CANADIAN WILDLIFE HEALTH COOPERATIVE

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Wildlife health and COVID-19 in Canada: Bats

Interim guidance for wildlife management agencies

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Executive summary

The susceptibility of Canadian wildlife to SARS-CoV-2 is not known, but case reports indicate that some species are susceptible to infection. The health of North American bat species is of particular concern due to white-nose syndrome already threatening bat populations. **A precautionary approach is advised to protect bats from potential infection with SARS-CoV-2 until more information is available**.

The goal of this document is to provide recommendations to federal, provincial, territorial, and other wildlife agencies and staff to manage and reduce the risk of transmission of SARS-CoV-2 to bats while also helping ensure that the COVID-19 pandemic does not lead to inappropriate measures taken against wildlife species or populations, or negatively impact wildlife conservation. **Currently, the Canadian Wildlife Health Cooperative (CWHC) recommends only handling of wild bats imperative to bat conservation is conducted in Canada until the risks associated with SARS-CoV-2 are better understood.**

Precautionary approaches:

- It is recommended to postpone any research requiring humans to handle or be in close proximity to wild bats that is not imperative for bat conservation.
- For bat rehabilitation, risk assessments are required on a case-by-case basis, but in general we recommend that rehabilitation centres not accept any new bats and postpone the release of bats currently in captivity.
- If individual bats need to be removed from buildings, wildlife management and permitting agencies should perform a risk assessment, if resources are available, to decide if the bat can be released, rehabilitated, or euthanized. When individual risk assessments are not possible, jurisdictional messaging should be developed that balance human health, bat health, and available resources to best guide public response to bats inside living spaces.
- If close proximity to bats cannot be avoided, recommended Personal Protective Equipment (PPE) includes at least: use of nitrile gloves, surgical masks or respirators designed to filter **exhaled** particles, and long-sleeved disposable or washable coveralls. Additional prevention strategies that should be adopted include proper hand and respiratory hygiene.

This document will be reviewed and modified when new information is available.

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Preface

This document is intended to be informative, not directive, and provide jurisdictional wildlife managers and agencies with the best available information and recommendations relating to Canadian bats and their potential susceptibility to SARS-CoV-2. While we recommend a precautionary approach regarding hands-on work with bats, it is not our intention to preclude all activities that require handling of bats. Wildlife managers and agencies must use their own judgement in deciding what is allowable, considering in each situation whether handling of bats is imperative for bat conservation or management purposes.

Overview

COVID-19 is a respiratory disease of humans caused by the novel coronavirus SARS-CoV-2. This disease is spreading rapidly via human-to-human transmission and was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020. The virus is closely related to coronaviruses identified in horseshoe bats (*Rhinolophus* sp.), but further investigations are needed to determine the source of SARS-CoV-2 and determine how the virus entered human populations. There have been reports of farmed mink, domestic cats, dogs, and a captive tiger testing positive for SARS-CoV-2 following close exposure to infected people. Experimental evidence indicates that cats, ferrets, and Egyptian fruit bats are susceptible to transient infection and can transmit the virus to closely housed conspecifics following high-dose intranasal viral inoculation; however, this may not accurately reflect susceptibility to natural infection. More information, including answers to Frequently Asked Questions about COVID-19 and animals, is available from the COVID-19 web page of the World Organization for Animal Health (OIE).

At this time, susceptibility of North American wildlife species to infection or disease caused by SARS-CoV-2 is not known. However, the possibility exists that a range of wildlife species could be susceptible and that their infection could negatively impact wildlife health and conservation, especially for species already impacted by other threats. Infection of wildlife could also create additional challenges for human public health. Thus, in keeping with the precautionary principle, **the goal of these recommendations is to reduce the risk of transmission to bats while also helping ensure that the COVID-19 pandemic does not lead to inappropriate measures taken against bat species or populations, or negatively impact bat conservation.**

This is a dynamic situation, and new information about SARS-CoV-2 is becoming available at a rapid pace. These recommendations will be updated as often as is reasonably possible based on the latest available evidence.

