Chronic Wasting Disease

Dr. Margo Pybus, Provincial Wildlife Disease Specialist, Alberta Fish & Wildlife

Dr. Deena Hinshaw, Deputy Medical Officer of Health, ISC

March 20, 2025

1:30-3:00 PM

Outline

1) Chronic Wasting Disease (CWD)

Presented by Dr. Margo Pybus

2) Human and Public Health Implications of CWD

Presented by Dr. Deena Hinshaw

3) Questions

INDIGENOUS SERVICES CANADA

Questions: VChelp@FNTN.ca

Chronic Wasting Disease

Dr. Margo Pybus
Provincial Wildlife Disease Specialist, Alberta Fish & Wildlife

CWD… marches on

CWD in wild cervids:

Patterns & Perspectives in Alberta

March 2025

M.J. Pybus PhD
Fish and Wildlife Stewardship

on behalf of

Alberta's CWD surveillance, policy, management, and research TEAM

Chronic Wasting Disease in Alberta

Road map

- General overview CWD
- Big Picture overview
- How did CWD arrive?
- AB current status
- Patterns in the data

- Q&A

Chronic Wasting Disease (CWD) general overview


J. Sweeney

- Fatal infectious prion (modified protein primarily in central nervous system)
- Deer family (cervids) - free-ranging and captive
- Direct contact transmission.. deer to deer
  - environmental contamination in enzootic areas
- Long incubation period (up to 2 yrs)
  - visible signs only in late stages
- Moves across landscapes by natural dispersal of deer and by human translocation

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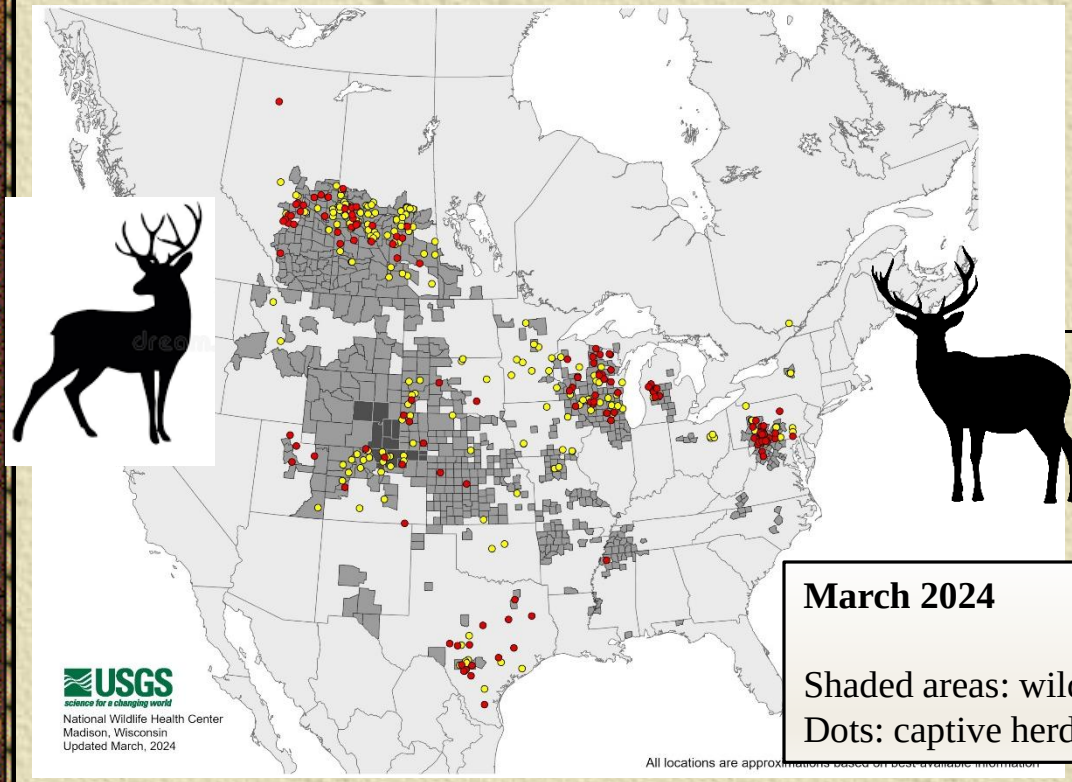
CWD Status in N America



March 2024

Shaded areas: wild pops
Dots: captive herds

- Geographic spread: long distance translocation, local dispersion
- Species patterns
  - Big picture: West: mule deer (MD) East: whitetails (WTD)
  - West: changes over time: initially MD, then spills into WTD, elk, few moose
  - Captive cervids: completely different picture, human influences

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CWD early history in Canada

1996: captive elk in SK (from S Dakota)

