

# THE ONE HEALTH TOOLKIT: WHAT DOES THIS LOOK LIKE IN THE FACE OF COVID-19?

*Canadian Animal Health Surveillance System &  
Community for Emerging and Zoonotic Diseases*

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One Health Consultant

November 2, 2022

Canadian  
Animal  
Health  
Surveillance  
System



**CAHSS**

**CEZD**  
COMMUNITY FOR EMERGING  
AND ZOOONOTIC DISEASES

# Territory Acknowledgment



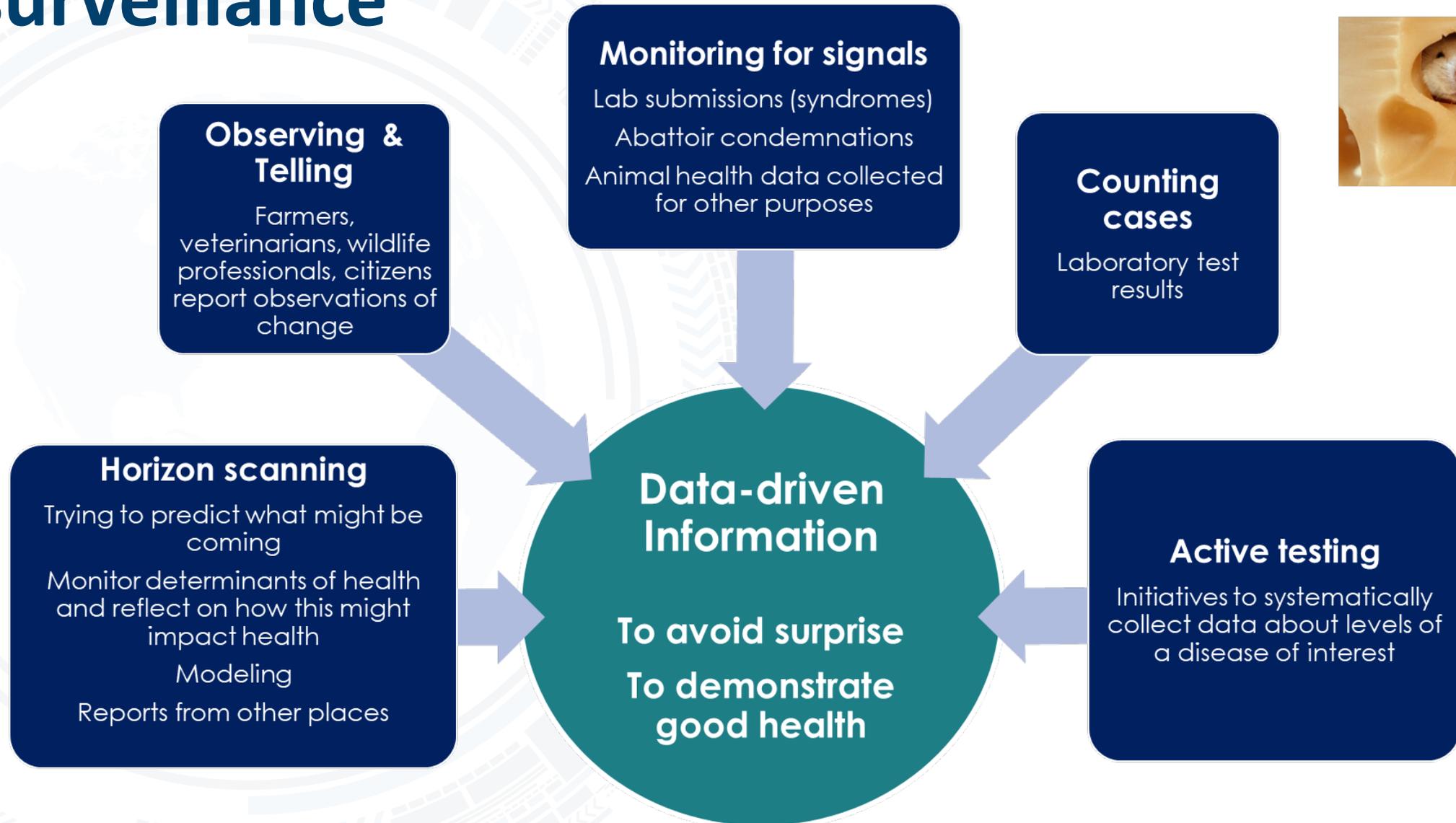
I would like to acknowledge that I am a settler and uninvited guest on the territory of the Stó:lō, Semiahmoo, W̱SÁNEĆ, Kwantlen, and s̓cəwaθenaʔt̓ təməx<sup>w</sup> Nations.

# Presentation Outline

- Importance of robust surveillance systems
- Canadian Animal Health Surveillance System (CAHSS)
- Community for Emerging and Zoonotic Diseases (CEZD)
- Network collaborations CAHSS and CEZD
- One Health tools for collaborative surveillance
- Call to action
- Q&A



# Delivering robust & resilient national surveillance



# Canadian Animal Surveillance System

Observe | Connect | Detect | Protect

Canadian  
Animal  
Health  
Surveillance  
System



CAHSS

# About CAHSS

## ANIMAL HEALTH CANADA

### PROJECTS

In addition to hosting our annual animal health and welfare FORUM we are proud to support five exceptional multi-year initiatives:



Advancing  
Animal Welfare  
and Public Trust  
Through Codes of  
Practice (NFACC)

**AHEM**  
Animal Health Emergency Management Project

Animal Health  
Emergency  
Management  
Project (AHEM)

**ASF** 

African Swine  
Fever (ASF)  
Project

Canadian  
Animal  
Health  
Surveillance  
System  **CAHSS**

Enhance  
Collaboration,  
Data Integration,  
Analysis and  
Reporting (CAHSS)



