

CWD Surveillance & Management in Minnesota: Fall 2019

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Wildlife Health Program  
October 29, 2019

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**Chronic Wasting Disease:**  
*What is it?*

- CWD is a slowly progressive, brain disease of deer, elk, moose, and reindeer
- CWD belongs to the family of diseases known as transmissible spongiform encephalopathies (TSE) or prion diseases
- Not caused by a virus, fungus, or bacteria – mis-shapen protein
- Spread animal-to-animal, mostly through saliva, feces, urine



Photo by J. Skukrud

Both Deer are CWD-Positive  
Top Photo: Pre-clinical disease  
Bottom Photo: Clinical disease



Photo by J. Skukrud

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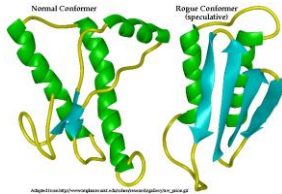
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*Understanding the CWD Agent*

- Infectious agent is called a prion, which is a mis-shapen protein
- It can remain infectious for years outside of the host body, readily binds to soil and can even be uptaken by plant roots.
- Extremely difficult to denature
  - Heat must be >1500°F to destroy
  - Normal disinfectants, such as bleach, do not destroy prions
    - Recent study showed 40% bleach solution over 5 minutes was effective for surface decontamination



Adapted from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2810102/figure/fig1>

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Things are NOT OK in areas with CWD

What we know ...

- Disease is 100% fatal
- Deer that are infected (but not symptomatic) have higher mortality rates than uninfected deer
- Bucks are 3x more likely to have the disease
- Yearling males are CWD delivery systems
- The percentage of infected deer increases annually, in addition to a larger geographic area
- The disease is having a negative effect on long-term deer densities in other states

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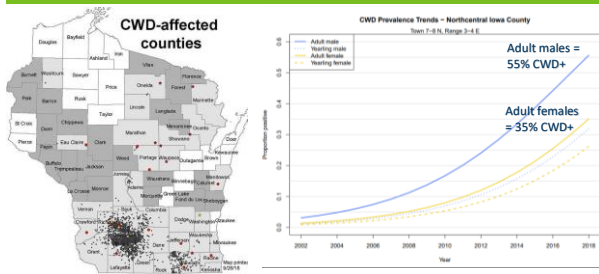
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We are trying to avoid this ...




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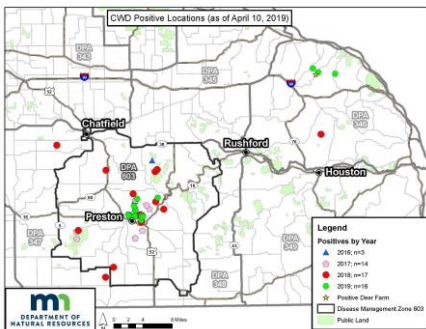
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CWD in Southeast MN

- 50 cases of CWD found in wild deer in SE MN from 2016-present
- Counties affected include Fillmore, Winona, and Houston

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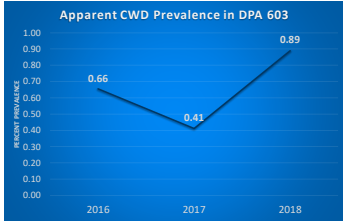
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### CWD Prevalence in DPA 603



- CWD prevalence is still low in DPA 603; however, increased from 2017 to 2018
- This infection appears to be persisting in the Preston-Lanesboro area and spreading outward

10/28/2019

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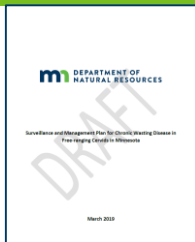
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### DNR released updated CWD Surveillance and Management Plan

- The original CWD response was written in 2011 by staff in the DNR's Wildlife Health Program
- It focused on the prescriptive steps we would take if the disease is found
- The current update was developed in 2018 and incorporates:
  - The most recent science
  - CWD plans from other states and provinces
  - Discussions with CWD experts around the country




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### MN CWD Plan Elements-Updated 2019

- **Initial Detection.** When we first find CWD (holdover from 2011 plan), and are trying to determine how bad it is... "Honeymoon Phase"
- **Transition to a Persistent Infection.** Decision points to determine when CWD may not be eliminated
- **Persistent Infection.** Disease that we may not eliminate, but stays at low levels
- **Endemic Disease.** When CWD becomes established and self-maintaining, regardless of management intervention

