with sheep or goats can depress plant health and reproductive capacity, can slow herbicide resistance by reducing use, generate income for managers/landowners, and enhance the grass bank for grazing utilization when in need (e.g., during droughts).
        - In order to implement, a stockman with a high level of skill for both livestock and predator management is necessary.
        - Furthermore, cost should be a consideration as income generation is not immediate.
    - Mixed class grazing (utilizing cattle, sheep, and goats) will maximize the selectiveness from each species and reduce the opportunity for invasive species to succeed and outcompete natives.
    - Combining targeted, long-term grazing management with prescribed fire can be greatly beneficial. Incorporating indigenous knowledge and practices for fire management is likely to increase success.

- **Monitoring:**
    - Monitoring is key to invasive species management and should reflect overall project goals. If monitoring capacity is limited, let goals and reporting drive monitoring protocols.
    - Utilizing a rapid monitoring protocol can reduce expenses, allow for landscape level initiatives, and inform retreatment needs. This allows for lower training input, can be adapted to meet needs across watersheds, utilizes tools managers likely already have, and provides data from the entire site (rather than representative portion).
    - Monitoring efforts should be included in grant proposals, but cost of rapid monitoring team could be shared across multiple districts (e.g., utilizing Americorps staff across multiple conservation districts where each district pays for 1-2 weeks rather than entire term).
    - Explore utilizing volunteers and other citizen science-based tools for photopoints and other monitoring initiatives.

- **Revegetation & Restoration:**
    - Woody invasives removal requires long term upkeep. Restoration does improve habitat, but practitioners need to understand that groups (e.g., insects, pollinators, small and large wildlife) will also respond to changes on the landscape.
    - To ensure long-term control, managers should implement integrated tools (e.g., grazing, fire, and active restoration methods).
        - Hand pulling young Russian olive seedlings is very effective and cheap as a follow-up method.
        - Fire can be best utilized on young saplings of woody invasives.
    - Revegetation initiatives are likely to spread into adjacent areas. This should be a consideration when choosing species for planting or seeding.
    - Use of weed cloth is likely to increase the survival of seedlings.
    - Planting trees with shrubs is likely to help shrubs survive (when in comparison to only planting shrubs).
    - Particularly in management of common buckthorn, it is exceedingly important to shade out the invader (i.e., Cover It Up).

Conclusions and Next Steps

The Science Advisory Panel proved a successful endeavor for gaining a better understanding of woody invasives management tools and processes, initiating collaborative discussion amongst land managers and natural resources professionals in- and out-of-state, and learning more on the status of emerging technologies and research. The insights provided by Panelists and attendees alike will be immensely beneficial to the statewide management plan draft. Next steps for the WIWG include:

- The coordination of two additional WIWG meetings, in accordance with the NWTF grant.
- A second Woody Invasives Science Advisory Panel likely to be held in spring 2024.

- Surveying Montana's land managers on perception of woody invasive species, areas of establishment and/or new introductions, current and past management efforts, and barriers to treatment efforts.
- The further development of the statewide management plan with a draft expected for release to the public in October 2024.