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Compound in Soil Fights Chronic Wasting Disease

Research Corner

A compound in soil could play an important role in combating chronic wasting disease by degrading the prions that cause the lethal disease in cervids, researchers found.

CWD has infected and killed deer, elk, moose and caribou throughout North America and has even been detected in South Korea and northern Europe. But researchers have had no luck finding a cure and

continue to manage for the disease by attempting to stop its spread. Efforts to combat the disease have been further challenged by the ability of the prions to bind to soil and remain in the environment for years.

But scientists may be one step closer to understanding how soil plays a role in fighting the disease. In a recent study published in *Plos Pathogens* (*Soil humic acids degrade CWD prions and reduce infectivity*, Kuznetsova et al. 2018) researchers found that high levels of major compounds in soil organic matter — humic acids — degrade CWD prions. When prions in soil were exposed to high concentrations of humic acids, researchers found lower levels of them. They also noted lower levels of infectivity in mice that were exposed to soil with higher levels of humic acids.

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White-tailed Deer
Photo credit: Ohio DNR

CWD CONTINUED ON PAGE 2

Chronic Wasting Disease

CWD prions can be spread between cervids as well as through the environment including decaying carcasses, infected urine, feces and saliva. Knowing about how different soil compounds can bind and degrade prions is important to understanding the disease, the researchers say.

“CWD is a significant emerging and fatal disease of deer, elk and moose,” University of Alberta professor Judd Aiken, an author in the study, said in a press release. “Given it is shed from infected animals into the environment where it can serve as a source of infection, it is essential that we understand the impact of soil and soil components on this unusual infectious



CWD infected deer
Photo credit: Wisconsin DNR

Article from The Wildlife Society eWildlifer

Latest issue of The Journal of Wildlife Management now available online

The next issue of The Journal of Wildlife Management is now available on early view through The Wildlife Society’s new journal [hub](#).



With online access included as a membership benefit, TWS members are increasingly engaging with the latest research findings in wildlife science and management. Simply login to [Your Membership](#) directly through the hub to access the latest content or browse archive issues of *The Journal of Wildlife Management*, *Wildlife Monographs*, and the *Wildlife Society Bulletin*.

Not a member of TWS? You can still access abstracts and some full studies through the hub. Everyone can access [Survival and causespecific mortality of desert bighorn sheep lambs](#)—a study with important management

Transforming Science Communication and Literacy A new report from Wiley sheds light on one of our profession's biggest challenges

We live in interesting times... I could stop there, link the report, and call it quits, but I'm not going to because I'm fascinated by the topic of science communication. In fact, nearly a decade ago I altered my career from studying wildlife to studying new frontiers in wildlife conservation. I say new frontiers because our profession is increasingly operating in uncharted territories. The world is changing, public attitudes are shifting, and skepticism towards science is increasing.

Gone are the days when we could produce a standalone scientific report, retreat to the field, and expect society to exhibit a heightened level of deference towards our research. Some may point to partisan politics or blame millennials because that seems to be a thing, but perhaps, we as a profession have failed to keep pace with the changing times. Our science may reach other scientists but is seemingly lost in the glut of information available to policy-makers and the public.

So, what's the solution? Unfortunately, there's no simple answer to that question, but Wiley's report—[*To Know the World: Transforming Science Literacy and Communications to Improve Research Impact*](#)—touches on several timely and thought-provoking concepts including:

- Recognizing the need for “translated” scientific information;
- Fostering curiosity and improving scientific literacy by inspiring others to ask questions and seek science-based answers;
- Making science relatable and the profession welcoming to all through providing diverse portrayals of scientists and by highlighting the personal stories of scientists;
- Contextualizing science and the scientific process; and
- Developing innovative ways to expand the audience and understanding of research.

This is not about becoming activists or about attacking the messaging of others. It's about improving our own messaging, becoming better storytellers, and figuring out ways to enhance our communication while still preserving the depth and integrity of our work. How can we as individual wildlife professionals shape our own personal networks, touch the lives of those around us, and inspire the next generation? Not every aspect of Wiley's report is relevant to wildlife professionals, but I hope the report sparks dialogue within your Section, Chapter, or Working Group while demonstrating that, while these are interesting times, we face boundless opportunity to forage new paths through the unknown.

What do you think? Is the increased skepticism towards science a good thing? What role should wildlife professionals play in communicating science? How do you share your science? Share your thoughts with us on social media @wildlifesociety or #wildlifesociety.



**Management
Corner**

Wildlife Updates from Around the State

NORTH EAST IOWA

Recently wildlife units in north east Iowa have been working hard to accomplish goals for Chronic Wasting Disease sampling of white-tailed deer. This is our 16th year of a surveillance program. In ten days, staff and volunteers collected 2,009 samples in the north east district. The discovery of the disease in Allamakee, Clayton, and Wayne counties continues to challenge Iowa's deer management program.

The north east district also has been completing maintenance to infrastructure at wetland complexes, timber stand improvement (TSI) projects, prairie seedings, and finishing up several wetland construction projects.