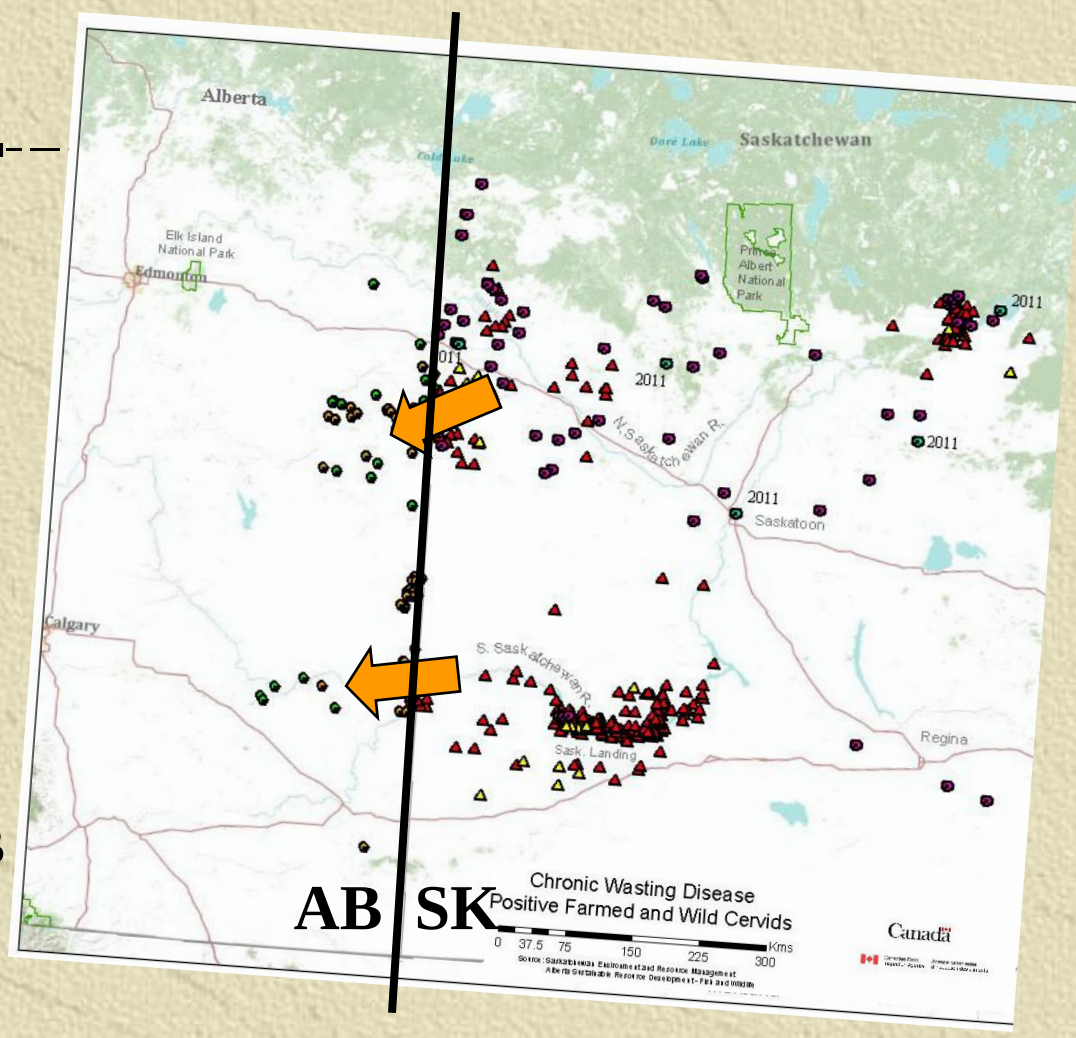
2000: 1st wild deer … in SK

Aggressive surveillance along AB/SK border

2005: 1st wild deer AB

Relatively recent arrival in AB

Spillover from SK along 2 river systems



Apr 2011

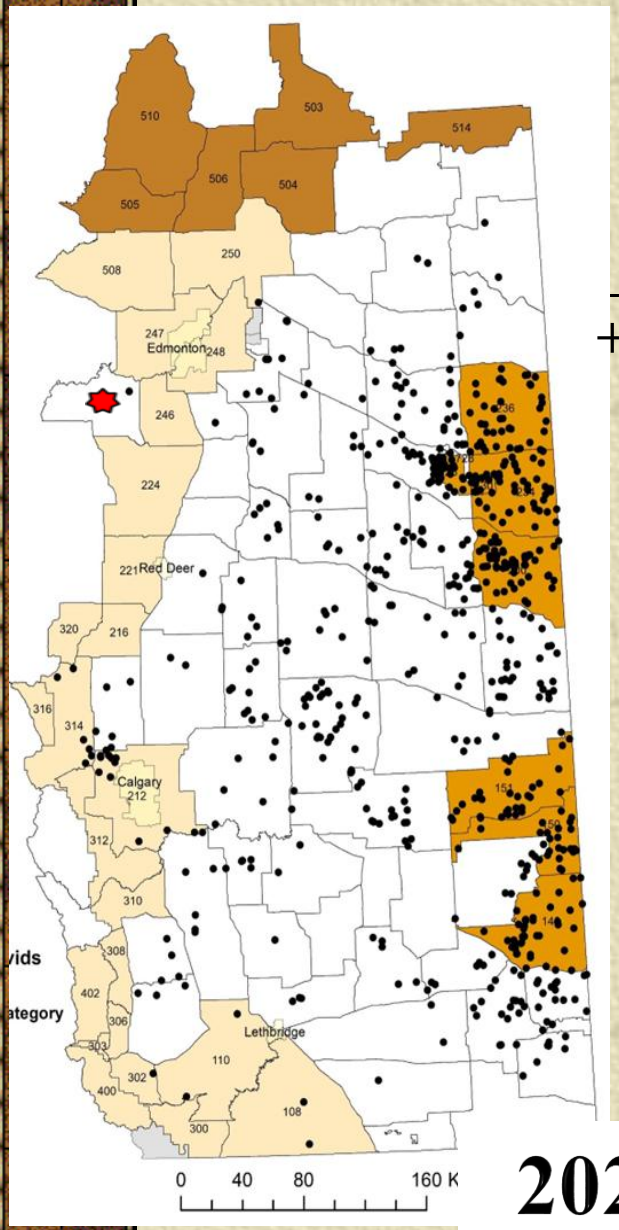
Alberta CWD Status (Oct 2024)