COVID-19 and bats in Canada

The following recommendations are intended to provide federal, provincial, territorial, and other wildlife agencies with support in making management decisions that protect bat health. Each agency

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should issue their own jurisdictional guidance and restrictions that can reasonably be applied with the respective agency's available resources, using the latest available evidence. At this point, **the CWHC recommends a precautionary approach: handling of wild bats in Canada that is not imperative to bat conservation or management should be avoided until the risks associated with COVID-19 are better understood**. It is not known whether Canadian bat species are susceptible to infection with SARS-CoV-2, whether the virus could contribute to bat mortality, or whether bats could potentially act as reservoirs of SARS-CoV-2 in North America. Many North American bat populations are already under severe pressure due to their susceptibility to white-nose syndrome (WNS). To understand the potential threat to bats from SARS-CoV-2, a rapid-risk assessment was conducted by the United States Geological Survey (USGS), United States Fish and Wildlife Service (USFWS), and the Association of Fish and Wildlife Agencies (AFWA) (Runge et al. 2020). According to Runge et al. (2020), transmission risk from humans to bats is non-negligible, but proper use of appropriate PPE (see below) is expected to drastically reduce, although not eliminate, the risk. The results of the rapid-risk assessment by Runge et al. (2020) helped inform and refine these recommendations, as will additional information as it becomes available.

Handling of wild bats for research purposes

To protect the health of both at-risk and non-listed bat species, it is currently recommended that any research requiring humans to handle or be in close proximity to wild bats (i.e., within 2 metres, similar to federal guidelines on physical distancing between humans) be postponed, unless the research is deemed imperative for bat conservation or management purposes by the respective governmental wildlife management agency. It is beyond the scope of this document to discuss specific criteria for imperative work, however, agencies should consider whether outcomes directly contribute to mitigating or managing an acute threat to bats.

Proper use of PPE is expected to decrease the risk of infection to bats. If activities requiring direct contact with bats are deemed imperative for bat conservation or management, to protect bats from potential infection, PPE, beyond what researchers would normally wear to handle bats, should be used to protect bats specifically from exposure to SARS-CoV-2. We recommend following the Government of Canada's guidelines for health professionals and the guidance provided by Runge et al. (2020). PPE required to prevent exposure of bats to SARS-CoV-2 differs from the PPE that many researchers will already be familiar with for preventing spread of WNS and rabies transmission. At a minimum, PPE for preventing potential spread of SARS-CoV-2 to bats should include: use of nitrile gloves, surgical masks or surgical respirators designed to filter **exhaled** particles (note: standard N95 respirators or other respirators with exhalation valves are designed to protect the wearer and are not appropriate), and long-sleeved disposable or washable coveralls. Take care not to touch and contaminate the outside surfaces of gloves and masks. Additional prevention strategies that should be adopted include proper hand and respiratory hygiene. All personnel using PPE should be properly trained and certified in its use. Finally, people who are feeling unwell, who have known recent exposure to SARS-CoV-2, or those who

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meet other criteria for quarantine or isolation, should refrain from handling bats under any circumstances.

It is important to consider that any PPE used for bat research purposes will reduce the PPE available to public health workers. Given that a cornerstone of the advice from the World Health Organization (WHO) is reducing non-essential use of PPE, and due to a scarcity in medical PPE in several regions, it is recommended that all non-essential PPE be offered to public health services.

Bat research that guarantees a two-metre (minimum) separation between people and bats, such as acoustic monitoring or emergence counts, has a very low risk of exposing bats to SARS-CoV-2. This research should be able to continue if otherwise allowed under the jurisdiction's current public health recommendations.

Bat rehabilitation

With the welfare of our wildlife in mind, it is important to consider the situation from that of a wildlife population health perspective, rather than that of an individual animal. If wildlife can become infected with and transmit SARS-CoV-2, rehabilitated animals have the potential to spread the virus to other wild animals. This could add another threat to at-risk species, such as bats. The question of whether animals should be released is especially urgent for bats in spring, when many rehabilitation facilities would normally be planning to release hibernating bats that have been held over winter. Due to these concerns, we recommend that permitting agencies assess each situation based on all factors and that, when deemed appropriate, prohibit the release of bats that have come into close proximity with people not wearing proper PPE until more reliable information is available to assess the risk associated with this activity.

Agencies should conduct risk assessments on a case-by-case basis to decide whether wildlife rehabilitators should be allowed to take in new animals, what protective measures are required to handle wildlife in care, and if animals can be released back into the wild, considering the potential for introduction of SARS-CoV-2 to a wildlife reservoir. Permitting agencies should consider collaborating with a trusted advocate within the wildlife rehabilitation community to help strengthen working relationships with rehabilitation centres and assist in communication about the current risks surrounding rehabilitation of bats and the resulting management decisions. If possible, it is recommended that rehabilitation centres do not accept any new bats and postpone the release of bats already in captivity.

