

Association of Fish & Wildlife Agencies

Voluntary Field Hygiene Guidance for Personnel Conducting Bat-related Activities

Version 1.0 (6/2/2025)



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Summary: The following voluntary guidance is intended to provide agencies with options to decrease risks of exposure and spread of disease for those working with bats and other wildlife. This guidance is intended to inform internal policies at fish and wildlife agencies regarding activities conducted or permitted by the agency that involve handling of or close proximity to bats.

Overview

This guidance was originally developed to help mitigate potential risks associated with zoonotic exposure from SARS-CoV-2 (COVID-19)-infected humans to North American bats that were presumed to be naïve hosts. Recently, multiple states and provinces have called for broader guidance on the precautions agencies should take to prevent exposure and transmission of unspecified pathogens and a range of known infectious agents, such as COVID-19 or white-nose syndrome (WNS), to bats.

Over half of North American bat species are estimated to be at moderate to high risk of extinction within the next 15 years (Adams et al. 2024), in large part due to the effects of WNS (Cryan et al. 2013, Hoyt et al. 2015, USGS 2018), although mortality due to wind energy development, the effects of climate change, and other threats also contribute (Adams et al. 2024). There is a high priority to prevent future disease spillovers between bats and humans, yet there is a lack of knowledge and surveillance of such pathogens, and whether bats may serve as disease reservoirs or carriers (Banerjee et al. 2019, Olival et al. 2020, etc). Therefore, essential precautions should be taken when handling bats to safeguard *both* bat and human welfare.

We have developed the following guidelines to promote best biosafety handling and welfare practices that protect both bats and humans from the pathogens they may respectively carry. These recommendations are not meant to be prescriptive. Wildlife managers should use prudence and discretion in view of their agency's research objectives and specific conditions. Bat handling activities should be assessed for best biosafety practices on an individual basis. Please note that these recommendations may be modified and superseded as new information becomes available.

One Health Approach

Infectious diseases threaten all wildlife populations and thereby can impact the work of AFWA and its members. One Health, a foundational, inclusive approach that has been embraced globally, recognizes the interconnection of people, animals, plants, and their shared environment. Human health is dependent upon both animal and ecosystem health, and all elements must be considered holistically across disciplines to support and improve infectious disease preparedness and response. It is important to recognize the role of bats in zoonotic disease outbreaks and implement mitigation strategies to prevent exposure to infectious agents when working with

them. However, equally important is recognizing the essential role bats play in ecosystem services and functioning, and the need to minimize the risks of introducing or spreading novel pathogens among bats. Ensuring bat health helps to ensure the health of other wildlife, domesticated animals, humans, and the ecosystem as a whole. The collaborative and integrated One Health approach can help close the knowledge gaps associated with the transmission of diseases among bats, humans, and other animals to ensure risk is minimized while bats are protected and managed effectively (Markotter et al., 2020). AFWA has made materials available to states, including the [One Health Approach White Paper](#), and encourages states, provinces, territories, and tribes to develop or expand One Health efforts.

Research and Monitoring Recommendations for Field Personnel

Although bats in North America are not known to be reservoirs for SARS-CoV-2, there is evidence that some species may be at risk of infection (Goldberg et al. 2024; Hall et al. 2023; Olival et al. 2020). Susceptibility to WNS further demonstrates the obligation to avoid the risk of introducing novel pathogens to bats. These guidelines provide a foundation of best handling practices for any federal, state, territorial, provincial, and tribal fish and wildlife agency biologists, transportation ecologists, and contracted wildlife consultants working with or near bats, or in bat hibernaculum and/or roosts to minimize the risk of pathogen transmission between bats and humans. Agencies should consider developing a field biosafety plan for each activity to include the following best practices:

- When feasible, individuals handling bats should be vaccinated for known pathogens (viruses, bacteria, etc.) that bats may carry or contract, including up-to-date vaccinations and titers for rabies.
- Conduct a daily symptom check for illness prior to handling bats. Do not handle animals if you have clinical symptoms or are feeling ill.
- When possible, conduct work in well-ventilated areas or outside and minimize handling times.
- Do not eat, drink, or smoke in the proximity of bats or on the same surfaces where you are handling bats.
- Use clean, unused holding bags to temporarily contain individual bats.
- Decontaminate all surfaces and biometric tools prior to and between handling individuals.
- Review and strictly adhere to the most recent version of the [National White-nose Syndrome Decontamination Protocol](#).
- Use Personal Protective Equipment (PPE), including a respirator mask (N95 or KN95 recommended), disposable gloves, and dedicated field clothing and shoes that can be disinfected.
- Well-fitted leather gloves are recommended to prevent bites and scratches from bats and can be worn under disposable gloves. Other reusable glove types that offer adequate protection include golf, riding, and gardening gloves.

These basic recommendations are for typical field activities that require contact with bat species in the United States and Canada. Activities such as preparing specimens, taking blood or tissue samples, and entering caves require additional PPE, safety, and field hygiene practices. Please reference the [IUCN SSC BAT SPECIALIST GROUP: GUIDELINES FOR FIELD HYGIENE](#)

for more detailed recommendations for atypical work or work in locations outside of the U.S. or Canada.