6163 CWD cases (114,000 heads tested)

+ve DEER: 5179 mule deer; 930 white-tails **(~6x MD)**

4389 males; 1719 females **(~3x males)**

+ 15 moose (mainly Wainwright) 39 elk (mainly Suffield)



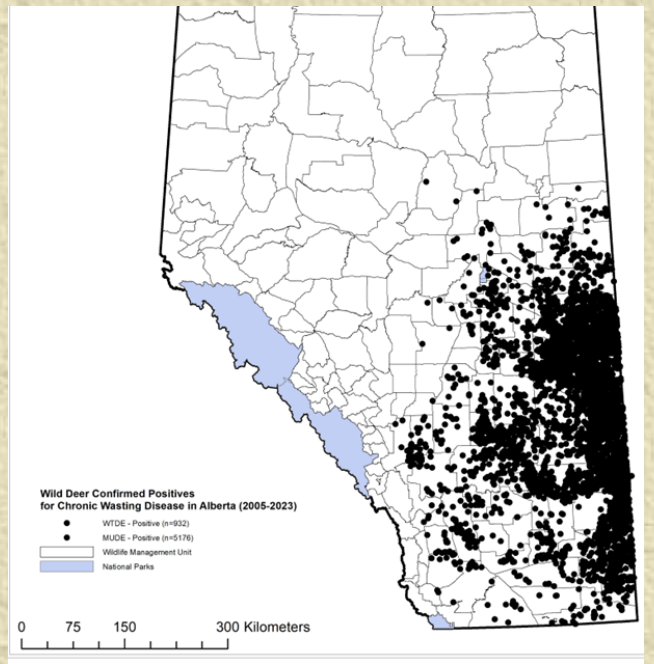
2023

Distribution: enzootic across eastern & central Alberta

- expanding in parkland & prairie habitats.