When deciding whether rehabilitation centres should be permitted to take in new bats, it is important to evaluate the ability of each rehabilitator to protect the bat from potential human-transmitted infection of SARS-CoV-2 on a case-by-case basis. Important considerations include: whether appropriate PPE is available in required quantities, and if the facility is prepared to keep bats healthy in captivity until there

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is available evidence to support it is safe to release these animals back into the wild. Note that measures to prevent rabies transmission from bats to humans are not necessarily the same as measures to prevent droplet-based transmission of SARS-CoV-2 to bats. Bats currently in the care of rehabilitation facilities should only be handled when imperative. The number of staff in contact with a bat in rehabilitation should be as low as possible, ensuring that all possible PPE measures are taken when handling bats, and anyone possibly infected with SARS-CoV-2 or otherwise meeting the jurisdiction's criteria for self-isolation do not handle or care for bats or any wildlife.

Bat interactions with the general public

Conservation officers or other staff may receive requests from the public to remove individual bats from human-occupied buildings. Public health guidelines within the jurisdiction should be the first consideration, and may restrict the ability of the conservation officer to respond. However, if public health recommendations can be followed and a live bat is found and captured in a living space where people have been present, wildlife management and permitting agencies should perform a risk assessment (based on, at least: species, bat health, time of year, and potential for exposure of the bat to SARS-CoV-2) to decide if the bat should be released or not. Consider that, if neither release or rehabilitation are an option, the bat may have to be euthanized by a trained professional. If individual risk assessments and house-calls from agency staff are not possible, it is advised that wildlife management agencies provide the public with thorough advice on when and how to remove bats from a living space, considering the degree of risk for bats to become infected with SARS-CoV-2 in various situations. In situations where there has been no close contact with people or pets, bats can be removed from a building and released if appropriate PPE is worn during the capture and release of the bat. Ideally, in addition to wearing appropriate PPE, bats are removed with zero contact, following these instructions.

After contacting your nearest CWHC regional centre, the collection of dead bats and severely injured bats that are euthanized, should proceed as usual. When there is a risk of rabies transmission, bats should be submitted for rabies testing immediately following the appropriate jurisdictional standard operating protocols.

Managing bat colonies in buildings

Some bat species regularly roost in or near anthropogenic structures. There are no recommendations for managing bat colonies from the perspective of bat health and SARS-CoV-2. There should be no risk for transmission of SARS-CoV-2 to bats living in a space separate from humans and pets (e.g., an attic), so there is no need to exclude the bats to protect bat health. In general, bat exclusions should not take place from late spring to early fall unless there are special circumstances that have been appropriately assessed by government authorities. It is always recommended that experienced nuisance wildlife control operators or pest control operators with appropriate government issued permits (including Species at Risk permits, if required) conduct bat exclusions to ensure that best management practices

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are followed, including wearing the appropriate PPE. If a bat exclusion is deemed necessary, minimum PPE should include use of nitrile gloves, surgical masks, and long-sleeved disposable coveralls. Take care not to touch and contaminate the outside surfaces of gloves and masks. Additional prevention strategies that should be adopted include proper hand and respiratory hygiene.

This is a living document. Additional guidance on these or other topics may be added at a later date and current recommendations may be updated as more information becomes available.

Further reading

Anthony et al. 2013. Coronaviruses in bats from Mexico.

Association of fish and wildlife agencies voluntary interim guidance for bat-related activities in response to COVID-19.

BCT Response to IUCN COVID-19 Recommendations for Bat Field Workers.

Canadian Veterinary Medical Association. Coronavirus (COVID-19) Information Page.

Davy et al. 2018. White-nose syndrome is associated with increased replication of a naturally persisting coronaviruses in bats.

Dominguez et al. 2007. Detection of Group 1 Coronaviruses in Bats in North America.

Gouilh et al. 2011. SARS-Coronavirus ancestor's foot-prints in South-East Asian bat colonies and the refuge theory.

Identification of 2019-nCoV related coronaviruses in Malayan pangolins in southern China.

IUCN SSC Bat Specialist Group: Recommended suspension of Field Activities for the Protection of Bats.

Lu et al. 2020. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding.

Misra et al. 2009. Detection of polyoma and corona viruses in bats of Canada.

Osborne et al. 2011. Alphacoronaviruses in New World Bats: Prevalence, Persistence, Phylogeny, and Potential for Interaction with Humans.

Runge et al. 2020. Assessing the risks posed by SARS-CoV-2 in and via North American bats—Decision framing and rapid risk assessment: U.S. Geological Survey Open-File Report 2020–1060, 43 p., https://doi.org/10.3133/ofr20201060.

Science-based facts & knowledge about wild animals, zoos, and SARS-CoV-2 Virus.

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Shi et al. 2020. Susceptibility of ferrets, cats, dogs, and different domestic animals to SARS-coronavirus-2.

World Organisation for Animal Health (OIE) Questions and Answers on the 2019 Coronavirus Disease (COVID-19).

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