Work Plan for 2023-2026

Montana Invasive Species Council - MISC

Work Plan Purpose: To have a substantial, multi-party discussion with stakeholders to shape the 2023-2026 Council work plan. The plan will focus the efforts of staff and the Council to implement the Montana Invasive Species Framework.

The Montana Invasive Species Framework was developed in 2016 to lay out the areas where the Council's efforts would have the greatest impact. The Framework was reprinted in 2019 and the objectives remain relevant. Only minor updates to this document were identified during the 2022 review process and prioritized actions consistent with the framework are included in this work plan. The process of identifying priority tasks to include in the Council work plan created an opportunity to reach out to a broader audience of stakeholders for feedback. This document supports the issues stakeholders feel Council should focus on in the short term.

During the June 1, 2022 MISC meeting, Council members were asked to identify constituent groups that they represented or identified as partners. Between June and August, over 110 individuals were contacted via phone, email, and personal visits and asked to participate in the Council's listening sessions in addition to public announcements. A survey form was developed and 8 individuals responded with detailed written comments, 2 of whom also joined the live discussions held on August 25 & 26, 2022 in Helena. In total, 55 individuals participated in one or more listening session over the two days and were from federal, state, and county agencies, tribes, industry, and non-profit groups.

The feedback and suggestions for the Council and MISC staff were discussed and top priorities were selected by attendees at the 2022 Montana Invasive Species Summit held on October 25 & 26, 2022 in Helena, MT. A "1-2-4-All" inclusive decision making method was used. First, all attendees were asked to review the suggestions and or consider important questions for the Council. With guidance from a facilitator, they then discussed their priorities with one other person at their table, coming to an agreement on the themes that were most important to them. This process was repeated with groups of 4 then by the entire table of 8 attendees. The tables reported out their top suggestions or priorities to the room. These priorities were presented to the Council on December 13, 2022, who voted to include the top ranked priorities in their 2023-2026 work plan.

1. 10 Invasive Species to Watch

This list was built from species suggested by stakeholders in August 2022, narrowed to the top 14 suggestions at the October 2022 Invasive Species Summit through a guided discussion, and approved as a list of 10 at the December 2022 MISC meeting.

Bullfrog – *Widespread Consequences*
While native to the Central and Eastern US, bullfrogs are an invasive species in Montana. Bullfrogs are voracious predators of our native wildlife. They can carry the chytrid fungus that affects frogs and amphibians and contribute to the dwindling population of native frogs. A bullfrog removal projects is underway in western Montana.

Eastern Heath Snail – *Accelerating Impacts*
A small land-dwelling snail that feeds on a wide range of crops and will climb vegetation and fenceposts to escape high ground temperatures. It can contaminate hay and crops, clog harvest and processing equipment, and transmit plant and animal diseases. While most agricultural and plant-pests are insects or pathogens/diseases, this mollusk pest highlights the need for additional taxa to be considered for national plant pest priorities. This snail is found in Cascade and Judith Basin counties.

Emerald ash borer - *Preventable*
This beetle threatens ash trees in Montana's urban communities, shelterbelts, and woody draws. The larvae feed on tissue underneath the bark, killing the tree. Emerald ash borer is one of many tree-killing beetles that can travel long distances in firewood. Preventing the transport of firewood from out of state into Montana can slow the spread of this and other tree pests. Emerald ash borer has infested 35 eastern states but was recently discovered in Oregon.

Feral Swine – *Preventable*
This species will impact agriculture producers through damage to crops, predation on livestock, and as a vector to spread diseases. Their destructive behaviors affect wildlife, habitat, and water resources. Feral swine are rampant in southern US states with no chance of eradication and Canadian populations continue to expand unchecked. Stopping the intentional movement of feral swine and responding to sightings are measures that keep this species out of Montana.

Flowering rush – *Widespread Consequences*
Invasive aquatic plants degrade aquatic habitats, impede water-based recreation and obstruct irrigation canals. Flowering rush has infested Flathead Lake and downstream to the Clark Fork River. Preventing the spread of invasive aquatic plants through cleaning watercraft and preventing aquarium and ornamental pond releases is an important part of protecting Montana's waters.

