

USFWS White-Nose Syndrome Decontamination Protocols for Researchers



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Outline of Presentation

- Why?
 - Purpose, intent, effectiveness
- When and Where?
 - Appropriate time and location to decontaminate
- What and How?
 - Products that should and should not be used
 - Proper decontamination of various gear
- Where to Find Protocols?



Why Decontaminate?

- Bat-to-bat transmission primary vector, but human transmission likely
- Reduces cross-species contamination
- Reduces contamination of non-WNS affected sites
- Promotes good stewardship
 - Reduces risk of other potential fungal, bacterial or viral agents
 - Reduces potential disease-related impacts to humans



Problems with Decontamination

- Ease of use
- Expensive
- Lessens the life of equipment
- Effectiveness
 - Mixed acceptance with researchers and cavers
- May require capturing fewer bats
- Multiple site visits in short periods of time
- Need better understanding of infection and transmission route



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When and Where to Decontaminate?

- Decontamination procedures should be followed **between every cave/mine visit**



Hazel Barton

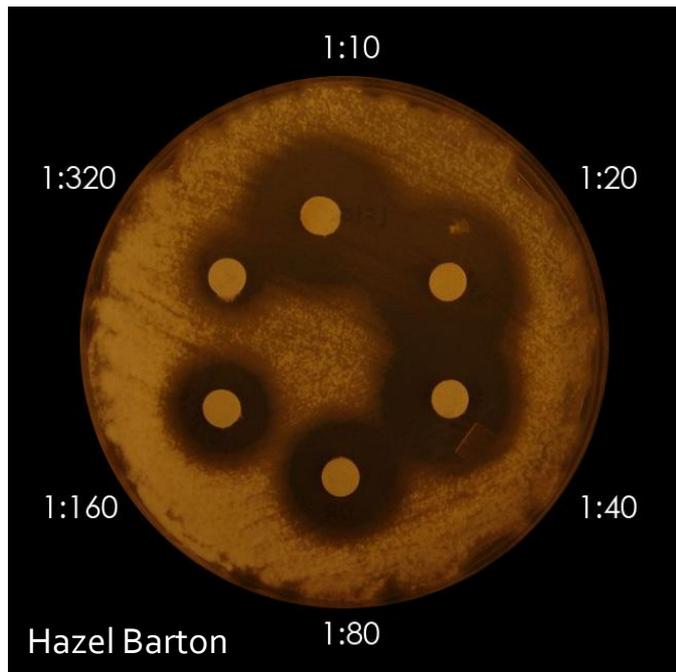


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Recommended Products

- **Lysol[®] IC Quaternary Disinfectant Cleaner**
with a minimum of 0.3% quaternary ammonium compound –
1:128 dilution or 1 oz:1 gal water



Suggestions on purchasing:

RestockIt.com

Cost: \$89.49 per case, 4 gal
\$27.97 per gal

Labsafety.com

Cost: \$32.50 per gal
\$28.40 for 8+ gal



Other Recommended Products

- Lysol[®] All-purpose Professional Cleaner -
with a minimum of 0.3% quaternary ammonium compound
- Formula 409[®] Antibacterial All-Purpose Cleaner -
with a minimum of 0.3% quaternary ammonium compound
- A 10% solution of household bleach -
1 part bleach to 9 parts water
- Lysol[®] Disinfecting Wipes
- Boiling nets and other submersible gear for
15 minutes



Recommended Products



Products NOT Recommended

- ALCOHOL



Mist-net 70% alcohol 15 min



Mist-net boiling 15 min

What Gear Gets Decontaminated and How?

- Any clothing, footwear and gear, including outer clothing, should **not** be used in multiple caves in the same day unless the cleaning and decontamination can be performed **between each cave**
- **The first step:** remove all soil and organic material from equipment, clothing, and boots using water and a brush



What Gear Gets Decontaminated and How?

- **Submersible Gear**
 - i.e. clothing and equipment that can be submerged without damage
- Wash all clothing and any appropriate equipment in washing machine or by hand using conventional detergents
 - Use cold, warm or hot water
 - Woolite[®] fabric wash is highly recommended
- Rinse thoroughly
- Follow by soaking for a minimum of 10 minutes using recommended products
- Rinse and air dry
- Clothing Alternative: use Tyvek[®] or ProShield[®] brand disposable suits



Submersible Gear



Submersible Gear

- Footwear
- Where possible, rubber (wellington-type) caving boots (which withstand harsh decontaminating products and are easily cleaned) are recommended
- Boots need to be fully scrubbed and rinsed to remove all soil and organic material
- Decontaminate rubber and leather boots, (including soles and leather uppers) with a recommended product for a minimum of 10 minutes
- Rinse and air dry



