

# Zoonoses & Captivity

Illustrations of an under-regulated risk to wildlife and human health

**CLAIRE TONRY SMITH & LOWNEY PLLC**

# Zoonotic Spillover Through Intermediate Host

## Stage 1: Original Host

Natural species reservoirs typically contain low levels of the pathogen. However, the pathogen may transfer to a new species, a phenomenon known as zoonotic spillover.



Original hosts may be asymptomatic— infection may even be undetectable with current technology.

## Stage 2: Intermediate Host

In the new host species, the disease is present in much higher levels, with increased replication raising the risk of further mutation. Species outside of the native population ranges of the original hosts are especially susceptible to zoonotic spillover.

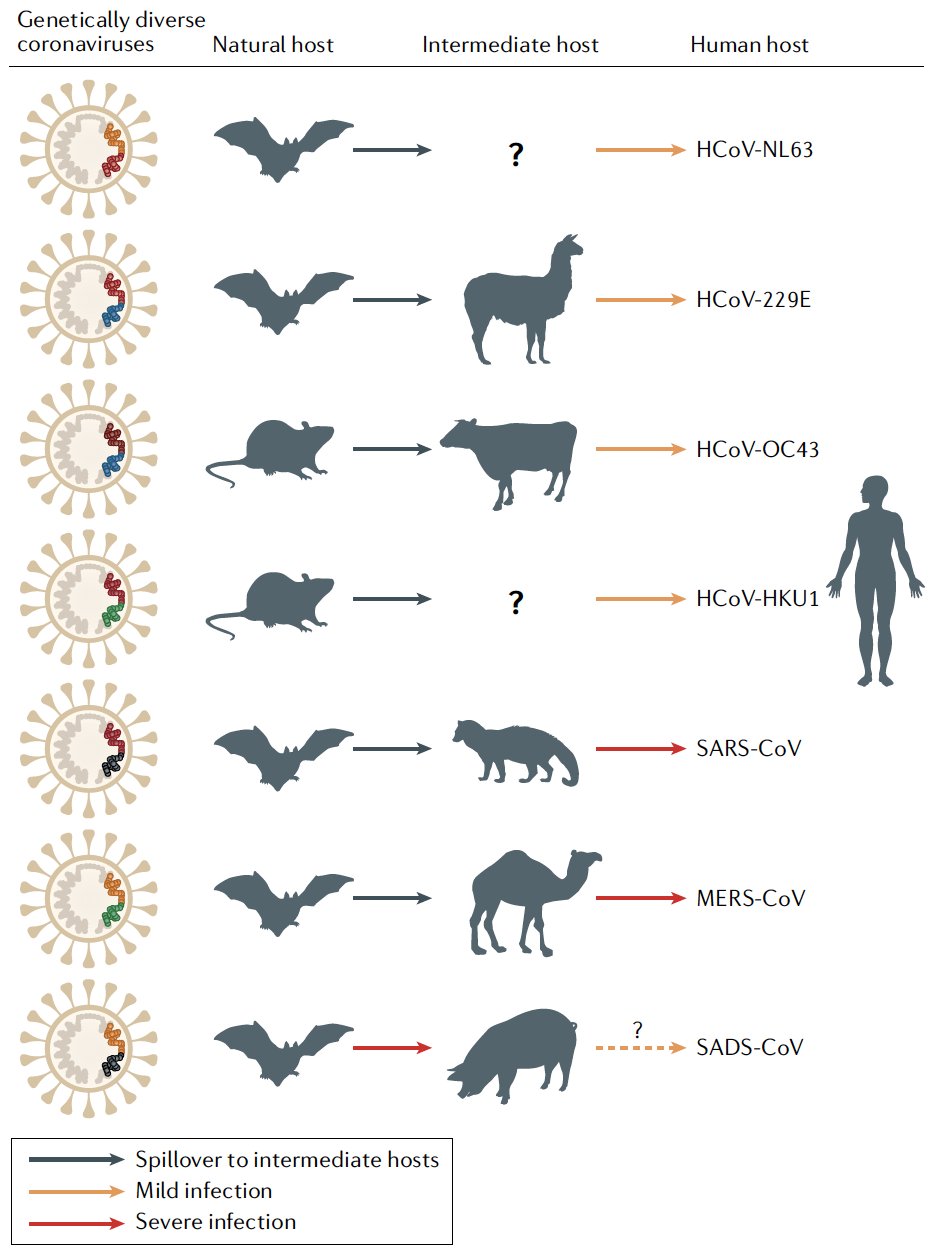


Pathogens transfer to humans in fluids (blood, urine, feces, saliva) from live animals or animal products.

## Stage 3: Human Host

Amplification from the intermediate hosts increases the opportunity for the pathogen to mutate and infect humans. With enough exposure, mutation may allow for human-to-human transmission.





Source: Jie Cui, Fang Li, and Zheng-Li Shi, Origin and evolution of pathogenic coronaviruses, Nature Reviews, Vol. 17 (Mar. 2019).



# Civets & SARS

- 2001-2002: 98 civets imported to US for private ownership
- 2002-2003: SARS-COV sickens >8,000
- ~10% fatality rate
- Thousands of civets killed



Image credit: Andrew Hardacre (license: <https://creativecommons.org/licenses/by-nc-nd/2.0/legalcode>)

# Civets & SARS

- 2004: CDC order bans importation of civets
- Exceptions allowed for “Exhibition purpose”
  - “use as a part of a display in a facility comparable to a zoological park or in a trained animal act. The animal display must be open to the general public at routinely scheduled hours on 5 or more days of each week. The trained animal act must be routinely scheduled for multiple performances each week and open to the general public except for reasonable vacation and retraining periods.” 42 C.F.R. 71.1



# Monkeypox

- 2003: African rodents transmit monkeypox to prairie dogs at breeding facility