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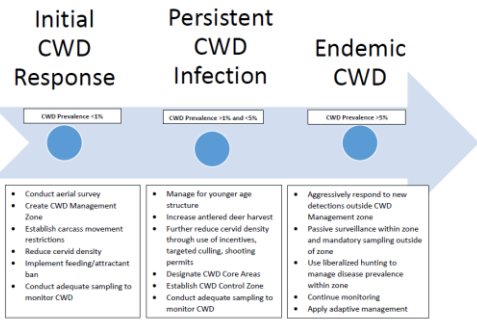
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**How to Best Invest of Limited Financial Resources?**




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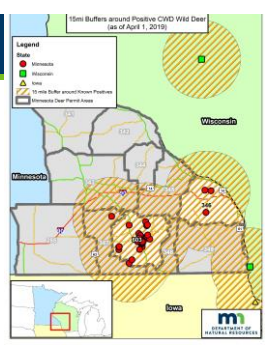
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**Formulated Plans for Fall 2019**

- Evaluated the data from all 3 area with CWD, as well as positives near borders (WI and IA)
- Drew new boundaries and formulated plans for fall 2019
- Implement strategies and actions laid out in our 2019 CWD Management Plan
- Public engagement and outreach




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Human Dimensions Research

- 2018 SE hunter and landowner studies
  - Regulations
  - Potential use of incentives
  - Satisfaction
- 2019 – 2020
  - Lapsed deer hunter survey (losing them a variety of ways)
  - Statewide general public CWD survey
  - Statewide hunter CWD survey




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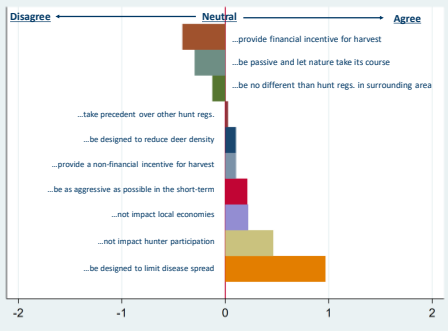
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CWD regulations should...




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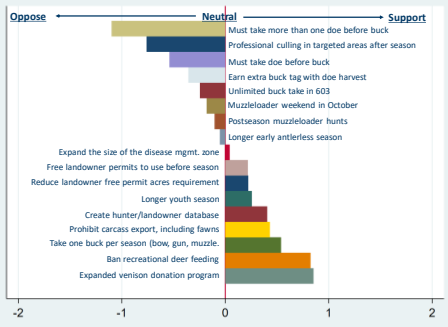
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Support for potential regulations to manage CWD




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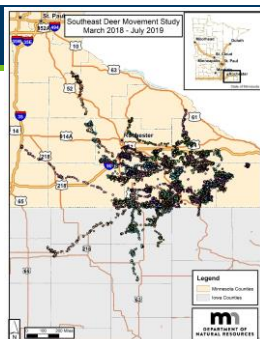
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## Southeast Deer Movement Study

### Objectives

- Document dispersal patterns and estimate activity ranges of juvenile males and females (= 1-year-old), and adult males (>2-years-old).
- Utilize information on juvenile dispersal (in particular) to map and inform corridors of possible CWD spread.
- Determine general causes of mortality.
- Want more? Visit website: <https://www.dnr.state.mn.us/cwd/deer-movement-study.html>




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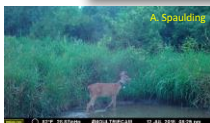
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## Southeast MN Deer Movement Study

### Collared Deer on Air – as of 10/23/19

- 47 mortalities: 15 hunter-harvested, 12 capture-related or unknown, 4 agency-culled, 6 poor health/condition, 6 due to vehicle collision, and 4 unknown cause
- 86/165 collars deactivated due to hardware failure (expansion or electronics)
- Actively monitoring 61 deer
  - 33 does
  - 28 bucks




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## Southeast MN Deer Movement Study

### Preliminary Results – Spring 2019

- Pre-dispersal winter (natal) home range is what we would expect.
- Both sexes had similar probability of dispersing in Spring 2019—about 45%.
  - In Spring 2018, more females dispersed