Submersible Gear

- Ropes and Harnesses
- Only Sterling rope and webbing have shown no damage when using recommended products
- Wash rope/webbing in a front loading washing machine on the gentle cycle using **Woolite® Extra Delicates detergent**
- Immerse in a dilution of Lysol IC Quaternary Disinfectant Cleaner for 15 minutes.
- Rinse twice in clean water and air dry
- Other brands of rope/webbing have not been tested for integrity after decontamination
- **Brands not tested should be dedicated to one cave or not used at all to prevent the spread of WNS**



Submersible Gear

- **Mist-nets:**
 - Use separate sets between WNS-affected and unaffected sites
 - Or boil nets in water for 15 minutes to kill fungus
- **Bat handling during netting:**
 - Use disposable paper bags to temporarily hold bats – one bag per bat
 - Disposable exam gloves should be worn over handling gloves and changed in between handling each bat
 - After each night of netting, remove heavy soil deposits from surface of bags and gloves, soak in an recommended decontamination product, rinse and dry completely
 - Use one of the recommended decontamination products to sanitize all equipment that comes into contact with a bat's body
 - i.e. light boxes, banding pliers, rulers, calipers, scale, etc.



What Gear Gets Decontaminated and How?

- **Non-submersible Gear**
 - i.e. equipment that will be damaged by submersion
- Clean thoroughly with soap and water
- Decontaminate using recommended decontaminating product to the outside surface for a minimum of 10 minutes
- Rinse and air dry



Non-submersible Gear



Non-submersible Gear

- Harp Traps
- Use separate traps between WNS-affected and unaffected sites
- Clean traps nightly after use to remove any dirt/debris from wires/lines and bags
- All surfaces should be sprayed with one of the recommended decontamination products
- Swab the bag with a recommended decontamination product
- Allow to dry completely prior to the next use
- Where complete decontamination is not possible, we recommend checking the catch bag more frequently to reduce the amount of time that bats are in contact with each other and the bag



Harp Traps

- Catch bags may be lined with a sheet of plastic and replaced with new plastic periodically or wiped down with one of the recommended decontamination products
- Disposable gloves should be worn over handling gloves and swapped out regularly throughout the night



Susi von Oettingen

Non-submersible Gear

- Cameras and Electronic Equipment
- If possible, do not bring electronic equipment into a cave
- If practical, cameras and other similar equipment that must be brought to a cave may be:
 - Placed in plastic casing (i.e. underwater camera housing)
 - Or wrapped in plastic wrap where only the lens is left unwrapped to allow for photos to be taken
- The plastic wrap can then be decontaminated by using:
 - Lysol® Disinfecting Wipes and discarded after use
 - Or wipes can be applied directly on camera surfaces or plastic casing

