



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Canada's National Bovine TB Eradication Program

Christa Coetser, DVM
USAHA meeting– October 2023



Canada 

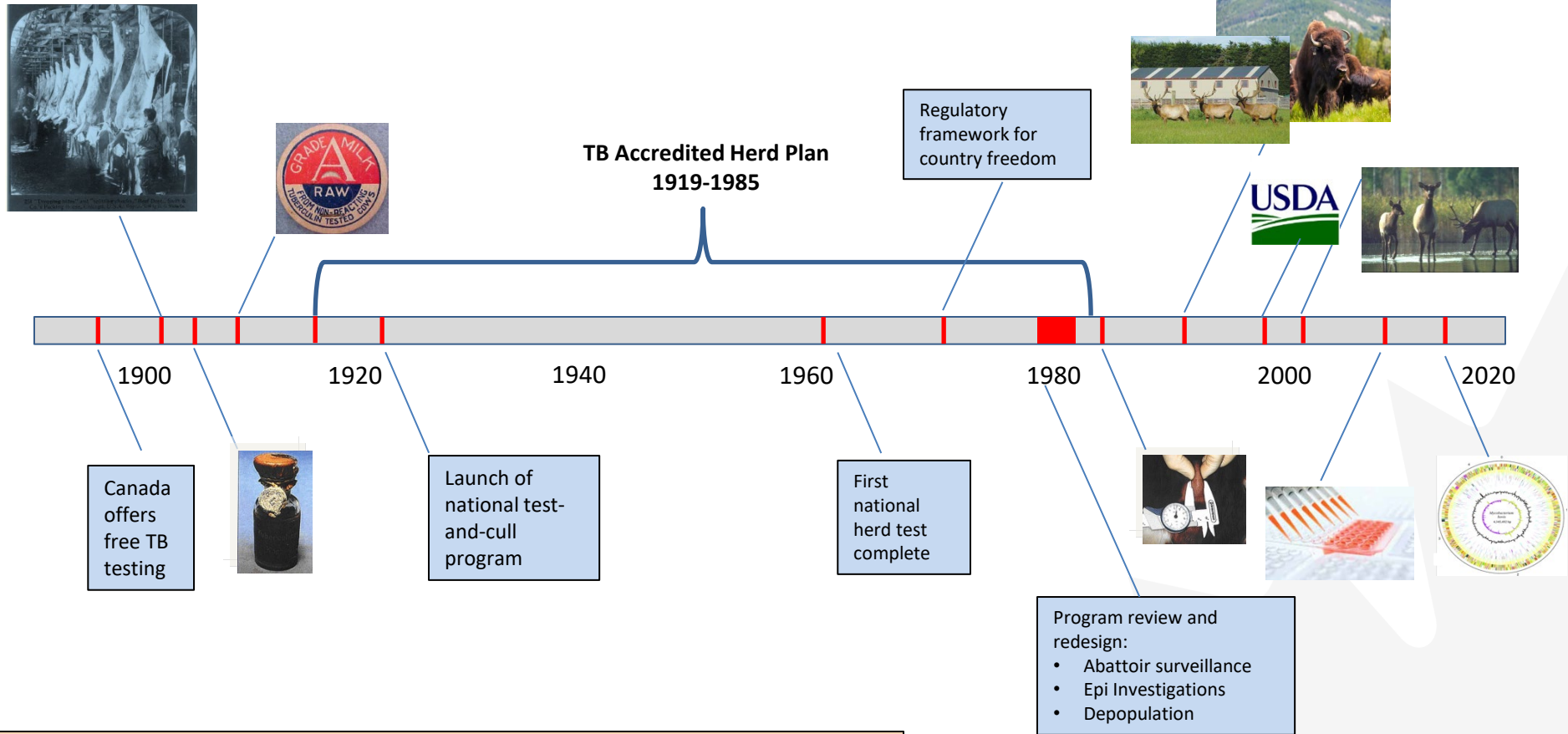
Bovine TB Program History

Drivers for Eradication

- **Public Health** - bTB can be transmitted to humans
 - *Early 20th Century: 6-30% of tuberculosis cases in humans were from cattle*
 - *Today : risk mostly eliminated except for occupational exposure*
- **Animal Health** - in livestock, companion animals and wildlife
 - *Livestock production benefits (milk and meat production) far exceed program costs*
- **Trade** – facilitates trade of animals and their products/by-products
 - *Many animal, animal product and by-product export certificates rely on bTB-free status*



