

THE MONTANA CONSERVATIONIST

News from Montana's Conservation Districts

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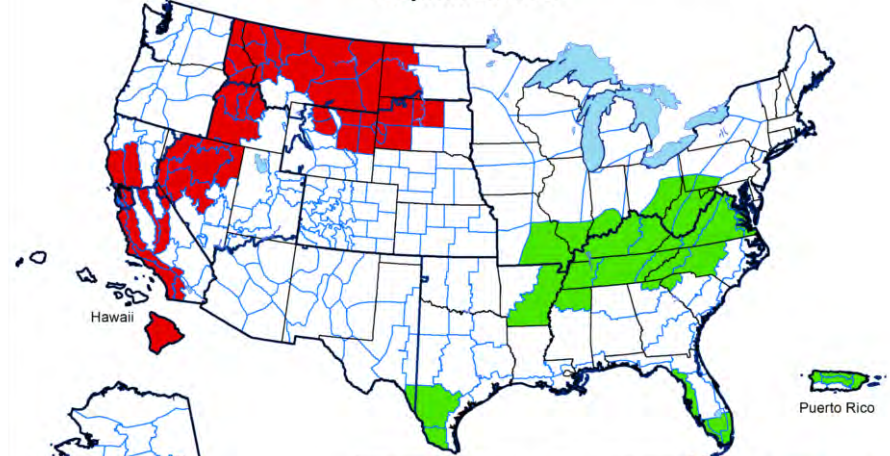
Calendar

You're not alone 2017 is a big fire year across the globe

August 31, 2017

Volume 10 Issue 17

**Significant Wildland Fire Potential Outlook
September 2017**



Dubious Distinction: Montana is epicenter of nation's summer 2017 drought

Missoula Current: If you feel parched, the statistics say you're justified.

Montana has the most intense drought conditions in the nation, according to the latest U.S. Drought Monitor published by NOAA. And conditions aren't expected to improve in September, either for the drought or for the wildfire danger.

In fact, over the past month, "severe," "extreme" and "exceptional" drought conditions marched westward across Montana – while much of the rest of the nation saw improvements or even above-normal precipitation.

Nationwide, 25 percent of the land mass is considered somewhere between "abnormally dry" and "exceptional drought." In Montana, that figure is 97 percent.

In the past month, "drought continued to expand in western Montana where the extremely dry weather pattern has persisted," said NOAA climate scientist Chris Fenimore. "It was reported that 98 percent of the topsoil moisture in Montana was rated very short to short and 90 percent of subsoil moisture was rated very short to short." [READ MORE](#)

SOIL & WATER
CONSERVATION DISTRICTS
of MONTANA



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Hawk with snake in claws sparks Black Eagle fire

From *Great Falls Tribune*: Dave Lee, acting assistant chief of the Black Eagle Fire Department, says he has a pretty good idea of what caused a fire that burned 40 acres in Black Eagle Wednesday.

It wasn't lightning.

It wasn't farm equipment.

It wasn't arson.

It was a hungry hawk with dinner in its claws.

"A dead hawk was found burned and it had contacted the power lines," Lee said. "The amazing thing is it still had a small snake gripped in its talons."

It isn't unusual for birds and squirrels to cause fires, Lee said.

A bird catching a snake before meeting its fiery end is.

"It was just awesome," said firefighter Kyra Vanisko, who snapped a photo of the charred bird underneath a power pole. "I wasn't expecting to find a hawk with a snake in its claws still."

The bird was toast, but its talons survived, and they remained gripped around a foot-long bull snake even in death.

Because of its condition, Vanisko couldn't make out the species of hawk, which was about the size of small cat.

"He's a crispy critter," she said.

[READ MORE](#)

Case studies show big economic impacts of soil health practices

From NACD: Soil health practices such as cover crops and no-till can result in an economic return of over \$100 per acre, according to [a set of case studies](#) jointly released by the National Association of Conservation Districts and Datu Research, LLC.

Cover crops and no-till can limit soil loss, reduce run-off, enhance biodiversity, and more. Naturally, farmers who are considering adopting these practices are keen to know how they will affect their farm's bottom line.