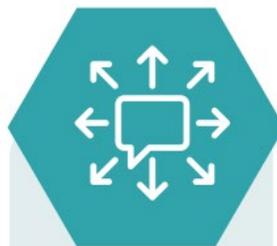
Canadian  
Livestock  
Transport  
Program (CLT)

# About CAHSS

- CAHSS's work is to support **effective, responsive, and integrated animal health surveillance** in Canada
- CAHSS has **four work areas**:



**Work Area 1:**  
Building people  
networks



**Work Area 2:**  
Information  
sharing



**Work Area 3:**  
Building national  
capacity



**Work Area 4:**  
Collaborative  
surveillance  
projects



# CAHSS' Network of Networks



Canadian Wildlife Health Cooperative



Canadian Food Inspection Agency



Canadian Swine Health Intelligence Network



Council of Chief Veterinary Officers



Canadian Integrated Program for Antimicrobial Resistance Surveillance



Animal Health Laboratories



Community for Emerging and Zoonotic Diseases



Universities

**RAIZO**

RÉSEAU D'ALERTE ET D'INFORMATION ZOOSANITAIRE



**ONTARIO ANIMAL HEALTH NETWORK**



Western Canadian Animal Health Network



Canadian Animal Health Surveillance System



**CAHSS**

# CAHSS' Network of Networks





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*Identifying emerging risks  
through collective intelligence*

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# What is CEZD?

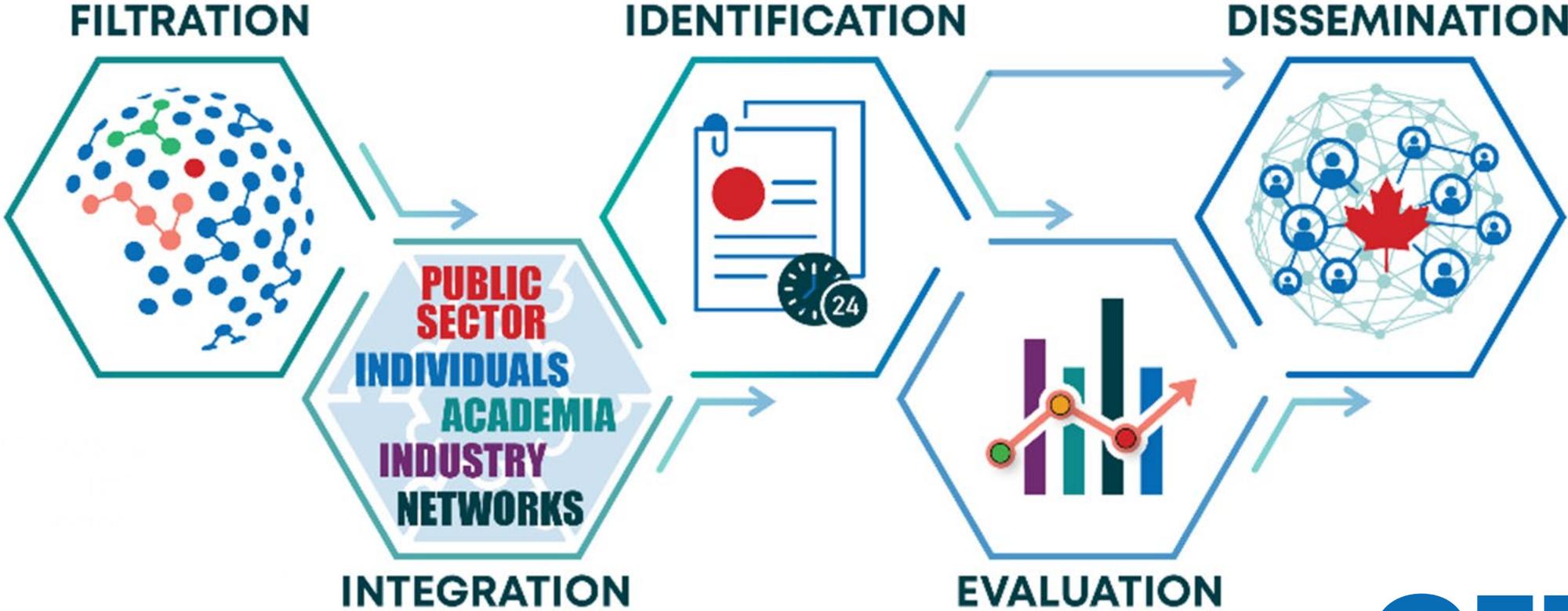
- CEZD is a Canadian virtual multidisciplinary network
- Provide early warning notifications of emerging and zoonotic disease threats through integration of automated information mining and multidisciplinary member perspectives
- Facilitate further discussion, analysis and reporting as needed for relevant signals



# Why was CEZD Developed?

- To support Canada's animal early warning, preparedness and response capabilities for emerging and zoonotic diseases
- CEZD started as a project 2013-16, funded by the Canadian Safety and Security Program of the Department of National Defense
- Since the project phase, the community has collectively developed both our **capability (technology)** and **capacity (human network)** to produce early warning intelligence