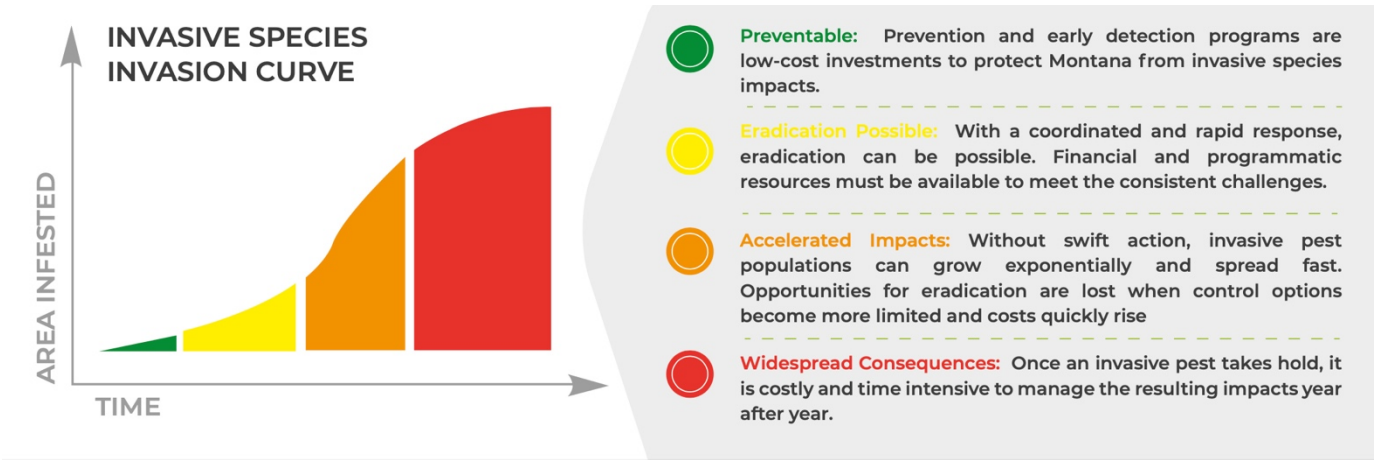
Rush Skeletonweed – *Accelerating Impacts*
A deep-rooted perennial noxious weed that is very drought resistant and can easily spread from rangeland to cropland. Impacts in rangeland include loss of forage and biodiversity. In croplands like cereal grains and potatoes, rush skeletonweed can reduce production, quality, and hamper harvest machinery with sticky latex sap. Rush skeletonweed is very difficult to identify in the field and management can be laborious. It is found mostly in western Montana.

Saltcedar – *Widespread Consequences*
This tall woody shrub establishes in riparian areas and replaces large stands of native cottonwood and willows, reduces wildlife access, increases soil salinity, and has the potential to take up significant amounts of water through a deep tap root. Saltcedar is a drought tolerant species that spreads easily by wildlife and water. When it develops dense stands, it can alter stream channels and floodplains. Saltcedar is found along the Missouri and Yellowstone rivers and tributaries.

Smallmouth Bass – *Accelerating Impacts*
The illegal introduction of a non-native fish species can adversely impact the ecology of a waterbody including predation of native fishes, increased competition for resources and space, introduction of disease, and hybridization. Stopping 'bucket biologists' from releasing fish will save important natural resources and limited agency resources. Smallmouth bass were captured in the Gardner River a tributary of the Yellowstone River and have been illegally introduced in other Montana waters.

Ventenata – *Widespread Consequences*
A noxious winter annual grass which can impact Montana's native landscapes and degrade rangelands, pastures, and crops by decreasing agricultural production and increasing risk of soil erosion. Ventenata has little to no forage value and its diminutive stature makes it difficult to identify. Ventenata is found in west and southwest Montana.

Zebra Mussels – *Preventable*
Invasive mussels can have major impacts on Montana's waters. They disrupt the food chain and impact recreational boating and fishing. Mussels can cause significant damage to infrastructure by clogging pipes used for hydropower, irrigation, and water treatment plants. Zebra mussels are established in the Dakotas and other eastern states. Preventing the spread of invasive mussels by cleaning watercraft and equipment is a top regional priority.