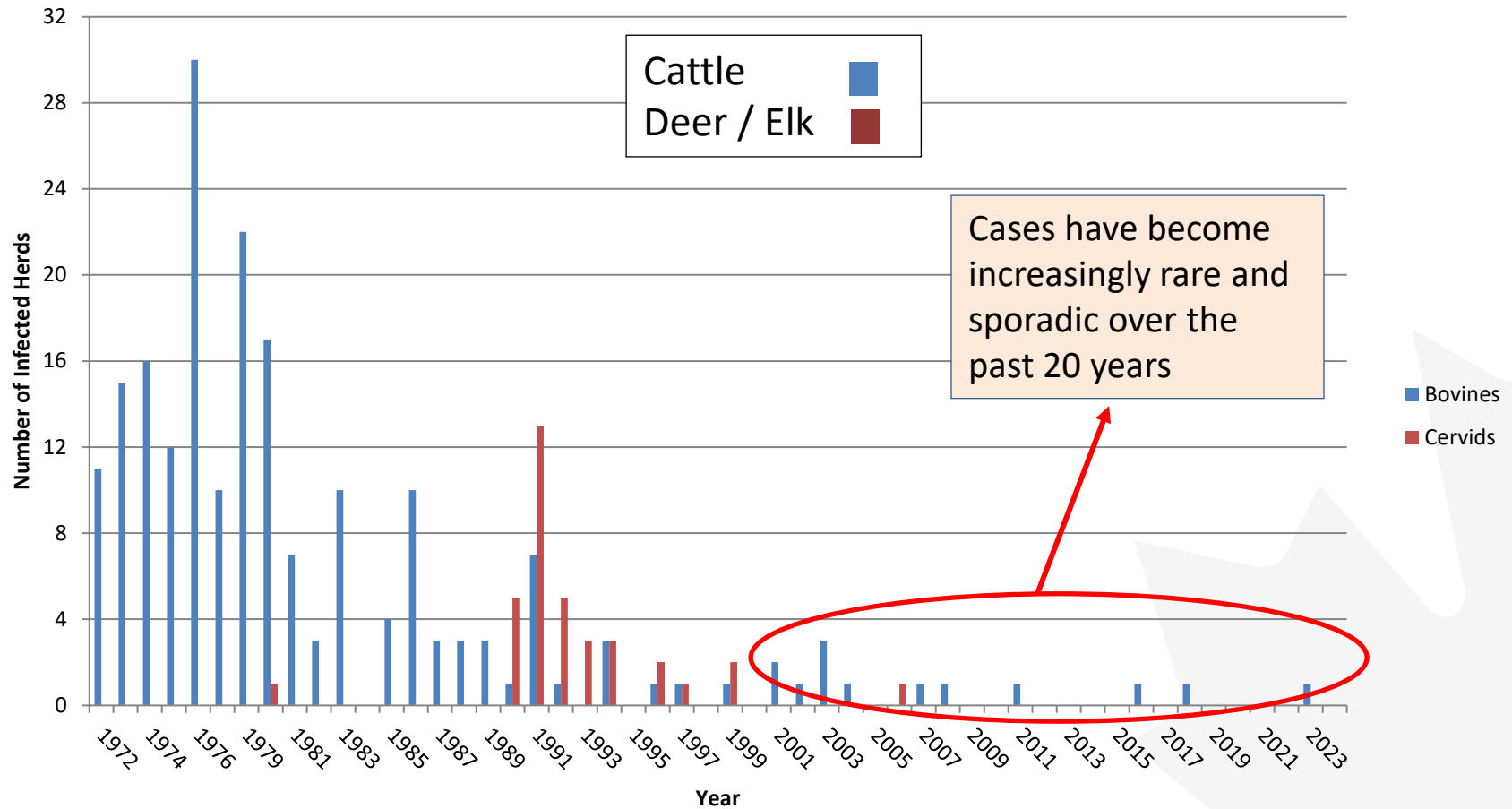
Bovine TB Program History



Successes:

- Herd Prevalence reduced to less than 0.1% by the 1960s, less than 0.01% by the 1980s, and virtually eliminated today
- Zoonotic *M. bovis* infection virtually eliminated
- Wildlife reservoir of disease in RMNP elk eliminated
- Economic benefits → millions of dollars per year, facilitates market access

Bovine TB Status



Bovine TB Status

Country Freedom



- **Domestic:** Provincially based system → TB-free status requires no cases identified during a 5-year surveillance period
 - All provinces TB-free in the late 1980s and have all remained TB-free since 2006



- **WOAH:** Requires testing all bovid/cervid herds regularly during a 3-year period and accepts a low disease presence (less than 0.1% of animals or 0.2% of herds)