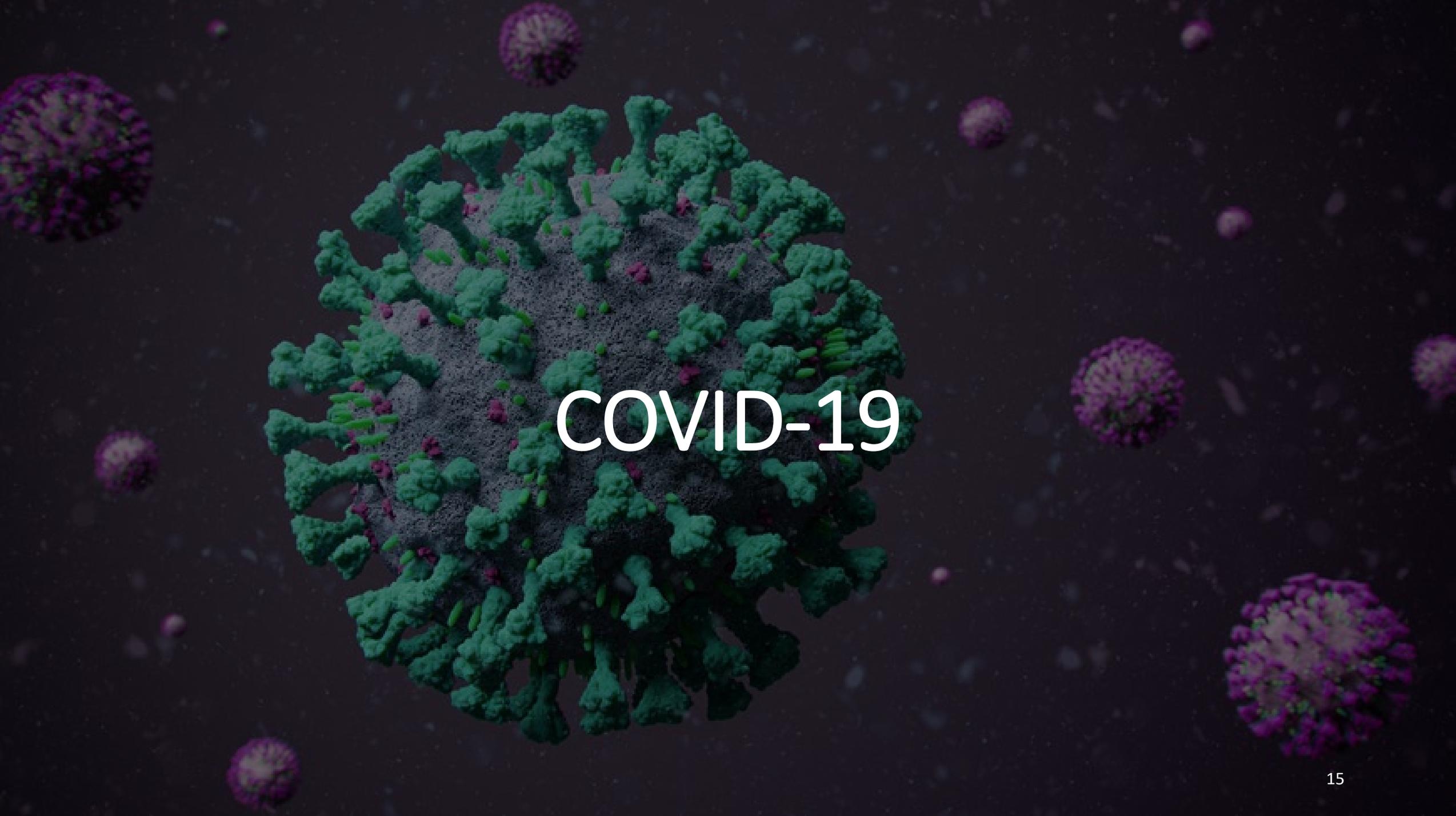
# How does CEZD work?



# Collaboration between CAHSS and CEZD

- CAHSS and CEZD have been working in **collaboration since 2016**
- Partnership has:
  - Broadened and deepened reach of both organizations
  - Expanded the scope of both organizations
  - CAHSS network discussions provide **important contextualization and increase value of intelligence** from a Canadian perspective
  - Created **centralized information hubs**
  - Allowed for **quick information and resource sharing**