- along northern forest fringe & into southern foothills

Cumulative All deer



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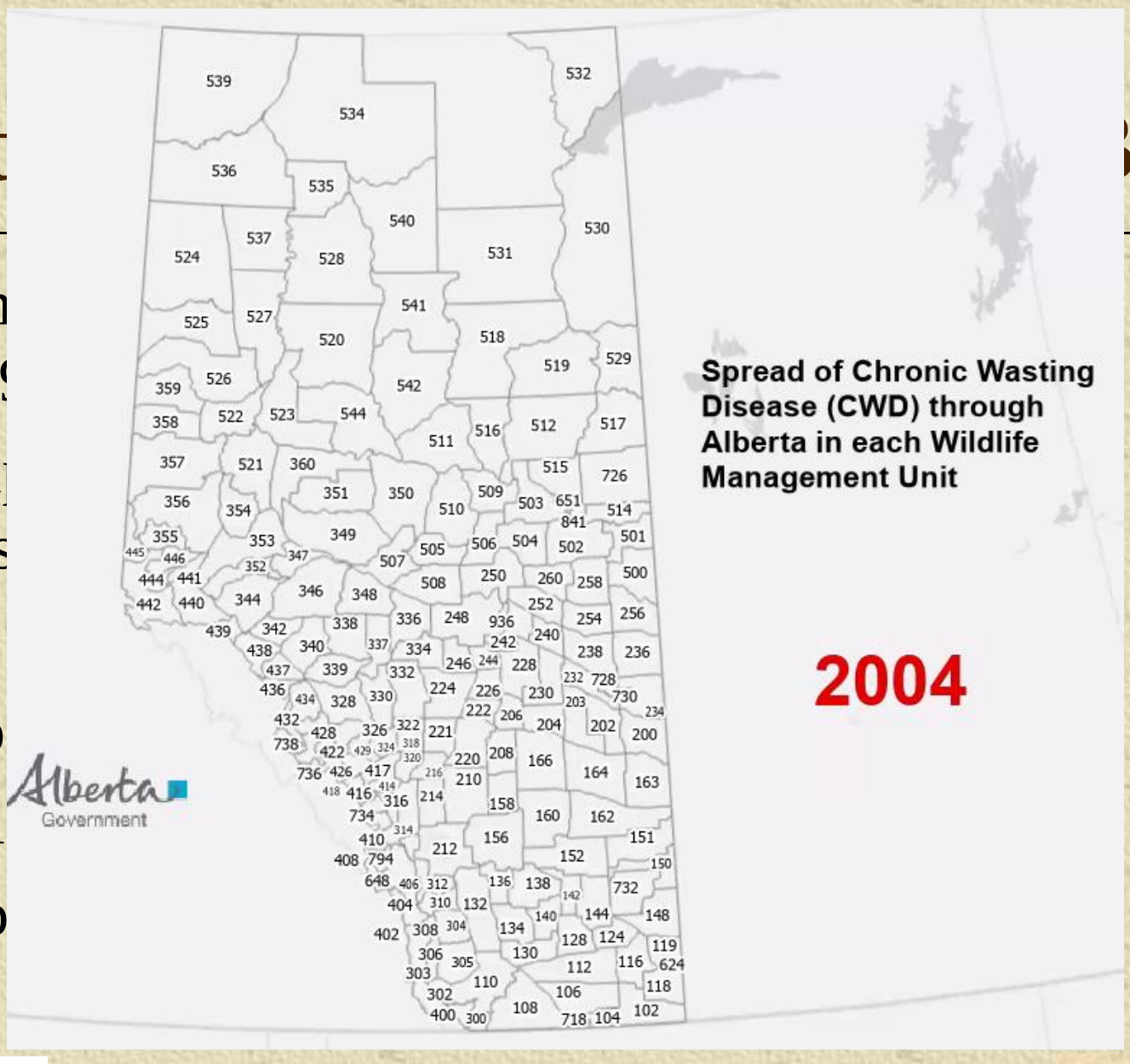
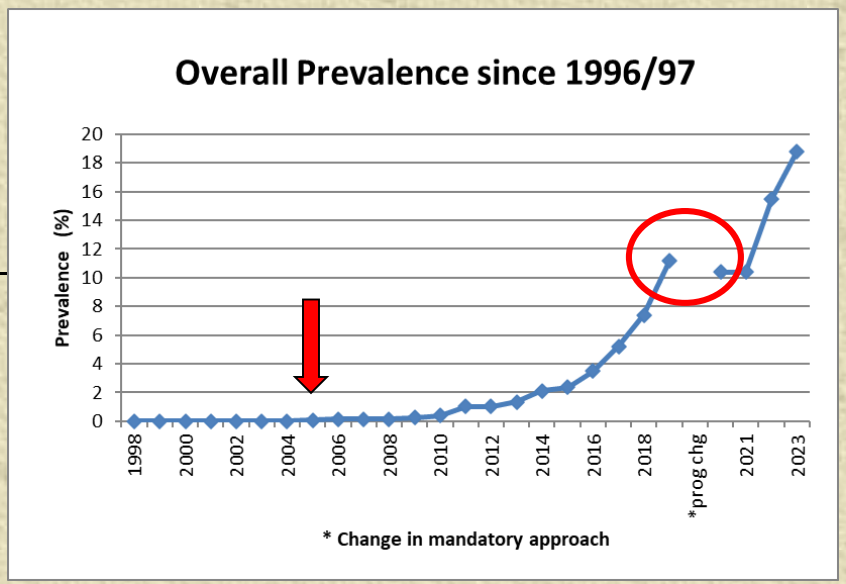
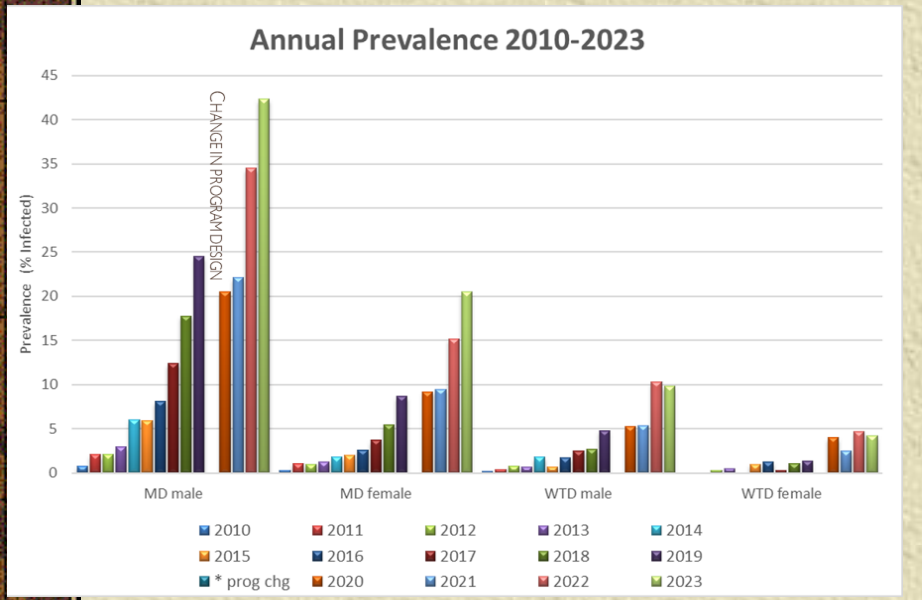
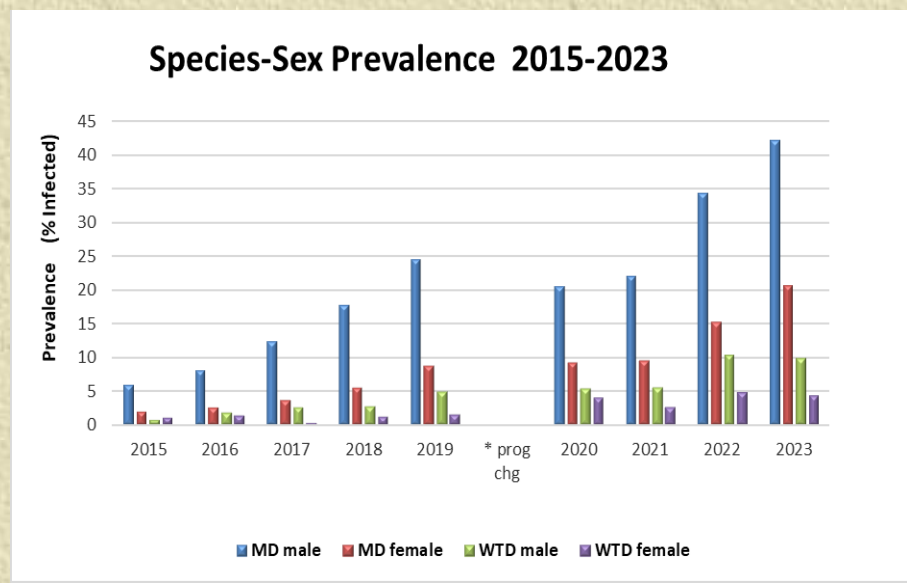