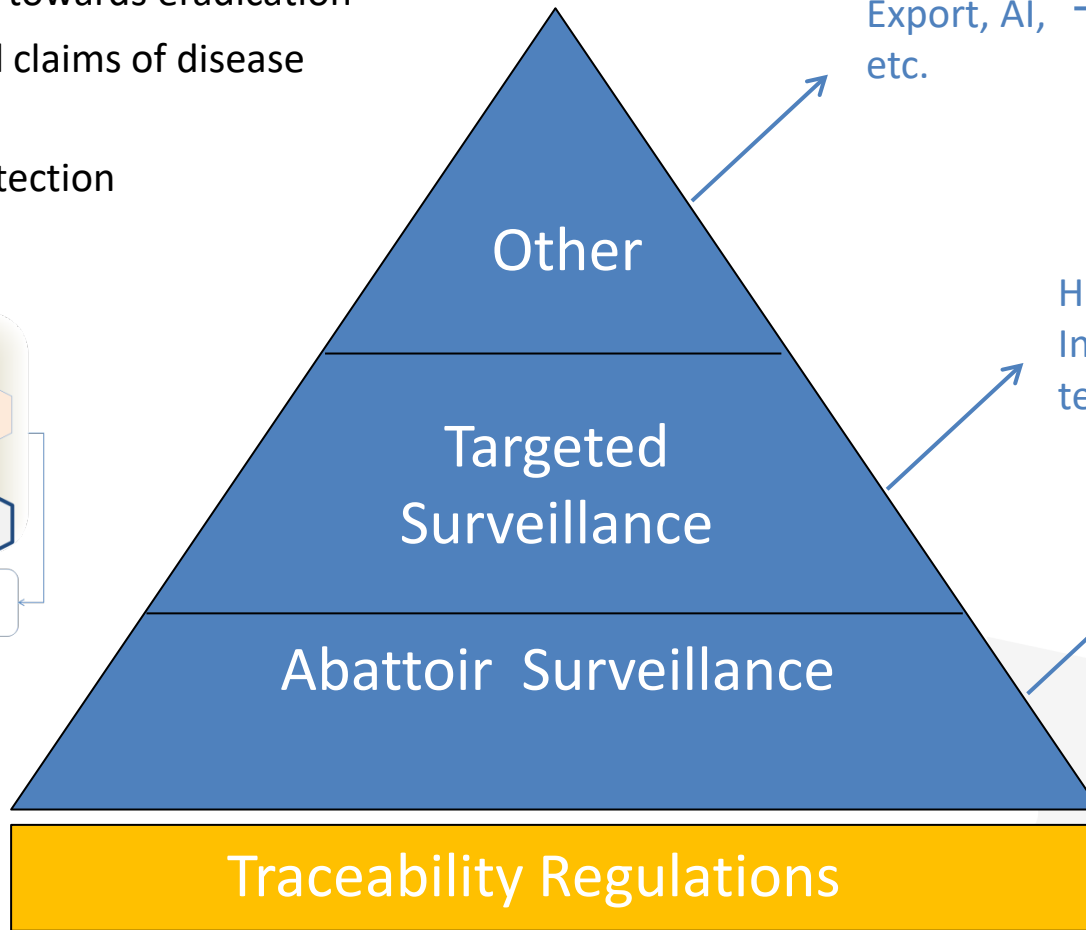
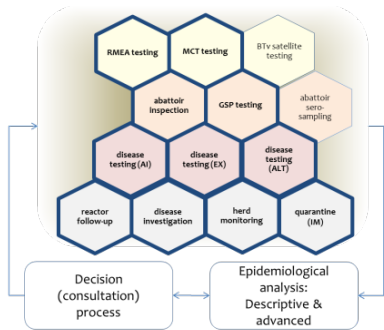
Maintaining Canada's TB Health Status

- **Program pillars:**



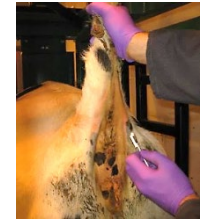
Bovine TB Surveillance

- Monitor progress towards eradication
- Supports national claims of disease freedom
- Provides early detection



Export, AI, etc. →

Lab Testing



↑ Live-animal testing

High Risk Areas, Disease Investigations, Cervid testing

Granuloma Submissions



↓ Lab Testing

Bovine TB Surveillance



Year	Abattoir Surveillance		Ante- Mortem Surveillance			
	Cattle Slaughtered	GSP Submissions	Export	AI	DI	HRA
2015	2,397,079	317	133	704	12,560	4,000
2016	3,076,959	352	117	670	48,866	N/A
2017	2,984,554	310	266	521	8,697	N/A
2018	3,161,572	406	245	839	19,491	N/A
2019	3,482,277	356	2,545	509	24,669	N/A
2020	3,428,366	132	1,874	2,319	1,556	N/A
2021	3,169,675	152	1,609	2,636	1,486	N/A
2022	3,156,955	235	2,650	2,672	1,630	N/A
Total	24,857,437	2,260	9,439	10,870	118,955	4,000