Wildlife Rehabilitation Recommendations

Some states and provinces allow wildlife rehabilitators to receive and provide care for injured and orphaned bats. As part of their training, wildlife rehabilitators and anyone working under their permit or license coverage should be educated on the health risks of caring for bats and have knowledge of zoonotic diseases, identifying parasites, and implementing proper cleaning and sanitation practices to keep both bats and the humans administering to them protected. In order to acquire the appropriate federal and/or state and provincial permits and licenses to care for and maintain bats in their facilities, wildlife rehabilitators must often show proof of any required vaccinations (e.g., rabies) and their training and experience. This may include passing an agency-administered exam in addition to other certifications. Rehabilitators and their trainees should be aware that any decisions regarding possible euthanasia of federally listed bats must be undertaken in consultation with the appropriate U. S. Fish and Wildlife Service Field Office, and only be carried out through safe and humane methods, while any potential rabies exposure should be reported to their jurisdictional Public Health officials and handled in accordance with local public health regulations. State and provincial wildlife agencies should be available to the rehabilitation community to provide additional guidance on state or provincial-related requirements, if any, related to the care of injured or sick bats or pups.

Because there is the potential for other pathogen exposure, such as SARS-CoV-2, between humans and bats during the rehabilitation period, rehabilitators should develop and implement appropriate biosecurity measures to reduce the risk of introduction when working with bats in their care. Risk reduction has been outlined through the [hierarchy of controls model](#) and includes, but is not limited to, keeping caretakers, volunteers, and the public away from bats and their holding facilities when exposed to or symptomatic of COVID-19 or other illness until they have recovered. Likewise, bats exposed or symptomatic of known or suspected transmissible disease should be kept isolated from other bats and only handled by caretakers with enhanced protection measures. In addition to staying up to date on all relevant vaccines, rehabilitators should follow proper hygiene practices to include frequent hand washing, avoidance of eating, drinking, or smoking near bats, brief handling times, use of recommended PPE including respirator masks and gloves, and disinfection procedures for dedicated bat husbandry and housing materials that ideally follows the most recent version of National White-nose Syndrome Decontamination Protocol. Bat rehabilitators are also encouraged to refer to the [2018 Acceptable Management Practices for Rehabilitating Bats Affected by White-nose Syndrome: A Guide for Wildlife Rehabilitators](#), which is a product of the White-nose Syndrome National Plan. Finally, the public should be prohibited from any direct contact with bats in a rehabilitation facility.

Wildlife Control Operator Recommendations

Some Wildlife Control Operators (WCOs) may have frequent contact with bats in performing bat exclusion activities. However, many of these activities can be completed without direct contact (e.g., installation of one-way doors, bat-proofing eaves). Current recommendations emphasize [standard biosafety precautions and proper use of PPE](#) to avoid exposure to bat guano, which may

be contaminated with the pathogenic fungus *Histoplasma capsulatum*, the causative agent of histoplasmosis. Appropriate use of PPE can further reduce exposure to other zoonotic pathogens between bats and humans. Therefore, WCOs should adopt the best practice recommendations for PPE noted above, as well as getting vaccinated for known pathogens that bats may carry or contract, avoiding handling bats if showing any clinical symptoms or feeling ill, minimizing handling times, avoiding eating, drinking, and smoking while around bats or on surfaces where bats have been handled, only using clean gear to contain bats, and following the most recent version of National White-nose Syndrome Decontamination Protocol for all clothing and gear that comes into contact with bats. WCOs that work with bats are also encouraged to refer to the [2015 Acceptable Management Practices for Bat Control Activities in Structures - A Guide for Nuisance Wildlife Control Operators](#), which is a product of the White-nose Syndrome National Plan.

State and/or provincial public health and wildlife personnel should be familiar with their current WCO regulations and consider updating guidance regarding the disposition of bats captured inside homes and other dwellings to minimize the risk of inadvertent zoonotic pathogen exposure. This information should be clear and made readily available to the WCO community. For example, the use of metal bat traps or cages to capture multiple bats inside building spaces should be avoided because adequate decontamination after installation is difficult. Furthermore, because these traps have been shown to cause wing injury and instances of bat-to-bat aggression, many state and provincial agencies prohibit this method. Any potential rabies exposure cases should continue to follow the process currently in place in each state or province as dictated by Public Health departments.

Conclusion

When humans are in direct contact with bats or are present in environments used by bats, such as caves, risk of pathogen exposure and transmission may exist. Wildlife biologists, wildlife researchers and consultants, wildlife rehabilitators, and wildlife control operators should be familiar with and comply with federal, state, and provincial regulations and recommendations for bat capture and handling best practices. This includes developing and implementing biosafety protocols, maintaining proper hygiene practices, and appropriate PPE use when in direct contact with live bats, when working in roost or hibernacula habitat, and in the processing and disposing of bat carcasses. These simple steps are prudent to reduce possible disease transmission between bats, humans, and other animals.

ADDITIONAL RESOURCES

- [2015 Acceptable Management Practices for Bat Control Activities in Structures - A Guide for Nuisance Wildlife Control Operators](#)
- [2018 Acceptable Management Practices for Rehabilitating Bats Affected by White-nose Syndrome: A Guide for Wildlife Rehabilitators](#)
- [Association of Fish and Wildlife Agencies: COVID-19 and North American Species of Mustelidae, Felidae, and Canidae](#)
- [CDC NIOSH Hierarchy Of Controls](#)
- [CDC: Reducing Risk for Histoplasmosis](#)
- [IUCN SSC Bat Specialist Group: Guidelines For Field Hygiene](#)
- [IUCN SCC Bat Specialist Group: Guidelines For Cavers](#)
- [One Health Approach White Paper](#)
- [National Association of State Public Health Veterinarians: Compendium of Veterinary Standard Precautions for Zoonotic Disease Prevention in Veterinary Personnel](#)
- [National White-nose Syndrome Decontamination Protocol](#)
- [Reducing the Risk of SARS-CoV-2 Spreading between People and Wildlife](#)
- [Welfare and Handling Recommendations for Bat Censuses in Canada](#)

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