#### NATAL HOME RANGE

| Cohort          | n  | Avg. Home Range                             | 95% CI | 95% UCI |
|-----------------|----|---|--------|---------|
| Juvenile female | 34 | 1.84 km <sup>2</sup> / 0.71 mi <sup>2</sup> | 1.46   | 2.19    |
| Juvenile male   | 22 | 2.65 km <sup>2</sup> / 1.02 mi <sup>2</sup> | 1.69   | 3.45    |
| TOTAL           | 56 |   |        |         |

- Median dispersal distance similar between sexes – about 10-11km.
- Unlike 2018, longest trek was from a juvenile male – 86.9km or 54mi.
  - In 2018, a juvenile female went 77 mi

#### SPRING DISPERSAL (15-April to 15-July 2019)

| Cohort          | n  | % Dispersing | 95% CI | Median Distance | min-max  |
|-----------------|----|--------------|--------|-----------------|----------|
| Juvenile female | 34 | 44% (15)     | 28-62% | 10.1km/6.3mi    | 4.8-47.1 |
| Juvenile male   | 22 | 46% (10)     | 25-67% | 11.2km/7.0mi    | 4.0-86.9 |
| TOTAL           | 56 |              |        |                 |          |

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## Southeast Deer Movement Study

### Future Directions

- Collect data on collared deer until they die, collars fall off, or collars stop transmitting – in all cases we will attempt to recover collars.
- Year 2 collar hardware and software have been improved (according to the maker) – fingers crossed.
- Capture and deploy GPS collars on 45 juvenile females and 45 juvenile males in a new cohort of animals around Jan-Feb 2020.




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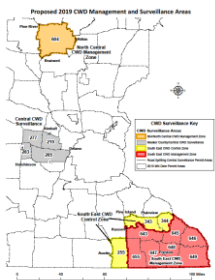
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## Expanded Southeast CWD Management Zone NEW – CWD Control Zone



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|---|---|
| <p><b>CWD Management Zone - Southeast</b></p> <ul style="list-style-type: none"> <li>• Early antlerless season</li> <li>• No-limit antlerless (\$2.50 disease management licenses)</li> <li>• Late-season special hunts</li> <li>• <b>Up to 3 legal bucks per hunter per year; 1 legal buck per licensed season – SE CWD Management Zone Only</b></li> <li>• No antler point restriction (APR)</li> <li>• Cross-tagging bucks is allowed</li> <li>• Mandatory testing during all seasons: all deer 1 year of age and older; fawns voluntarily</li> <li>• <b>All deer carcasses including fawns cannot leave management zone until test results are confirmed; meat or quarters may leave immediately</b></li> </ul> | <p><b>CWD Control Zone – Southeast</b></p> <ul style="list-style-type: none"> <li>• No antler point restriction (APR)</li> <li>• All deer carcasses including fawns cannot leave the control or management zones, until a test result is confirmed; meat/quarters may leave immediately</li> <li>• Mandatory testing of all deer 1 year of age and older during the first two days of the A and B firearms seasons</li> </ul> |
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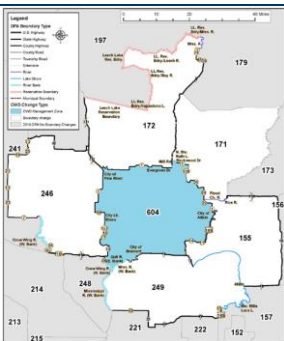
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## New Zone 604, North-central MN

### New Regulations:

- Early- antlerless season
- No-limit antlerless for all seasons (\$2.50 disease management licenses)
- Late-season special CWD hunts end of December; can use any unused tags
- 1 legal buck per hunter per year
- Mandatory CWD testing during all seasons
- Fawns voluntary tested
- Deer feeding and deer attractants ban in place and in surrounding counties
- Carcass movement restrictions in place within DPA 604 until test results are reported

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**Deer Feeding Ban Key**

- Road spilling county
- Counties impacted by ban

**Restriction**

- No deer feeding
- No deer feeding or deer attractants

## Ban on recreational deer feeding



- Feeding deer and placing salt/mineral blocks is prohibited in the areas identified in the central counties on the map.
- In both the southeast and north central counties with feeding bans, not only is deer feeding prohibited, but so are attractants that are capable of attracting or enticing deer, including any product that contains or claims to contain cervid urine, blood, gland oil, feces or other bodily fluids.
- Food placed as a result of normal agricultural practices is generally exempted from this rule; however, cattle operators are advised to take steps that minimize contact between deer and cattle.

