

# THE MONTANA CONSERVATIONIST

News from Montana's Conservation Districts

October 25, 2017

Volume 10 Issue 21

## In this issue:

2 USDA: Locations of agricultural regions may change as climate warms

"Off the Shelf Wetland" firm poised for international growth

3 BSWC members study canal seepage

4 Convention Information

5 MSU finds irrigation timing benefits wheat yields

Vacancies & reorganization: The state of USDA

House committee approves bills to change ESA

6 Opportunities

7 Calendar

Weed war may wound beneficial soil bacteria

**SOIL & WATER**  
CONSERVATION DISTRICTS  
of MONTANA



MONTANA ASSOCIATION of  
CONSERVATION DISTRICTS  
*We're growing Montana's future.*

1101 Eleventh Avenue  
Helena, MT 59601  
406-443-5711  
www.swcdmi.org

This newsletter is made possible by a grant from DNRC.



## No new signs of mussel larvae in state, official says

*From the Bozeman Chronicle, Oct. 9:* No new positive hits were found in the year after invasive mussel larvae were found for the first time in Montana, a state official said Monday.

Paul Sihler, chief of staff for Montana Fish, Wildlife and Parks, told members of the Montana Legislature's Water Policy Interim Committee that the agency hasn't found larvae in any new waterbodies. Additionally, no adult mussels were found in either of the reservoirs where larvae were found in 2016. "We've had a good year," he said.

This comes about a year after larvae from either zebra or quagga mussels were first found in Canyon Ferry and Tiber reservoirs. Mussels are small, shelled organisms that stick to hard surfaces and can cause major damage to irrigation pumps and hydroelectric dams.

In response to the find last fall, FWP and the Montana Department of Natural Resources and Conservation created a program to combat the organisms. [READ MORE](#)

## Future temperature and soil moisture may alter location of agricultural regions

From the USDA: Future high temperature extremes and soil moisture conditions may cause some regions to become more suitable for rainfed, or non-irrigated, agriculture, while causing other areas to lose suitable farmland, according to [a new U.S. Geological Survey study.](#)

These future conditions will cause an overall increase in the area suitable to support rainfed agriculture within dryland areas. Increases are projected in North America, western Asia, eastern Asia and South America. In contrast, suitable areas are projected to decline in European dryland areas.

This study focused on understanding and projecting suitability for rainfed agriculture in temperate, or non-tropical, dryland regions. Drylands make up at least 40 percent of the earth's land area and rainfed croplands account for approximately 75 percent of global cropland. Worldwide, temperate regions account for 31 percent of the area used to grow wheat and 17 percent used for corn.

"Understanding the future potential distribution of rainfed agriculture is important for resource managers," said USGS scientist and lead author of the study, John Bradford.

[READ MORE](#)



## "Off the Shelf Wetland" firm poised for international growth

*Shepherd company makes floating islands for water treatment, nutrient removal*

From Last Best News: Since founding Floating Island International 12 years ago, Bruce Kania has achieved a lot of milestones.

More than 7,000 of his man-made islands — he likes to call them "off-the-shelf wetlands" — have been sold around the world. He holds "a couple dozen" patents related to the floating island technology and he has six licensed manufacturers — three in the United States and one each in China, New Zealand the United Kingdom — making his patented BioHaven-brand islands.

The islands are used mainly for removing nutrients from water, so most of them are in water-treatment operations and other settings where the goal is to extract pollutants from water. But they are also in wide use for increasing the productivity of fisheries, protecting shorelines and levees, and creating habitat for threatened species of birds.

But all that work and all those successes, in Kania's view, was only setting the stage for what comes next. He and his wife, Anne Kania, previously did most of the work of operating and expanding Floating Island International.

Now, having brought on experts in global marketing and business development, Kania believes his company is at a tipping point, "on the verge of exponential growth." That wording comes from the executive summary of a recent annual report for Floating Island International.

Kania, whose business is headquartered a few miles outside of Shepherd on 340 acres thick with wetlands, demonstration ponds and an abundance of fish, fowl, insects, amphibians and mammals, said "this concept of off-the-shelf wetlands is really taking off," and "we really feel like we're the best people in the country to advance that technology." [READ MORE](#)

## Big Sky Watershed Corps members study canal seepage in the Musselshell

*Editor's Note: Willie Friedman and John Lange are Big Sky Watershed Corps Members with the Musselshell Watershed Coalition. They wrote in to tell us a little bit about what they worked on this summer.*

Water users throughout the Musselshell Basin regularly express their concerns about water quantity and supply availability. For the ranchers and farmers of the watershed, water use efficiency is key due to the region's regularly low annual precipitation.

