

**MINISTRIES OF MINES, ENVIRONMENT AND FOREST LANDS AND NATURAL RESOURCE OPERATIONS,
BRITISH COLUMBIA**

Decontamination procedures when visiting potential bat habitats in mines and caves

PURPOSE

To describe decontamination procedures to reduce the risk of introducing the fungus *Pseudogymnoascus destructans* (formerly known as *Geomyces destructans*) into B.C. bat habitats and reducing transmission among sites.

DESCRIPTION

Bats have high economic and ecological value, providing between \$3 and \$53 million dollars in pest control services (US figures). These benefits are under a serious threat. A new disease caused by a newly introduced fungus, *Pseudogymnoascus destructans* (*Pd*), has killed over 6 million bats in eastern North America. The disease is called White Nose Syndrome (WNS) because of the white fungal fuzzy growth on the nose and fur of affected bats. The organism forms spores that transmit the disease when affected bats are in close contact in colonies in caves, mines and other places during hibernation and roosting. To date, the disease has not been detected west of the Rocky Mountains but there is concern that spores can be transported inadvertently to the west by humans; on boots, clothing and the equipment of cavers, miners, geologists, geocachers and others who frequent habitats that are also used by bats. Although bat to bat contact is considered the primary mode of *Pd* transmission, human associated transport of fungal spores is suspected in at least one case of WNS emergence. The extent of bat movement across the Continental Divide is unknown, but may not be extensive. Given this, it is important that humans do not become the vector of WNS transmission to western North America.

RESPONSIBILITY

It is recommended that geologists, surveyors, miners, support staff and recreational users in and around potential bat habitat in mines and caves, particularly unused mines, follow these SOPs. People moving to B.C. from areas where White Nose Syndrome has been detected should pay particular attention to reducing the risk (<http://www.whitenosesyndrome.org/>). It is recommended that these decontamination protocols be implemented in B.C. when people, equipment and materials equipment are moving between mines and caves that are >10 km apart, are in different watersheds, or have major geographical barriers between them.

STANDARD OPERATING PROCEDURES

Decontamination involves removing and destroying fungal spores. The first step is to thoroughly wash all mud and debris from equipment, as these reduce the efficiency of the decontamination procedure. We recommend the following procedures but these may change with further testing:

1. Soak materials/equipment in disinfectant containing at least 0.3% ammonium quaternary compounds for 10 minutes. A product currently field tested in B.C. for efficacy and ease of use is Zep Aqua San®. The Zep Aqua San should be used at the maximum label recommended strength for industrial uses. The Material

Safety Data Sheet (MSDS) for Aqua San is at: http://webfiles.acuitysp.com/MSDS/2410_1_EN1_CDN.PDF.

Rinse if materials are to be reused prior to drying.

2. Or soak in 10% bleach (1:10 or one part bleach to 9 parts water) for 10 minutes (approximately half cup bleach in a litre of water). The MSDS is at: <http://www.iaprisoinind.com/downloads/msds/IPI-ChlorineBleach10.pdf>. Through rinsing is required to remove all traces of bleach.
3. Or submerge in water that is at least 5⁰C or hotter for 15 minutes (boiling water is 10⁰C, hot water from a tap is between 4⁰C and 6⁰C), or
4. Steam clean large pieces of equipment. This technique is currently being tested for efficacy and may be used where other methods are impractical.

Smaller equipment such as boots, ropes, climbing harnesses, mistnets, may be submerged in one of the above decontamination liquids for the advised time, rinsed and dried. Larger equipment or non-submersibles such as headlamps and acoustic equipment, should be sprayed where possible or wiped down with one of the decontamination liquids, ensuring that the surfaces are wet for the minimum time required before being wiped dry. Clothing must be washed in hot water with bleach in a washing machine, hand washed with a pre-soak of 10 minutes in the decontamination liquids or immersed for 15 minute in water hotter than 50° C.

All equipment that has come in contact with a bat or that has been inside a potential bat roost (mines/caves) and has not been decontaminated should be stored in a waterproof box/tote during transportation to prevent vehicle contamination and to prevent vehicles from acting as secondary sources of cross contamination. All potentially contaminated clothing should also be stored in totes.

If the equipment is used immediately at another site, the SOP should be carried out on a road or other impermeable surface and away from water bodies to prevent environmental contamination with the disinfectant solutions. If there is no time to ensure complete drying, residual solution should be rinsed off with clean water, again working away from water bodies.

The products above may damage gear, pose human health risks, and cause environmental damage. It is the responsibility of the users to read the MSDS sheets, follow safety protocols, use protective gear and follow appropriate procedures for disposal.

FURTHER INFORMATION ON WNS

If signs of WNS are detected (large numbers of dead or dying bats, day flights of bats observed in the middle of winter, bats with damaged wing membranes etc), please immediately contact:

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For further information on WNS: [BC Wildlife Health website \(http://www.env.gov.bc.ca/wld/wldhealth/\)](http://www.env.gov.bc.ca/wld/wldhealth/) and navigate to “White Nose Syndrome Alert” under Current Issues on the right menu.