"These case studies quantify for producers, policy-makers, and researchers alike what the economic advantages of using no-till and cover crops are, and why it makes good sense for farmers to try them and for organizations like NACD to support and even incentivize their use," said Jeremy Peters, NACD CEO. "We have loads of anecdotal data that says conservation practices benefit the land and producers' pocketbooks, but now we have run the numbers and know how much."

During the three-year study period, corn-soybean farmers experimented with cover crops and/or no-till, and quantified the year-by-year changes in income they attributed to these practices compared to a pre-adoption baseline. They found that while planting costs increased by up to \$38 per acre:

- Fertilizer costs decreased by up to \$50 per acre
- Erosion repair costs

decreased by up to \$16 per acre

- Yields increased by up to \$76 per acre

The studies also found that with adoption of these conservation practices, net farm income increased by up to \$110 per acre. Included in the farmers' calculations was the considerable time they spent attending workshops or searching the internet to learn about no-till or cover crop practices.

"That time turns out to be an excellent investment, when bottom lines start improving," said Marcy Lowe, CEO of Datu Research, which conducted the case studies in partnership with NACD. "Farmers who switch to these practices can see losses at first. But thanks to these case study farmers who are generously sharing what they've learned, that learning curve will speed up for other farmers."

One of the case study subjects, Michael Willis, farms 1,000 acres in northwestern Missouri with his family. His advice for future cover crop adopters is this: "Start small enough so it doesn't freak you out, but large enough to matter."

Datu Research and NACD intend to continue contributing to the scientific literature on the economic advantages of implementing conservation practices and systems on working lands. The case studies released today [can be viewed and downloaded here](#) and the parent report is available on request.

After the flames: How fire affects soil nutrients

By Clain Joines, MSU Extension Soil Fertility Specialist

Hundreds of thousands of acres of forest, rangeland and cropland have sadly gone up in smoke this summer in Montana. In addition to the devastating effect on personal property and direct loss of crops and livestock, fire can affect soil properties and soil nutrients. The impact is highly dependent on the fire intensity/duration and the proportion of plant material that is burned. Timber and shrubs will burn hotter and longer with greater impact on soil than range- or crop land. Fast moving grass fires have minimal impact on soil nutrients and soil health compared to slow moving, intense fires in moderate to heavy fuels.

In general, fires reduce the pool of nutrients stored in organic matter, release a flush of plant available nutrients in the short term, and redistribute nutrients through the soil profile. The availability of nutrients, especially nitrogen, is increased after low intensity fires, yet, a portion of nitrogen and sulfur is lost to the air. Although these losses are not trivial and are similar to removal by harvest and losses to wind erosion, they are small compared to the average pool of nutrients in the top six-inches of soil.

Nitrogen can additionally be lost through nitrate leaching, as the burned plant matter creates a large pool of nitrate and few active plant roots are left to take

up either the nitrate or soil water. This can have long term impact on the productivity of forest and rangeland ecosystems, but can be minimized or remediated on croplands. The other nutrients such as phosphorus, potassium, magnesium, zinc and manganese are more stable and not lost directly through combustion, but rather through blowing ash, and post-fire soil erosion.

Cropland fires rarely burn hot enough to affect soil organic matter. The bigger concern is loss of surface plant residue, which is very important to reduce wind erosion, and protect against the physical sealing impact of raindrops. Ash particles also contribute to reduced water infiltration as they plug soil pores. All these factors increase the risk of water runoff and soil erosion.

Intense forest and shrubland fires can burn soil organic matter, reducing the pool of nutrients in the soil, soil aeration and water infiltration/retention, and the soil's ability to hold nutrients coming from ash or fertilizer.

In addition, forest and shrubland fires can create a water repellent layer within the top 2 inches of soil that comes from compounds in the burnt litter, coating soil aggregates or minerals. The depth and thickness of this layer can vary greatly, and it can affect infiltration for several months to years. This layer should not form on grassland or stubble fires.

