



FAQ on 'reverse' zoonotic transmission of COVID-19 to wildlife from humans

Last Updated: January 2022

Concerns have arisen around the potential for transmission of the virus that causes COVID-19 in humans (SARS-CoV-2) from humans to other mammals (reverse zoonosis), over the past two years as our knowledge of susceptibility to this virus accumulates. Current evidence indicates that domestic cats and domestic dogs, along with some species of non-human primates, hares and rabbits, wild felids, bats (e.g. Egyptian fruit bat), tree shrews, and white-tailed deer are susceptible to this virus and it will replicate within them.

Consistent with guidance from the [US Geological Survey](#) (USGS) and the [Canadian Wildlife Health Cooperative](#) (CWHC), Parks Canada is recommending that any wildlife handling that is planned for susceptible wildlife species be postponed UNLESS all people handling these species are fully vaccinated (as per the Parks Canada [Policy on COVID-19 Vaccination for the Parks Canada Agency](#)), show no clinical signs of COVID-19 infection, AND are wearing appropriate personal protective equipment (PPE). These precautions are recommended for handling of bats, wild felids (e.g. bobcat, lynx, cougar), cervids (white-tailed and mule deer, elk, moose, caribou), and wild mustelids (skunks, weasels, mink, marten, ferrets, fisher, otter, badger, wolverine) until more information is known about potential interspecies transmission.

1) What research is known about inter-species transmission of the virus that causes COVID-19?

Research indicates that pigs, ducks and chickens are not susceptible to infection SARS-CoV-2 and do not shed large amounts of virus, but that viral replication occurs very effectively in wild deer, [domestic and wild cats, mink and ferrets](#). There is also evidence that [captive tigers and lions](#) and other wild felids can become infected and show clinical signs of disease as can [hamsters](#). Domestic mink can also become infected and, to date, have been identified as one of the only species to potentially transmit SARs-CoV-2 to humans. Moreover, there is evidence that wild mink can obtain the virus within the vicinity of infected [mink farms](#). Similarly, a controlled studies performed by the USDA found that captive white-tailed deer could be experimentally infected with SARS-CoV-2. Although infected deer were asymptomatic, the virus was able to replicate in this species and was potentially spread deer-to-deer. More recent research in the United States has found strong evidence of multiple human-to-deer spillover events in free-ranging white-tailed deer that have resulted in high levels of infection and deer-to-deer transmission in affected white-tailed deer populations. SARs-CoV-2 infections have also been recently identified in three asymptomatic, free-ranging white-tailed deer from Quebec. No



evidence of deer-to-human transmission has been identified at this time. Note that the susceptibility of many species remains unknown and a conservative approach that includes covid-19 vaccination of people handling wildlife, appropriate PPE and disinfection of equipment must be followed. Up to date information on susceptible species can be found [here](#).

2) Does this recommendation apply to all research and management activities with these species?

No, other research with these species which does not involve direct handling of animals such as acoustic monitoring, surveys and population monitoring not involving handling can still proceed as normally permitted through the Parks Canada Research and Collection Permit System.

However, the recommendation does apply to other management activities which may involve direct handling of live animals (e.g. marten being trapped for conflict purposes). Field Units should inform any stakeholders or members of the public that will be given live traps for removing animals that are in conflict situations of the potential risks involved and strongly consider having staff deal with any trapped animals using these guidelines as reference. If live animals require direct handling and a two-meter separation distance will not be possible, staff must be fully vaccinated against SARS-CoV-2, asymptomatic, and must ensure that appropriate PPE is worn to prevent viral transmission where possible. All traps, equipment, and surfaces that have come in potential contact with the animal must also be disinfected following the animal's release.

In addition to safe, humane practices and enhanced social distancing, any personnel involved in such work must adhere to all appropriate Safe Work Practices (SWP) and COVID-related guidance, including the Infectious Disease Guidelines and Cleaning and Hygiene Protocols and the [Policy on COVID-19 Vaccination for the Parks Canada Agency](#). This guidance is only intended to provide factual information from a disease transmission perspective and not operational approval of activities.

3) What constitutes appropriate personal protective equipment?

The U.S. Geological Survey in cooperation with the U.S. Fish and Wildlife Service recently published a rapid risk assessment titled: Assessing the Risks Posed by SARS-CoV-2 in and via North American Bats—Decision Framing and Rapid Risk Assessment. In this report, an expert panel in bat ecology, epidemiology, virology, and wildlife disease estimated that exposure risk to bats from research scientists could be reduced 94–96 percent through proper use of N95 respirators, dedicated field clothing (e.g. Tyvek suits or coveralls), and gloves (nitrile or equivalent). Those handling bats (or other susceptible species) within Parks Canada should adhere to these guidelines to reduce the risk of reverse zoonotic transmission to susceptible wildlife. Note that N95 masks may be used when handling bats and other susceptible species. The same PPE should be used when working closely with other known susceptible species and must also be worn when the carcasses of dead bats, wild felids, mustelids, and cervids are handled during wildlife research or management operations. If splashes could potentially be generated, for example when gutting wild cervids after harvest, eye protection should also be worn (glasses or face shield). Appropriate PPE should also be provided for partners and



volunteers involved in handling the above wildlife species as well (e.g. indigenous partners removing and handling hyperabundant ungulates).

4) How long will these restrictions be in place?

It is unclear at this time how long these restrictions will need to be in place. Research findings continue to be released and the situation evolves. This document will be modified as new information emerges and evidence is accumulated about risks to both people and wildlife.

5) What is the risk to local bat populations should a bat become infected while being handled?

There is much uncertainty with regard to the potential impact on bat and other wildlife populations due to SARS-CoV-2. The rapid risk assessment by the USGS indicates that if a handler were shedding SARS-CoV-2 virus while handling bats without recommended PPE, 50 percent of those bats could be exposed to virus, and 17 percent could become infected. The expert panel estimated that there is an approximately 33-percent chance the virus could spread within a bat population from an infected individual. The latest research suggests that big brown bats (*Eptesicus fuscus*) are not susceptible to SARS-CoV-2 infection under experimental conditions however other North American bat species have yet to be tested.

6) What about handling already planned for other wildlife species?

There is currently no evidence that other wildlife species are susceptible to SARS-CoV-2 at this time, but the evidence base for this is constantly changing, especially with the emergence of new covid-19 variants. As such, handling activities other than for bats, mustelids, wild felids, and cervids do not need to be modified, postponed, or canceled from a reverse zoonotic or zoonotic perspective at this time. As new information becomes available, this document will be updated. Surveillance for SARS-CoV-2 is currently being conducted in collaboration with universities, the CWHC and Environment and Climate Change Canada colleagues. Please [contact a Parks Canada wildlife health specialist](#) if samples for wildlife testing can be incorporated into any wildlife handling project.

7) Bats in enclosed public spaces

Should a single bat become trapped in a public structure and cannot escape without assistance, the rescuer should ensure that appropriate personal protective equipment (PPE) is worn prior to capture attempts. Bats that have been in an enclosed space for short periods of time and in spaces infrequently used by people should be captured and released immediately. Bats that have been in an enclosed space for several days in high human traffic areas may be candidates for euthanasia as the risk of transmission has increased.

Please [contact a Parks Canada Wildlife Health Specialist](#) for additional guidance. You should also refer to [PCA Standards for Managing bats in Protected Heritage Places](#) (currently only available on ParksNet) for more information on excluding bats from buildings and to [Bat Conservation International](#) on how to remove single bats from buildings.



Please note that this document is evergreen and will be updated as needed with new information as available.

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