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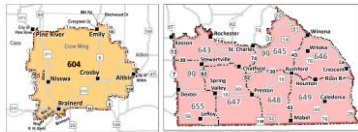
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## CWD Sampling Stations in the SE and NC Zones



Self-service Sampling Stations: Available all of archery and muzzleloader season throughout SE (n=16) and NC (n=6) zone. Heads are picked up 3x/week and samples shipped to lab.



During Firearm Season:

- All stations staffed by DNR and students (>400 people working)
- Open 9am to 7pm daily, everyday of firearms season
- Most stations will have quartering stations and dumpsters available as well

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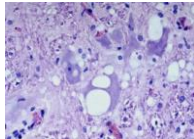
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## How do we test for CWD?

- Extract retropharyngeal lymph nodes and ship to University of Colorado for testing.
  - ELISA takes 3-4 business days and will tell us if a deer is "suspect" or "not detected"
  - If suspect, sample is confirmed with the disease using immunohistochemistry (IHC), takes about a week
  - Confirmed CWD-positive deer carcasses & meat are recovered and brought to the alkaline digester at the UMN Veterinary Diagnostic Lab in St. Paul, whenever possible




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### What Does a Hunter Need to do to be Compliant in a CWD Zone?

- Harvest your deer as normal and register the animal through the phone, internet or walk-in Big Game Station
- Bring the deer to a nearby CWD Sampling Station for sampling
  - List of those locations in the Hunting Regs Book and on the CWD webpage
- Don't bring the whole carcass out of the CWD Zone until "not detected" results are received (4-5 business days, on average)
  - Options inside the CWD Zones for carcass management and trophy deer include: trained taxidermists that are collecting samples, meat processors, quartering stations and dumpsters
  - Hunters can hang their deer at "camp" like normal and process their animals to their choosing; just can't take whole deer out of zone without test results
  - We encourage hunters that process deer themselves to either use our provided dumpsters or keep the remains close-by and away from scavengers, and if the deer is a CWD-suspect, we'll pick those remains up for proper disposal

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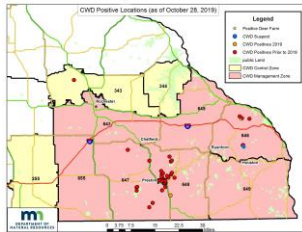
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### Results from Fall 2019 CWD Surveillance, Sept 14-Oct 28th

- North-Central CWD Zone
  - Collected 600 samples: 538 "not-detected" and 62 pending
- Southeast CWD Zone
  - Collected 1189: 1035 "not detected", 152 pending, 1 confirmed CWD-positive, and 1 CWD-suspect
    - CWD-positive: Yearling male harvested in DPA 648, near CWD Core Area south of Preston
    - CWD-suspect: Yearling female harvested in DPA 636, same location has fall 2018 case in Houston County
- Test results updated and available on [www.dnr.state.mn.us/cwdcheck](http://www.dnr.state.mn.us/cwdcheck)



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### CWD Funding: Request vs. Appropriated

In millions

| Fund                             | FY20 Request | FY20 Appropriated | FY21 Request | FY21 Appropriated | Total Req FY20-FY21 | Total App FY20-FY21 |
|----------------------------------|--------------|-------------------|--------------|-------------------|---------------------|---------------------|
| General Fund                     | 2.41         | 1.595             | 2.16         | 0.275             | 4.57                | 1.87                |
| Game and Fish                    | -            | 1.125             | -            | 1.675             | -                   | 2.80                |
| Carvid Health – Adopt a Dumpster | -            | 0.050             | -            | -                 | -                   | .05                 |
| <b>Total</b>                     | <b>2.41</b>  | <b>2.77</b>       | <b>2.16</b>  | <b>1.95</b>       | <b>4.57</b>         | <b>4.72</b>         |