- Monkeypox spread to 47 humans
- CDC & FDA ban importation and domestic capture, sale, shipment
- 2008: Domestic regulation repealed



“They've been rapidly closing the barn door after the horse has bolted. It would make more sense to have a rational set of policies that requires adequate surveillance of the wildlife trade, because there simply are not enough safeguards to protect public health.”

Mary Pearl, President of Wildlife Trust, to Nature in 2004.





Canadian Food Inspection Agency

Agence canadienne d'inspection des aliments

REFERENCE NUMBER: CRDR-2016-0040  
WASHINGTON IMPORT PERMIT # 91WA29042  
"DONALD"

VETERINARY HEALTH CERTIFICATE

EXPORT OF BROWN BEARS TO THE UNITED STATES

COUNTRY OF ORIGIN: CANADA

I. OWNER: Name RUTH LABARGE  
Address PO BOX 6303, STATION MAIN, INNSFALL, AB T4E 1T2

II. DESCRIPTION OF ANIMAL  
Name: "DONALD"  
Sex: M  
Date of birth: 2016/01/05  
(yyyy/mm/dd)  
Color: BLACK/BROWN, WHITE MARKINGS ON NECK  
Other identification (if available): \_\_\_\_\_

III. CLINICAL EXAMINATION

I, the undersigned licensed veterinarian, declare that the animal described above has been examined before departure on the date indicated below and found to be free from any communicable disease and to the best of my knowledge and belief, not exposed to any communicable disease within sixty (60) days preceding the date of inspection.

Date of examination: 2016/06/10 (yyyy/mm/dd)

2016/06/13  
Date (yyyy/mm/dd)

[Signature]  
Signature of Licensed Veterinarian ABVMA #1492

Name and address of licensed veterinarian: DR. LYANNE COPELAND, 4915-48 ST., INNSFALL, AB T4E 1N1

2016/06/13  
Date (yyyy/mm/dd)

[Signature]  
Signature of Official Veterinarian  
Canadian Food Inspection Agency  
Government of Canada

**CHRIS BIEDERBECK, DVM**  
**CANADIAN FOOD INSPECTION AGENCY**  
**6503 67 STREET**  
**RED DEER, AB T4P 1A3**

\_\_\_\_\_  
Name of Official Veterinarian (in block letters)



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ion

- Health
- CIT
- ESA

t birds)

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# Captive Animal Interfaces

## In the home



## Behind the scenes

7 cars.

