

White-nose Syndrome Show Cave Guidance

Recommended Practices to Reduce Risks of People Spreading the Fungus *Pseudogymnoascus destructans*



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White-nose Syndrome Show Cave Guidance

Introduction

White-nose syndrome is a disease of hibernating bats caused by a non-native fungus called *Pseudogymnoascus destructans*, or *Pd* for short. Cave explorers first saw bats with signs of white-nose syndrome in 2006 in a cave near Albany, New York. Since then, the disease has spread across North America, killing millions of bats. This disease does not affect people, but spores of the fungus can last for a long time on clothes, shoes, backpacks, cameras and other items. As a result, visitors to caves where the fungus lives can unknowingly spread it to other areas.

Show caves, also known as tourist caves or commercial caves, provide important opportunities to introduce members of the public to the wonders of natural subterranean environments. As owners and managers of show caves, you can further help protect native cave environments and the bats that use them by reducing the chance that visitors, personnel, or researchers that spend time in your caves may disturb bats and may move the fungus from one place to another. This guidance provides a risk assessment tool, recommendations, and examples to support your efforts to reduce the risk of visitors to your sites spreading the fungus that causes this devastating disease.

Background

Caves contain a wealth of natural, cultural, and paleontological resources and provide valuable opportunities for recreation, exploration, education, and research. Many outdoor educational groups and community organizations depend on caves to increase awareness of bats and other cave-dwelling organisms, demonstrate unique geologic features, and promote appreciation of nature. Show caves also add to the economy through tourism and enrich our communities.

Previously, the White-Nose Syndrome Response Team developed the WNS decontamination protocol¹ and recommendations for equipment restrictions and managing access to subterranean bat roosts². These recommendations are based on the application of [universal precautions](#)³ and the best available scientific information, which shows that **people visiting caves have the potential to spread white-nose syndrome and may disturb hibernating bats**².

Purpose

This document provides a reference to help show cave operators consider options to reduce the risk of people spreading *Pd* into or out of caves and reduce the effects of white-nose syndrome on bats. Information and tools are provided to help with carrying out other national guidance (e.g. "[Cave Access Advisory](#)"² and [National WNS Decontamination Protocol](#)³) at caves managed specifically for visitation, research, or tourism.

These recommendations specifically address risk of people spreading *Pd* but are likely to also reduce risks of transporting other potentially harmful "biological hitchhikers" between

caves. These voluntary actions do not supersede recommendations or requirements from local authorities in your area.

Objectives

The strategies identified in this document are intended to:

1. Reduce risks of visitors to show caves spreading *Pd* to bat populations and places that are currently free of *Pd*.
2. Reduce disturbance of bats in show caves during sensitive seasons.
3. Balance operational goals and resources at show caves with conservation and recovery goals for bats and other cave resources.
4. Foster collaboration among government agencies, non-government organizations, landowners, and the public.

Throughout this document, use of the term “show cave⁴” refers to caves that are publicly or privately owned sites that are operated to promote access by the public, regardless of whether or not there is a fee charged to visitors.

Although the recommendations focus on show caves, these guidelines may also apply to other underground structures that are managed for public visitation (e.g., mines, tunnels, bunkers, buildings, forts). The definition for show cave is based on International Show Caves Association⁴.

Operational Recommendations

The voluntary recommendations described herein focus on visitors to show caves. Personnel, researchers, and volunteers that work in and around the sites should follow the same or more conservative practices to reduce risk of inadvertently transporting fungal spores into or out of the cave. Use of site-dedicated clothing, footwear, and vehicles can effectively reduce risk posed by guides, maintenance staff, and others who have frequent or prolonged activity in caves.

Regulatory Considerations

Federal and State laws are in place to help protect caves and the natural and cultural resources in and around them. Laws are also in place to protect the public from entering dangerous areas. These regulations include the Federal Cave Resources Protection Act of 1988, National Historic Preservation Act of 1966, the Archeological Resources Protection Act of 1974, the Native American Graves Protection and Repatriation Act, the Paleontological Resources Preservation Act, and The Surface Mining Control and Reclamation Act of 1977. Other Federal and State regulations and management policies such as the Endangered Species Act protect plants and animals that live in these locations. All relevant laws, regulations, and policies supersede recommendations outlined in this document.

How to Use this Resource

A careful assessment of risks, operational goals and resources can guide effective and feasible strategies for reducing risks of people spreading *Pd*, while minimizing disruptions to private and public show cave operations. Documenting this process also clarifies decision processes for carrying out strategies.

- 1. Identify the level of risk for your situation:** The categories below identify a simplified determination of risk based on presence of bats, visitation rates, and common activities in the site. Designation of a risk level may be somewhat subjective while weighing the various factors indicated in this list. The Risk Assessment Tool in Appendix 1 provides a more objective way of considering these factors.

Low Risk Factors:

- No bats observed in the site, or bats observed sporadically in only the summer.
- Light visitation by local visitors not requiring specific gear and equipment for cave exploration.
- Access along developed or natural surface walkways without need for crawling and scrambling.

Moderate Risk Factors:

- Bats use the site in summer, but not in winter.
- Moderate visitation by regional visitors using casual gear and equipment or some gear specific to exploring caves.
- Visitation involves contact with natural surfaces while walking, crawling, or scrambling.

