



# Montana Invasive Species Council

Key Findings of the *Xerolenta obvia* (Eastern Heath Snail) Science Advisory Panel: A discussion on the biology, monitoring, and best management practices for control.

A nine-person panel of researchers, management specialists, and pest program coordinators, met via video conferencing in December 2020. The panel was organized by the Montana Invasive Species Council (MISC) to review the status of *Xerolenta obvia* (Eastern Heath Snail) in Belt, Montana and discuss gaps in our current understanding of the biology of this species, review risks posed by this species, and determine the resources needed to initiate best management practices. Key challenges, recommendations and next steps identified by panelists follow.

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## Challenges

- *Xerolenta obvia* (Eastern Heath Snail) is established in Belt, Montana
  - Introduced as early as 1910, possibly with mining operations
  - At least one producer currently impacted (hay)
  - Residents resistant to control efforts as risk of chemical treatments seen as higher risk than the snail
  - Population density reaches high levels within the Belt Valley
  - Resources are limited to mitigate existing snail populations and potential spread
  - There are currently no local cooperative agreements to manage this species or rules prohibiting their transport
- *Xerolenta obvia* is spreading in Montana, Michigan and Ontario, Canada
  - Climate does not appear to be a barrier to the spread of *Xerolenta obvia*
  - Millions of acres are located in production areas within the likely range of this species
  - The species is regulated at the international border; not all states regulate interstate movement
  - Populations in Michigan expanded once control efforts discontinued and snails spread along rail lines and through intermodal transport
  - Transport of materials (gravel) and vehicles have established at least three additional Montana populations 18-28 miles from Belt
  - Construction (electrical, internet cables) and road work can potentially spread snails
  - Vehicles, garbage cans, propane tanks, bee hives, and any structures left in the field can amass snails providing the potential to move them to other sites
- *Xerolenta obvia* is not currently identified as a high-risk species due to the following:
  - The Canadian Food Inspection Agency's 2004 Pest Risk Assessment
  - It is considered a generalist feeder with low direct impacts
  - Lower densities in native range do not have the impacts observed in the introduced range
  - Very high densities have not significantly impacted producers by contaminating equipment or crops
- Research on the biology of *Xerolenta obvia* and gastropods in general is limited and underfunded
- Management requires substantial time, consistent access to funds, staffing, effective molluscicides, and community support for long-term control efforts.
- The most effective molluscicide (e.g. metaldehyde) is not being used due to cost and mitigation requirements
- Sustainable long-term funding for outreach and management for mollusk pests is limited and a low priority

## Recommendations

- Initiate a robust research program to investigate and better understand the biology of *Xerolenta obvia* to improve management decisions and options in the future
  - Identify if *Xerolenta obvia* is capable of transmitting vertebrate parasites in North America or the spores of plant diseases
  - Identify where the North American populations of *Xerolenta obvia* originated from to improve efforts to predict their spread and introduction
  - Identify and prioritize other research needs
- 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
- Update liquid metaldehyde formulation review
- Develop a cooperative management plan for *Xerolenta obvia* in Montana based on the recommendations in the USDA New Pest Guidelines – Temperate Terrestrial Gastropods, other local response plans for gastropod species, and local priorities to include the following recommendations:
  - Boost survey efforts to identify locations of established populations
  - Develop tools to manage pathways and reduce the movement of snails
  - Utilize metaldehyde products, wherever possible, and reduce the use of iron phosphate for control. Incorporate vegetation management into control work
  - Use the full suite of management tools to keep snails from reaching densities that make harvesting impossible and to ensure that there is uniform use to eliminate refugia populations
- Conduct an economic impact analysis of the spread of this and related species in Montana
- Develop targeted outreach materials for the public and those that recreate near infested areas; the public; residents; producers; and industry to build awareness of invasive gastropods
  - Develop identification and reporting tools
  - Raise awareness about the need to check for and remove hitchhiking snails, e.g. install signage at access points to local recreation areas in infested areas indicating the presence of *Xerolenta obvia*
  - Identify impacted industries, processors, and growers and improve understanding of the impacts of expanding snail populations on operations and exports
  - Create a liaison officer position modeled after the South Australia Grains Biosecurity Officer to support impacted industries in adopting the control practices and equipment modifications needed to continue producing crops on heavily infested sites
- Include snails to the gravel section being developed for the Montana weed seed free forage program (MDA bill 2021 leg. Session)
- Secure long-term and sustainable funding and capacity for management efforts
- Support the continued availability of chemical control tools to contain spreading invasive species
- Address non-insect pests at a national level

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## Conclusion

The MISC *Xerolenta obvia* Science Advisory Panel provided a platform to review the efforts taken since the official discovery of this species in Montana in 2012 and discuss the best globally practiced management practices for pest gastropods. An advantage in managing this newly expanding threat is the ability of U.S. managers and producers to build on decades of experience developed in Australia. A complex of terrestrial snails similar to the Eastern heath snail [i.e. the Mediterranean snails: *Certhia virgata*, *Cochlicella acuta*,

*Cochlicella (Prietocella) barbara* (Geomitridae), and *Theba pisana* (Helicidae)] have impacted grain and pulse growers in South Australia and surrounding regions.

The economic impact in areas with these high-density aggregating snails has led to the development of a suite of management tools and practices that can be adapted to U.S. grain, pulse, and canola production. The estimated cost to producers to manage the four established Mediterranean snail species is an additional \$50/hectare (\$20.23/acre/year). Costs include reducing snail presence in fields of grain, pulses, and hay in addition to costs due to crop losses. For Montana, the 2019 State Agricultural Review for Montana (USDA) indications predict productions to be:

- 5,450,000 acres wheat
- 3,000,000 acres hay
- 950,000 acres barley
- 1,024,000 acres pulses (lentils, peas, chickpeas)
- 244,800 acres brassica (canola, sugar beets)

Applying Australian estimates, additional costs to Montana growers using the predicted total acreage of crop production could exceed \$215 million per year in additional costs to producers to manage snails. Australia's experience provides information that Montana can use to mitigate the impacts of *Xerolenta obvia* and also amplifies a sense of urgency regarding the importance to develop a local and regional approach for containment and management of *Xerolenta obvia* to avoid potential economic impacts.

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## Next Steps

MISC has identified the following steps to utilize the information from the panel:

- Distribute information generated from the scientific advisory panel to all interested parties including outreach networks, neighboring states, and impacted industries
- Engage regional coordinating bodies for both impacted industries and invasive species coordinating bodies to assist in the promotion/implementation of the next steps identified by the panelists
- Support research on both the biology of this pest and possible control strategies
- Conduct an economic impact analysis and develop education and outreach materials
- Encourage and support the development of funding and regulations for invasive gastropods (slugs and snails)