8 Q. Has there ever been opportunities for

9 tourists to play with the baby animals?

10 A. On occasion, there would be family and

11 friends that we would bring down and give them kind of

12 what we called the behind-the-scenes tour. And if we

13 had little animals, we'd let them go in and visit the

14 animals. It wasn't the general public. This was

15 always staff involved.

16 Q. Okay. So there wasn't any situation in which

17 the general public could pay to play with the baby

18 animals?

19 A. No way, ever. That would have been wrong. I

20 did indulge myself with animals I knew and trusted and

21 people. It was one of the biggest thrills of their

22 life to get to touch them, and I knew it was safe. I

23 would just give them that opportunity on occasion

24 without incidence ever.



# Photo Ops



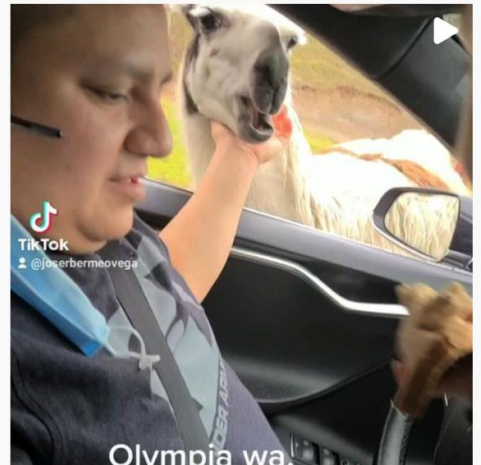
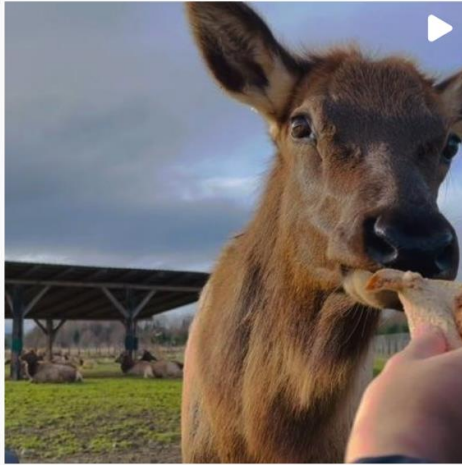
Photo from USDA. Photographer Dr. Cunningham.



# Drive-Through Zoos

Instagram

Search





# Petting Zoos



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# USDA Regulations

- Knowledgeable attendant present during public contact. 9 CFR 2.131
- COVID-19 advisory for non-domestic cats
  - Public kept 6' away
  - Staff advised to don protective gear

## DRIVE-THROUGH ANIMAL PARKS

Public feeding of animals in drive-through parks can bring even more challenges. Here are some added tips for these situations:

- Offer verbal or written instructions, such as a flyer, at the point of entry to make visitors aware they can only feed the animals facility-provided food.
- Encourage visitors to only offer food in a way that the animals' heads or other body parts do not enter vehicles.
- Have methods in place for staff to observe visitors often enough throughout the drive to intervene if there are problems.



Photos from USDA  
Middle: Amanda  
Owens  
Bottom: Louisville Zoo



# Public Health Regulations

- “Provide an accessible hand-washing station or alternative hand sanitizing method approved by the local health officer”
- Post these signs
- Watch for and prevent public contact with sick animals
- Comply with rabies and parrot fever regulations



Wash. Admin. Code 246-100-192



Washington State Department of Health - DOH 333-201 October 2014



# Monitoring & Reporting

- Zoonotic testing not required
- May require special authorization
- Necropsies not required



Photo by Jason Morgan, Stoel Rives LLP



# Thank you!

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