

THE MONTANA CONSERVATIONIST

News from Montana's Conservation Districts

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Earthworms: essential for soil health, bad for the forest

Rome Sentinel: The earthworm is a fascinating creepy crawly guy or gal!

Earthworms belong to the order Oligochaeta, (meaning few bristles), with about 1800 species grouped into 5 families around the world.

While somewhat primitive, the earthworm has well-developed nervous, circulatory, digestive, excretory, muscular and reproductive systems. The most noticeable external feature is the ringing or segmentation of the body which is not external but involves all internal structure.

Segmentation within the earthworm serves the same general function as the division of the animal body into organs, that is, different segments perform different functions.

Earthworms do not have lungs; they breathe through their skin! Light sensitive tissues near their heads detect light.

Amazingly, earthworms have 5 hearts, can jump up to a foot, live up to 10 years, and produce their own weight in casts (that's worm poo) in 24 hours. They are hermaphrodites, meaning they contain both male and female sex organs. The male and female sex organs can produce sperm and egg respectively in each earthworm. Although earthworms are hermaphrodites, most need a mate to reproduce.

Worms are 70% protein. You might want to remember that if you ever get stranded in the woods. They are a favorite food of robins and moles. Earthworms are a gardener dream at helping make the best garden soil possible. They condition the soil, rapidly decompose organic matter and quickly return nutrients to the soil. In addition, their presence aerates the soil, allowing oxygen and water to filter into the plant roots and creating channels for roots to grow.

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Hutterite colonies donate milk to local community

Northern Ag Network: You may have seen the unfortunate stories of dairy producers in Wisconsin having to dump milk due to the supply chain challenges that COVID-19 has caused. With schools, restaurants and hotels closed and some stores limiting milk purchases, Montana dairy farmers have run into similar challenges. In fact, this week some producers were forced to dump their milk. However, some of Montana's milk producers have come together to get milk to those people in need.

Twenty-nine Hutterite Colonies have donated 3,500 pounds of milk each, approximately 12,000 gallons, to the Montana Food Bank Network. Rather than dumping the excess milk that cannot be delivered or is not being purchased by retailers, the Colonies came together to give to consumers who want and need milk. The Montana Milk Producers Association, made up of the 29 Colonies, said they want to help those in need and know that there are people out there that need this milk.

A Colony representative told Northern Ag Network, "We want to donate this with open arms to those in need across the state of Montana."

Not only was the milk donated but the costs for processing and delivery have been covered as well.

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US Agriculture produces more with lower greenhouse gas emissions

Northern Ag Network: New analysis of updated data from the U.S. Environmental Protection Agency, combined with U.S. Department of Agriculture data, shows U.S. farmers and ranchers continue to reduce per-unit greenhouse gas emissions. All told, the U.S. agricultural sector accounts for less than 10% of total U.S. emissions. That's less than the emissions from the transportation, electricity generation and industrial sectors. Globally, agriculture accounts for about 24% of GHG emissions.

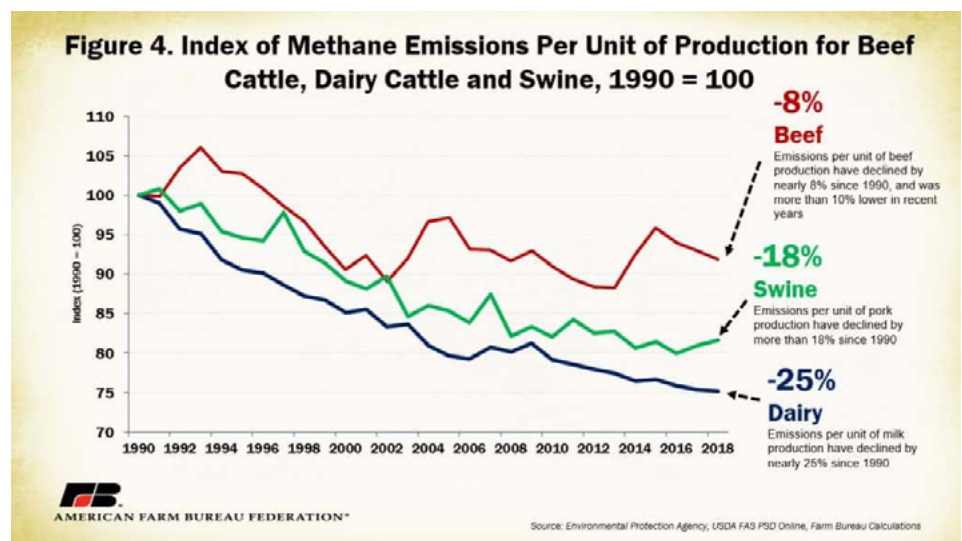
The EPA's U.S. Inventory of Greenhouse Gas Emissions provides a first look at 2018 U.S. emissions data, which is incorporated into a new Market Intel report from the American Farm Bureau Federation. The Market Intel report finds that per-unit methane emissions from livestock have declined since 1990 as livestock producers have increased productivity. During the