The irrigation canal network constructed throughout the Musselshell Basin is integral in distributing the limited supply of water, and critical for ensuring water rights are met throughout the watershed. Most of the canals within this network are prone to seepage, and not nearly as efficient as they were when originally constructed.

With water being as limited as it is in the Musselshell Basin, any improvement to water efficiency would have a beneficial effect on the water users of the watershed.

Over the course of the 2017 irrigation season, the Musselshell Watershed Coalition's Big Sky Watershed Corps Members, William Friedman and John



Lange, have been conducting a basin wide canal seepage and efficiency study.

The study focused on over 130 miles of irrigation canals that make the irrigation network of the three main water users associations located throughout the Musselshell watershed.

Working with the water managers of the Upper Musselshell Water Users Association, the Deadman's Basin Water Users Association, and the Delphia Melstone Water Users Association, the study set out to isolate areas along the irrigation canals that are experiencing high water losses through ground seepage.

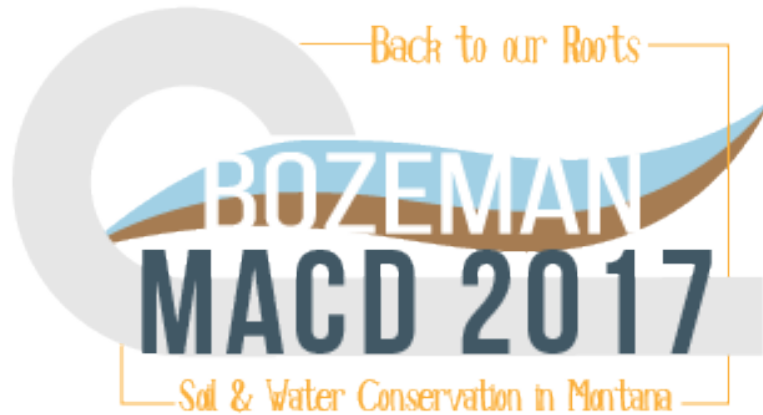
Over the course of the project, over 160 discharge measurements were recorded at over 40 sites along the canals.

With irrigation outputs taken into account, these discharge measurements were used to quantify the amount of water lost as it flows through stretches of the canals.

With quantifiable losses along the canals, projects and repairs can be prioritized to help insure that more water is available for irrigators when needed.

Project data will be made available to both the water users associations that manage the canals, and the Department of Natural Resources Conservation to help plan future improvement projects within the Musselshell.

*The Big Sky Watershed Corps program is a partnership between SWCDM, MWCC, and MCC. You can read more about the program here: [swcdm.org/bswc](http://swcdm.org/bswc).*



## Register Now for MACD's Annual Convention

**Early Bird registration ends October 31.** Visit [macdnet.org/convention](http://macdnet.org/convention) for information on booking hotel rooms and to register.

**Are you a supervisor interested in attending?** MACD is offering scholarships up to \$500 are available to help cover costs associated with attending the convention. More information is available on the convention web page.

### On the Agenda:

**[www.MACDnet.org/Convention](http://www.MACDnet.org/Convention)**

**Tuesday:** MACD Directors, Executive, MRCDC, and EO meetings; Soil Health Leaders Forum.

**Wednesday:** Keynote speaker, trainings for supervisors & administrators (including one-on-one Ask An Expert sessions), tours of Story Mill Park & Dry Hills Distillery, EO event.

**Thursday:** Partner updates; MACD general business meeting; breakout sessions on fire & drought, innovative projects, BSWC, and more; banquet.

**Vendor Booths:** Would your business or organization like to connect with local conservation districts? Vendor booths are still available, but filling up quickly. Reserve your today for \$260 at [macdnet.org/convention](http://macdnet.org/convention).

### **New this year!**

Instead of the silent auction, MACD is selling raffle tickets to win one of three prizes: A Ruger rifle (your choice of caliber), a beautiful handmade quilt, or, a Traeger Pro series pellet grill / smoker combo.

Tickets are \$10 each, and can be purchased at your local conservation district office.

## MSU professor finds irrigation timing benefits wheat yield and quality

In an agricultural state enduring one of the worst droughts in recent history, a Montana State University crop physiologist may have some good news for state watersheds and farmers' pocketbooks when it comes to irrigating one of Montana's top cash crops.