Bovine TB Surveillance

Preventive Veterinary Medicine 134 (2016) 145–152



ELSEVIER

Contents lists available at [ScienceDirect](#)

Preventive Veterinary Medicine

journal homepage: www.elsevier.com/locate/prevetmed



Assessing the sensitivity of bovine tuberculosis surveillance in Canada's cattle population, 2009–2013



Farouk El Allaki^{a,*}, Noel Harrington^b, Krista Howden^c

^a Canadian Food Inspection Agency, Animal Health Science Division, 3200 Sicotte Street, PO Box 5000, Saint-Hyacinthe, Quebec J2S 7C6, Canada

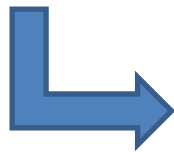
^b Canadian Food Inspection Agency, Animal Health, Welfare & Biosecurity Division, 59 Camelot Drive, Ottawa, Ontario K1A 0Y9, Canada

^c Canadian Food Inspection Agency, Animal Health Science Division, 8403 Coronet Road NW, Edmonton, Alberta T6E 4N7, Canada

A high probability that disease will be detected in Canada if present at very low levels in the population ($\geq 0.00028\%$)

Bovine TB Disease Investigation

- **When surveillance activities suggest the possibility of disease**
 - Granuloma Submission Program
 - Laboratory diagnosis of Mycobacteriosis, Mycobacteriosis suspect
 - On-farm skin testing
 - Reactors to live-animal screening tests
 - Clinical disease investigation
 - E.g., veterinary diagnostic labs, private veterinarians



- Tracing herd(s) of origin
- Movement restrictions
- Epidemiological investigation
- Herd testing
- Confirmatory testing