The species that was recommended at the 2022 Summit for freshwater fish was changed from Northern Pike to Smallmouth Bass after discussions with the Council at their December 2022 meeting.

- **Walleye**
  The spread of gamefish is beneficial to a small group of advocates who promote this species but negatively impact biodiversity and other fisheries.

The species that required additional information or discussion and were not included by the Council were:

- **Grasshoppers**
  The species that are responsible for the outbreaks across Montana are native and so are excluded from the official definition of invasive species. The 2020-2022 outbreaks may represent a shift in their abundance and behavior exacerbated by a changing climate.

- **White-nose syndrome**
  This wildlife disease can be spread through visitors to local caves that bring in contaminated soil from areas with outbreaks.

- **Non-native praying mantises**
  These generalist predators would never be considered in a modern bio-control program but are commonly sold as natural pest control.

- **Cats**
  Sometimes the biggest impacts from urbanization have been with us for a long time. The ability of cats to negatively impact songbirds and small reptiles is well known, their spread out from urban areas in Montana is less clear.

- **Starlings**
  Invasive birds have impacts that are concentrated with certain producers but the birds themselves are widespread.

2. Quantify the Impacts of Invasive Species

Since 2016, the Council has contracted researchers to determine the economic impact of invasive species in Montana. The first was in collaboration with the Flathead Lake partners on the impact of zebra or quagga mussel invasion in the region. Results from this work were used to develop a policy brief and focus prevention efforts. The second study was completed with the University of Montana Bureau of Business and Economic Research on the economic impact of Eastern Heath Snails. This effort was suggested by the Eastern Heath Snail Science Advisory Panel. This panel identified that the lack of familiarity with this class of pests in North America limited engagement in management.

During the August 2022 Council listening sessions, stakeholders were asked which invasive species could have a financial impact but required more economic research. At the October 2022 Summit, the question about economic impact was broadened to include other impacts to ecosystems, visitor experience, traditional practices or land use, and cultural harm from invasive species. Examples given by panelists at this session on the impacts of invasive species included:

Flowering rush *Butomus umbellatus* creates a closed water habitat so that trout avoid the near shore areas colonized by this plant but invasive fish like northern pike increased. Algae take advantage of the extra surface area provided by the stems and the increase feeds snails that in turn transmit swimmer's itch.

Preserving Montana's natural beauty and heritage during a time of dramatically expanding development and residents is a challenge. A view of what is possible is provided by the Crail Gardens maintained by the Gallatin Invasive Species Alliance. This relatively small native plant demonstration garden has influenced the landscaping on many more acres in the surrounding area by showing off the beauty of Montana's wildflowers and what is possible with invasive species management.

Angling for trout is worth about $750 million per year or about 20% of all tourism spending in Montana and the number of angler days per year has doubled over the last few years. Conservation management actions are local and when building support for these actions people are more likely to listen to their neighbors than state agency staff.

The power of travel is clear: Montana hosts 12.3 million visitors per year who bring in $5.1 billion dollars to the state and pay $388 million in state and local taxes. The draw for these visitors are the National Parks, open space, lakes and rivers, and winter sports. They take part in scenic drives, day hiking, fishing, birding, wildlife watching, and rafting.

The examples given at the October 2022 Summit led the Council to request a comprehensive review of the list of "10 to Watch" across all classes of impacts:

- *Analysis of the "10 Invasive Species to Watch" list for the cumulative impacts to recreation and biodiversity.*

Invasive species impact topics for future consideration:

- Annual grasses and hogs have impacts beyond their costs to control. What are the changes to fire regimes, property values, and threats to human safety from their spread?

- What are the impacts of aquatic invasive species on recreation? These should be considered as a group and include: threats to fisheries like proliferative kidney disease (PKD), salt cedar, Emerald Ash Borer on riparian corridors, and a new look at how zebra mussels might impact tourism.

- Wildlife diseases like white-nose syndrome and chronic wasting disease have broad impacts to populations of keystone species. Is the capacity to prevent and detect these harmful outbreaks in scope for the potential impacts they cause?

- What is the scope of the impact from rush skeleton weed on Montana agriculture?