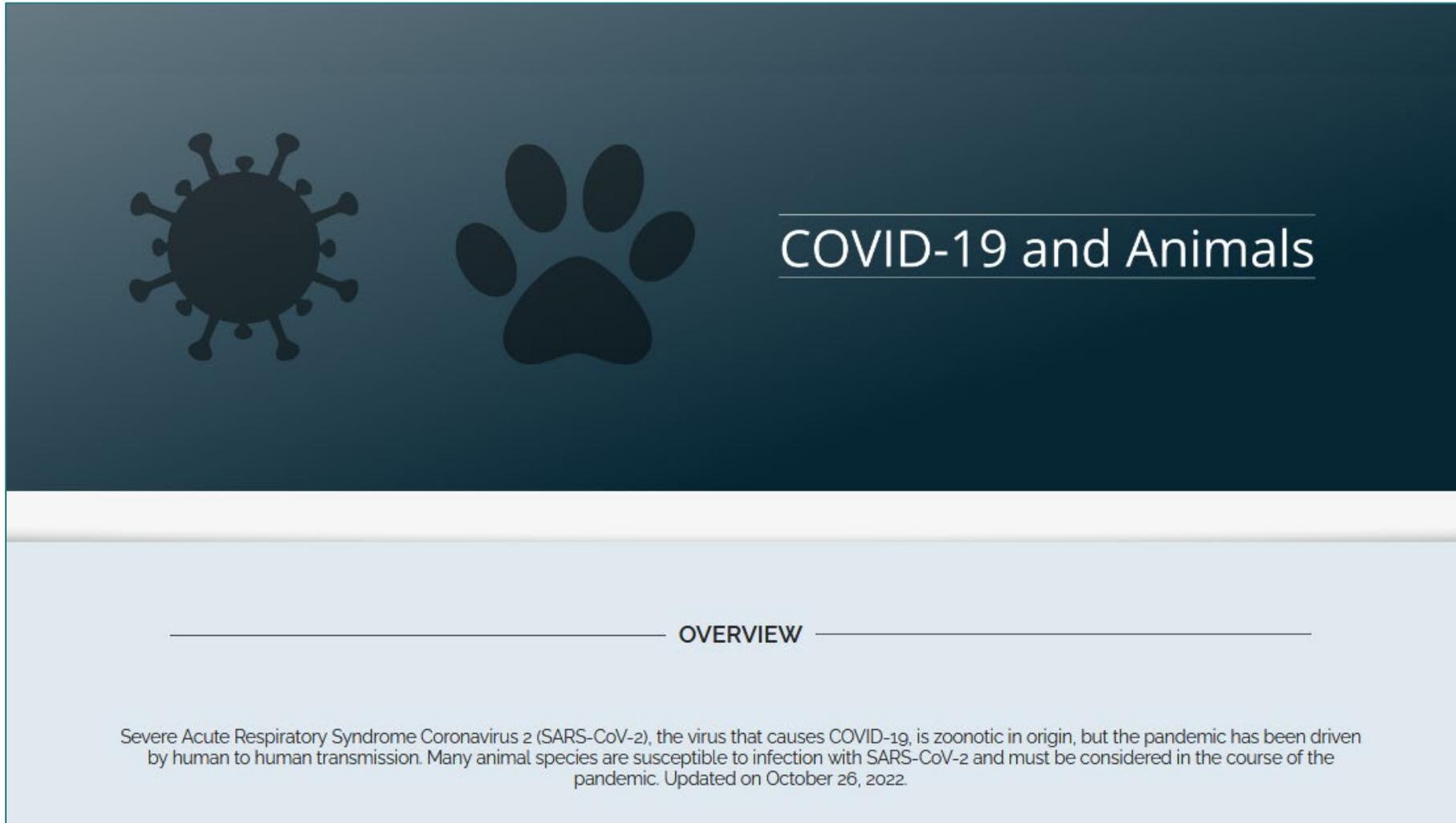
# COVID-19

# One Health Tools

- **SARS-CoV-2 Specific tools**
  - SARS-CoV-2 Species Susceptibility Information Page
  - SARS-CoV-2 Animal Case Dashboard
- **General Tools**
  - One Health Initiatives Inventory
  - CAHSS Resource Library
  - CAHSS Surveillance Initiatives Library
  - CEZD Reports Library



# SARS-CoV-2 species susceptibility information page



COVID-19 and Animals

OVERVIEW

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19, is zoonotic in origin, but the pandemic has been driven by human to human transmission. Many animal species are susceptible to infection with SARS-CoV-2 and must be considered in the course of the pandemic. Updated on October 26, 2022.

# SARS-CoV-2 species susceptibility information page

## FARMED ANIMALS



### ● Natural Infection

American mink (*Neovison vison*) are susceptible to SARS-CoV-2 infection. There have been a number of confirmed transmissions of SARS-CoV-2 from workers on mink farms to farmed mink, where the virus has then spread among the mink population. In addition, it has been demonstrated that the virus in mink can be passed back to humans.



### ▲ Experimental Infection

Several other farmed animal species have been found to be susceptible to experimental infection with SARS-CoV-2, including alpacas (*Lama pacos*), cattle (*Bos taurus*), goats (*Capra hircus*), New Zealand white rabbits (*Oryctolagus cuniculus*), sheep (*Ovis aries*), and swine (*Sus scrofa*).

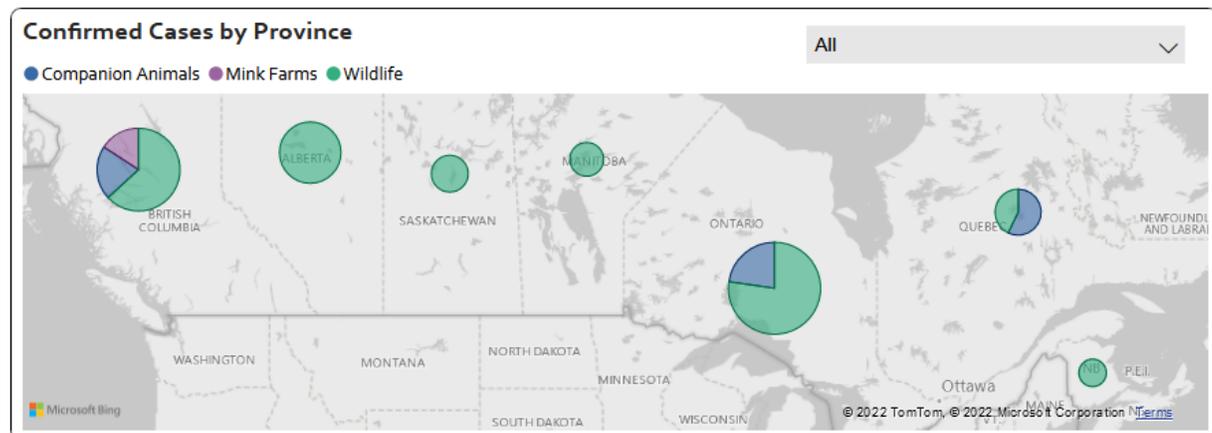


### ○ Not Susceptible to Experimental Infection

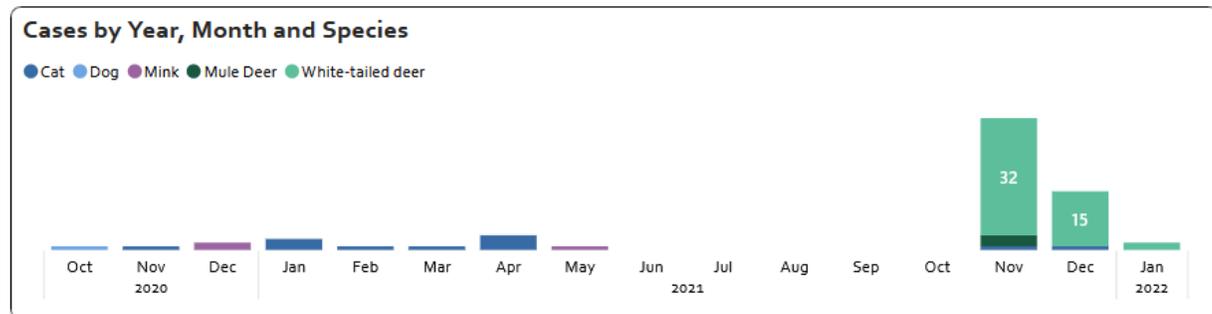
A number of farmed animal species have been found to not be susceptible to experimental infection with SARS-CoV-2, including chickens (*Gallus gallus domesticus*), ducks (Pekin and Shaoxing) (*Anas platyrhynchos domesticus*), geese (Snow, White Chinese) (*Anser caerulescens caerulescens*, *Anser cygnoides*), Japanese quail (*Coturnix japonica*), and turkeys (*Meleagris gallopavo*).