Patterns in AB CWD

- Detected in 2005
- Low prev during disease control 2006-2008
- Steady increase 2009-2015
- Steep increase since 2016
- 2020: program changed, CWD did not







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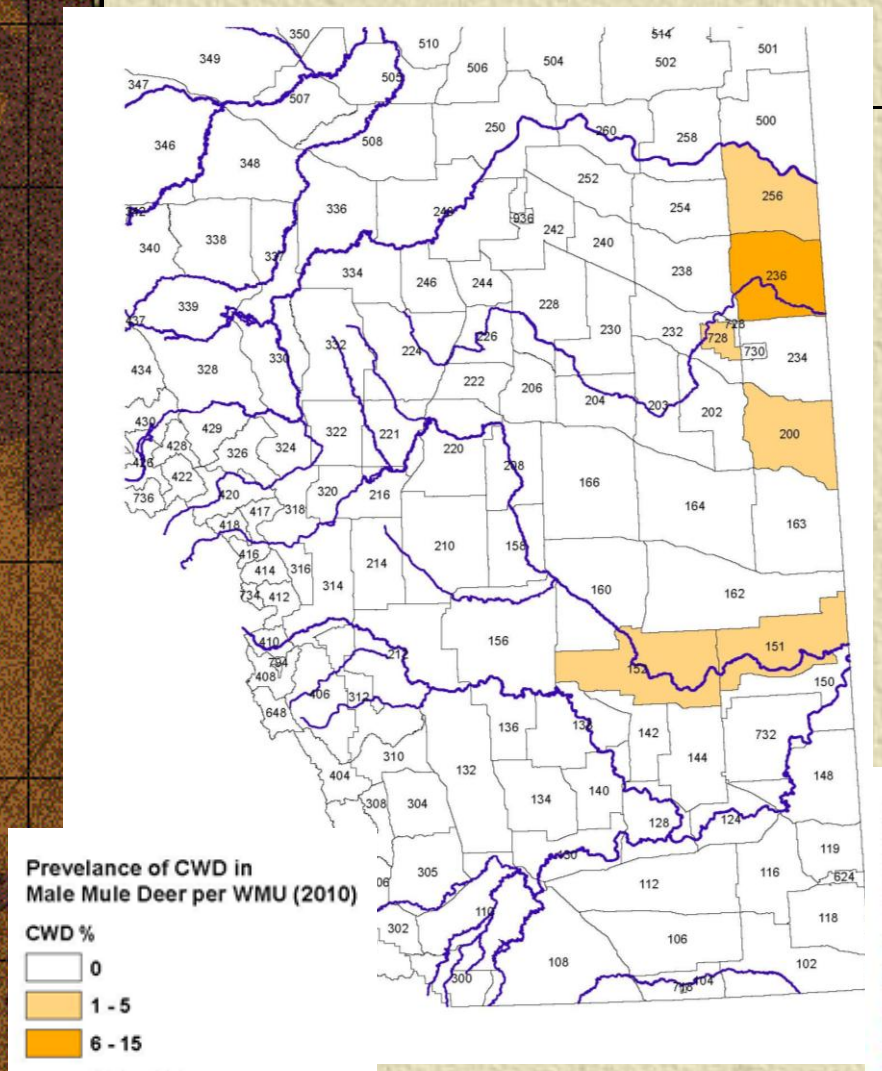
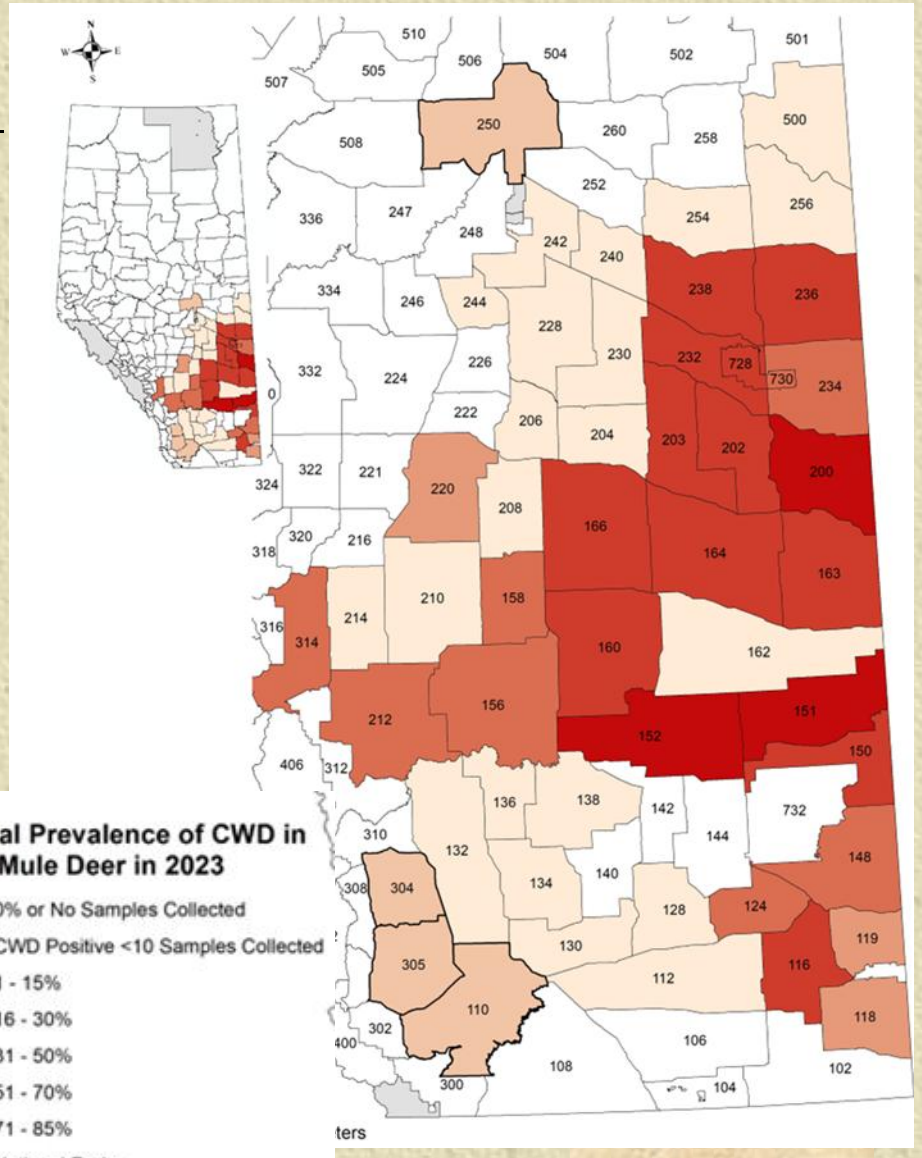
CWD Prevalence in male mule deer

2010



2023



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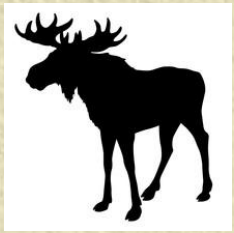
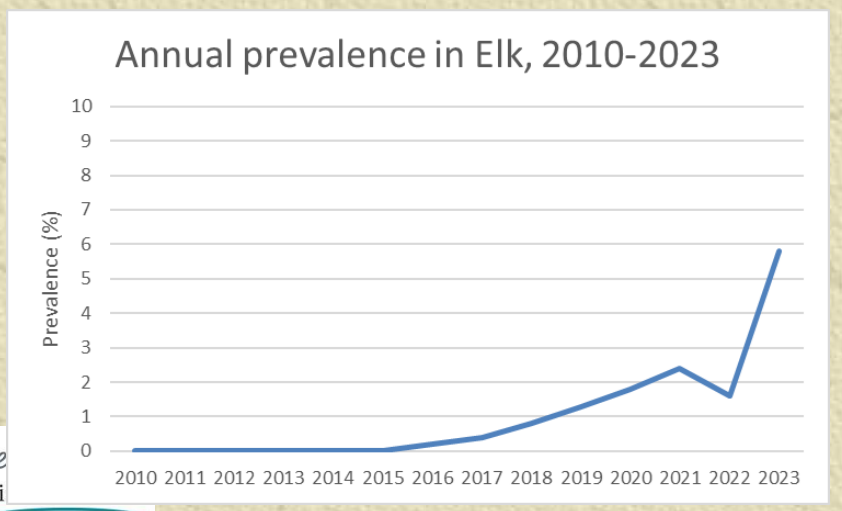
Other species