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### CWD Spend by Category

In thousands (as of 10/22/19)

| Category                          | Expended     | Encumbered     | Total          |
|-----------------------------------|--------------|----------------|----------------|
| Salary                            | 115.0        | 645.2          | 760.2          |
| CSU OVD Simple Testing            | 0.8          | 381.4          | 382.2          |
| USDA-Culling Contract             | -            | 350.0          | 350.0          |
| Contracts: OVD Tissue Sampling    | -            | 202.0          | 202.0          |
| OVD Attitude Survey               | 18.0         | 62.0           | 80.0           |
| Dumpsters for Deer Remains        | 2.3          | 73.3           | 75.6           |
| Supplies                          | 54.5         | 9.4            | 63.9           |
| Printing/Advertising/Postage      | 24.5         | 12.4           | 36.9           |
| OVD Field Office lease - Rushford | -            | 19.2           | 19.2           |
| Equipment                         | 9.6          | 8.5            | 18.1           |
| LMN OVD Testing (elk/moose)       | 0.2          | 4.8            | 5.0            |
| Travel fleet                      | 1.5          | -              | 1.5            |
| <b>Total</b>                      | <b>226.4</b> | <b>1,768.2</b> | <b>1,994.6</b> |

- 72% of the appropriated budget for FY20 has been spent or encumbered.
- The majority of travel/fleet expense will be incurred in November/December.
- Currently have \$300K in pre-encumbrance status waiting to be finalized – not included in totals. (\$69K Additional dumpsters/ trash service; \$31K for additional deer collars.)
- Supplies and equipment expenses are items needed to set up CWD sampling stations

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**KEEP  
MINNESOTA'S  
DEER HERD  
HEALTHY**  
STOP THE SPREAD  
OF CWD





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### Epizootic Hemorrhagic Disease (EHD)

- Viral disease transmitted by a biting midge (*Culicoides* sp.), most commonly affects white-tailed deer
- Disease appears late summer/early fall, ends with frost
- Clinical signs appear 7 days after being bitten by infected midge; death occurs within 8-30 hours
  - Midges are not born with the virus; they must encounter an infected host (cattle, sheep, deer, etc.)
  - Air currents can move midge populations far distances, increasing disease spread
- Deer often found dead near water, due to fever from the disease
- EHD can cause high mortality rates in a localized area, where deer were previously not exposed to the virus, but impact to overall deer population is small
- Common in southern states. First reported in MN was in 2012 on a cattle farm in Springfield. Next found in captive deer herd in Goodhue Co. in 2018. Never found in wild deer in MN prior to this year; surveillance efforts have occurred in past years.
- There is no management activity available to combat the disease
- EHD is not a threat to humans.




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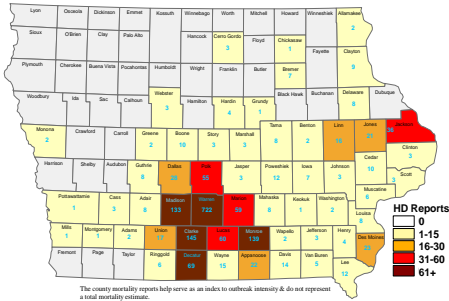
### Events in Minnesota, Fall 2019

- First report of multiple dead deer occurred on 3-Sept; St. Stephen area of Stearns County.
  - DNR staff visited sites, collected 2 whole carcasses; most were too decayed for testing
  - EHD confirmed by NVSL on 11-Sept
  - Approx. 30 deer reported on 5 properties through 13-Sept; 6 deer confirmed with EHD but all mortalities likely caused by disease; underestimate of true mortality
- First report of multiple dead deer in Houston County, 11-Sept
  - 5-Sept, BAH reported EHD caused dead of 2 farmed deer in Houston Cty
  - Approx. 50 deer reported on 16 properties; 3 deer confirmed with EHD (also screened for CWD); underestimate of true mortality
  - 3 reports of dead deer in Winona County as well; no samples available for testing

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### Suspect HD Reports - 2019



The county mortality reports help serve as an index to outbreak intensity & do not represent a total mortality estimate.

### EHD in Iowa, Fall 2019

- As of 24-Oct, Iowa DNR reported 1,764 suspected-EHD mortalities in 58 counties
- Outbreak most significant in southern Iowa

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