- Feral hogs will have complex impacts on Montana. The reduction in populations of ground nesting birds, leaf litter dependent animals like salamanders, and physical disturbance of wetlands are relatively well known based on their behavior elsewhere in North America. What are the impacts to hunting opportunities, cultural adaptation, and management from the spread of feral hogs?

- Emerald ash borer (EAB) will substantially change the size structure and abundance of native ash in eastern Montana woody draws. This will have a cascade of ecological impacts but the spread of EAB will also cause loss of a substantial portion of the urban tree canopy. What are the social impacts of this invasion including indirect impacts like intensifying the heat island effect of urban areas with fewer mature trees, increased energy use to compensate for shading, and water availability?

- The future impacts of new invasive species are difficult to predict. For emerging issues, shifting management from current priorities to new targets requires quantifying their likely impacts. Increasing the capacity to quickly produce impact analyses for feral hogs, invasive praying mantises, fire regimes under new invasive annual grasses, and other emerging issues will improve response planning.

3. Science Advisory Panels

Organizing Scientific Advisory Panels is one of the duties assigned to the Montana Invasive Species Council. The panels, "inform Montana's efforts based on the current status, trends, and emerging technology as they relate to invasive species management in Montana." Panels are organized by a subcommittee of the Council, composed of subject experts most relevant to the topic, meet at a public workshop, and share their results via a report.

Previous Panels:
April 2018 The use of eDNA for Dreissenid Mussel Early Detection
Purpose: To evaluate the use of environmental DNA (eDNA) for dreissenid mussel early detection and provide input and guidance to managers regarding its use.
Many partners are involved in sampling for invasive mussels. The panel defined the need for shared language and clear communication protocols to reduce barriers for using eDNA as a detection method in multiple jurisdictions. The panel recognized the need to create a decision tree for eDNA results along with monitoring results from other methods and the likelihood of invasion, and water body suitability to guide future responses.

April 2019 Scoping the potential for approval of *Mogulones crucifer* for classical biological control of houndstongue in the U.S.
Introducing classical biological control for any weed requires meeting USDA APHIS and USFWS ecological criteria to determine the safety to native and crop plants. The panel identified the research needed prior to releasing *M. crucifer* as a biological control in the U.S. The panel provided input and guidance to managers if the organism is encountered in the field and recommended the development of a petition to release this insect.

December 2020
Topic: Investigation of known information about the eastern heath snail (Mollusca: Geomitridae, *Xerolenta obvia* (Menke) and identification of gaps in information.
The eastern heath snail is known to be established in only two other locations in North America and the limited distribution of this species has both limited a national response and left many open questions about the potential distribution of this species and its impacts. By including experts in the literature related to the snail's native range and the experience of managers tasked with mitigating its impacts in its introduced range the panel recommended that the USDA redevelop and modify the 2012 Environmental Review for *Xerolenta obvia* based on the larger area now occupied, including different treatments recommended for landowners, roadsides and different cropping systems, and the impact of integrated pest management (IPM) measures that include increased till and burning to reduce populations in hay fields.

May 2022 Firewood Science Advisory Panel: A review of firewood management and communicating risk with partners and the public.
The panel identified opportunities for managing out-of-state transport of firewood into Montana as a pathway for invasive tree pest. Partners from forest industries, tourism, research, and management recommended expanding markets for locally produced firewood, developing positive messages focused on protecting Montana's resources, and sharing that message across partners and with visitors.

Science Advisory Panel Process

"When the panel ends, the work begins."
Amy Gannon, Chair for the May 2022 Firewood SAP.

Spring

Start: MISC Council confirms the topic at a council meeting.
- The topic is refined and focused in discussion.
- A lead Council member is identified.
  - The lead identifies a planning team.
    - The planning team identifies the potential participants or areas of expertise that would benefit the discussion.

S*cope*:
-Discussions with the potential panel participants are used to develop specific questions to focus the discussion.
  - The Council approves the scope and confirms the goal for the SAP. This can include an application for an action like releasing a biological control organism, a best practices document, or other management focused outcome.
    - The questions are developed into a request for written responses from the panelists and sent out.

