CANADIAN WILDLIFE HEALTH COOPERATIVE

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White-nose Syndrome

Recommendations for decontamination during summer activities

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While *Pseudogymnoascus destructans* (*P.d.*), the fungus that causes white-nose syndrome (WNS) in bats mainly affects bats during their winter hibernation, bats can carry viable fungal spores to their summering roosts. It is not well understood under what conditions spores in summer roosts remain viable to pose a risk of further spread and infection during the following winter, but spore transmission might be highest after emergence from hibernation in early spring or when swarming commences late summer. Anyone coming in contact with bats and their roosts in summer should consider the risks of spreading *P.d.* and develop a strategy to minimize risk of spread. Generally, the same decontamination procedures can be followed in winter and summer. The following guidelines are most applicable to researchers, pest control operators, land managers, and cavers or anyone else that comes in contact with bats, their guano, or their roosting locations. The recommendations below apply a better-be-safe-than-sorry principle, use your professional discretion or contact your local bat expert with questions.

Note: Bats should only be captured and handled by experienced professionals with the appropriate permits issued, and bat evictions or exclusions should only be done under proper permits using humane practices.

Catching and handling bats

To minimize the risk of carrying spores from summering bats on skin and clothing, it is important to change and contain the outer-most layer of clothing (for later decontamination) at the end of the night and when changing trapping sites. Clothing or any equipment that is being transported (e.g., placed into a vehicle), needs to be decontaminated or contained during transportation and then decontaminated. Optionally, consider the use of disposable coveralls or coveralls that can be decontaminated. Note that even if coveralls are worn it is still recommended to decontaminate the layer of clothing underneath. Coveralls may decrease contact of *P.d.* with layers underneath but are not impenetrable barriers. Additionally, wear disposable gloves or gloves that can be decontaminated when handling bats. Bat handlers should be aware that some bats, like people, can be allergic to latex. Use nitrile gloves where possible to avoid this risk. Care should also be taken to ensure that bats teeth are removed carefully from any gloves they puncture, to avoid damage to teeth that could reduce feeding ability.

Note that a bite from a bat can go unnoticed but should be taken seriously due to the small risk of contracting rabies. Anyone who has touched a bat should immediately wash the exposed skin with soap and water for 15 minutes and contact the health line associated with your province or territory to evaluate whether you should receive rabies post exposure prophylaxis. See our "Bats and Rabies Infographic" for more information.

If bats are trapped at a single roost site (e.g., bat box, attic, tree, and rock crevice) extensive contact between bats inside the roost can be assumed. No decontamination or changing of equipment and gloves between handling of bats is needed. However, it is important to fully decontaminate all reusable

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gear before moving to another roost or other trapping site (follow WNS decontamination guidelines). Note: generally, the only conditions under which decontamination of equipment would not be needed is if its next use is at the same roost site and equipment is not being transported from the site.

Be aware of the things you touch while handling bats. If headlamps are adjusted or storage containers are opened, wipe these surfaces with appropriate products. Ideally have additional personnel keep their hands clean to open tubes, adjust headlamps and assist in other data collection.

Also consider risks of spreading pathogens to non-bat species when moving between field sites. Consult additional guidance like those created by herpetology working groups.

If free flying bats are trapped that may not be from the same colony (e.g., trapping in forested corridors away from known roosts), change gloves between handling each bat if possible (if changing gloves to at mist nets or harp traps with multiple captures increases extraction time it might not be practical to do so) and wipe all equipment (scale, calipers, etc) that has come into contact with the bat with appropriate disinfecting wipes (see Table 1 of the 'Canadian National White-nose Syndrome Decontamination Protocol for entering bat hibernacula' for products). To store bats, use cloth bags (e.g., geological sample bags) for individual bats only and decontaminate before using again (follow WNS decontamination guidelines). Alternatively, disposable paper lunch bags can be used but are likely less comfortable for bats.

To decontaminate nets and traps, mist nets can be soaked in hot water (55°C) for 5 minutes or treated with other appropriate decontamination products. Harp trap frames and string can be thoroughly wiped down with appropriate decontamination products. Harp trap canvas bags should be cleaned with liquid decontamination products (i.e., hot water treatment or submersion in other effective chemical decontamination products; see Table 1 of the 'Canadian National White-nose Syndrome Decontamination Protocol for entering bat hibernacula' for products). Consider replacing the canvas bags of harp traps with ones made of plastic, or with disposable, non-porous plastic tarps if deemed practical. However, bats tend to become more agitated in plastic tarps or bags because they cannot climb up and roost, as they do in canvas bags. Hanging sheets of soft mesh down each side of the plastic bag beneath the covers allows the bats to climb up and roost underneath the covers, and reduces stress to captured bats while allowing rigorous decontamination of the bags between nights. Plastic tarps can be thoroughly wiped with appropriate products or disposed of between sites.

Trapping and netting equipment used in WNS positive/*P.d.* detected regions should never be used in WNS negative/ *P.d.* not detected regions. Use dedicated equipment when working in different regions.

Summer hibernacula visits

Spores of *P.d.* are shown to remain dormant and viable in hibernacula environments when bats are not occupying the site. The same risks of spreading *P.d.* apply in winter and summer. Any underground site in summer should be considered potential bat hibernation habitat and the same decontamination procedures apply to entering these sites in summer. Consult the full instructions on the decontamination process in the 'Canadian National White-nose Syndrome Decontamination Protocol for entering bat hibernacula'.

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Excluding bats, entering summer roosts, and guano mitigation

Wildlife control operators or researchers entering summer roosts can potentially pick up *P.d.* spores from one roost and translocate these to another roost. Exclusion and research gear, including one-way tubes, head lamps, coveralls, respirators, vacuums, and boots should be decontaminated to the best of your ability following the same methods as used after a hibernaculum visit. See Table 1 for additional guidance for nuisance wildlife control operators.

Note that accumulations of bat guano or bird droppings should be considered a potential source of *Histoplasma capsulatum*, the fungus that can cause the disease histoplasmosis, even in areas where the fungus is not reported. Care should be taken to not disturb such material, including soils contaminated with bird or bat droppings. Wearing a Canadian Centre for Occupational Health and Safety (CCOHS)-approved respirator with a high efficiency particulate air (HEPA) filter is strongly recommended if working in environments or participating in activities where exposure to spores of *H. capsulatum* is possible. See our "Histoplasmosis Fact Sheet" for more information.

Table 1: Recommendations taken from 'Acceptable Management Practices for Bat Control Activities in Structures – A Guide for Nuisance Wildlife Control Operators' by the US WNS Conservation and Recovery Working Group.

Type of Guano Mitigation Equipment	***Examples***	***Action***
Disposable personal protective equipment	Tyvek suit, gloves, booties, light duty mask	Dispose of properly following each guano mitigation project or entry into bat roosting areas.
Non-disposable equipment	Clothing, shoes, clipboards	Bag to transport after use in roosts; follow WNS guidelines to decontaminate.
Respirators	Typically multiple-use style with removable filters	Dispose of filters after each job, and decontaminate respirator following WNS guidelines.
Vacuums	HEPA vacuums are typically used to remove guano and have two components, the unit itself and the hose/nozzle component	Dispose of vacuum bags after each guano mitigation project and clean hard-surfaced unit, hose, and nozzle following WNS decontamination guidelines.
Lights	Lights, headlamps, and other cursory items used to illuminate the work area in an attic or interior space	Decontaminate according to WNS guidelines.
Cleaning materials	Drop cloths, etc., often removed along with guano and insulation	Dispose of following each guano mitigation project.