# SARS-CoV-2 Dashboard

## SARS-CoV-2 Confirmed Cases in Animals



Surveillance is not occurring/completed in all provinces at this time. Therefore, the absence of cases in a province or species does not mean the absence of infection.



- Environment and Climate Change Canada
- Canadian Food Inspection Agency
- Public Health Agency of Canada
- Parks Canada
- Defence Research and Development Canada
- Canadian Wildlife Health Cooperative
- University of Saskatchewan
- University of Guelph
- Université de Montréal
- University of Calgary
- Sunnybrook Research Institute
- Government of British Columbia
- Government of Alberta
- Government of Saskatchewan
- Government of Manitoba
- Government of Ontario
- Government of Quebec
- Government of New Brunswick
- Government of Nova Scotia
- Government of Newfoundland and Labrador
- Government of Yukon

<https://cahss.ca/cahss-tools/sars-cov-2-dashboard>

# SARS-CoV-2 Dashboard

Canadian Animal Health Surveillance System  
@CahssCanada

Our CAHSS website houses the new [#SARS-CoV-2 in #Animals](#) Dashboard that displays cases of SARS-CoV-2 infections in animals in Canada, which are confirmed by the CFIA NCFAD. This dashboard is created by the CFIA and other One Health partners. Link: [cahss.ca/cahss-tools/sa...](#)

**SARS-CoV-2 Confirmed Cases in Animals**

13 3 9  
Companion Animals Milk Farms Wildlife

Confirmed Cases by Province

Date of Sampling	Species	Province
2021-12-02	Cat	Quebec
2021-12-01	White-tailed deer	Ontario
2021-11-23	Cat	Quebec
2021-11-16	White-tailed deer	Saskatchewan
2021-11-08	White-tailed deer	Quebec
2021-11-07	White-tailed deer	Quebec
2021-11-06	White-tailed deer	Quebec
2021-11-04	White-tailed deer	Ontario
2021-11-03	White-tailed deer	Ontario
2021-09-02	Wink	British Columbia

Metric	Value
Impressions	20,916
Engagements	421
Detail expands	99
New followers	0
Profile visits	19

<https://twitter.com/CahssCanada>

# General Tools

Canadian  
Animal  
Health  
Surveillance  
System



CAHSS

**CEZD**  
COMMUNITY FOR EMERGING  
AND ZONOTIC DISEASES



# One Health Initiatives Inventory



The One Health Initiatives tool has been created with the support of the [Canadian Animal Health Surveillance System](#). The tool allows searching for One Health Initiatives in Canada, along with the ability to filter the initiatives by name, topic, scope, species, region, lead organization, and group type as well as by date range. A csv download function is available, so the information is more readily useable.

A [fillable form](#) is available for the addition of initiatives that may not yet be included.

Search:

From:

To:

Topic:

Region:

Species:

Primary Organization:

One Health Scope:

Group Type:

[Reset](#)

One Health Scope (1 selected) ▼

- Applied
- Education
- Intelligence
- Modelling
- Policy
- Research
- Risk Assessment
- Surveillance

<https://cezd.ca/resources/one-health>

Title	Start Date
<a href="#">Community for Emerging and Zoonotic Diseases</a> The Community for Emerging and Zoonotic Diseases (CEZD) is a Canadian virtual multidisciplinary network that includes partners from provincial, federal and municipal governments, industry, and academia in areas of public, animal and environmental health. CEZD was developed to support Canada's animal early warning, preparedness and response capabilities needs regarding emerging and zoonotic diseases. Through the gathering of information, analysis, and the generation and distribution of timely intelligence reports, Canada is now better able to anticipate, manage, and mitigate pending disease threats on its society, economy, environment, and animal resources. Our community has the collective expertise to identify, understand, and assess the risks associated with emerging situations. We strive to create a safe and respectful environment where each one of our individual strengths can be shared at our virtual round table.	Jan 01, 2013

# One Health Initiatives Fillable Form

**One Health**

Initiative\*  

Link to Website (optional)

Upload file(s) (PDF, Word) (optional)

Summary\* 

"Railway", H... Sl... Normal - **B** *I* U  

# Resource Library

## What's in the library

Animal Type

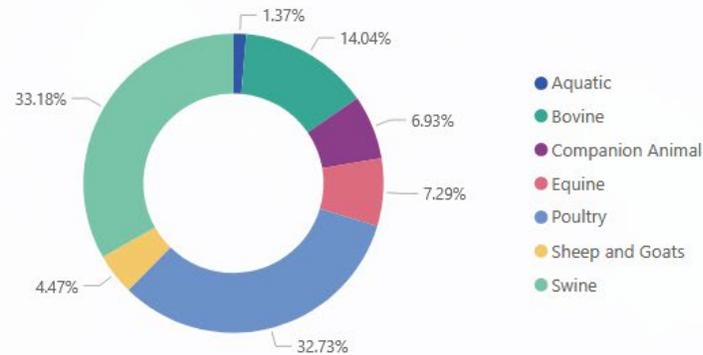
Disease Agent

Organization

Region

Topic

Animal Type



258

Total Resources

EXPORT TO .CSV

### BC Ministry of Agriculture Animal Health Monitor - January 2022 Newsletter

Jan/02/2022

The Animal Health Monitor is a collaborative work by the professional staff at the Animal Health Centre. This newsletter includes articles about animal diseases occurring in the province, current issues in animal health, case reports, updates on the scope of diagnostic services, expertise, programs and support available at the Animal Health Centre, information about food safety, biosecurity and issues that are affecting or may affect local animal, human and environmental health.