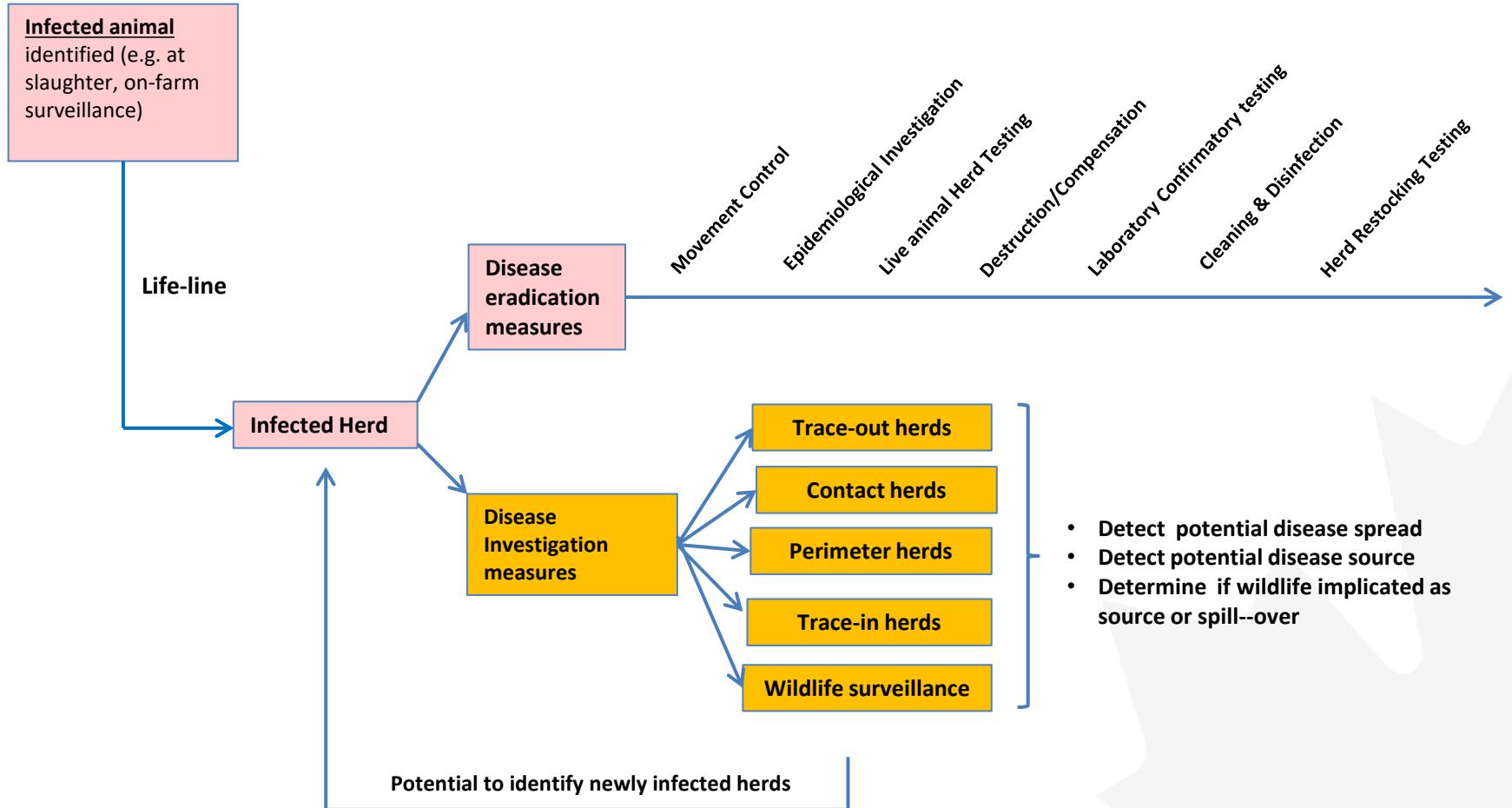
Infection confirmed



Response

Bovine TB Case Response

Hazards Specific Plan: Overview of a bovine TB Response



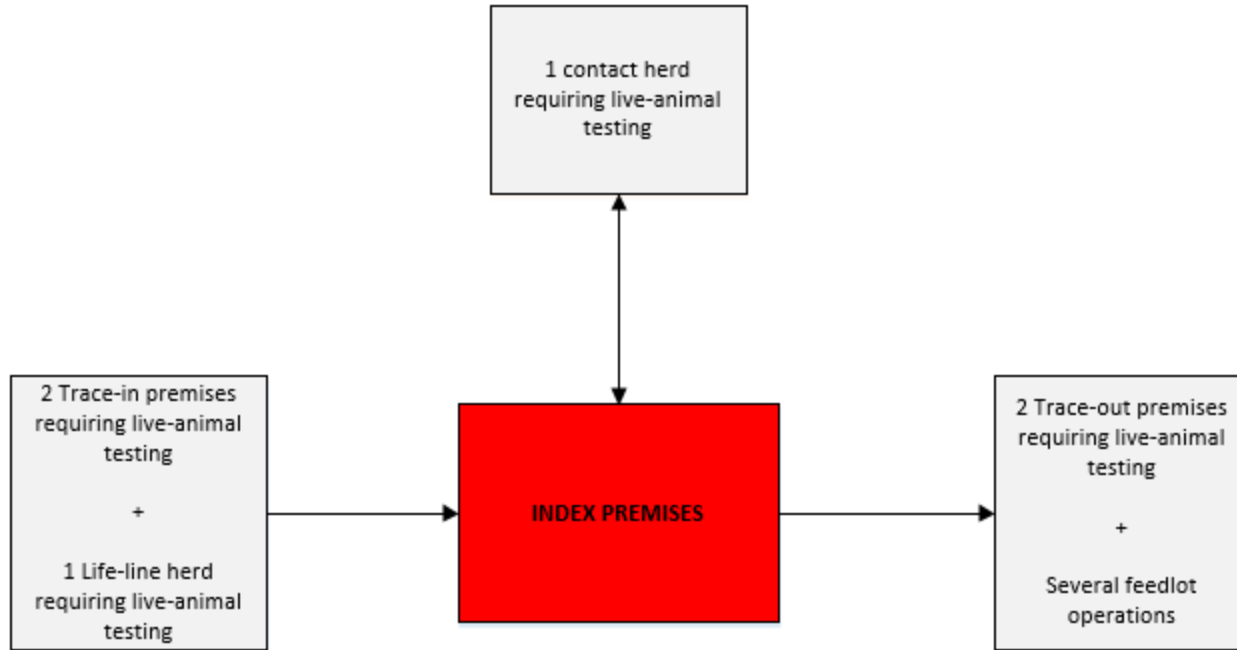


2018 Response

Reason for Investigation	Number of Herds	Animals Live Tested ^a	Number of Tests Applied ^b	Enhanced Post-mortem Sampled	M. bovis Detected
Index Farm	1	639	639	27 ^c	4 ^c
Direct Contact ^d	9	10,883	11,711	44	0
Trace-out Breeding Herds ^d	6	4,266	5,875	142	0
Trace out Feedlots	13	0	0	47 ^e	0
Trace In Herds	12	7,279	7,279	27	0
Restock Testing	1	218	218	0	0
Total Number	42	23,285	25,722	287	4