[Jessica Torrior](#), assistant professor of crop physiology at MSU's [Northwestern Agricultural Research Center](#) in Creston, recently published an article that shows specifically timed irrigation practices can affect the harvest quality of hard red spring wheat varieties — if they are applied past the medium milk stage of the wheat plant's development. The article, "[Impacts and Limits of Irrigation Water Management on Wheat Yield and Quality](#)," appeared in [Crop Science](#), the official journal of the Crop Science Society of America. Torrior's research was funded by the Montana Wheat and Barley Committee.

Milk stages are phases in a wheat plant's growth cycle when the wheat kernel begins to form and secretes a milky fluid containing starch, protein and other nutrients. The milk eventually solidifies as the wheat kernel ripens and matures enough for adequate baking and milling, in a process called "grain filling." Grain filling generally takes four to six weeks, depending on how much moisture the crop gets. That process can be cut short during times of high temperatures, which stresses the plant, Torrior said.

Irrigating during and after the late milk stage, when the milk fluid decreases and plant starches increase to create a thicker milk, does not improve the wheat's overall yield and grain quality, Torrior said. Rather, Torrior found that scheduling the final irrigation during the medium-milk stage produces yield benefits similar to that of applied irrigation after the medium milk stage, but with less water. [READ MORE](#)

## The state of USDA: what you need to know

*From Civil Eats:* The Trump Administration has been riddled with high-profile scandals since the President took office. But looking beyond the front page reveals yet more controversy, as the President and his cabinet appointees struggle to fill essential roles within the agencies. The Trump White House has lagged [far behind](#) the prior administration in this regard. And in the U.S. Department of Agriculture

(USDA), many are concerned that notable absences could hamstring the agency's policy-making efforts dramatically.

Almost from the start, the USDA has been hobbled by the inexperience and inefficiency of the administration. Secretary of Agriculture Sonny Perdue was the [final Cabinet member named](#), and his confirmation [took three months](#) to complete. [READ MORE](#)

## House Natural Resources Committee approves bills making changes to ESA

Last week, the House Committee on Natural Resources passed five bills to reform the Endangered Species Act.

Chairman Rob Bishop (R-UT) issued the following statement:

"The ESA is a landmark statute created with noble intent. It also includes fatal design flaws that inhibit greater success and handicap state-led, science-based recovery strategies. These flaws must be addressed and the law must be modernized. This slate of bills provides a framework for this discussion that we will build upon in coordination with the Senate, Trump administration, states and all interested stakeholders. I thank the bill sponsors for their work on these important pieces of legislation and look forward to our work ahead."

- H.R. 424 (Rep. Collin Peterson, D-MN), the "Gray Wolf State Management Act of 2017," reissues the final rules from the Fish and Wildlife Service to delist the gray wolf in the Western Great Lakes region and maintains state wolf management in Wyoming. The bill passed by a vote of 26-14.

- H.R. 717 (Rep. Pete Olson, R-TX), the "Listing Reform Act," allows for the consideration of economic factors in threatened listing decisions.

[READ MORE](#)

## Grants

### 223, etc. Grant Deadlines

Deadlines for 223, mini-education, and district development grants from DNRC for FY 2018 are as follows: **October 18, 2017, January 16, 2018, April 25, 2018.** [Grant Info](#)

### Environmental Education Teacher Professional Development Grants

The Cedar Tree Foundation invites organizations that provide professional development opportunities for teachers who are working in the school systems to communicate urgency and cultivate stewardship around environmental problems to submit a proposal for funding. [More Info](#)

### Local Foods, Local Places

Communities are invited to apply for a new round of planning assistance from Local Foods, Local Places. The application deadline is **11:59 p.m. Eastern Time on October 25, 2017.** [More Info](#)

### Future Fisheries Grants

Montana Fish, Wildlife & Parks reminds landowners, watershed groups and others that this winter's deadline to apply for Future Fisheries Improvement Program grants is Nov. 30. The goal of the program is to restore rivers, streams, and lakes to improve Montana's wild fish habitat. [More Info](#)

### Integrated Pest Management Grants

Grants available in this RFA include Project Initiation, IPM Work Groups, Outreach and Implementation, and IPM Planning

Documents. Proposals are due by 5 p.m. Pacific Standard Time on Friday, December 8, 2017. [More Info](#)

### Temper of the Times Environmental Marketing Grants

Grants of up to \$15,000 will be awarded to nonprofit organizations to underwrite the costs of advertising designed to promote the conservation and restoration of native wildlife, plants, and ecosystems in the United States. Due Dec. 15 [More Info](#)