SOUTH WEST IOWA

Prairie Resource Center staff have been busy cleaning a large diversity of prairie forbs and grasses for distribution to the 16 Iowa DNR wildlife units across the state. Seed production

looks great for next year's prairie reconstructions and pollinators alike! Wildlife staff have been working to accomplish CWD sample collection

goals and priority habitat projects, such as edge feathering work for bobwhite quail habitat.

Eastern red cedar tree removal efforts in the prairies of the Loess Hills and TSI projects in the woodlands of southern Iowa are both benefiting from the frozen ground and ability to get some cutting accomplished. Snow on the ground is allowing managers to burn brush piles where cleanup is vital for future management and maintenance of those areas. Several firebreaks were put in just prior to snowfall and folks are getting burn plans written for the spring.

Weekly waterfowl surveys are coming to an end but have been greatly beneficial to the public and managers. Even though the weather is unpredictable one thing is consistent and that's the importance of teamwork to accomplish the



Edge Feathering Quail Habitat



CWD sample collection

Species (actually genus) Spotlight: *Mustela*

I brake for roadkill weasels. Seems normal enough, but you'd be surprised at how many non-biologist passengers are surprised (sometimes shocked) when you turn your truck around to investigate a slightly mangled mustelid. Although a fan of flattened fauna, I don't stop for just anything. Raccoons and possums are so common on my travel routes that they have to be fairly odd colored or outsized specimens before I'll even think of tapping the breaks. But weasels are pretty rare where I drive around and always get a second look. Sometimes you'll be fooled into stopping by a young mink or vehicularly misshapen squirrel, but generally weasels are hard to miss. Iowa is home to three weasel species, the long-tailed weasel (*Mustela frenata*)



Slightly flattened *Mustela erminea*.

and least weasel (*Mustela nivalis*) found across the state, and the short-tailed weasel or ermine (*Mustela erminea*) found in the northeastern half of the state. All three species are considered furbearers and can be legally trapped during season, but are uncommon.

The smallest of our weasels, the aptly named least weasel, is probably the most numerous. Its slender body is only 5-7 inches long with a 1-2 inch tail. Small rodents and birds make up most of its diet. In the northern part of its range, it molts its short brown summer fur and becomes almost pure white in winter with just a few black hairs at the tip of its tail. Some least weasels remain brown throughout the winter in southern Iowa, but where the northern boundary of this line occurs has not been documented. Unlike Iowa's other weasels, the fur of the least weasel will fluoresce under ultraviolet light. As a result, the least weasel is the most popular of Iowa's mustelids at rave parties and local discotechs (not really). But seriously, when you're wandering out in the woods or wetlands at night and you happen to be shining your UV light around and spot a glowing weasel, Boom – least weasel - easy ID....

Iowa's largest weasel, the long-tailed, also grows

Species (actually genus) Spotlight: *Mustela*



Winter phase *Mustela frenata*

11- 17 inches, with males growing larger than females. In addition to small mammals, these weasels can take out prey the size of rabbits and squirrels.

The short-tailed weasel, as you might suspect, has a shorter tail than the long-tailed weasel, about 1/3 of its body length with a black tip. At 10-12 inches long, it ranks between the least and long-tailed weasel in size, and Iowa is at the southern end of its range.

A common misconception attributed to most species of weasels is that they suck or lap the blood from chickens and other prey animals, leaving the carcasses uneaten. This type of predation behavior has not been documented in wild or captive weasel populations. Weasels

usually grab prey by the neck and bite through the base of the skull or the throat. They will often wrap their slender bodies around a mouse or rabbit, holding the prey down until dead. The brains and head of prey animals are generally eaten first and then the rest of the body consumed. In captive situations when presented with multiple prey animals, such as mice, weasels will kill all the mice present and then start eating them one by one.

All three of Iowa's weasel species have been documented at various sites by DNR MSIM crews and are occasionally caught by trappers (and barn cats). However these elusive predators



***Mustela nivalis* with a captured vole**
torts are still a fairly rare sight. So any day you

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Iowa TWS Fall Workshop Recap

On September 26, 2018, wildlife professionals and students from across Iowa gathered at Lewis and Clark State Park in the Loess Hills for the annual Iowa TWS Fall Workshop. The workshop included a variety of presentations on habitat improvement and research projects focused on restoring prairie habitats for butter-



Workshop participants exploring a prairie restoration site in the Loess Hills.

flies.

Pete Hildreth with the Iowa DNR filled in for Katy Reeder to present “*State Wildlife Grants Competitive Grant Program: Restoring Royalty to the Prairie: Habitat Improvement for the Regal Fritillary and Monarch Butterfly*”.

Stephanie Shepherd with the Iowa DNR presented “*Regal Fritillary (Speyeria idalia) and Monarch (Danaus plexippus) Habitat and Monitoring*”.

Bill Johnson with the Iowa DNR presented “*How to take your prairie reconstruction to the next level*”.