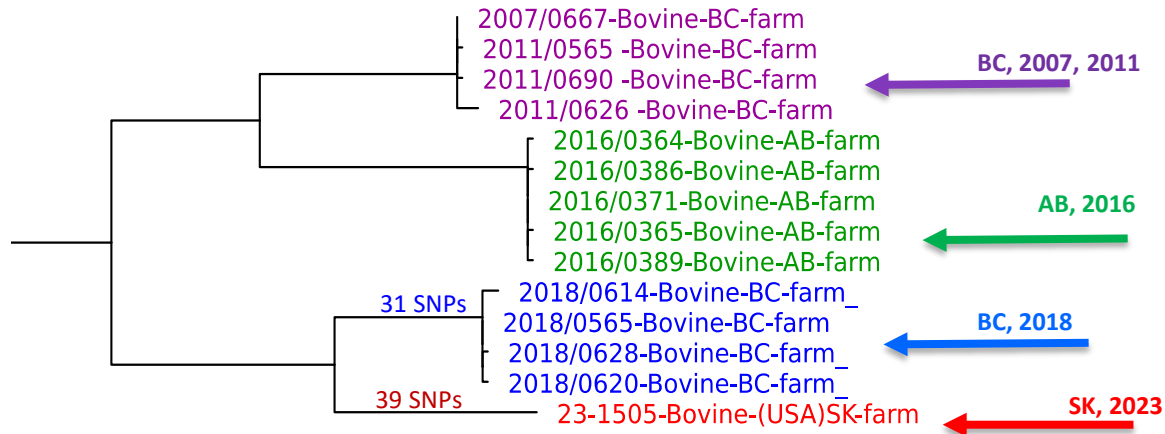


2023 detection



*Accurate as of October 12, 2023. Trace work continues

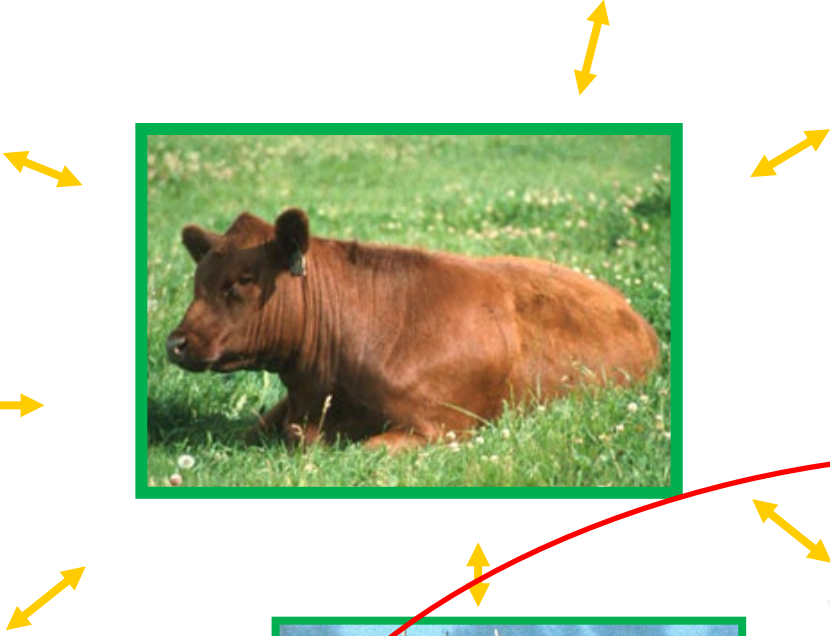
- The isolate *M. bovis* 23-1505 is genetically different from *M. bovis* isolates observed in Canada to date (1985-2022).



- The isolate *M. bovis* 23-1505 differs by >60 SNPs from isolates within the most closely related cluster.