The newsletter includes some of the following topics:

- Premises ID Registration To Become Mandatory in BC
- Post Mortem Neurological Examination
- Renal Tubulonephritis with Microabscessation in a 3 day old Veal Calf
- Pulmonary Nodules with Hilar Lymphadenomegaly in a 14 year old Thoroughbred Gelding
- Bovine Viral Diarrhea Mucosal Disease in Two Breeding Age Dairy Heifers
- Floods: Spoiled Feed Management
- B.C.'s response to floods and mudslides
- Disease Risks for Dairy Cattle Exposed to Flood Waters

Animal Type: Bovine, Equine, Other

Disease Agent: Botulism (Clostridium botulinum), Bovine viral diarrhoea virus, Pseudomonas, Salmonella, Salmonella Dublin

Disease Agent Type: Other: Virus

Media Type: Newsletter

Organization: BC Government

Production System: Commercial, Large-scale, Smallholding, Hobby/Pet, Other

Region: British Columbia

### Protecting your horse from equine infectious anemia (EIA)

Aug/08/2022

Infographic that provides information for horse owners on how to protect their horses from equine infectious anemia. As there is no vaccine or treatment for EIA, the best way to protect horses is through regular testing and strict biosecurity measures.

Animal Type: Equine

Disease Agent: Equine infectious anemia

Frequency: Other

Media Type: Article/ infographic

Organization: Canadian Animal Health Surveillance System (CAHSS)

Production System: Hobby/Pet

Region: National

- > Animal Type - (1/25)
- > Disease Agent - (0/105)
- > Disease Agent Type - (0/12)
- > Organization - (0/28)
- > Region - (0/16)
- > Production System - (0/7)
- > Media Type - (0/19)
- > Frequency - (0/7)

From:

To:

Search

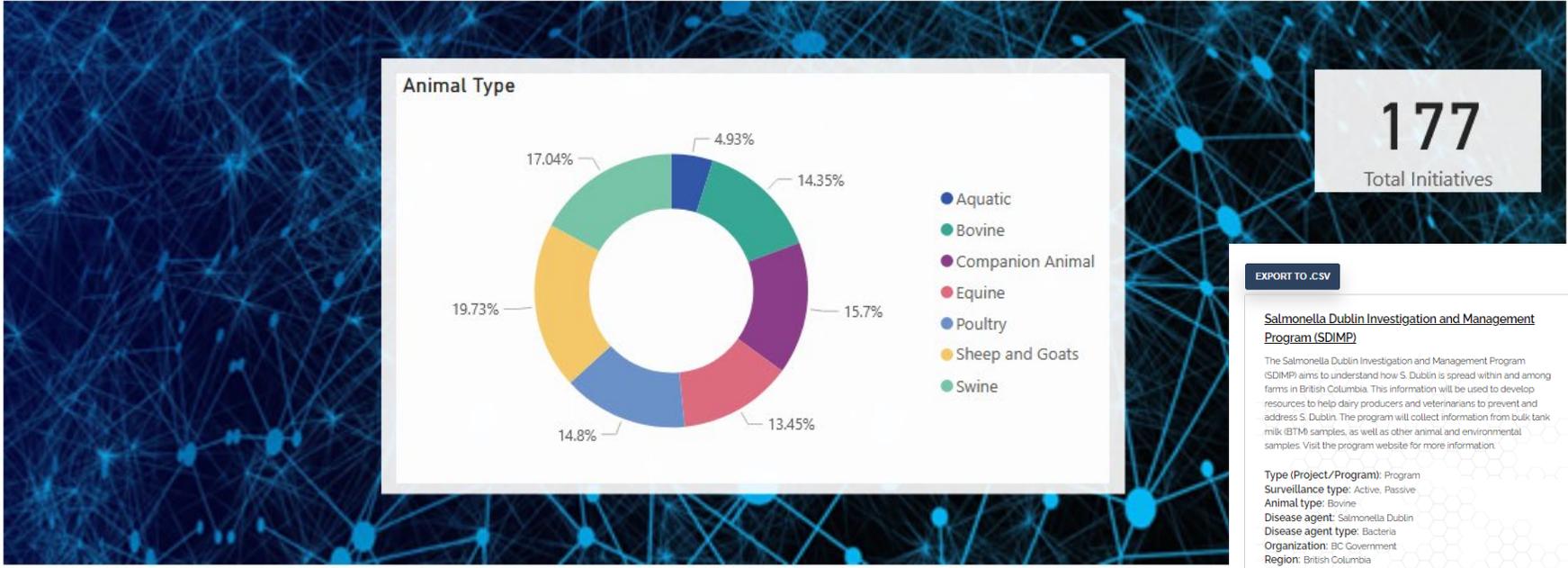
SEARCH [Reset](#)

<https://cahss.ca/cahss-tools/document-library>

# Surveillance Initiatives Library

## What's in the library

- Animal Type
- Disease Agent
- Organization
- Region
- Topic
- Production System



177  
Total Initiatives

EXPORT TO .CSV

### Salmonella Dublin Investigation and Management Program (SDIMP)

The Salmonella Dublin Investigation and Management Program (SDIMP) aims to understand how S. Dublin is spread within and among farms in British Columbia. This information will be used to develop resources to help dairy producers and veterinarians to prevent and address S. Dublin. The program will collect information from bulk tank milk (BTM) samples, as well as other animal and environmental samples. Visit the program website for more information.

**Type (Project/Program):** Program  
**Surveillance type:** Active, Passive  
**Animal type:** Bovine  
**Disease agent:** Salmonella Dublin  
**Disease agent type:** Bacteria  
**Organization:** BC Government  
**Region:** British Columbia  
**Topic:** Animal welfare, Production-limiting, Zoonotic

### Canadian Dairy Network of Antimicrobial Stewardship and Resistance (CaDNetASR)

Antimicrobial use data is collected annually on 150 dairy farms across Canada. On each farm, manure and bulk tank milk samples are taken and tested for antimicrobial resistance (AMR) levels. This data is used to assess the impact of AMR on animal health and animal welfare indicators, as well as trends in AMR of selected pathogens on dairy farms.