past 30 years, U.S. milk production has increased 71% while per-unit emissions of milk have declined by almost 25%. Beef production has increased almost 50%, while per-unit emissions have fallen nearly 8%.

Meanwhile, American farmers are producing more crops on fewer

acres, according to an analysis of USDA data. When compared to farm production in 1990, U.S. farmers would have needed almost 100 million additional acres to grow the same amount of corn, cotton, rice, soybeans and wheat they harvested in 2018.

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Different methods of soil testing for phosphorus and pH have different effectiveness

April 2020. Provided by Clain Jones, Montana State University Extension Soil Fertility Specialist

Several tests have been developed over the past century to assess phosphorus (P) availability, including Olsen, Bray, Mehlich-3, and Haney-Haney-Hossner-Arnold (H3A). Montana State University fertilizer guidelines are based on Olsen P, which has proven to be reliable in soils with pH greater than 7 (alkaline) that contain calcium carbonate (limestone). However, different laboratories

often use one of the other three, especially labs in the Midwest. The question is whether there is a reliable conversion between Olsen and any of these three OR whether Mehlich-3, Bray, and H3A are simply not reliable in high pH soils.

A recent article in Crops & Soils, September 2019, published by the American Society of Agronomy, reported on an Idaho study that found a strong correlation between Mehlich-3 and Olsen P ($Olsen\ P = (Mehlich/2.05) - 14$). Using this conversion, the MSU

P fertilizer guidelines can be used with caution to calculate approximate P fertilizer rates.

Both the Bray and H3A tests were designed for neutral to acidic soils (pH less than 7). The Idaho study did not find a correlation between either the Bray or the H3A tests and Olsen P test results in soils containing calcium carbonate. In a number of soils, the Bray P test did not detect any P, even though Olsen P levels were relatively high.

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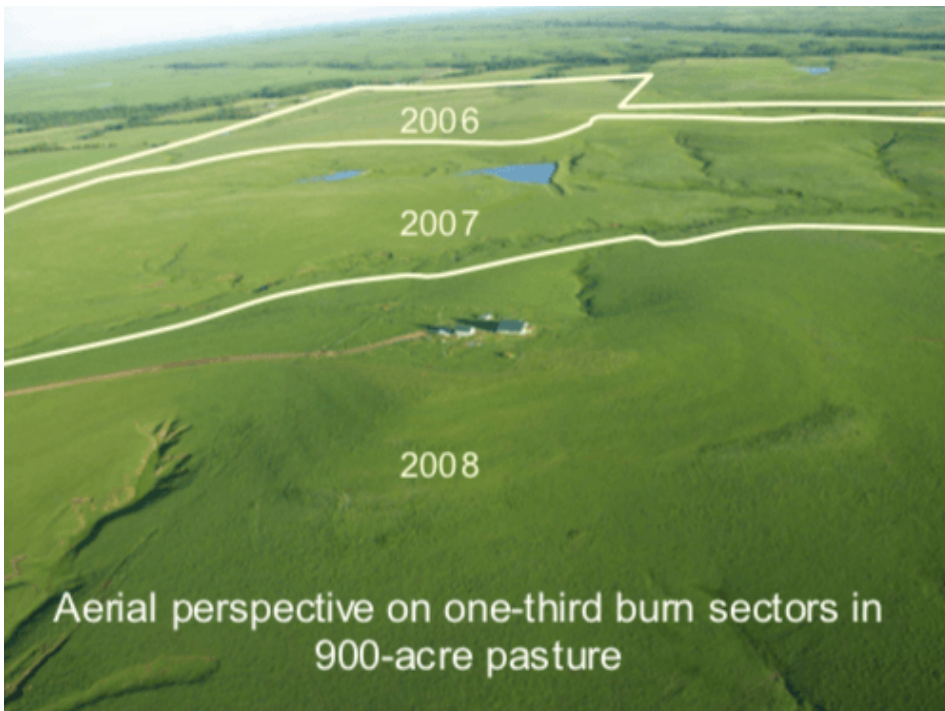
Soil Testing

