Protecting Cervid Operations from CWD

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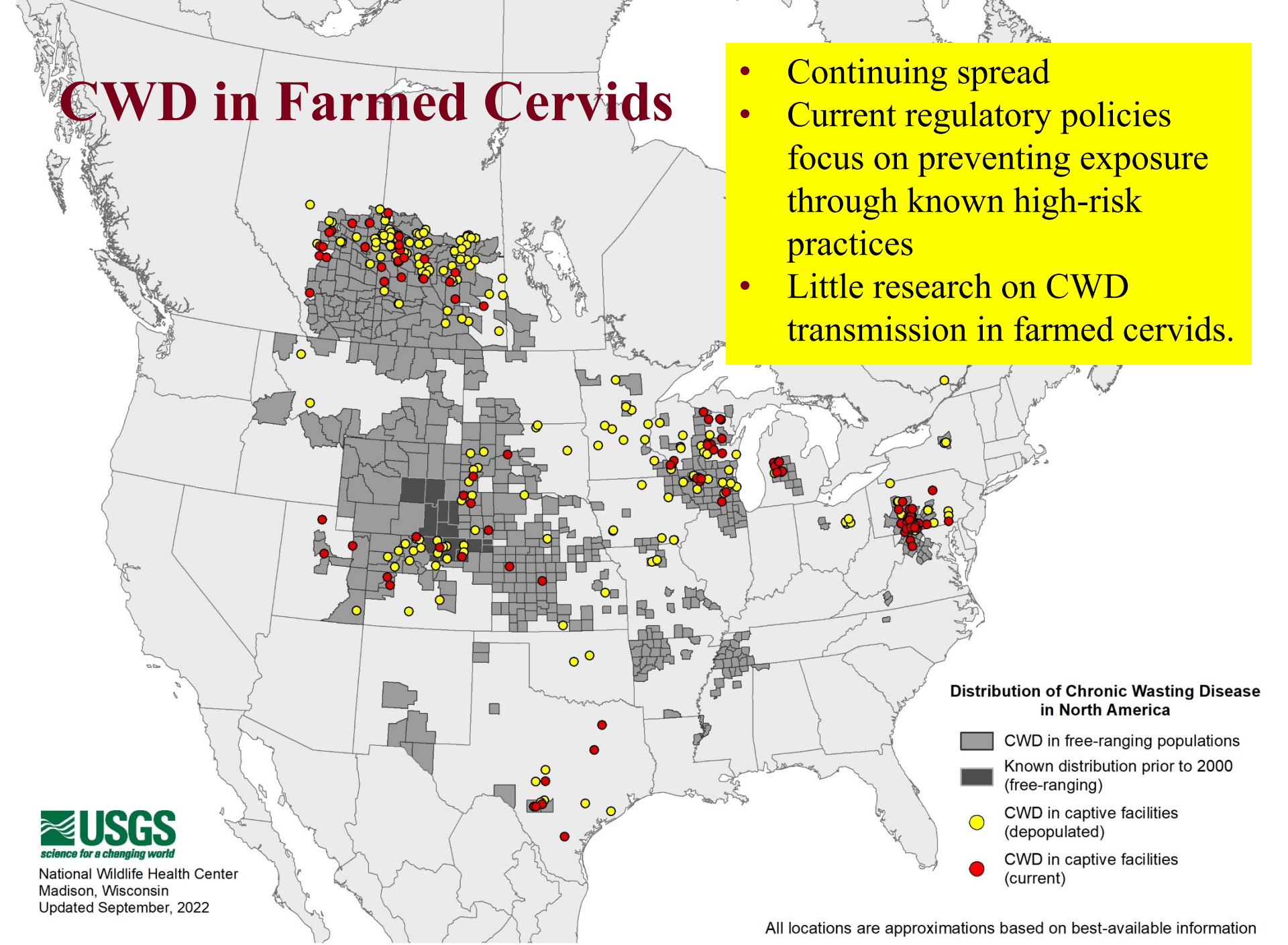
CWD in Farmed Cervids

- Continuing spread
- Current regulatory policies focus on preventing exposure through known high-risk practices
- Little research on CWD transmission in farmed cervids.



USGS
science for a changing world

National Wildlife Health Center
Madison, Wisconsin
Updated September, 2022

Potential CWD Transmission Pathways to Cervid Operations

Infected Farmed Cervids

Infected Wild Cervids

Indirect Contact

Direct Contact

Cervid movements

--Fencing breaches (escapes/re-entry)

Direct Contact

Indirect Contact

-Sharing equipment or vehicles
-Contaminated feed or water
-Contacts with birds or scavengers
-Semen/embryos?

