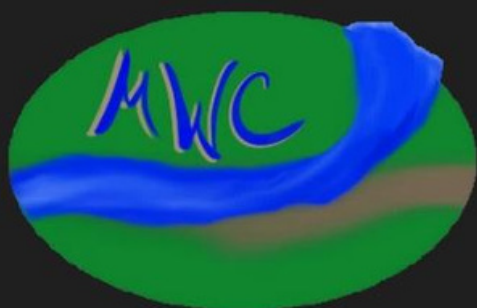


Musselshell Watershed Coalition

2022 Winter Edition



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musselshellwc.wixsite.com

WHAT HAS THE MWC BEEN UP TO?

The Musselshell River Watershed is a place of extremes and since it's been awhile since we've sent a newsletter, it seemed appropriate to recap what has taken place on the Musselshell River since the inception of the Musselshell Watershed Coalition in 2009 and some of the things that we're doing in response.

Continued on page 2

NEXT MEETING:

Tuesday, December 13, at Noon in Roundup. MSU Extension Office

Agenda Highlight: *Montana Fish, Wildlife, and Parks to present on the Musselshell River Fishery*

A full agenda can be found on the website and our Facebook page. The meeting will end at 2:30. Please bring your own lunch. We hope to see many of you there.

Musselshell Flooding: How it looks then and now

Flowing 342 miles, through the heart of Montana from Martinsdale to the Missouri River, the Musselshell River irrigates nearly 85,000 acres on 250 farms and ranches. Communities throughout the watershed cannot claim strength in numbers but have demonstrated that strength comes from shared challenges and shared concerns.

The people of the Musselshell are no strangers to natural disasters. In recent years, these have included floods in 2011, 2013 and 2014 and sustained 5-year flood waters for over a month in 2018 and 2019 as well as big fires in 2012, 2017, 2020, and 2021, and record setting drought in 2021 that extended into 2022.

During the 2011 flood, the river crested four feet over flood stage which left over 300 people stranded when roads were washed out or under water. For two weeks, stranded people had to rely on their neighbors to bring them necessities like medicine, food, and drinking water, much of which was transferred by boat. The Musselshell River itself shortened by almost 10%. In the years since, the river has continued to move in an effort to reclaim its length. This constant changing has brought constant challenges to landowners and communities trying to live on its banks.

The Musselshell Watershed Coalition (MWC), was one entity of many that helped to organize emergency repair projects, formed a technical advisory team to evaluate the damage, and learned of ways to lessen the economic, social, and ecological impacts of future flooding events. The MWC continues to work with partners to implement streambank stabilization projects and towards updating irrigation infrastructure, all of which lessens our community's susceptibility to flood damage.



The extremes of the Musselshell never cease to amaze. Above photos show the August 2014 flood on the lower end of the Musselshell and Flatwillow Creek wiping out a bridge and the photo on the right shows Flatwillow Creek in mid-October 2022. Dry. [Both photos by Chris Boyer, Kestrel Aerial.]

A 10-year History of THE MUSSELHELL RIVER

ALWAYS A PLACE OF EXTREMES, THE LAST 10 YEARS ON THE MUSSELHELL HAVE BEEN EXCEPTIONAL.