High Risk Factors:

- Bats use site in winter, fall, or spring.
- Protected species are present (endangered, threatened, and species of special concern).
- Moderate to high visitation from throughout North America or beyond. Visitors use gear specific to exploring caves.
- Visitation involves crawling and scrambling in natural areas in proximity of bats or bat roosting areas.
-

- 2. Know the status of *Pd* and WNS in your area**

- Consult your local wildlife agency and the current map of distribution of *Pd* and WNS available at www.whitenosesyndrome.org/spreadmap
- It is important to note that *Pd* or WNS occurs in areas that are not reported on the map.

- 3. Consider your operational goals.** Appendix 2 provides a worksheet to assess and document your options. It is unlikely that all recommendations are feasible or appropriate for specific situations. The Situation Assessment worksheet in Appendix 2 is an example for assessing and documenting these options. This document can help balance the resources needed to implement strategies with the costs to your




operations and the experiences of visitors. The tools available in the appendices may also provide a helpful record to support the strategies you choose to implement, for both internal and external communication.

Management Actions

Management actions are listed according to the risk level and the status of white-nose syndrome at the site. Descriptions and examples of how each management action can be carried out are also included. The information and tools provided in this section are not comprehensive, but are meant to provide suggestions to help you establish procedures to reduce the risks of human-assisted spread of *Pd* and disturbance of bats.

Your participation in surveillance for white-nose syndrome and *Pd* is also valuable. Regular observations and reports from visitors or personnel may provide early indication of atypical behavior or changes in the health and abundance of resident and local bats. Operations wishing to engage in WNS surveillance or submit samples for disease diagnosis must coordinate actions with their state wildlife or natural resources agency (<https://www.whitenosesyndrome.org/contact/local-bat-expert>)

Consider options for management actions associated with your site's risk level. Numbers in parentheses refer to [risk assessment worksheet in appendix](#).

	 Low Risk (≤ 5)	 Moderate Risk (6-10)	 High Risk (≥ 11)
A. Education	●	●	●
B. Screening	●	●	●
C. Avoiding bats	●	●	●
D. Cleaning gear		●	●
E. Dedicating gear		●	●
F. Restricting access			●

►►► A. Visitor and staff education

Educating visitors and staff about white-nose syndrome and what they can do to help protect bats and cave resources is one of the most important things you can do to reduce risks of spread of *Pd* by people and to increase public support for bat conservation. The effectiveness of this action relies on design and placement of communication materials and abilities of staff to interact with visitors.

Application:

- Risk (All levels)
- *Pd*/white-nose syndrome status⁵ of the cave (Positive/Not detected/Unknown)

Implementation: Education and outreach options include websites, social media, radio announcements, displays or signs in the visitor center, signs at the trailhead or entrance to the cave, flyers or brochures, information printed on tour tickets, or communicated through live or recorded interpretive programs or tours.

Information and resources for communicating about white-nose syndrome are available at www.whitenosesyndrome.org (Appendix 3: Toolkit). State and federal agency-specific resources are also available. Engaging and partnering with local partners, like caving clubs (grottos) or other relevant organizations can also help spread the message.



Visitor education at Ape Cave, Gifford Pinchot National Forest, Washington. (USFS Photo)

►►► B. Visitor screening

Preventing the introduction of *Pd* into a cave on contaminated clothing, footwear, or equipment is a top priority. Screening visitors for potential previous exposure to *Pd* before entry of a show cave can reduce risk of accidentally introducing *Pd* into new locations. Of course, the effectiveness of screening relies upon accurate information from visitors and outreach to help visitors understand why these screening measures are important. Screening can help to identify items in a visitor's possession that could be considered a contamination risk and avoid unnecessary interventions with low-risk visitors.

Application:

- Risk (All levels)
- *Pd*/white-nose syndrome status⁵ of the cave (Not detected/Unknown)
- Incoming visitors



Notification for visitors to avoid bringing potentially contaminated gear and equipment into a show cave in Pinnacles National Park, California. (NPS photo)

Implementation: Alerting visitors to the purpose and procedures for screening prior to their arrival, e.g. via websites, can help them bring or wear appropriate gear to facilitate this process. The screening process often involves a series of questions asked of each visitor to determine if the visitor has footwear, clothing or equipment previously worn in a cave (e.g. may be contaminated with *Pd*). Additional questions may be asked to determine if the person recently visited a cave that is:

- outside of North America (e.g., Europe, Asia);
- in the US or Canada after 2006 when the first evidence of white-nose syndrome was observed in North America;
- outside of the state, county, or province in which the show cave is located, depending on the proximity of white-nose syndrome and your risk tolerance;
- within regions already affected by white-nose syndrome.

The purpose of such screening is to comply with the National White-nose Syndrome Decontamination Protocol¹, which states that equipment or clothing used in a site contaminated with *Pd* should not be brought into a site that is less contaminated with or free of *Pd* (see Figure 2 in the [decontamination protocol](#)). Even in sites already contaminated with *Pd*, there is unknown risk associated with introducing other, potentially more harmful strains of *Pd* not already present there. Importantly, there is a possibility that *Pd* or WNS could occur in areas that are not known or not reported on the map. Therefore, additional caution is warranted in areas near known occurrence of *Pd*.