Canadian Dairy Network of Antimicrobial Stewardship and Resistance (CaDNetASR) is a collaboration between Canada's five veterinary colleges (Faculty of Veterinary Medicine, University of Calgary; Western Canadian Veterinary College, University of Saskatchewan; Faculté De Médecine Vétérinaire, Université de Montréal; Ontario Veterinary College, University of Guelph; Atlantic Veterinary College, University of Prince Edward Island) and the Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS).

The goal of the Canadian Dairy Network for Antimicrobial Stewardship and Resistance (CaDNetASR) is to establish a sustainable, on-farm, surveillance system to measure antimicrobial use and the effectiveness of antimicrobial stewardship protocols and programs.

**Type (Project/Program):** Project  
**Surveillance type:** Active  
**Animal type:** Bovine  
**Disease agent type:** Bacteria  
**Organization:** Public Health Agency of Canada (PHAC)  
**Other organization:** Atlantic Veterinary College (AVC), Ontario Veterinary College (OVC), University of Calgary, Western College of Veterinary Medicine (WCVOM)  
**Region:** Canada-wide  
**Production system:** Commercial, large-scale  
**Topic:** Antimicrobial Use/ Resistance

- > Type (Project/Program) - (0/4)
- > Surveillance type - (0/4)
- > Animal type - (0/27)
- > Disease agent - (0/72)
- > Disease agent type - (0/13)
- > Organization - (0/39)
- > Other organization - (0/20)
- > Region - (0/16)
- > Production system - (0/7)
- > Topic - (0/16)
- > Media Type - (0/4)

From:

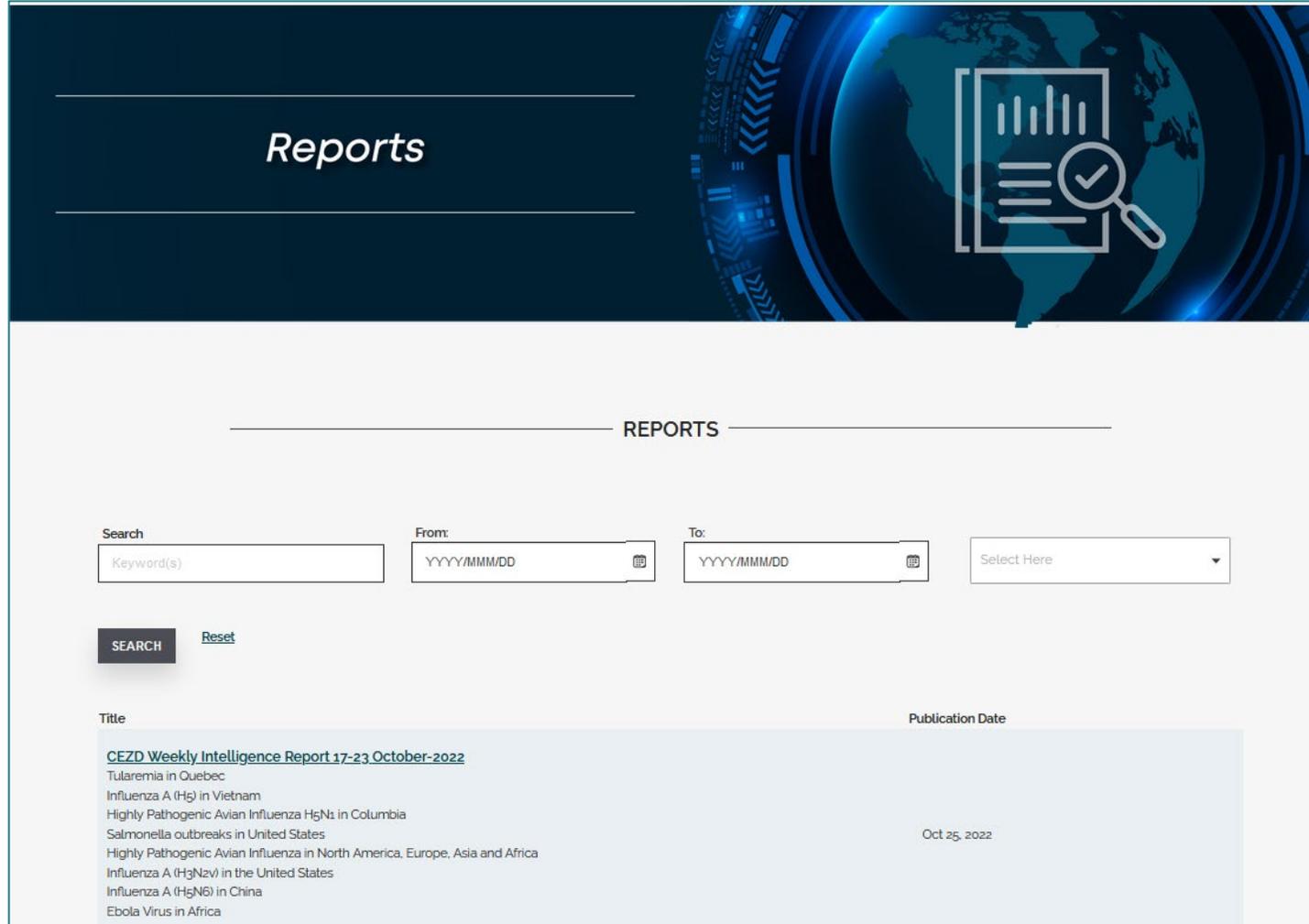
To:

Search

SEARCH [Reset](#)

<https://cahss.ca/cahss-tools/surveillance-initiative-library>

# CEZD Reports Library



The image shows a screenshot of the CEZD Reports Library website. At the top, there is a dark blue header with the word "Reports" in white, flanked by two horizontal lines. To the right of the header is a graphic of a globe with a magnifying glass over a document icon. Below the header, the word "REPORTS" is centered between two horizontal lines. Underneath, there is a search interface with four input fields: "Search" (containing "Keyword(s)"), "From:" (containing "YYYY/MMM/DD"), "To:" (containing "YYYY/MMM/DD"), and a dropdown menu labeled "Select Here". Below these fields are a "SEARCH" button and a "Reset" link. The main content area displays a table with two columns: "Title" and "Publication Date". The table contains one row of data with a list of report titles and the date "Oct 25, 2022".