A variety of habitat improvement projects in State Parks and Wildlife Management Areas were presented by Doug Chafa, Jeff Seago, Matt Dollison, Matt Moles, and Brian Hickman

the Loess Hills for a tour of habitat improvement projects at Turin WMA and Loess Hill State Forest, led by Missouri River Wildlife Unit and Loess Hills State Forest staff. The hikes led through steep slopes, full of amazing examples of remnant tallgrass prairie, to hilltop vistas where one could see for miles.

The restoration work featured, primarily involved clearing of woody invasive plants, such as eastern red cedar, and frequent controlled burns. The resulting prairie species that grew back after management work were impressive to say the least. In a cooperative effort each year, several agencies and nonprofit groups in the Loess Hills share staff, equipment and resources for “Burn Week”. Prescribed fire is applied to thousands of acres each year, in a large scale effort. Many hands working together are able to put fire back in this ecosystem on a landscape scale.

In addition to the great diversity of prairie plants found on these restored sites, there was also talk of a butterfly species collected during surveys that has yet to be described by science. Even in a state we’ve been exploring for hundreds of years,



Ecology students testing a plant ID app in a Loess Hills prairie remnant.

What Wildlifers are Reading in TWS Journals: The Top 20 Most Downloaded Papers in 2017

TWS' three premier wildlife journals — *The Journal of Wildlife Management*, *Wildlife Monographs* and the *Wildlife Society Bulletin* — support our mission to achieve a positive impact on the sustainability of wildlife populations through the dissemination of science-based wildlife conservation and management.

With online access now included as a membership benefit, TWS members are increasingly engaging with the latest research findings in wildlife science. In case you missed any of these, here's a list of the most downloaded papers in 2017:

[Free-roaming cat interactions with wildlife admitted to a wildlife hospital](#)

[Polar bear attacks on humans: Implications of a changing climate](#)

[Determining kill rates of ungulate calves by brown bears using neck-mounted cameras](#)

[Effects of control on the dynamics of an adjacent protected wolf population in interior Alaska](#)

[Predicting eagle fatalities at wind facilities](#)

[How publishing in open access journals threatens science and what we can do about it](#)

[Clarifying historical range to aid recovery of the Mexican wolf](#)

[Bat mortality due to wind turbines in Canada](#)

[Online hunting forums identify achievement as prominent among multiple satisfactions](#)

[Inefficiency of evolutionarily relevant selection in ungulate trophy hunting](#)

[Investigating impacts of oil and gas development on greater sage-grouse](#)

[Consumption of intentional food subsidies by a hunted carnivore](#)

[How open access is crucial to the future of science](#)

[Predators, predator removal, and sage-grouse: A review](#)

[Annual elk calf survival in a multiple carnivore system](#)

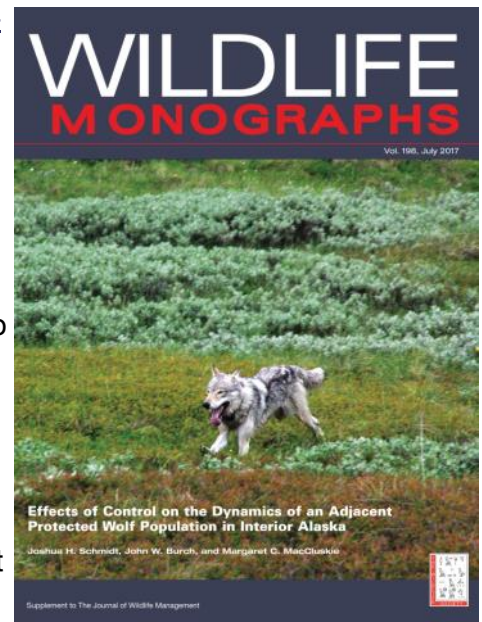
[Demography of an increasing caribou herd with restricted wolf control](#)

[Manipulations of black bear and coyote affect caribou calf survival](#)

[Winter diet and hunting success of Canada lynx in Colorado](#)

[Overpasses and underpasses: Effectiveness of crossing structures for migratory ungulates](#)

Log into [Your Membership](#) to read these papers by going to the "Publications" tab. We want to thank these authors for choosing to publish with TWS. Next time you are ready to submit a paper, we hope you will



Nancy Sasavage is TWS Director of Publications and Communications.

Upcoming Events



Iowa Chapter of The Wildlife Society &

Iowa Chapter of The American Fisheries Society

Combined Winter Meeting
12-13 February 2019
Honey Creek Resort
Lake Rathbun Iowa

- **Midwest Fish & Wildlife Conference**, 27-30 January 2019 at the Hilton Cleveland Downtown Hotel in Cleveland, Ohio. For registration and other information, visit www.midwestfw.org
- **Iowa Association of County Conservation Board Employees (IACCBE) Winterfest**, 5-7 February 2019. Marriott Convention Center, Coralville Iowa. For registration and more information, www.mycountyparks.com/Info/WINTERFEST.aspx
- **National Pheasant Fest and Quail Classic**, 22- 24 February 2019, Schaumburg Convention Center Schaumburg, IL. For more information, visit www.pheasantsforever.org/Pheasant-Fest.aspx

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