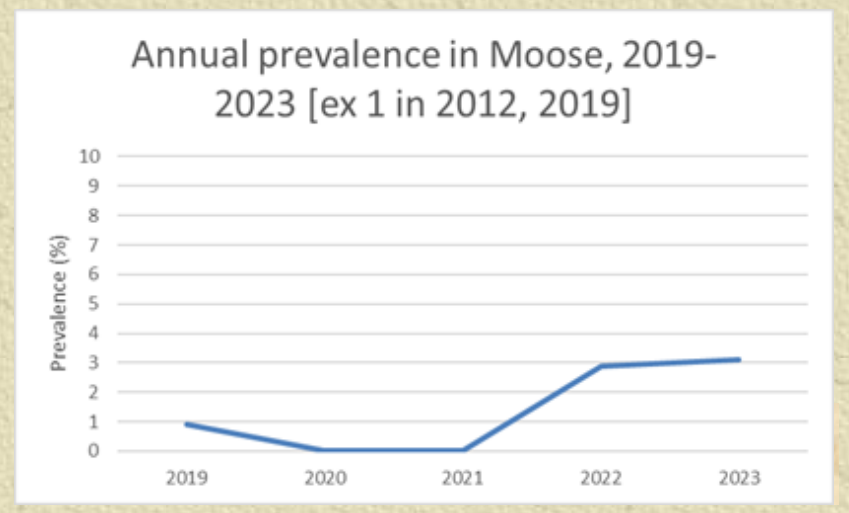
Limited spillover to elk & moose
in areas of concentrated overlap with infected deer

primarily Suffield



primarily Wainwright





Current situation

- Overall
  - Expanding provincial distribution
  - Increasing prevalence
  - Primarily male mule deer
  - Trickling down to younger males
  - Spilling into more females, and WTD
  - Spilling into a few moose and elk
- Throughout parkland & prairie regions
- Moving into foothills & perhaps northern forest fringe
- Spread will continue in the absence of active management

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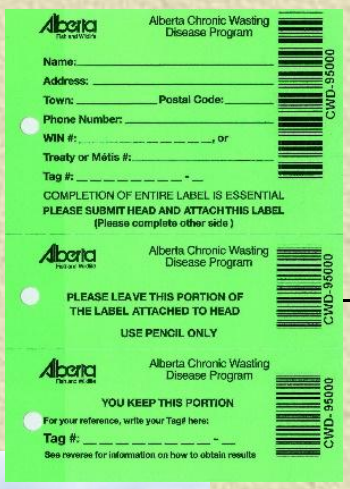
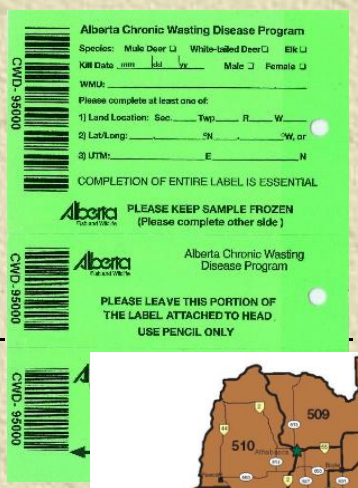
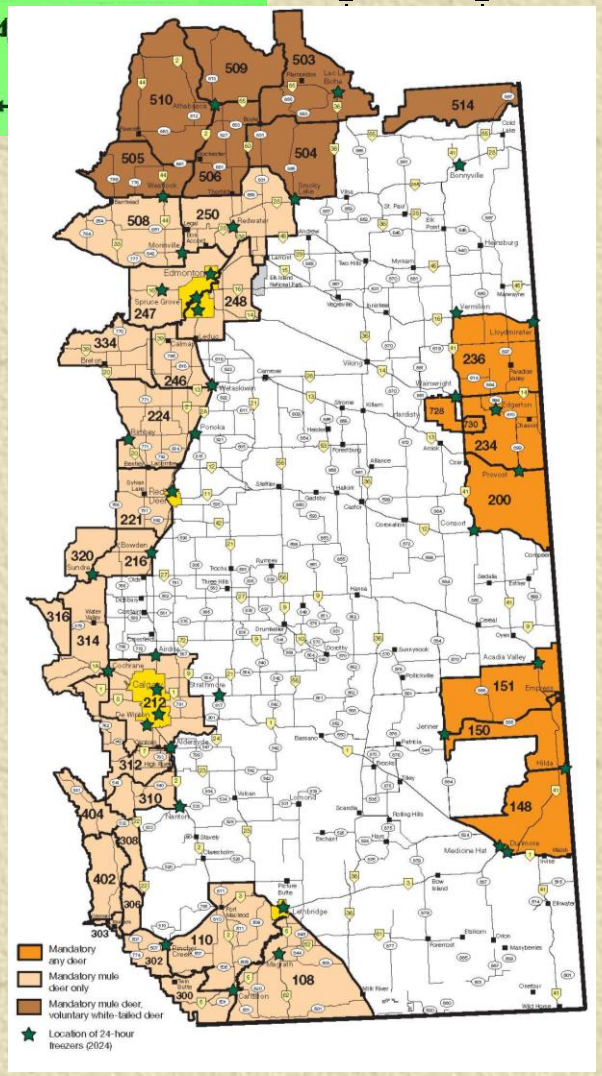
Relies on ongoing hunter support