**REPORTS**

Search: Keyword(s)    From: YYYY/MMM/DD    To: YYYY/MMM/DD    Select Here

**SEARCH**    [Reset](#)

Title	Publication Date
<a href="#">CEZD Weekly Intelligence Report 17-23 October-2022</a> Tularemia in Quebec Influenza A (H5) in Vietnam Highly Pathogenic Avian Influenza H5N1 in Columbia Salmonella outbreaks in United States Highly Pathogenic Avian Influenza in North America, Europe, Asia and Africa Influenza A (H3N2v) in the United States Influenza A (H3N2) in China Ebola Virus in Africa	Oct 25, 2022

<https://cezd.ca/reports>

# CEZD Intelligence Reports



## WEEKLY INTELLIGENCE REPORT

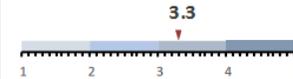
October 17<sup>th</sup> – October 23<sup>rd</sup> 2022

SUMMARY: RELEVANT SIGNALS (includes all signals rated  $\geq 3.0$ )

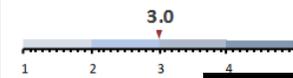
### Highly Pathogenic Avian Influenza

- Over the last week, Canada has reported outbreaks of HPAI in commercial poultry in: **British Columbia**(1), **Manitoba**(1), **Saskatchewan**(1), **Ontario**(1), and **Quebec**(3); in non-commercial poultry in: **Saskatchewan**(2); and in non-commercial non-poultry in: **Alberta**(2)
- Spain** has reported an outbreak of avian influenza A(H5N1) in a mink farm in **A Coruña**; the mink were tested following regular surveillance procedures after the occurrence of sick mink in the farm with respiratory symptoms and an unusual increase in deaths of the animals

[Read More](#)



[Read More](#)



<https://cezd.ca/reports/cezdweeklyintelligencereport1723october2022>



Community for Emerging and Zoonotic Dis... @CEZD\_C... · Oct 26

CEZD Weekly Intelligence Report 17-23 Oct 2022 includes: Tularemia in Quebec, Influenza A H5 in Vietnam, H3N2v in the US, H5N6 in China, HPAI in North and South America, Europe, Asia and Africa, Ebola-Sudan in Africa, Salmonella in the United States

Link: [bit.ly/3f7b4fi](https://bit.ly/3f7b4fi)



You and WesternCanadianAnimalHealthNetwork



4



6

27

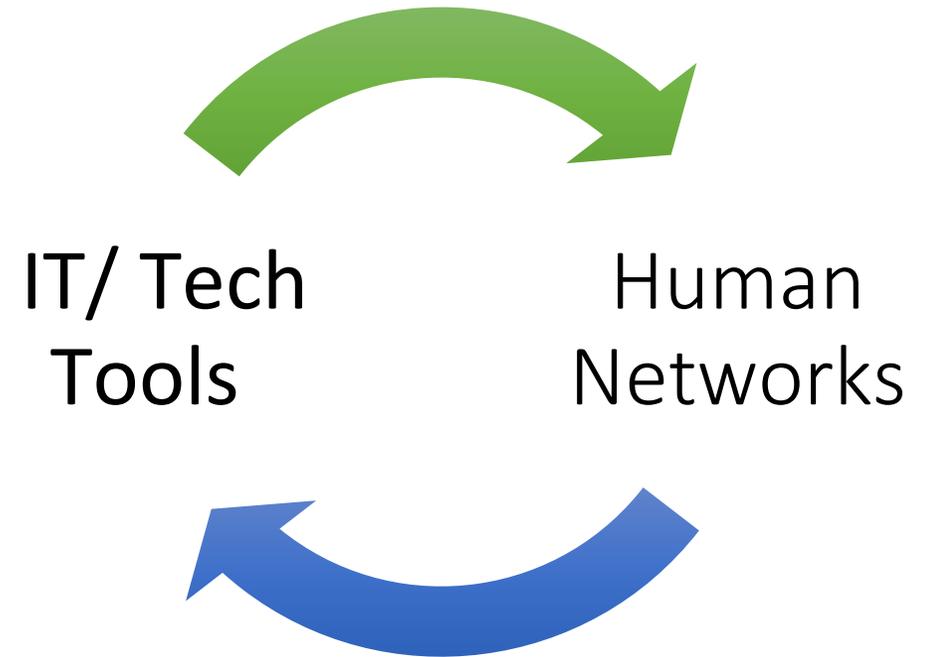


[https://twitter.com/CEZD\\_CMEZ/status/1585409468787040258](https://twitter.com/CEZD_CMEZ/status/1585409468787040258)

# The most important tool in the One Health Toolkit

Developed tools can only go so far...

The most important tool is still the **human network** that helps to assess, refine, and sustain our OH tools as we continue to advance animal and human health in Canada



# Calls to Action

- Become a member of CAHSS and CEZD
- Follow us on social media
- Use our One Health tools

JOIN US





# Funding Acknowledgement

Funding for CAHSS activities has been provided through the AgriAssurance Program under the Canadian Agricultural Partnership, a federal-provincial-territorial initiative.



**Thank you for  
listening!**

**CAHSS:**

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**CEZD:**

[cezd@inspection.gc.ca](mailto:cezd@inspection.gc.ca)