Self-cleaning station at Ape Cave, Gifford Pinchot National Forest, Washington. (USFS photo)

Questions used to screen visitors may be included on signs or other materials, or asked by staff at the time of ticket purchase or start of a tour. (See Appendix 3. Toolkit) Visitors with potentially contaminated items should be instructed to consult with staff and take appropriate action to clean, disinfect, or leave behind those items before entering the cave. The action will depend on your situation. Some examples include: asking the visitor to change footwear or clothing and leave any potentially contaminated items in their vehicle or bag outside the cave, cleaning or disinfecting (if appropriate) the items before entering the site, providing alternative footwear or denying entry.

Facilities may consider providing secure storage for visitors to leave items outside while they enter the cave. Similar screening methods may be put in place at caves with no regular staff by providing self-cleaning stations at a central trailhead or near the cave entrance. However, waste disposal and maintenance at the site may be necessary (e.g., replenish supplies, clean boot brushes). Cleaning stations that utilize soaps or other chemicals should assure thorough rinsing of cleaned surfaces with water to assure no foreign chemicals are introduced to underground habitats, nearby surface waters, or sensitive habitats adjacent to subsurface habitats, such as sinkholes and springs.

Preparations will be necessary to provide for sanitary and safe disposal of cleaning materials.

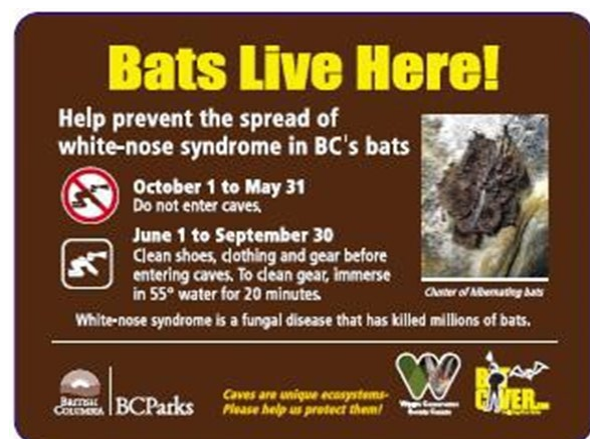
▶▶▶ C. Avoiding areas with roosting bats

Disturbance during hibernation can make it harder for bats to survive winter, and during summer can hinder reproductive success. Therefore, minimizing disturbance of bats is especially important for populations affected by white-nose syndrome. Regardless of whether bats in a site have WNS, avoiding areas where they are roosting promotes the well-being of the animals and safety of visitors. Avoiding these areas also keeps visitors clear of cave sediments where *Pd* is likely to be more abundant in caves.

Application:

- Risk (All levels)
- *Pd*/white-nose syndrome status⁵ of the cave (Positive/Not Detected/Unknown)

Implementation: Areas that have been identified as roost sites for hibernating bats or maternity colonies may be avoided seasonally or year-round to reduce disturbance to these colonies. Knowledge of locations, species and demographics of the bats, and timing of use for specific areas is needed in order to identify and prioritize appropriate time and place for access restrictions. Avoiding them may involve re-routing cave tours, closing select caves or areas to visitors, or restricting access within a designated area around the entrance of bat hibernacula or maternity colonies. Continued monitoring of bat use can help adjust plans as needed to reduce disturbance of bats and risks of visitors coming into direct contact with bats. Monitoring efforts should be coordinated with your local state agency responsible for wildlife.



Notification of seasonally restricted access to protect bats. British Columbia Parks, Canada. (BCParks image)

▶▶ D. Cleaning gear and equipment for visitors and staff

Cleaning gear and equipment, and following the national WNS decontamination standards¹ if appropriate, for all visitors and staff, before and after entering a cave, helps prevent human-assisted transport of *Pd* into or out of a site. By applying this process to all visitors, you can avoid the additional steps of visitor screening and do not have to rely upon accurate disclosure by each visitor. Before detection or suspected presence of *Pd* in a cave, cleaning of incoming visitors should be the priority. Once *Pd* has been detected or is assumed to be in the cave, cleaning of outgoing visitors is important to reduce risks of them transporting the fungus elsewhere. Cleaning gear for incoming visitors at caves with *Pd* can also reduce the risk of introducing other strains of *Pd* (possibly including a second mating type) to the cave. Because *Pd* persists in the environment even when bats are not present, appropriate

cleaning procedures should be used year-round. Researchers or visitors with their own gear can be required to comply with national decontamination protocol¹ before and after entry to the cave. It is important that care is taken to avoid visitors tracking cleaning agents into caves and all cleaning must be done in accordance with label recommendations of the gear and the cleaning agent.