Note: Difference ≤5 SNPs = common exposure
Difference >5 SNPs = separate introduction events

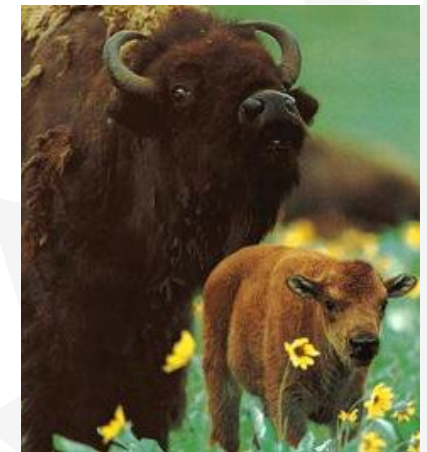
Wildlife Reservoir Management



Wildlife Reservoir Management



Wood Buffalo National Park



Parks Canada

Wildlife Reservoir Management



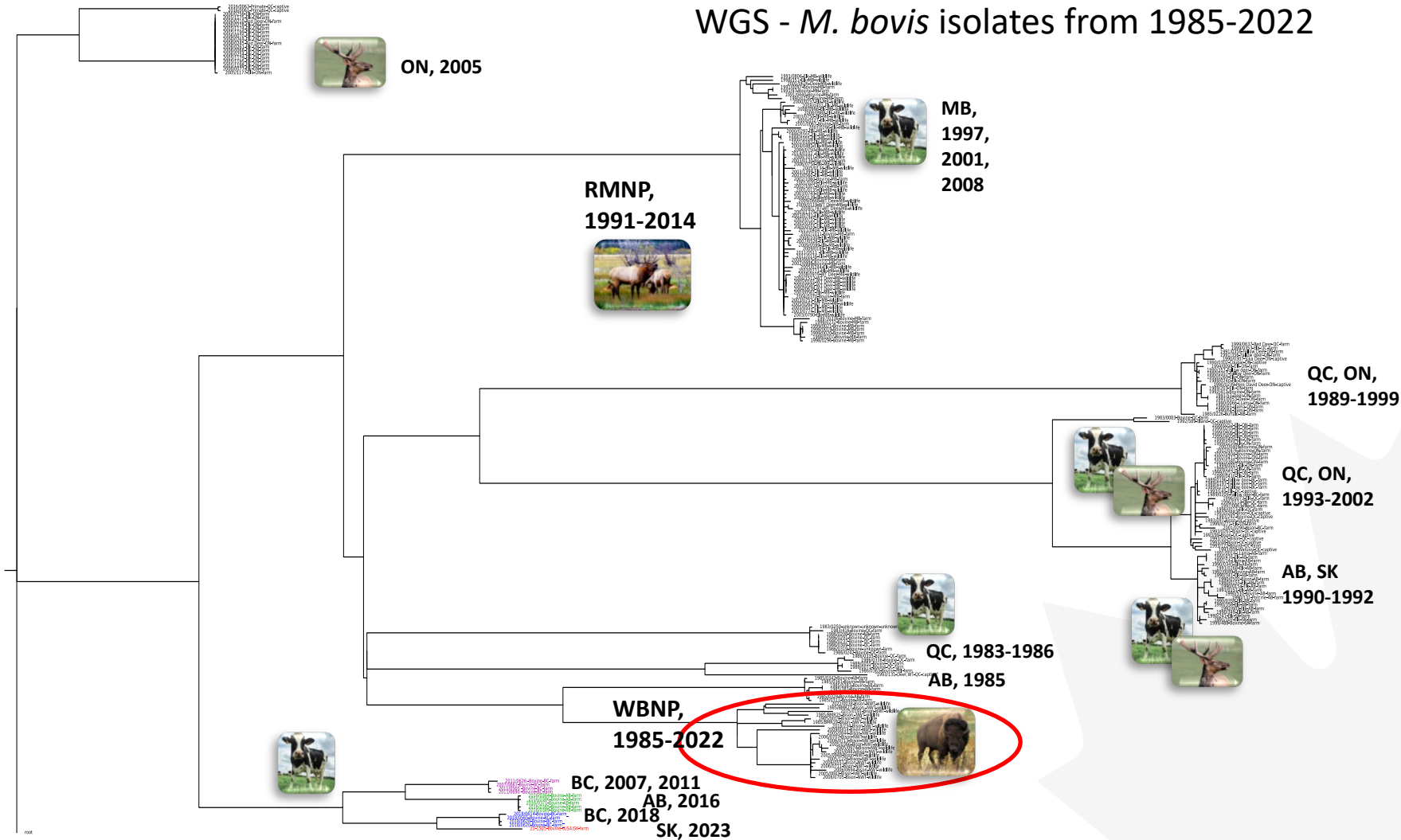
Riding Mountain National Park & Riding Mountain Eradication Area (RMEA)

- RMEA established in 2003
 - Requirement for TB testing of breeding cattle from MB for export to US
- Last case of bovine TB in livestock herd detected in 2008
- Last case of bovine TB identified in wild cervid in 2014
- Targeted on farm surveillance ended in 2016
- USDA eliminated TB testing requirements on Manitoba's breeding cattle and bison (July 1, 2018)
- RMEA dissolved in 2019
- Risk mitigation activities continue (e.g. barrier fencing, education, wildlife population reduction)
- Ongoing surveillance