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Acknowledgements

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Fish and Wildlife staff and managers

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And a wide range of financial supporters

for providing the foundation on which Alberta's CWD programs are built.

Alberta Environment and Protected Areas

Human and Public Health Implications of CWD

Dr. Deena Hinshaw

Deputy Medical Officer of Health, ISC

Human Implications

- Human prion diseases
- Human CWD infection potential – what we know
- Environmental implications
- Farmed animal implications
- Food security implications

Human Prion Diseases

- Creutzfeldt-Jakob disease (CJD) - sporadic, genetic, or acquired
  - Causes the brain to stop working normally, and causes death within a year of the beginning of symptoms
  - CJD is seen worldwide and causes 1-2 deaths per million people per year
  - Usually seen in people over the age of 60
  - Can be transmitted through organ or tissue transplants, especially nervous system tissue
- Variant CJD (vCJD)
  - Linked to eating meat from cattle with Bovine Spongiform Encephalopathy (BSE) – sometimes called “mad cow disease”
  - Younger patients, longer disease duration, some different symptoms than CJD, but also always fatal
  - Worldwide, 233 people have been diagnosed with vCJD
- Others – very rare

Can humans get CWD?

- Direct evidence
  - No human cases ever diagnosed
  - Close to 20-year follow up of 81 people who ate meat from a CWD infected animal in 2005 has not found any infection
- Lab models
  - Human brain cells in petri dishes did not become infected after direct exposure to CWD prions

Can humans get CWD?

- Animal models
  - No other wild animals have been diagnosed with CWD
  - Lab transmission possible in several different species when prions are injected into the brain
  - Lab transmission by oral exposure has been seen in squirrel monkeys but not in other animals
- Lessons learned from BSE and vCJD
  - Low incidence (estimated 5 million human exposures to BSE-infected meat in UK, only 178 cases of vCJD in UK diagnosed to date, none since 2016)
  - Long incubation – illness can start decades after last known exposure

Recommended Precautions

- Check if the hunting area has reported cases of CWD
- Avoid hunting, handling or eating sick animals or those that have died of an unknown cause
- Wear gloves when field dressing and minimize handling of the head and brain
- Wash hands thoroughly with soap and water after field dressing
- Disinfect tools with bleach mixture
- In areas where CWD has been identified, it is recommended to wait for CWD testing results before eating the meat
- Avoid eating animals that have tested positive for CWD

Environmental Implications

- Prions persist for many years in the environment, including soil and plants
- Plants can take up prions from the soil into their leaves
- Unknown implications for humans, but likely to be lower risk than exposure to infected animals

Farmed Animal Implications

- Farmed cervids – testing required but some unknowns such as human consumption of elk antler velvet
- Farmed animals of other kinds – no transmission or susceptibility documented to date
  - Exception of some early results in pigs – experimental transmission and some wild pig CWD prion detection
- Economic implications for cervid farmers

Food Security Implications

- As CWD becomes established in an area, it may be more difficult to be confident that a harvested animal is not infected – testing system is set up for animal surveillance and test results can take time.
- Deer populations can be reduced or changed in demographics – this can have impacts on those who harvest wild cervids for food.
- The greater the prevalence of CWD, the higher the level of infectious particles in the environment, which may lead to other animals being impacted (e.g. moose, elk, caribou), with subsequent impacts on harvest

Human Health Implications: Key Points

- Many unknowns remain
- No current evidence that humans can get CWD
- Potential for prion variants to emerge or for human cases to be identified following a long incubation period
- Best advice is to be cautious, and not consume meat from CWD positive animals
- Biggest current risk to humans relates to food security and impact of the disease on animal populations

Questions and Conversation

Dr. Margo Pybus and Dr. Deena Hinshaw

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Additional Questions?

- ***VCHELP@FNTN.CA***

Acknowledgements

- Dr. Margo Pybus, (she/her), Provincial Wildlife Disease Specialist, Alberta Fish & Wildlife
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