Cleaning station instructions at British Columbia Parks, Canada. (BCParks image)

Application:

- Risk (Moderate or High)
- *Pd*/white-nose syndrome status⁵ of the cave (Positive/Not Detected/Unknown)
- Incoming and outgoing visitors

Implementation: The methods used for cleaning should follow the National White-nose Syndrome Decontamination Protocol¹ and product labels to ensure safe and appropriate applications of methods shown to be effective against *Pd*. The most effective means of reducing risks of spread of *Pd* by people is to avoid using equipment that has been potentially contaminated with *Pd*. Site managers can also minimize exposure to cave microbes by keeping walkways, stairs, and railings clear of mud and sediments (see [Recommended International Guidelines for the Development and Management of Show Caves](#)⁶).

Prior to entering the cave

Streamlined systems (e.g. walk-over mats) that require less staff involvement per visitor may be effective methods for caves with high visitation as long as the system allows for thorough rinsing of gear with water so that cleaning agents will not be tracked into the site. Show caves with fewer visitors and available staff may carry out more individual-based procedures, including self-service decontamination stations. These stations may include brushes to remove particulate matter from boots, disinfecting wipes, as identified in the national decontamination protocol, walk-over mats, and other materials that enable visitors to clean and disinfect gear. People who regularly visit caves with personal equipment for research, work, or recreation can be required to comply with decontamination protocols prior to and after entering the cave. Similar to high through-put systems, care should be taken to avoid tracking of cleaning agents into caves and that cleaning



Walk-over mat station for cleaning footwear of visitors leaving sites at Lava Beds National Monument. (NPS photo)

agents are maintained and disposed of according to their labels.

Upon exiting the cave

Visitors may also be screened as they exit sites where *Pd* is present or unknown. In this case, screening is focused on identifying individuals likely to visit or interact with other bat roosts, such as caves, in the near future. People who are more likely to enter another cave within the coming months can be informed of the risk and steered to undergo more thorough cleaning processes while those unlikely to visit another bat roost can use higher throughput cleaning stations.



Cleaning and drying caving gear in Georgia. (USFWS photo)

►► E. Use of dedicated equipment

Dedicating equipment for use only within a specific cave, or set of associated caves helps to assure that *Pd* is not transported on contaminated equipment to other locations. Using only dedicated gear within a specific site can reduce the risk of *Pd* being introduced on equipment from elsewhere. Because decontamination is not 100% effective, the use of dedicated equipment is preferred.

Application:

- Risk (Moderate or High)
- *Pd*/white-nose syndrome status⁵ of the cave (Positive/Not Detected/Unknown)

Implementation: Caves that offer “off-trail” or “wild caving” tours requiring specialized equipment (e.g., over clothes, boots, helmets, headlamps, gloves) should provide this equipment for visitors, if possible. Boot coverings or alternative footwear may also be provided to visitors for walking tours, however safety and security for the visitor must be considered. Dedicated equipment may also be provided for researchers and staff. This equipment is dedicated for use within the managed caves in close proximity to each other and should be appropriately cleaned and stored after each use. Dedicated equipment should also be considered for staff managing show caves, as well as holders of special use permits visiting one of more sites in an area.



*Gated site that is closed to unauthorized entry.
(MetroParks photo)*

► F. Closure and access restrictions

Partially or entirely closing show caves to public access is the most certain method for preventing human-assisted spread of *Pd* into or out of a cave and reducing disturbance of bats. This option may be warranted under circumstances of high or unknown risk, where access cannot otherwise be regulated or other management actions cannot be carried out (e.g., visitor screening and decontamination). Temporary and strategic closures that restrict access to parts of a cave or for part of the year can also be effective at

reducing risks to bats. Partial or full closure of sites may significantly affect operational objectives of the site and may not be realistic in many situations.

Application:

- Risk (High)
- *Pd*/white-nose syndrome status⁵ of the cave (Positive/Not Detected/Unknown)

Implementation: The method of closure will depend on the cave and the resources available to enforce access restrictions. When feasible and warranted, bat-friendly gates can be installed at the entrance of a site. However, impacts of these permanent structures on natural, historical or cultural resources should be carefully considered and installations should follow best practices⁷ to reduce aversions to bats and detrimental effects to the environment of the cave. Costs associated with monitoring and maintaining these structures should also be considered. Where physical closures are not possible (i.e., due to multiple entrances, large openings, etc.), institutional controls, such as special orders or signs may be posted at the entrances to the caves or at trailheads for the area. If necessary and possible, monitoring and inspections by staff and partners, remote sensing devices, trail cameras and roost monitors can be used to help enforce the closures. Outreach to the local community and interest groups, like caving clubs, is also important to foster understanding and respect of restrictions or closures.

References

¹National Decontamination Protocol for White-nose Syndrome

<https://www.whitenosesyndrome.org/static-page/decontamination-information>

²Recommendations for managing access to subterranean bat roosts:

<https://www.whitenosesyndrome.org/press-release/updated-cave-advisory-recommendations-for-managing-access-to-subterranean-bat-roosts-to-reduce-the-impacts-of-white-nose-syndrome-in-bats>

³Universal precautions for the management of bat white-nose syndrome

https://prd-wret.s3-us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/atoms/files/WHB_2011-05_UniversalPrecautions.pdf

⁴Definition for show cave based on International Show Caves Association.