Wildlife Reservoir Management

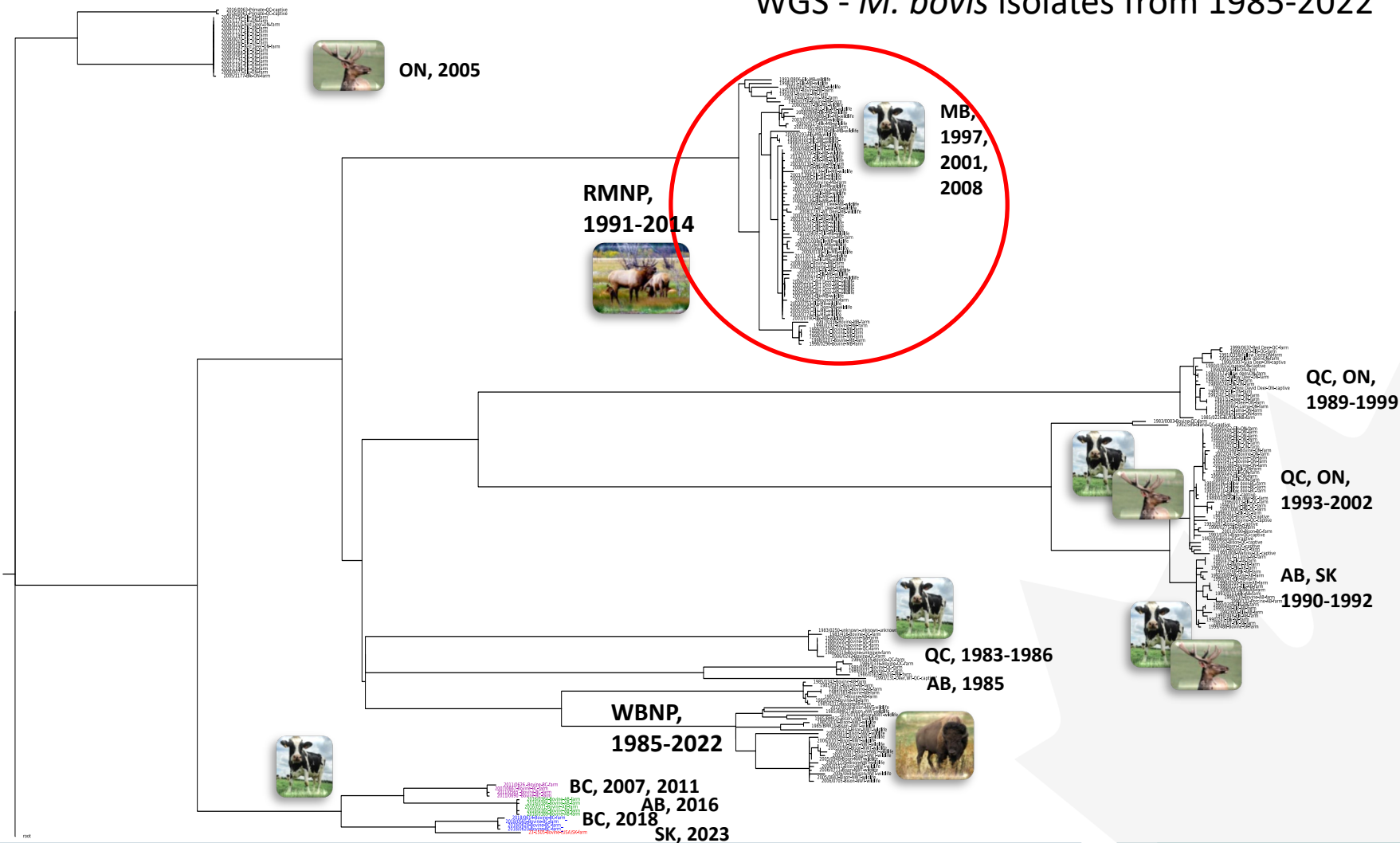
WGS - *M. bovis* isolates from 1985-2022





Wildlife Reservoir Management

WGS - *M. bovis* isolates from 1985-2022



Summary

- Canada has been engaged in longstanding bovine TB eradication activities benefiting public health, animal health and market access
- Cases have become increasingly rare and sporadic over the last 20 years and Canada meets domestic freedom criteria
- Surveillance, disease investigation, case response and reservoir management protects Canada's TB health status by detecting and responding to any re-emergence of the disease

Canada 