Fire kills bacteria and fungi at the

soil surface but microbes rapidly recolonize from deeper soil layers, except in severe fires where the soil is sterilized several inches deep. Microbial activity can actually increase with the flush of nutrients available after a fire. However, new input of plant material is important to sustain their populations.

Post-fire management includes soil testing to determine nutrient availability, and establishing ground cover where possible. Test for nitrogen, phosphorus, and potassium to calculate fertilizer needs. Because drought preceded fire, it's likely that many fields have nitrogen that wasn't used this summer, so less might be needed next spring. When soil sampling burned fields, be sure to select representative sites, avoid areas where there may have been a windrow, bale, or other high accumulation of straw or residue. Spreading manure can be very beneficial post-fire but this is rarely available or reasonable at large scales.

The MSU Soil Fertility Extension website <http://landresources.montana.edu/soilfertility/> has several publications and presentations on soil testing and calculating fertilizer rates. Contact Clain Jones at clainj@montana.edu or 406-994-6076 if you have questions.

Welcoming new Forest Service Chief Tooke

From NACD: Last Friday, the Chief of the U.S. Forest Service Tom Tidwell announced his retirement after 40 years of service to the agency. Tony Tooke, who is currently serving as the Regional Forester for the Southern Region, will succeed Tidwell starting September 1.

"NACD congratulates Chief Tidwell on his many years of dedicated service and is grateful for all he has accomplished as a friend of conservation," NACD CEO Jeremy Peters said. "We look forward to working with Chief Tooke in his new role to address barriers to forest health nationwide, and to ensure conservation districts play a role in both public and private lands conservation."

Tooke has worked for the Forest

Service since he was 18 years old. Prior to becoming a Regional Forester, he was the Associate Deputy Chief for the National Forest System (NFS), Director for Ecosystem Management Coordination, Deputy Director for Economic Recovery, and Assistant Director for Forest Management.

"Tony has been preparing for this role for his whole professional life, and at a time when we face active and growing fires, his transition into leadership will be seamless... His focus will be on ensuring we are good neighbors and are managing our forests effectively, efficiently, and responsibly, as well as working with states and local governments to ensure the utmost collaboration," Agriculture Secretary Sonny Perdue said.

How safe is oilfield produced water for irrigation? A new study looks to find out

From Modern Farmer: When groundwater and surface water wane, farmers are left scrambling for other sources. One possible solution is oilfield-produced water (OPW), which is a byproduct of oil extraction. There's lots of it available, but no one has really figured out how safe it is to use on food crops. That's about to change.

The research institute RTI International, in conjunction with Duke University in Durham, North Carolina, began a three year study in May, thanks to a USDA grant, to determine whether this type of water is safe to use on food crops. Researchers plan to

sample water, soils, and crops from the farms that currently use OPW for irrigation, along with samples from farms that don't use OPW, then assess any potential human or environmental problems through modeling and risk assessment techniques. They also plan to study whether heavy metals or salts in the water could hinder crop growth over time and what, if any, water treatment would be needed to minimize health and environmental risks.

There's never been an in-depth look at whether there could be adverse impacts to human health from ingesting crops irrigated with OPW. [READ MORE](#)

How they started: tales of two wildfires

Bozeman Daily Chronicle: It began in the engine compartment of the four-wheeler. Grass and seeds were lodged inside, but the state employee didn't notice until he smelled smoke. Soon, he saw two spot fires behind him, apparently sparked by the four-wheeler as he drove by.

That's how the Maurer Mountain fire started according to the most recent update on InciWeb. The fire has burned an estimated 3,000 acres south of Dillon and east of Clark Canyon Reservoir, but fire crews have gotten a handle on it. As of Friday, there was still a 20-person hand crew and several engines there, but some of the resources that came to the fire were released to battle blazes elsewhere.

Fire officials decided to offer more detail about the fire's origins on InciWeb in an effort to show how easy it is to spark a wildfire. The person driving the four-wheeler was a Montana Department of Natural Resources and Conservation employee who was working on range surveys.