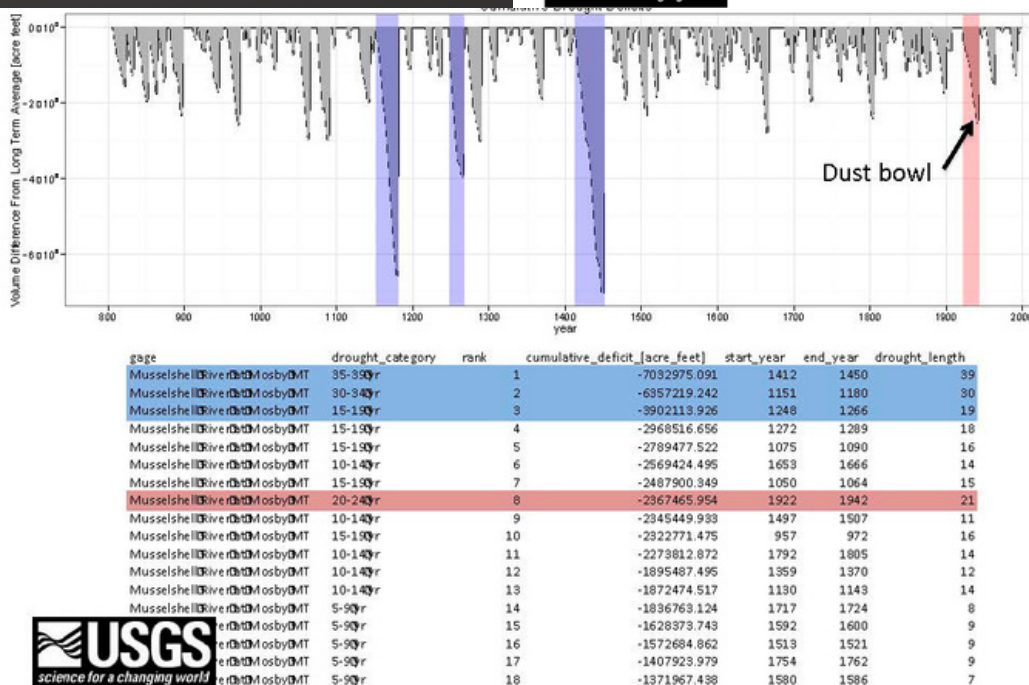
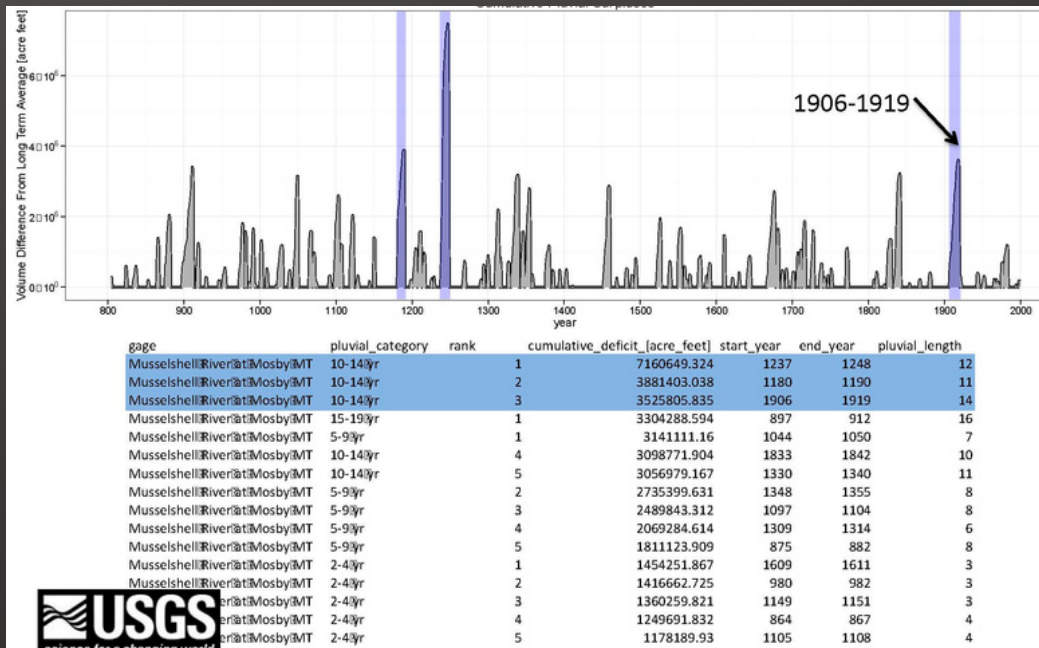
What have we learned?

In the fall of 2021, the City of Roundup hosted a 10-year Anniversary Event for the 2011 floods. Much has been learned in the last ten years, the most of which is the importance to work together, communicate, and seek resources. Mayor Sandra Jones shared these 7 Steps for Building a Resilient Community:

- Assess the need
- Assess available resources
- Open lines of communication with one another
- Identify what each partner contributes to the whole
- Celebrate the differences among partners
- Present a unified force
- Evaluate the results (and then start over again)

One thing is sure, flood, fire, and drought will all come again and neighbors and partners will be prepared to respond. And, whether fire or flood, local landowner Mary Brown said it best: "Ranches can be rebuilt but knowing who will be there for you when things get tough, that is irreplaceable."

Musselshell River at Mosby:
High-Flow Periods



Musselshell River at Mosby:
Low-Flow Periods



Eastern Heath Snail

Eastern Heath Snail

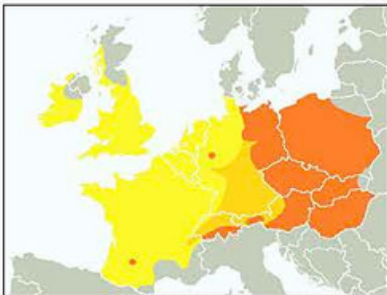
Terrestrial snail in the Hygromiidae family
Scientific Name: *Xerolenta obvia* (Menke)

Description: a little smaller than a dime (0.63" (16 mm) - 0.75 (19 mm) in diameter); white with dark brown spiral brown bands



Hosts: feeds on a wide range of plant species (254 genera). Is a known pest of alfalfa, clover, lupine, sanfoin, serradella (a legume), wheat, and barley. Observed locally on a wide variety of plant materials, e.g., grasses, ornamentals, trees (including fruit), shrubs and weeds.

Biology & Behavior: found in vegetation, under rocks, boards, and refuse. Known for climbing on vegetation, fence posts and other upright objects to escape high ground temperatures and will aggregate in enormous numbers in a behavior called massing. Snails survive long periods of dry conditions by withdrawing into their shells and sealing the opening with a mucous membrane. Reproduces in the fall in Europe (typically October and early November) but has been observed to have a spring and fall reproductive cycle in North America. Overwinters in the soil.



Distribution: southeastern and eastern Europe (Bulgaria, Czech Republic, Poland, Slovakia) and isolated populations in western Germany and southern France (depicted in orange). Established population in southern Ontario (Bethany in 1969 and 1972) and detected in Detroit, Michigan in 2001. Introduction and spread of snail populations is largely by anthropogenic means (man). Snails readily attach themselves to a variety of materials.

Source: KERNEY et al.

Damage/Impacts: feeds on plant material, reducing yields and lowering crop quality

- Contaminant in grains; products may be downgraded (e.g., malting barley to feed barley) or may be unacceptable to grain handling authorities
- Contaminate of fruits and vegetables
- Transmits spores of *Alternaria* sp., *Fusarium* sp., and *Phytophthora* sp. (plant diseases)
- Vector of animal diseases: *Protostrongylus rufescens* (sheep lungworm), *Davainea proglottina* (cestode), and *Dicrocoelium dendriticum* (trematode).



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Animal and Plant Health Inspection Service (APHIS)
Plant Protection and Quarantine (PPQ)
406-449-5210

Best Management Practices for the Eastern Heath Snail

Site Sanitation

Trash, litter, debris or other forms of waste provide snails with daytime hiding places or harborage. Infested areas/properties should be kept clean to help facilitate management and improve the effectiveness of control measures. Removal of trash, litter or other debris should be conducted to prevent the spread of an infestation by hitchhiking snails. To mitigate risks, ensure waste is free of snails, place waste in regular waste bags and seal prior to normal proper disposal.

Artificial Movement Prevention and Inspection

Various articles can provide snails an opportunity to “hitchhike” and travel to other locations. Articles may include any product, commodity, vegetation or any means of conveyance, that present a pathway for the spread of snails or snail eggs. To address this concern, the following practices are recommended:

- Thoroughly inspect articles that will be leaving infested areas.
- Articles should not be staged in infested areas or where vegetation is present. Articles that need to be staged in vegetated or known infested areas should be inspected for snails prior to being moved.
- If snails are observed, they should be removed and eliminated by crushing.
- If possible, the article/s in transit should be properly inspected at the point of origin and at its destination to verify the condition as “snail free.” If shipping to Oregon or California, an official inspection prior to shipment or transit is required.

Site Management and Modification

Vegetation Management: Maintenance of vegetation in infested areas is an effective means of controlling the natural spread of snails by reducing food sources/habitat, in addition to enhancing the effectiveness of mollusk control measures. Some examples of vegetation management include mechanical cutting and herbicide applications.

- Vegetation should be mowed to a maximum height of 5 inches.
- Green waste such as small trees, brush, and other vegetation should be chipped on site prior to removal to prevent artificial movement of snails.
- After clearing and removal of vegetation, mow or apply thorough, regular pesticide applications.
- Inspect all equipment before it leaves the infested site to prevent artificial spread.
- Optimally, equipment used for vegetation management should be cleaned and stored inside buildings. Any equipment stored outside can be protected by establishing a salt barrier.
- For questions about disposal procedures to help prevent artificial spread, contact the Montana Department of Agriculture or local USDA APHIS PPQ office.

Site Modification

Site modification may be used in lieu of vegetative controls if the facility determines such practices would be more feasible and cost/effective. Site modification such as grading or resurfacing kills snails and eggs present in the shallow surface soils (0–4 inches below ground). Grading also disrupts existing vegetation and destroys snail habitat. Examples of site modification include raking, rough grading with a bulldozer or resurfacing with crushed stone or gravel, asphalt millings, pavement, or concrete to retard vegetation regrowth.

Treatment

To reduce and manage snail numbers, apply molluscicides approved for use in your state to the infested areas. Use granular molluscicide baits having either metaldehyde or iron phosphate as the active ingredient. There are a variety of brand name molluscicides with these ingredients which have appropriate labeling for the sites to be treated.

Summary

Property owners are encouraged to implement Exotic Snail Best Management Practices to prevent additional snail species from establishing active populations. The Exotic Snail Best Management Practices is not intended to be complete and all-inclusive, but provides a foundation for effective management. Property owners are encouraged to customize/tailor these Best Management Practices to their own property and unique set of conditions.

Additional Resources – New Pest Response Guidelines: Temperate Terrestrial Gastropods

http://www.aphis.usda.gov/import_export/plants/manuals/emergency/downloads/nprg_temp_terr_gastro.pdf



GPS-collared cows like this one near Malta can be managed through a web application, like Vence. The program, (a mashup of "virtual" and "fence"), allows ranchers to draw virtual fencelines on their cell phones - effectively improving grazing management and boosting drought resilience with less effort, less cost, and no black-and-blue thumbnails. - David Hanson.

Montana Drought Management Plan: Fall 2022 Updates

Regional groups to meet Dec. 15 to talk drought adaptation

Did you know that even though summer's over, most of the state is still in a multi-year drought?

Drought Plan Updates for Summer/Fall 2022:

- A huge thanks to those of you who carved out time over the summer for a one-on-one drought interview or to complete the online drought survey! Our team completed 60 interviews and collected survey responses from over 250 people representing a wide array of water interests across Montana.
- The Montana Drought Task Force met monthly over the summer to monitor drought and draft a modern drought response framework and response recommendations.
- We're wrapping up work with the Montana Climate Office and other partners on a drought monitoring analysis that identifies the best data-driven drought indicators and indices to use in different parts of Montana at different times of year.
- We've profiled six community members across Montana who are working on diverse drought adaptations in their fields - from beaver mimicry and biochar to regenerative farming and collared cattle.