-Hunting or taxidermy
-Contaminated feeds or water
-Contacts with birds or scavengers

CWD Transmission Pathways to Cervid Farms

Pathway	From infected farmed cervids	From infected wild cervids
Direct contact	**Introduction of infected farmed cervid from another farm**	**Contact with infected wild cervids through fencing**
High risk	• From CWD+ farm	• Fencing breach with escape/re-entry
Lower risk	• From other farm	• Nose-to-nose contact through fence
Indirect contact	**Contact with infected cervid carcass (hunting/taxidermy)**	
High risk	• From CWD+ area or farm	
Lower risk	• From other area or farm	
Indirect contact	**Sharing feed or water, equipment/trailers, other animals**	**Introduction via feed or water, other animals/scavengers**
High risk	• With CWD+ farm	• Access to feeds or water by wild deer
Lower risk	• With other farm	• Access to feeds or water by animals • Access to deer pens by animals

CWD Risk Exposures Summary

MN and WI CWD-positive farms before Jan 2019

(Kincheloe et al, 2021, Viruses)

Known higher CWD risk exposures - 56% of CWD+ farms

1. 35% introduced cervids from another farm later detected with CWD.
2. 24% reported wild deer entry or farmed cervids escape/re-enter in areas with CWD in wild deer.
3. 6% introduced cervid parts from areas with CWD in wild deer through hunting or taxidermy practices.

No known higher risk CWD exposures - 44% of CWD+ farms

1. 64% of CWD-positive cases since 2015.
2. 80% of these herds added cervids from herds (without test-positive animals) in the previous 5 years; 20% had no new additions.
3. 73% of these herds located <50 miles of CWD-infected wild deer.

Identification of Farm and Environmental Factors associated with Chronic Wasting Disease (CWD) in Farmed Cervid Herds

(USDA APHIS Funding 2021-2023)

- **Which exposure risks are most important to CWD transmission?**
- 71 white-tailed deer herds in MN, WI, and PA participated in case-control study to identify factors associated with CWD infection.

CWD Transmission Pathways to Cervid Farms

Pathway	From infected farmed cervids	From infected wild cervids
Direct contact	**Introduction of infected farmed cervid from another farm**	**Contact with infected wild cervids through fencing**
High risk	• From farm later found CWD+ (OR = 7.2)	
Lower risk		• **<10 km from CWD+ deer (OR = 2.3)** • **Not use double fencing (OR = 3.1)**
Indirect contact	**~~Contact with infected cervid carcass (hunting/taxidermy)~~**	
Indirect contact	**~~Sharing feed or water, equipment/trailers, other animals~~**	**Introduction via feed or water, other animals/scavengers**
Lower risk		• <10 km from CWD+ deer (OR = 2.3) • Evidence of mammal scavengers (OR = 6.6) • Presence of cats (OR = 4.1) • Dispose carcasses in compost or waste pile (OR = 3.3) • Forest crosses perimeter fence (OR = 3.5) • <1 ft distance of water source to fenceline (OR = 4.7)

Development and Evaluation of CWD Biosecurity Practices using a Risk Assessment Approach by Farmed Cervid Producers

(USDA APHIS Funding 2021-2023)

Objectives:

1. Develop **on-farm CWD Biosecurity Assessment tool for cervid producers** and their veterinarians to assess risk of CWD introduction to the operation.
2. Develop **CWD biosecurity educational resources** to support implementation of biosecurity on cervid operations.
3. Evaluate impact of **implementing biosecurity program** on cervid operations that implement the biosecurity risk assessment program.

https://cwdbiosecurity.umn.edu/

cwdbiosecurity.umn.edu

CWD Biosecurity for Cervid Farms

Menu ☰

Home

Preventing the Introduction of Chronic Wasting Disease to Cervid Operations

Welcome to the Farmed Cervid Biosecurity against Chronic Wasting Disease (CWD) website.

CWD Biosecurity for Cervid Farms

Menu ☰

Scenarios

Scenarios

Scenarios from Cervid Operations

These scenarios represent real situations that could occur, but were created for educational use and are not based on any specific cervid operation.

Expand all

+ Scenario 1. Deer purchase at Katie's Breeding Operation
+ Scenario 2: Fence down after lightning storm at Roger's Hunting Preserve
+ Scenario 3: Forest critters in Jack's White Tail Deer Preserve
+ Scenario 4: Traveling truck on Matt's Hobby Farm

After reviewing these scenarios, are you interested in evaluating the potential risks of CWD transmission to your operation?