<http://www.i-s-c-a.com/about-us>

⁵Pd/WNS status definitions in this document have been modified for simplicity from case definitions for WNS

https://prd-wret.s3-us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/atoms/files/Case%20Definitions%20for%20WNS_0.pdf

⁶ Recommended International Guidelines for the Development and Management of Show Caves

<http://www.i-s-c-a.com/documents>

⁷ Agency Guide to Cave and Mine Gates, 2009

<http://www.batcon.org/pdfs/sws/AgencyGuideCaveMineGating2009.pdf>

Appendix 1. Assess risk level and relevant management recommendations:

a. Risk Assessment Worksheet

A list of potential context-specific risk factors is included below. If the information is unknown, a site operator may make their best estimate for the site or consult with a local management agency.

If you manage multiple caves or tour options, complete this worksheet separately for each unique location or tour.

1. For each of the three categories, circle the relevant number(s).
2. Add the circled numbers within each category to get subtotal.
3. Add subtotals to get the total and determine the Overall Risk for the cave or tour based.

Name of site or tour: _____

Bat Use of the Site (Circle all that apply.)

If unknown or outdated, surveys of the site are recommended to determine species and numbers of bats, and timing and purpose of use (e.g. hibernation, raising young, day roost).

- Bats that are Endangered, Threatened or Species of Special Concern.....3
- Site used for hibernation or as winter roost for bats.....3
- Established colonies of bats in summer.....2
- Sporadic or unknown use by bats during spring and summer.....2
- No bats observed in the site, which has been adequately surveyed1

NOTE: Some risk for spreading Pd between sites remains even in the absence of bats because Pd can survive in the environment of caves and mines.

Subtotal _____

Visitors (Circle one per sub-category)

- Number: Choose the one option that most accurately fits your situation.
 - Large number of visitors from all of North America and beyond.....3
 - Light to Moderate visitation from throughout North America2
 - Light visitation from primarily local visitors.....1
- Type and Equipment: Choose the one option that most accurately fits your situation.
 - Visitors likely to be using gear/clothing specifically or preferably used for exploring caves.....3
 - Visitors likely to have been in another cave in past six months or likely to visit another cave in the next six months.....3
 - Tourists likely to be using casual or outdoor gear/clothing or unlikely to have been in a cave in the past six months.....1

Subtotal _____

Tour Type (Circle all that apply)

- Unrestricted access to the site, no specific routes.....3
- Crawling tours on specific but undeveloped routes.....3
- Walking tour on natural surface trails.....2