Logistics:
- Participating panelists are identified and commit to attending. Fall, winter, and early spring panels avoid the field season from April through September.
  - Panelists and the discussion team suggest moderators and the moderator is engaged as part of the planning team.
    - The location is decided and the venue is booked. If there is a substantial international component to the meeting Zoom worked well to reduce travel costs and allow accommodations for shorter meetings over a week-long period to spread out the discussion.
      - An after-hours or informal venue is suggested (this was a popular part of the Firewood SAP).

Process:
- The panelist's written answers to the questions are compiled anonymously into a background document. The planning team reviews and approves a draft to be sent out to the panel. The team picks a set of questions to focus the live discussion.
  - The agenda is built around the discussion questions.
    - Public meeting notices and invitations are sent.
      - Final logistics: panelist's lodging, catering, meeting supplies.

Fall

Outcome:
- Panel meeting: notes and summary drafted and added to the compiled panelist written responses as the basis of the final report.
  - Report drafting, follow up questions with the panelists and planning team.
    - Draft report is presented to MISC for approval.

End: MISC approves the recommendations and distributes them to partners.

Council suggestions for 2023-2036 topics:

Next science advisory panel question: What is the most effective process to assess the potential invasiveness of a species by effectively quantifying its impact to Montana's economy and environment?

Priority questions:

- Invasive annual grass impacts,
  What are the benefits of control, landowner buy-in, impacts to recreation, and preventing secondary invasions?

- Climate Change
  Will the risk for known invasive species change and will native species shift their behavior?

Future topics for further consideration:

- Best practices from integrated weed management through revegetation?
- Noxious weed pathways: identifying the vectors and improving prevention.
- Feral hogs: What is the plan?
- Feral cat impacts from urban areas to rural populations.
- Data sharing and standards.
- Impacts of aquatic invasive plant control with herbicides on aquatic plant communities.
- Effective techniques for vehicle decontamination from terrestrial weeds and pests.
- eDNA technology has evolved, beyond mussels, how can it be used?
- Best practices for roadside vegetation management.
- Balance best practices for weed control with providing pollinator habitat and not attracting herbivores to the road.
- Frontiers in control: What has changed that can improve management?
- Praying mantis biology.

4. Focused Efforts to Improve Programs and Increase Capacity

Four areas were selected by the Council at the December 2022 meeting to receive focused attention. All those working in invasive species recognize that new outbreaks, new technology, and changing resources will create a constantly shifting landscape for managers. The following areas are current priorities and others may be identified by the Council as time goes on.

- *Issue:* Support woody invasive species management and research coordination.
  Practice: Council staff and members, as available and appropriate, to join and compliment the Montana taskforce for woody invasive riparian weeds.

- *Issue:* Education and communication training is a need across many partner programs.
  - Targeted communication about invasive species.
    - Audiences: targeted efforts for specific groups including landowners
    - Focus: use the tools we have in-state to improve audience contact.
  - Community-based social marketing
    - Positive messages give people a reason to get involved.
    - Develop modules for youth groups like scouts and 4-H
  - Tools that change with the times
    - Social media's role in communication
    - Break the scientific language barrier
  - Consistent messaging
    - Promote recognizable, shared language
    - Make pre-packaged presentations available

  Practice: The Council will host a workshop with the goal of providing technology transfer to outreach professionals, coordinate invasive species messages across Montana, and guide attendees through the development of an audience specific communication plan.

- *Issue:* Climate change.
  Current invasive species will change their behavior and native species' distributions may change. How do we plan for control and revegetation in a changing environment?
  Practice: The next MISC Summit in 2024 will include speakers, panel sessions, and opportunities for stakeholders to discuss current work on how invasive species management can anticipate and respond effectively to projected changes in average temperatures, earlier spring thaws, and precipitation changes. This will be followed by a Science Advisory Panel tasked with developing a set of recommendations for adapting invasive species management.

- *Issue*: Compliance with current regulations varies by county.
  - Why are the current laws not fully enforced?
  - Is there an opportunity to modernize reporting?
  - What is the best approach to achieve invasive species control goals?
  - Work with county attorneys to develop a meeting or training that meets their needs.

  Practice: A stakeholder meeting will be followed by a working group composed of professionals who will develop recommendations in a report delivered to the Council.

2023-2026 MISC Work Plan Calendar