The statewide drought vulnerability assessment - a data-and-stakeholder-driven look at how different communities experience drought - is almost complete.

What's Next?

Now, it's up to you to help identify local, regional, and state-level adaptation strategies. Please join us (virtually) on December 15 to hear results from your interviews/surveys and to look at drought vulnerability across the state.

Regional Groups meeting:

Thursday, December 15 from 12:30 - 2:30 p.m. via Zoom.

[CLICK HERE TO REGISTER](#)

Keep an eye out for the opportunity to comment on the draft drought plan in spring 2023. In the meantime, please reach out with questions, comments, or just to say hello! See you on December 15.

Resiliently, **[The DNRC Drought Team](#)**

Regional Groups Refresher: There are seven regional stakeholder groups across Montana that formed for the purpose of updating the Montana Drought Management Plan through 2022. Group members - like you - represent various water-related categories including agriculture, public supply, recreation, energy, tourism, wildlife and fisheries, conservation, hydropower, industry, commerce, culture, and more. Your continued input will ensure the new state drought plan incorporates local needs, priorities, and solutions moving forward. Please feel free to pass this invitation along.

MTDroughtInfo.org

Stay Connected with Montana Department of Natural Resources & Conservation
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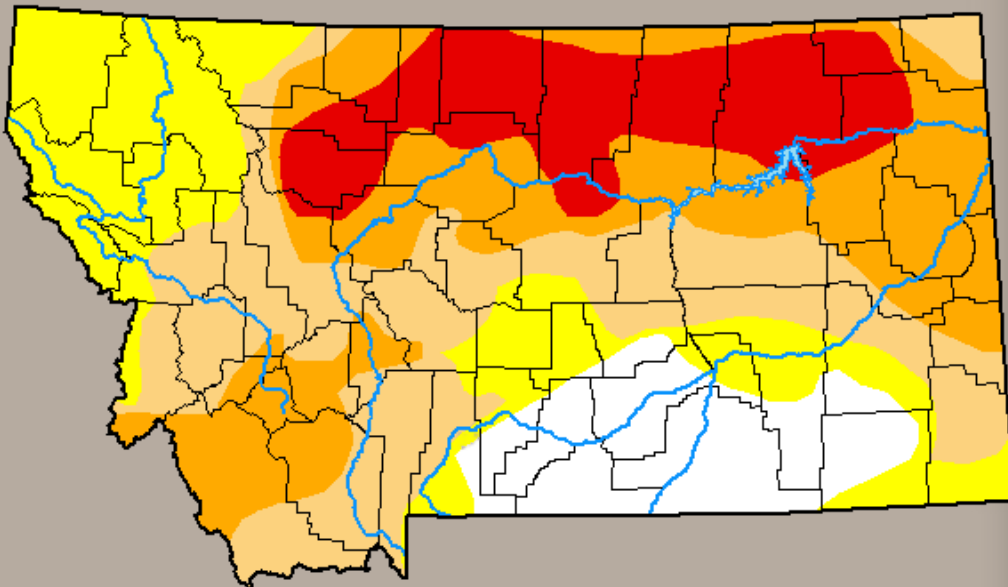


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U.S. Drought Monitor

~Montana~



November 22, 2022
(Released Wednesday, Nov. 23, 2022)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	12.04	87.96	66.74	40.51	15.47	0.00
Last Week 11-15-2022	10.43	89.57	66.76	41.89	15.47	0.00
3 Months Ago 08-23-2022	32.62	67.38	31.85	15.53	3.59	0.00
Start of Calendar Year 01-04-2022	7.36	92.64	89.33	86.35	53.93	13.87
Start of Water Year 09-27-2022	5.40	94.60	77.46	45.05	12.35	0.00
One Year Ago 11-23-2021	0.00	100.00	100.00	92.82	66.82	33.10

Intensity:

 None	 D2 Severe Drought
 D0 Abnormally Dry	 D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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droughtmonitor.unl.edu

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