### Noxious Weed Trust Fund Grants

The MT Department of Agriculture is now accepting applications for Noxious Weed Trust Fund grants and Emergency grants for FY18. Funding is available for noxious weed research projects, state and community education/development projects, and local cooperative - landowner cost share. Applicants may apply for funding up to \$75,000 per project. Applications for emergency grants are due Nov. 1, regular grants due Jan. 6. [More Info](#)

### Three-County Yellowstone Conservation Project

Agricultural producers in Big Horn, Carbon, and Yellowstone counties have until January 19, 2018, to apply for financial assistance for conservation practices funded through the Natural Resources Conservation Service's (NRCS) Regional Conservation Partnership Program. The RCPP project will promote additional conservation practices for farmers using beet or

barley crop rotations including documentation of irrigation water usage. Through the project, records will be collected pertaining to irrigation water management and usage, nutrient and pest management, cover crops, yields, and timing. Projects will also serve as demonstration sites and field day locations. [More Info](#)

## Jobs

### McCone Conservation District Administrator

McCone CD is seeking a District Administrator. This position, based in Circle, is intended to provide clerical support to the MCD Board of Supervisors and administration of the Conservation District in implementation of the District's annual work plan. [More Info](#)

## Events, etc

### Supervisor & Employee of the Year Awards

MACDEO is calling for nominations for the annual Conservation District Supervisor of the Year and Employee of the Year Awards. For forms and criteria, email Carie Hess, [petroleumcd@macdnet.org](mailto:petroleumcd@macdnet.org).

### JOIN US IN BOZEMAN!

MACD'S Annual Convention will be held in Bozeman, November 14-16 at the Holiday Inn. More info online: [macdnet.org/convention](http://macdnet.org/convention)

## Coming Up:

### November

11

Veteran's Day

12-15

Montana Farm Bureau  
Convention

14-16

MACD Annual  
Convention, Bozeman

23

Thanksgiving

27

MACD Executive  
Committee Conference  
Call

30-2

Montana Wool Grower's  
Convention

### December

5

Organic Agriculture  
Webinar Series

11

MACD Board Conference  
Call

12

Grass Conservation  
Commission Meeting

#### Have an event to share?

Visit [macdnet.org/calendar](http://macdnet.org/calendar) to  
add your event to our list!

## Weed war may wound beneficial soil bacteria

**Cornell researchers discover glyphosate may stunt certain beneficial soil bacteria used as biocontrols.**

*From American Agriculturalist:* With the fast-rising national interest in soil health, university researchers are digging into potential unintended effects of herbicides, insecticides, fungicides and biocides — direct-applied and seed treatments on soil microbiome. Much is unknown about combination effects of active ingredients, inert ingredients, salts, surfactants and tankmixes.

However, new research findings are discovering unexpected interactions. For instance, as you battle aboveground weeds, you may inadvertently cause underground casualties — beneficial bacteria. Cornell University researchers recently found negative consequences of glyphosate on a soil-friendly *pseudomonas* bacteria. (Note: This research was conducted in-laboratory using succinate organic acid as a medium for testing glyphosate's impact on the bacteria.)

#### How beneficial soil bacteria work

"Beneficial *pseudomonas* in the soil can help crops thrive," explains Ludmilla Aristilde, Cornell assistant professor of biological and environmental engineering. "They can produce plant-stimulating hormones to promote plant growth and antifungals to defeat problematic fungi such as pythium and fusarium.

"Previous studies reported that the abundance of beneficial bacteria decreased when the herbicide glyphosate seeps underground," adds the researcher. "Our study seeks to understand why this happens."

The findings show that glyphosate doesn't target amino acid production and metabolic gadgetry equally among *pseudomonas* species. For instance, when *pseudomonas protegens*, a bacteria used as a biocontrol agent for cereal crops, and *pseudomonas fluorescens*, used as a fungus biocontrol for fruit trees, were exposed to varying glyphosate concentrations, the researchers noted no ill effects. But in two species of *pseudomonas putida* used in soil fungus control for corn and other crops, the bacteria's growth was notably stunted.

"If a farmer is using *pseudomonas fluorescens* as a biocontrol, then it's probably OK to use glyphosate," says the faculty fellow at Cornell's [Atkinson Center for a Sustainable Future](#). "But if *pseudomonas putida* is used to control the fungus in soil, then glyphosate is more likely to prevent the bacteria from doing its job. If that's the case, farmers need to know which beneficial soil biocontrol they're using can be susceptible," she concludes.

[READ MORE](#)