Continued from page 3: When sending soil to a lab, ask the lab to use the Olsen test. If the lab doesn't use Olsen, but does use Mehlich-3, make sure to convert from Mehlich-3 to Olsen. If the lab only uses Bray or H3A, consider switching labs, or make sure that the pH is less than 7. The Bray test may be a reliable indicator of available P, however, you will need to use the lab's P recommendation rather than MSU's, which may not be ideal for Montana soils. The H3A test is not reliable for Montana soils.

While you are in the field soil sampling, look for or ask about areas that may have had unexplained poor production, unusual response to herbicide or herbicide residual, increased *Cephalosporium* stripe or fusarium crown rot, or nitrogen deficient legumes (poor legume nodulation). These are all indicators of possible soil acidification.

Farmers in several Montana counties are experiencing nearly complete yield loss in portions of their fields due to soil acidity (pH below 5.5). Soil acidification is best caught early in order to modify agronomic practices and minimize further crop loss.

In areas that are suspect, test the top 0-3 inches of soil using a field soil pH probe at about 1.5 inches (or sending off for lab analysis). Soil at the edge of poor growth areas should also be analyzed to determine if the pH is close to toxic, but crops do not yet exhibit symptoms. The potential is there for problem areas to grow in size. Areas where pH is 5 to 6 should be managed differently to prevent further acidification. [READ MORE](#)



Aerial perspective on one-third burn sectors in 900-acre pasture

Patch burning means fewer fences, better grazing management, and improved wildlife habitat

On Pasture: Ranchers on the tallgrass prairie traditionally burn their pastures each spring before summer grazing. After fire, plants grow more quickly, and the new growth is very nutritious. But the practice is problematic for migratory birds. It reduces nesting and feeding habitat just when they need it most. So, how can ranchers balance getting great forage while maintaining wildlife habitat? Jane Koger, a rancher in Matfield Kansas suggests that patch-burning is a good option.

Instead of burning an entire pasture, patch-burns focus on a portion of the pasture. Generally, one-third of each grazing unit is burned annually in rotation. Post-fire regrowth attracts cattle to burned areas where forage is most nutritious. The remainder of the pasture is only grazed lightly. This

lets plants rest and build root mass while providing the habitat that wildlife prefer.

The Homestead Ranch Renewal Initiative

In 2003, Koger created the Homestead Ranch Renewal Initiative, the first, privately-sponsored effort to explore how patch-burning might benefit ranchers and the prairie. She brought together an advisory team that included representatives from the U.S. Fish & Wildlife Service, Natural Resources Conservation Service (NRCS) and The Nature Conservancy, to develop a plan to improve wildlife habitat, and to revitalize Homestead Ranch pastures.

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Warming makes US West megadrought worst in modern age

PHYS.ORG: A two-decade-long dry spell that has parched much of the western United States is turning into one of the deepest megadroughts in the region in more than 1,200 years, a new study found.

And about half of this historic drought can be blamed on man-made global warming, according to a study in Thursday's journal *Science*.

