

# Avian Influenza, BSE and West Nile virus

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# Overview

- Outbreaks
- Control actions
- Preventive measures
- Consequences
- Issues



# Differences in:

- Control actions
- Preventive measures



# Avian Influenza (AI)

- Feb. 19, 2004
- Fraser Valley, B.C.
- H7N3
- HPAI is only H5 or H7
- 42 flocks (also 11 backyard)
- Highly contagious among birds; endemic in wild birds

# AI Pathogenicity

- Eight susceptible 4-to-8 week-old chicks
- Inoculated with infectious virus
- If 6 out of 8 (75%) die within 10 days, then strain is highly pathogenic

(OIE, 2004)



(Webshots)





# AI Diagnosis & Reporting

- Passive surveillance

  - diagnostics privatized in AB in 1998;  
partner with private labs

- HPAI is federally reportable

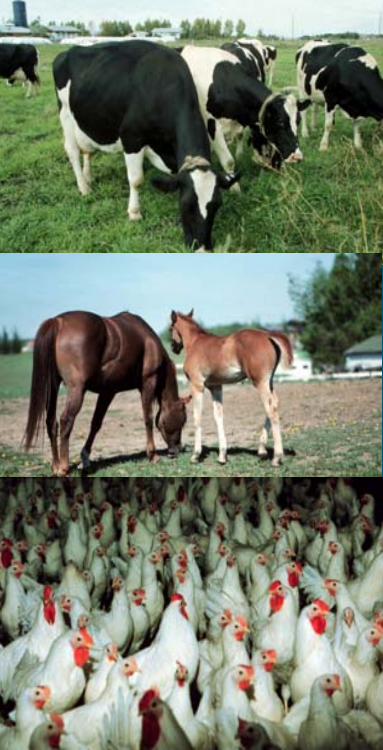
- Proposed new OIE rule

  - must report all H5 and H7 cases,  
whether high or low  
pathogenicity



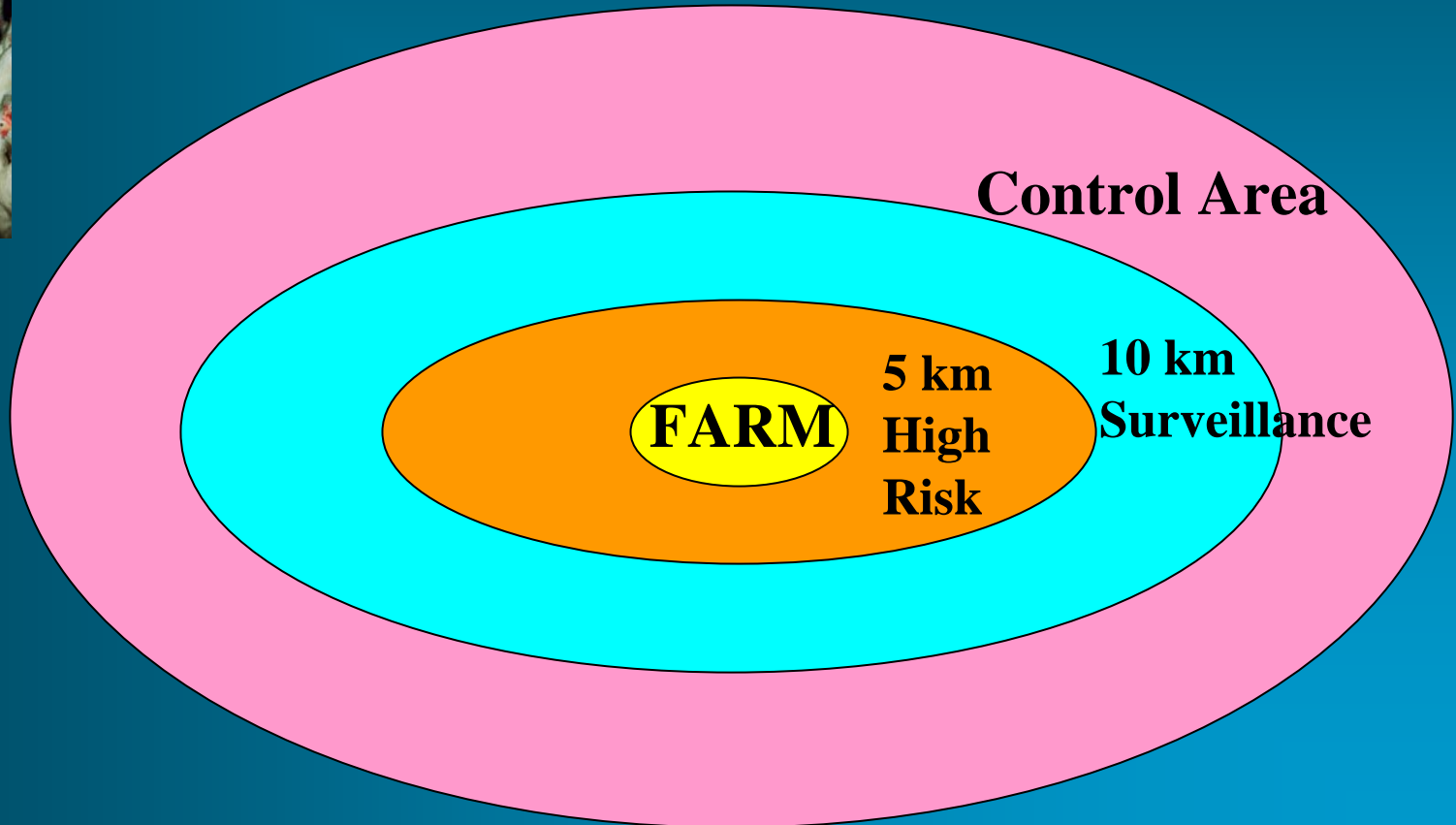
# AI Control Actions

- CFIA mandate to eradicate
- Quarantine
  - 42 affected farms, 11 backyard
- Depopulation
  - 19 million birds



# AI Control Actions

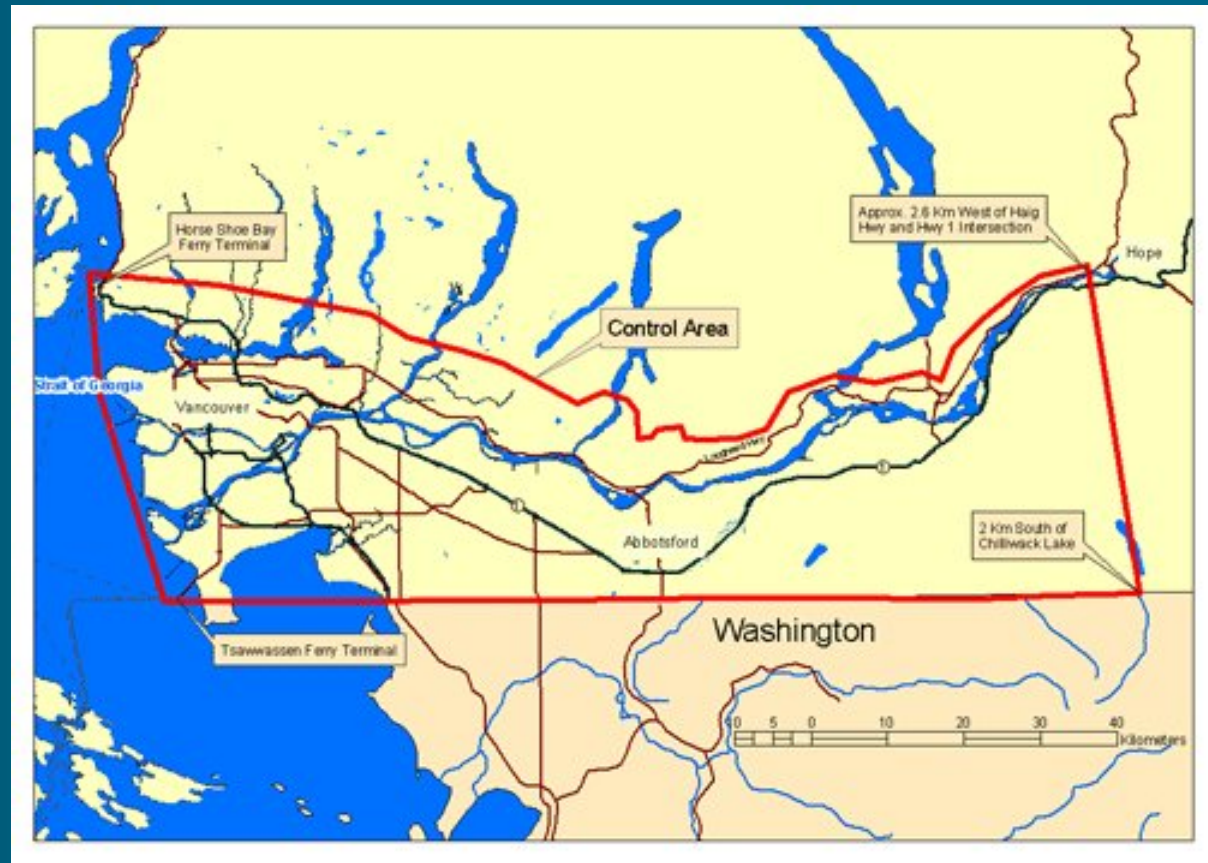
- Control zones for highly infectious livestock diseases