- Walking tour on developed, artificial walkways.....1

Subtotal _____

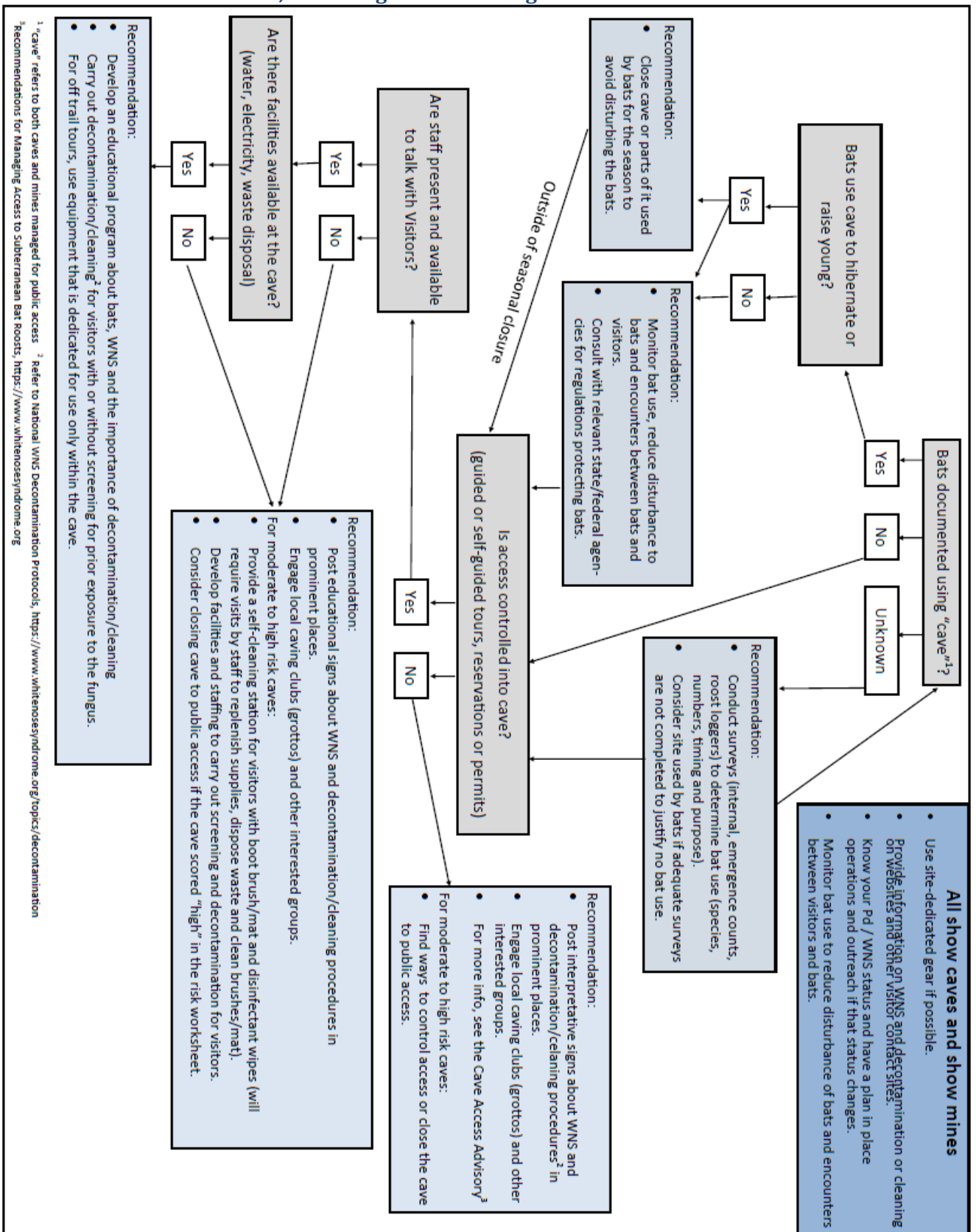
TOTAL _____

Circle Overall Risk Categories: Low Risk (<6) Moderate Risk (6 – 10) High Risk (>11)

Determine the status of *Pd* and WNS in your county. If you are not sure, consult the map at www.whitenosesyndrome.org or contact the wildlife authority in your state.

Check one: _____WNS-Suspect or WNS-positive _____ *Pd* not detected _____Status unknown

b: WNS Show Cave Guidance; Flow Diagram for Management Recommendations



Appendix 2. Assess your options and operational goals.

Use the Situation Assessment Worksheet to help determine which types of management actions are feasible and appropriate for your situation based on your operational goals and resources.

Consider the goals and resources you have available for implementing different actions at your show cave. A clear understanding and description of operation goals and resources establishes situational perspective on which actions are feasible and appropriate for you. Use the following questions as a guide and maintain a record of your responses for communication with stakeholders and others, as needed.

What are the mission and goals of your show cave (e.g., tourism, education, research, income, and conservation)?

What operational resources and capacities do you have available to support management actions?

- *Public access*– guided or self-guided, unexpected walk-ins, reservations or permits, unregulated
- *Staff and budget*– number of personnel, time and other job duties, training, funding
- *Facilities/infrastructure* – visitor center, trailhead, signage, space, access to water, electricity, waste disposal, gear and storage capacity
- *Educational resources*– capacity and means for public outreach and education (e.g., website, signs, personnel)
- *Research coordination and oversight* (if applicable)– manage and share data, coordinate access for researchers, review and approve research permits and enforce decontamination protocols
- *Knowledge of bat use of the site* – locations of bat roosts, species and population sizes, timing and purpose of use. Site managers are encouraged to contact the local wildlife agency or a biologist with expertise in bat surveys to determine the timing and frequency of surveys to adequately understand the use of the site by bats. (<https://www.whitenosesyndrome.org/contact/local-bat-expert>)
- *Site expertise* – knowledge of biological, geological, physical, hydrological, and ecological characters of the cave
- *Other relevant operational goals or resources*


Appendix 3: Toolkit

Resources and examples for implementing recommendations to reduce risks of human-assisted spread of *Pd* and minimize disturbance of bats within show caves.

- a. WNS Communications and Outreach – www.whitenosesyndrome.org
 - i. WNS Poster and Handout <https://www.whitenosesyndrome.org/mmedia-education/white-nose-syndrome-poster-available-for-your-use>
 - ii. Additional products of the WNS Communications and Outreach Working Group <https://www.whitenosesyndrome.org/static-page/communication-outreach-products>
 - iii. Brochures, postcards, and fact sheets on WNS: <https://www.whitenosesyndrome.org/static-page/brochures-postcards-and-fact-sheets>
- b. Educational signs and notices for visitors
 - i. Infographic from WNS Communications Working Group <https://www.whitenosesyndrome.org/mmedia-education/white-nose-syndrome-infographic-updated-may-2018>



- c. Screening of visitors entering sites
 i. Permission requirements at Lava Beds National Park



Welcome To Lava Beds National Monument

Before entering caves, obtain a *White-Nose Syndrome Permit* from staff during visitor center hours to help save bats.

White-nose syndrome is a deadly bat disease that has killed millions of bats in North America since 2006.

Do your part in preventing the spread of white-nose syndrome by obtaining your permit and discussing decontaminating your gear with a ranger!

You must have the permit prior to caving. Violators are subject to fine. 36-C.F.R.1.5(f)

National Park Service
U.S. Department of the Interior

Lava Beds National Monument

**White-nose Syndrome:
The Deadly Invader**



White-nose syndrome (WNS) is a disease responsible for the death of millions of bats in the US and Canada since 2006. The disease is caused by a white, powdery fungus that grows on the affected bat's nose, ears, and wing membranes. Evidence suggests that the fungus (*Pseudogymnoascus destructans*) was introduced to the US from Europe via a human vector.

Your help is needed to prevent this fungus from infecting bats at Lava Beds.

Review the questions on the back of this card. Then, get your card stamped by a ranger before visiting a cave.

Observe cave closures to protect bat colonies.