Scientists looked at a nine-state area from Oregon and Wyoming down through California and New Mexico, plus a sliver of southwestern Montana and parts of northern Mexico. They used thousands of tree rings to compare a drought that started in 2000 and is still going—despite a wet 2019—to four past megadroughts since the year 800.

With soil moisture as the key measurement, they found only one other drought that was as big and was likely slightly bigger. That one started in 1575, just 10 years after St. Augustine, the first European city in the United States, was founded, and that drought ended before the Pilgrims landed on Plymouth Rock in 1620.

What's happening now is "a drought bigger than what modern society has seen," said study lead author A. Park Williams, a bioclimatologist at Columbia University.

Study: Snowpack will become a less reliable predictor of drought in Western U.S.

CPR News: In the next 16-45 years, two-thirds of Western states may have to turn away from snowpack and find new tools to predict drought.

And by the late century, scientists estimate that area will grow to four-fifths of the western United States, according to a new paper in *Nature Climate Change*.

"When the temperature warms, the phase of the precipitation is likely to change from snow to rain. So less snowpack is something that's pretty likely," said lead author Ben Livneh, an assistant professor of civil, environmental and architectural engineering at the University of Colorado Boulder.

Water managers typically rely on artificial dates like April 1 when the snowpack is highest to predict drought. But in the coming decades, they'll have to develop other tools like soil moisture and perhaps even satellite data to make the call.

To come up with his conclusions, Livneh analyzed the output of 28

climate models using statistical tools.

The one bright spot for Colorado is that locations above 10,000 feet of elevation will see snowpack well throughout the 21st century. Compare that to the Pacific Northwest, where water managers there could start seeing significant snowpack decline in the next 15-20 years.

Livneh said he's hopeful that scientists will expand existing tools for water managers, and develop new ones. For example, satellite data now makes it possible to see mountaintops from space.

"We're starting to be able to see things from space that we couldn't see before. Seeing the tops of mountains, and places where it's hard to go out and make an observation, you can see those places from space. And not that much has been explored yet there," Livneh said. "Maybe this can serve as a call to action."

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Grants

MARS In-Lieu Fee Stream and Wetland Mitigation

Montana Aquatic Resources Services (MARS) runs a state-wide In-Lieu Fee Stream and Wetland Mitigation Program. We have funding for several wetland restoration projects in our **Marias, Milk and Lower Missouri** service areas (see [Service Area map](#)). Our funding covers site selection, design, construction, monitoring, landowner payments, and long-term stewardship; and can be used for stand-alone projects, or possibly in combination with another rangeland conservation project or program. To learn more about the ILF program, visit <http://montanaaquaticresources.org/>

Ranching for Rivers

The Ranching for Rivers program is accepting applicants on a rolling basis for 2020. Conservation Districts and watershed groups with identified projects, or individual landowners working with a local CD or watershed group may apply. The program offers 50% cost-share for project implementation and/or the development of a Grazing Management Plan. [More Info](#)

RDG Project & Planning Grants

The DNRC Reclamation and Development Grants Program (RDGP) is now accepting grant applications for both: RDG Planning Grants - up to \$50,000; and RDG Project Grants - up to \$500,000. Grants are available to any city, county, Tribe, conservation district, or other local government subdivision in

Montana. Proposed grants must provide natural resource benefits in one of two categories: 1) Reclamation projects; 2) Crucial state need: must prevent or eliminate damage to natural resources or capture extraordinary public benefit that would otherwise be lost. **On Friday, 3/20/20, DNRC updated the RRGL Project Grant deadline to June 1, 2020 and the RRGL Planning Grant deadline to April 10, 2020. We understand the impacts COVID-19 is having on communities and organizations and are allowing additional time to prepare these applications. [More Info](#)**

Montana Grazing Lands Education Mini-Grants

The Montana Grazing Lands Conservation Initiative (GLCI) is accepting applications for mini-grants and demonstration projects. The mini-grants will provide funding for educational events throughout the year and support partners and organizations with an interest in the conservation, education, and awareness of grazing lands and natural resources in Montana. Mini-grant funding requests are limited to a minimum of \$50 and a maximum of \$1,000. There is no application deadline. [More Info](#)