# AI Control Actions

## Control area





# AI Preventive Measures

- Biosecurity
- Source of drinking water (e.g. dugouts)
- Producer awareness
- Early diagnosis is essential



# BSE

- May 20, 2003
- 6-year old black angus cow
- Condemned at slaughter
- 2<sup>nd</sup> case, detected in USA (Dec. 2003)



# BSE Diagnosis & Reporting

- Targeted surveillance
  - neurological any age
  - 4 D's (downer, diseased, distressed, dead)
  - 8,000 in 2004; 30,000 in 2005 (Canada)
- Bio-Rad ELISA TeSeE<sup>®</sup>
- Immunohistochemistry
- Federally reportable disease



# BSE Control Actions

- CFIA mandate to eradicate
- Selected depopulation
  - cattle born into the same herd within a year before or after the birth of the infected animal
  - progeny
- Trace-outs
  - feed mills



# BSE Preventive Measures

- Ruminant-to-Ruminant feed ban (1997)
- Specified Risk Materials (SRM) ban
  - July 2003
  - tissues that contain BSE infectivity
  - skull, brain, trigeminal ganglia, eyes, tonsils, spinal cord, dorsal root ganglia, (>30 mos) and distal ileum (all ages)
  - removed at slaughter in all federal and Alberta plants



# BSE SRM-Bovine Tissue Infectivity

<b>Tissue</b>	<b>% of Infectivity</b>
<b>brain</b>	<b>64.4</b>
<b>spinal cord</b>	<b>25.7</b>
<b>dorsal root ganglia</b>	<b>3.9</b>
<b>small intestine</b>	<b>3.3</b>
<b>trigeminal ganglia</b>	<b>2.6</b>
<b>eyes</b>	<b>0.03</b>
<b>tonsils</b>	<b>0.01</b>
<b>TOTAL</b>	<b>99.94</b>



# Why Not Test Every Cow?

- Surveillance does not make beef safer
  - verifies effectiveness of feed ban
  - establishes the true prevalence of BSE
- Public health is protected by the SRM ban



# West Nile virus (WNV)

- August 2003—first horse case in Alberta
- 222 suspected
- 170 positive
- 59 deaths (34.7%)



# West Nile virus (WNV)

- Source: wild birds
- Spread by: mosquitoes  
(*Culex tarsalis*)
- Most horses subclinical
- Few horses clinical
  - 35% die or euthanised



# WNV Diagnosis and Reporting

- Passive surveillance
- Provincially reportable disease
- Veterinarian survey for each suspect case (risk factors)
- Federally immediately notifiable disease



# WNV Control Actions

- None
- Horses are dead-end hosts;  
no threat to human  
health



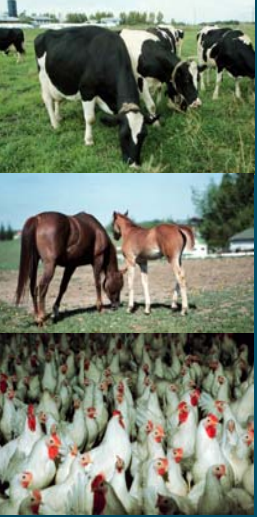
# WNV Preventive Measures

- Licensed vaccine
- Smudges, screening, spraying, eliminating standing water
- Public education



# Consequences

- Economic (BSE & AI)
  - trade bans
  - loss of income for producers and other businesses
- Reduced animal health status
- Public perception



# Consequences

- Human health

## Putting Risk in Perspective

	vCJD (world)	AI (world)	WNv (Canada 2003)	Cancer (Canada 2004, est.)	Car Accidents (Canada 2001)
<b>No. of cases</b>	156	138	1388	145,500	
<b>No. of deaths</b>	151	30	10	68,300	2,778
<b>Source</b>	ProMed, WHO	WHO	Health Canada	Canadian Cancer Society	Health Canada



# Issues

- Notification of public health
  - when?
- Interaction between fed/prov/muni/public
  - sharing information
  - confidentiality issues (FOIP)



# Issues

- Carcass disposal
  - environmental concerns
  - pre-selection of sites
  - humane treatment
  - prions, toxins
  - rendering issues re: SRMs