If you want to move forward, click the link below to download the CWD Risk Assessment.

cwd_risk_exposure_assesment_for_cervid_operations_2022-10-03.pdf

CWD Biosecurity Assessment

Potential CWD Transmission Pathway	Max Risk Score	Farm Risk Score
Contact with infected farmed cervid		
• Direct contact with infected farmed cervid	30	
• Indirect contact with infected farmed cervid	12	
Contact with infected cervid carcass or body part		
• Through hunting or taxidermy	15	
Contact with infected wild cervid		
• Direct contact with infected wild cervid	24	
• Indirect contact with infected wild cervid	19	
Total	**100**	

CWD Biosecurity Assessment

Potential CWD Transmission Pathway	Max Risk Score	Farm Risk Score
Contact with infected farmed cervid		
• Direct contact with infected farmed cervid	30	30
• Indirect contact with infected farmed cervid	12	10
Contact with infected cervid carcass or body part		
• Through hunting or taxidermy	15	0
Contact with infected wild cervid		
• Direct contact with infected wild cervid	24	6
• Indirect contact with infected wild cervid	19	7
Total	**100**	**53**

CWD Biosecurity Assessment

Potential CWD Transmission Pathway	Max Risk Score	Farm Risk Score
Direct contact with infected farmed cervid	30	5
Indirect contact with infected farmed cervid	12	6
Indirect contact with infected cervid carcass or body part	15	0
Direct contact with infected free-ranging cervid	24	9
Indirect contact with infected free-ranging cervid	19	19
Total	**100**	**39**

CWD Biosecurity Assessment (Risk to farm) and Exposure Assessment (Risk from farm)

Potential CWD Transmission Pathway	Risk to farm		Risk from farm	
Contact with infected farmed cervid	Max score	Farm score	Max score	Farm score
• Direct contact with infected farmed cervid	30		30	
• Indirect contact with infected farmed cervid	12		12	
Contact with infected cervid carcass or body part				
• Through hunting or taxidermy	15		15	
Contact with infected wild cervid				
• Direct contact with infected wild cervid	24		24	
• Indirect contact with infected wild cervid	19		19	
Total	**100**		**100**	

Assessment of the Ecology of Wildlife near the Perimeter Fence of Cervid Farms

(USDA APHIS Funding 2022-2023)

Objectives:

1. Identify and characterize **wildlife activities associated with cervid farms** with endemic CWD in wild deer populations.
2. Update on-farm **CWD risk assessment tool** for cervid producers and their veterinarians to assess risk of CWD introduction to the operation.

https://pv-magazine-usa.com/2019/12/16/the-quick-gray-fox-jumped-through-the-upside-down-solar-fence-a-photo-essay/

Eligible herds

- Eligible herds
  - White-tailed deer operations in MN or WI
  - Voluntary participation

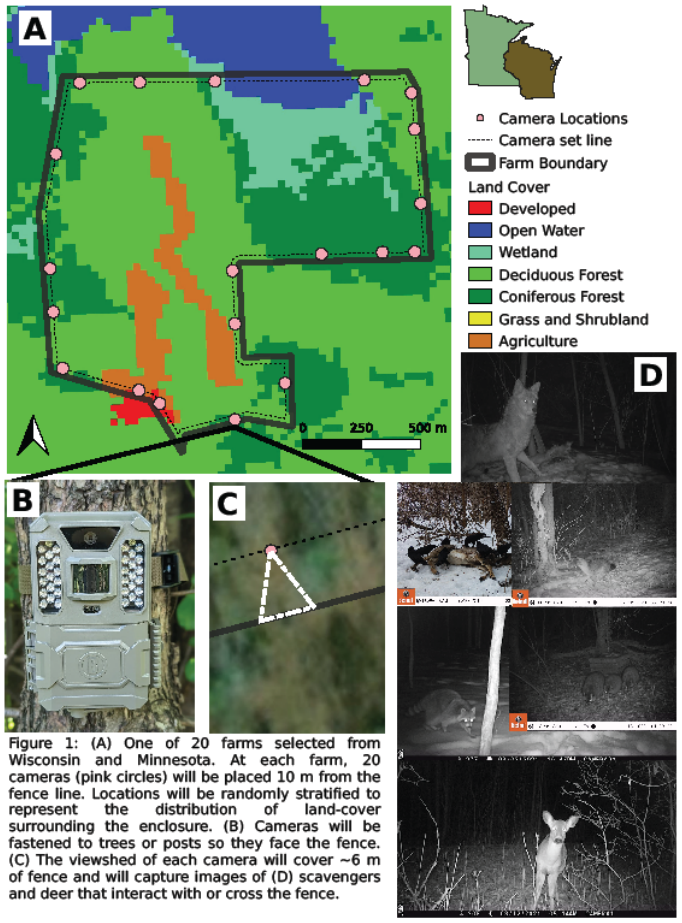


Figure 1: (A) One of 20 farms selected from Wisconsin and Minnesota. At each farm, 20 cameras (pink circles) will be placed 10 m from the fence line. Locations will be randomly stratified to represent the distribution of land-cover surrounding the enclosure. (B) Cameras will be fastened to trees or posts so they face the fence. (C) The viewshed of each camera will cover ~6 m of fence and will capture images of (D) scavengers and deer that interact with or cross the fence.

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Study Partners:

- Minnesota Board of Animal Health
- Wisconsin Dept of Agriculture, Trade, and Consumer Protection
- Pennsylvania Dept of Agriculture

Study Collaborators

- Cervid Industry leaders
- Cervid producers