Sweet Grass Water Project Funding

Sweet Grass Conservation District is now accepting applications for a new round of water project funding. Applications are due to Sweet Grass Conservation District by **May 5, 2020**. Ranking and awarding will be done on May 11th. Projects must be able to be completed by November 30, 2020. Maximum amount to be awarded per project is \$12,225. Contact

Guelda Halverson, guelda.halverson@mt.nacdnet.net for more info.

FY2021 CD Administration Grants

Applications for Conservation District administrative grants for FY2021 are due May 1. Contact Karl Christians kchristians@mt.gov for more info.

Watershed Stewardship Funding

SWCDM, in partnership with DNRC and DEQ, is offering a one-time funding opportunity for Conservation Districts engaging in watershed planning and stakeholder engagement efforts! The deadline for applications is **May 13th** at 5:00 PM. For more information and application form, Visit: <https://swcdm.org/watershed-stewardship-funding/> or contact stephanie@macdnet.org for questions.

Events, etc

Upper Columbia Basin Monitoring Workshop

Presented by Whitefish Lake Institute and the Flathead Lake Biological Station on Friday, **May 29, 2020** from 10am – 3pm at the Flathead Lake Biological Station. This training is free and open to the public. Mileage reimbursement up to 100 miles is available and sampling equipment will be made available as needed as well. Please RSVP by MAY 1st to Cynthia Ingelfinger at cynthia@whitefishlake.org

Coming Up

April

- 27 MACD Executive Committee Conference Call
- 29 MACD Education Committee Call
- MACD District Operations Committee Call
- 30 Rangeland Monitoring Webinar

May

- 1 FY2021 Admin grants due
- 6 MACD Merger Study Committee Meeting
- 11 MACD Board Conference Call

Have a story, funding opportunity, or event to share?
Please email tmc@macdnet.org with details.

Montana Youth Range Camp

The annual Montana Youth Range Camp, hosted by the Lewis & Clark Conservation District, will be held August 3-6, 2020, at the C Bar N Ranch near Augusta, Montana. Visit <https://lccd.mt.nacdnet.org/> for more info.

Jobs

Assistant Fuels Reduction Program Administrator

The Lower Musselshell Conservation District in Roundup, MT is looking to hire an assistant fuel reduction program administrator. The applicant will work directly with the Fuel Reduction Program Administrator and the USDA-NRCS office to further develop and administer the district's Fuels Reduction Program. Contact Wendy Jones, Wendy.Jones@MT.nacdnet.net for more info.

Project Manager

Montana Aquatic Resources Services is seeking a project manager based in Livingston. The project manager's role is to support MARS' mission through the administration and oversight of restoration and mitigation projects, including planning, implementation and long-term project management. [More Info](#)

MISC

New Grant Resources Database Launched

The State of Montana just made

many jobs easier by launching a searchable web-based database of over 130 state and federal grant/loan opportunities to fund community and economic development projects. Project categories represented in the database are wide-ranging and include agriculture and natural resources, arts and education, historic preservation, housing, and community and business development opportunities. [Main Street Montana](#). [More Info](#)

Webinars

Moving Beyond Inventories: A new era for rangeland monitoring

Join WLFW researcher and rangeland ecologist, Brady Allred, for his presentation on how the Rangeland Analysis Platform is advancing rangeland monitoring for landowners and managers. **April 30.** [More Info](#)

New tools for pinyon-juniper management: Balancing needs of sagebrush and woodland obligate birds

This webinar will highlight recent literature on wildlife response to pinyon-juniper management across the West, and new science and tools for considering sagebrush- and woodland-obligate songbirds, like pinyon jay, in conifer management. Knowledge gained from wildlife studies will be put into context of emerging remote sensing analyses that provide a comprehensive picture of continued woodland change. **May 27, 11am.** [More Info](#)