To Visit a Cave:

Have you been in a cave or mine in any of the shaded states or Canadian provinces since 2006 or in any caves or mines in Europe ever?



Yes No

Do you have any items (boots, gear, cameras, glasses, clothing etc.) with you that entered any of the caves/ mines you previously visited?

Yes No


Let us decontaminate (clean) your gear.

10-15 min

Permit valid only with a stamp

Display, this side up, on vehicle dash

- d. Sign near entrance to cave in Pinnacles National Park, California



Please Help Protect Bats!

Have you visited a cave outside of California? Bringing items from that visit into another cave could make bats sick!

This includes:

- Shoes
- Hats
- Clothing
- Packs
- Headlamps
- Cameras

White Nose Syndrome can wipe out an entire bat colony. People can spread this disease from cave to cave.

Thank you for protecting bats by using clean gear!

i. Visitor screening notice at Mammoth Cave National Park

U.S. Department of the Interior
National Park Service

Mammoth Cave National Park



We Need Your Help!

If you have been in a cave or mine since 2005, please talk to the Rangers at the White-Nose Syndrome Station at the Visitor Center before you go on any tour of Mammoth Cave.

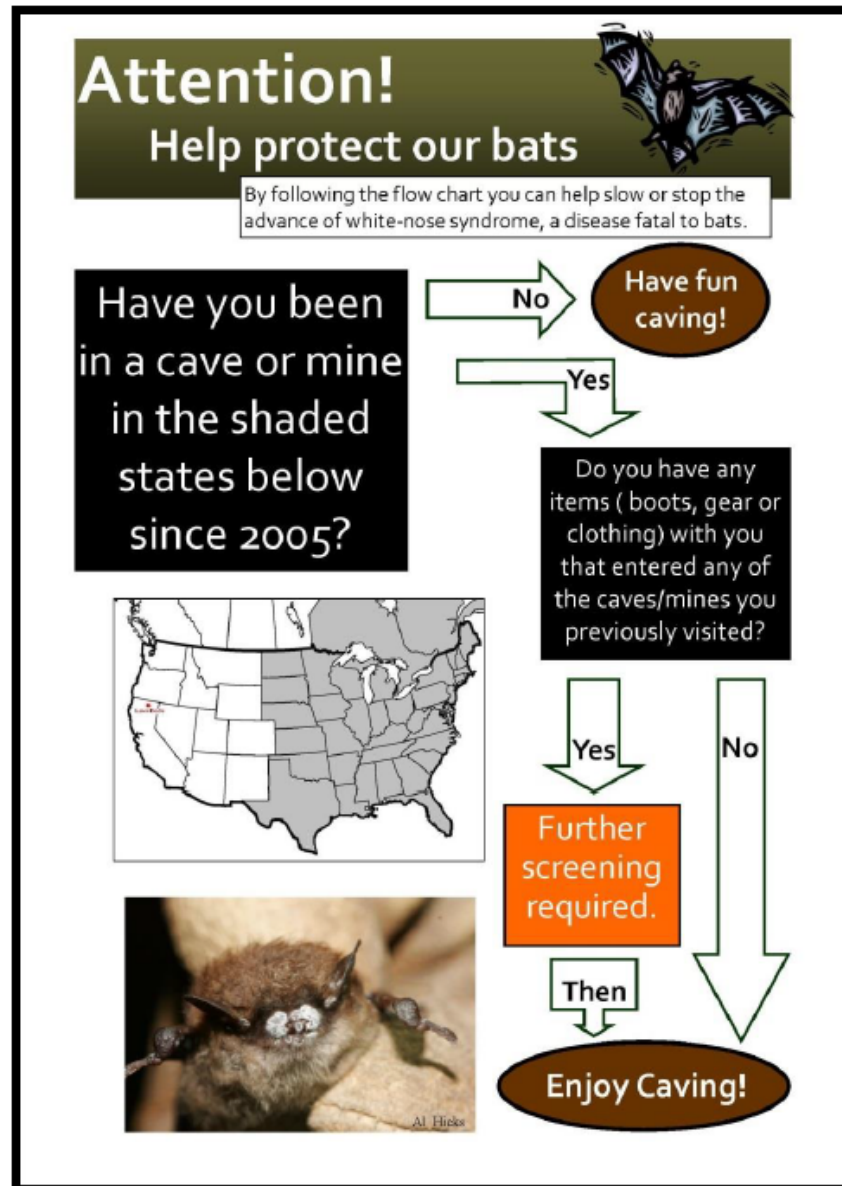
A fungal disease called White-Nose Syndrome (WNS) is spreading through bat populations in the United States, killing bats that hibernate in caves. Although the disease is not known to affect humans, it has been associated with the deaths of more than one million bats since it was first identified in 2006.

While bat-to-bat transmission of the fungus is the primary way the disease has spread, some evidence suggests that humans may play a role in spreading the fungus from one cave or mine to another. White-Nose Syndrome has not yet been identified in Mammoth Cave National Park but has been found within 80 miles of the Park. The Park has therefore put bio-security measures in place to treat visitors' shoes before and after cave tours. This dual approach will help prevent the spread of WNS both into the Cave and, if it is present here but not yet detected, from the Cave to other caves or mines.

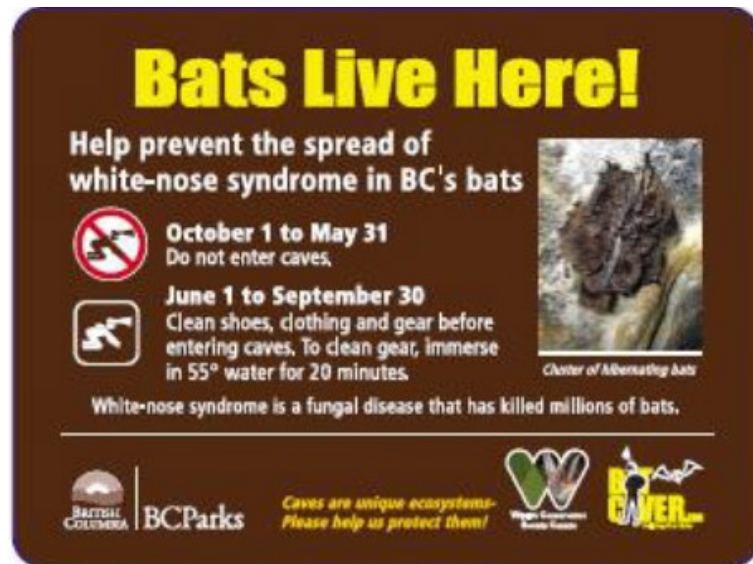
Thank you for your cooperation.



ii. Flow Chart for Visitors to Lava Beds National Monument



- e. Avoiding areas with bats during sensitive times
 - i. Sign at entrances to caves of BC Parks (British Columbia)



- f. Decontamination and cleaning stations
 - i. Visitor contact points and self-cleaning stations at Ape Cave, Gifford Pinchot National Forest




ii. Step-by-Step Guide for Decontamination at Lava Beds National Monument

Lava Beds National Monument

National Park Service
Department of Interior

White-nose syndrome cleaning 101: Cleaning shoes that have been in other caves




1

Help yourself to PPE (Personal Protective Equipment). Safety gear should include eye protection and gloves.

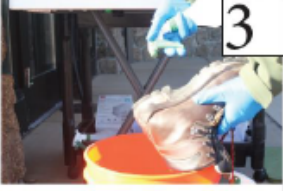
Ayudarse a los EPI (Equipo de Protección Personal). El equipo de seguridad debe incluir protección para los ojos y guantes.

Give your pair of shoes a good brush in the boot bin to remove any excess sand, dirt, or mud. Then remove your shoes and head to the orange bucket!

Dele a su par de zapatos un buen cepillo en el cubo de arranque para eliminar la arena de acceso , la suciedad o barro. Además, quitarse los zapatos y va a el cubo naranja!



2




3

Over the orange bucket, use the water spray bottle and the small hand brushes to remove any dirt or mud from the soles of the shoes. Make sure all runoff lands in the bucket!


Sobre el cubo naranja , utilice la botella de agua y los cepillos de mano para eliminar suciedad o el barro de las suelas de los zapatos. Asegúrese de que todas las tierras de escurrimiento en el cubo!

While working on one shoe, always store the second shoe in the "Dirty" plastic bin. This keeps the gear with spores contained in one place.

Mientras trabaja en un zapato, siempre almacenar el segundo zapato en el recipiente de plástico "sucio". Esto mantiene el engranaje con las esporas contenidas en solo un lugar .



4



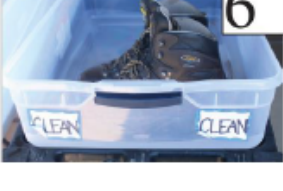
5

Wearing your gloves and glasses, pump the bottle of ISOPROPYL ALCOHOL a few times and spray the exterior of each shoe over the orange bucket.

El uso de guantes y anteojos , bomba de la botella de alcohol isopropil un par de veces y rociar el exterior de cada zapato sobre el cubo naranja .

Set the clean shoes in the "Clean" plastic bin to dry and then put them back on. Thank you for helping to save the bats!

Establecer los zapatos limpios en el cubo de plástico "limpio" que se seque y luego ponerlos de nuevo. Gracias por ayudarnos a salvar a los murciélagos!



6

- iii. The Responsible Caver and WNS Decontamination Video (Cave Research Foundation and U.S. Forest Service)
<https://www.whitenosesyndrome.org/static-page/videos>
- g. Example of WNS Response Plans for show caves. Mammoth Cave National Park –Decontamination requirements and certification.
https://www.nps.gov/macal/learn/management/upload/Mammoth_Cave_NP_WNS_Response_Plan_FINAL_web.pdf
- h. Additional information is available on a variety of websites of partners on the WNS National Response Team
 - i. www.Whitenosesyndrome.org
 - ii. <http://www.cwhc-rcsf.ca/wns.php>
 - iii. <https://www.nps.gov/subjects/bats/index.htm>
 - iv. <https://www.fs.fed.us/research/invasive-species/terrestrial-animals/white-nose-syndrome.php>
 - v. https://www.usgs.gov/centers/nwhc/science/white-nose-syndrome?qt-science_center_objects=0#qt-science_center_objects