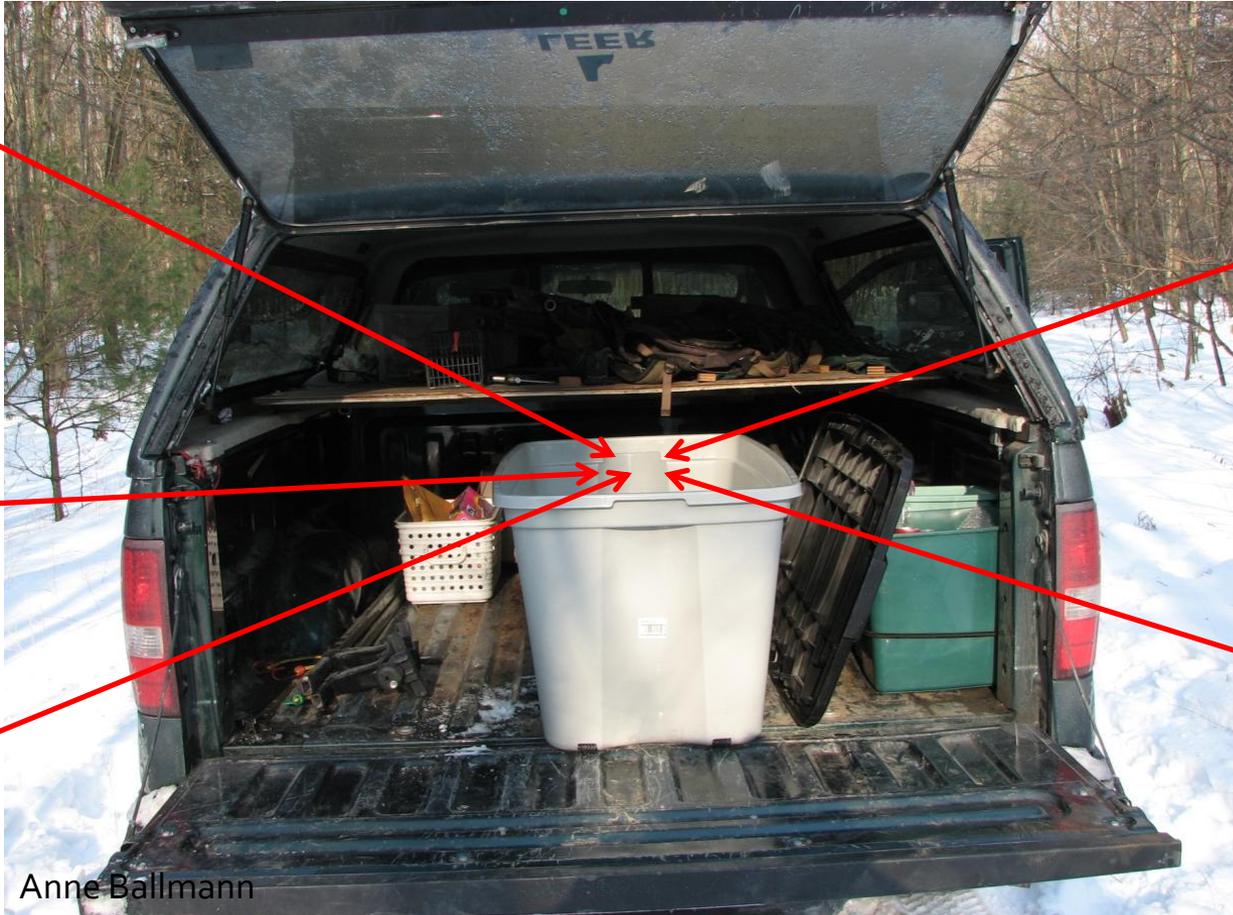


Vehicles

- Do not work on live bats in vehicles
- Do all processing on vehicle hood or on a table away from the vehicle – tailgate is **not** recommended
- In addition to caving gear, vehicles used to transport equipment may harbor spores
- Keep vehicles as clean as possible by storing gear in clean containers
- Decontaminate containers, along with your gear, using one of the recommended decontamination products



Vehicles



Wing Biopsies

- For approved research studies on Federally threatened or endangered bats, use a new (unused) sterile punch for each bat
- For other bats, punches may be reused, but only if they are still sharp enough to make clean punches
- If there is evidence of fungal infection on any individual, use new punches
- Be sure to completely sterilize recycled punches between bats by dipping the cutting end in alcohol. Pass the cutting end through a flame 3-4 times, and then allow the flaming punch to naturally extinguish, and cool completely (this reduces DNA cross-contamination)



Wing Biopsies

- Decontaminate cutting boards in between processing individual bats using one of the recommended products
- Disposable, stiff cardboard squares (1 per individual) can be used as an alternate support for biopsy
- It may be necessary to have multiple people to assist with wing biopsies to avoid contaminating equipment during this process
 - one for holding the bat down
 - one for note taking
 - one for taking the biopsies



Where to Find Protocols?

- USFWS WNS Website:
 - Quick Reference Protocol
 - Caver Protocol
 - Bat Researcher Protocol

<http://www.fws.gov/WhiteNoseSyndrome/research.html>



The screenshot shows a web browser window displaying the USFWS White-Nose Syndrome website. The page title is "White-Nose Syndrome: Something is killing our bats". The main content area features a "Current News" section with several articles. The first article, titled "A bat from a cave in northwest Oklahoma has tested positive for the fungus associated with WNS", reports on a genetic signature of the fungus found in a single bat from Oklahoma. The second article, "The U.S. Forest Service's Eastern Region is funding projects with \$150,000 set aside for WNS work", describes funding for acoustic surveys and bat-friendly gate installation. The third article, "The Service has awarded Arkansas Game and Fish Commission a multi-state grant of \$998,834 on behalf of itself and eight more states for WNS response", lists state partners and project goals. A fourth article, "Reflecting the unfortunate spread of white nose syndrome beyond the Service's Northeast Region, we have replaced the old URL with a new one", provides a new URL for visitors. A fifth article, "The Department of Natural Resources has closed Missouri state park caves to protect against WNS", mentions the closure of four caves. To the right of the text is a photograph of a bat. The website includes a search bar, a navigation menu on the left, and the USFWS logo at the top right.



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