Here's the narrative from InciWeb:

On Wednesday, August 23, at approximately 1:30 pm a DNRC employee was driving a four-wheeler on an open road while conducting range surveys. He smelled smoke and realized that grass and seed heads had become lodged in the engine compartment and had ignited from the exhaust manifold.

[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](#)

DNRC RRGL Program

The Renewable Resource Grant and Loan program will be accepting planning grant applications July 1st through September 1st, 2017 through www.fundingmt.org. The program information can be found on the [DNRC website](#)

Water Quality Mini Grants Now Open

SWCDM is seeking applications for mini-grants of up to \$3,000 to fund local education and outreach efforts addressing nonpoint source pollution and water quality issues. A total amount of approximately \$10,500 is available for grant funding this cycle. Due September 29. [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](#)

Ranching For Rivers

Applications are now being accepted for new *Ranching for Rivers* projects, a program that provides cost-share to landowners to better manage the riparian resources on their land through riparian fencing and other infrastructure (hardened crossings, offsite water, etc). The first round of application reviews will begin Sept 22 and continue on a rolling basis until Oct 9. More info and application available at <http://swcdm.org/programs/r4r>

Events

Wetland Council Meeting

The Montana Wetland Council will be hosting their semi-annual meeting in Helena on September 14th at 9:00 am. [More Info](#)

Jim Gerrish Sustainable Grazing Workshop

Ranchers Stewardship Alliance is hosting a sustainable grazing workshop at the matador Ranch, featuring Jim Gerrish. September 19. [More Info](#)

Montana Range Tour

The 2017 Tour will take place in Petroleum and Fergus County areas, where we will focus on large landscape projects, conservation easements, new technology for monitoring water and cattle, grazing management, and soil health. September 6-7, Lewistown. [More Info & Registration](#)

Stockmanship for Improved Grazing Management Workshops

Lake, Missoula, Bitterroot, Deer Lodge, & Granite Conservation Districts have teamed up to host a series of workshops featuring Curt Pate. Ronan 9/18, Victor 9/19, Deer Lodge 9/20. [More Info](#)

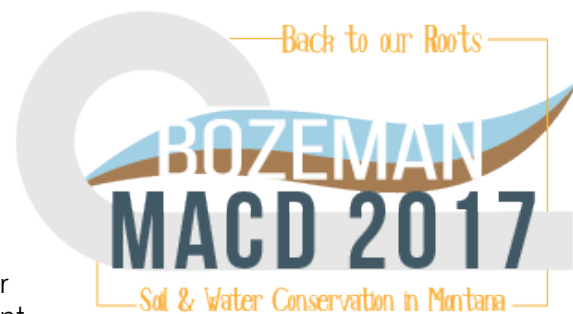
REGISTER NOW Area Meetings

The 2017 MACD Area Meetings will be on the following Dates: Sept 18th - East Glacier (3) | Sept 20th - Culbertson (1) | Sept 21st - Ekalaka (2) | Sept 22nd - Harlowton (4) | Sept 26th - Missoula (5) | Sept 27th - Butte (6) [More Info](#)

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.

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

Coming Up:

September

- 6-7** Montana Range Tour, Lewistown
- 11** MACD Board Conference Call
- 12** Soil Health Series Webinar
- 14** Montana Wetland Council Meeting
- 18-20** Musselshell Watershed Tour, Harlowton
- 18** Curt Pate workshop, Ronan
- 19** Curt Pate Workshop, Victor
Jim Gerrish Sustainable Grazing Workshop, Matador Ranch
- 20** Curt Pate Workshop, Deer Lodge
- 25** MACD Executive Committee Call

Have an event to share?
Visit macdnet.org/calendar to add your event to our list!

You're not alone: The rest of the world is on fire this summer, too

United States So far, 5.6 million acres of land has burned this year, or 1.8 million acres more than the ten-year average of 3.8 million acres burned by this time.

Canada This is British Columbia's second worst fire season on record and [NASA](#) satellites have identified the conflagration from space.

Europe On the other side of the globe, it looks like the end of the world. The total is already roughly three times the normal amount of summer wildfires. [READ MORE](#)

Below, active fire maps from US, Canada, & Europe:

