



White Nose Syndrome  
Decontamination  
Tips and Tricks  
NSS Convention 2016

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Special thanks to Rickard Toomey and Knutt Peterson

# USFWS New Decon Policy issued in April 2016

- <https://www.whitenosesyndrome.org/topics/decontamination>
- It may be updated again.
- 7 pages: Intro, purpose, product use, trip planning/organization, procedures for decontamination, equipment and activity specific recommendations
- Reading it is good, but just knowing the basics is okay...

# WHY- Fungus persists in the environment

- Fungus sometimes detected 3 years before visible signs present/mass mortality.
- Cave/mine soils are a reservoir for the fungus and bats seem to pick it up again in fall from the infected roosts.
- Cave gear can pick up the fungus even without bats present and theoretically be a method of transport.



It is still unknown where it came from  
and HOW it got here.

- 50% of approximately 250 caves sampled in Europe were positive for the fungus. Some caves may remain an uninfected refuge in a “saturated” area.
- **Rates of detection from substrate vary**, especially without bats present. So even if a cave has been tested, it might be positive.
- European version has two mating types, so far North American version is clonal. Don't want to mix these regional types.

# Cavers Care

Risk management includes controlling what we can, and there is not much we can do.

- The policy is: no movement of potentially infected gear from an infected area to a clean one. **EVEN if DECONTAMINATED.**

# When do you have to decon?




Policies vary

- In general, should decontaminate **between each cave/management area**.
- Depends on cave manager. Some agencies group caves for ease of decontamination purposes.
- Even in saturated areas, we need to clean our gear for other future pathogens and other biota.

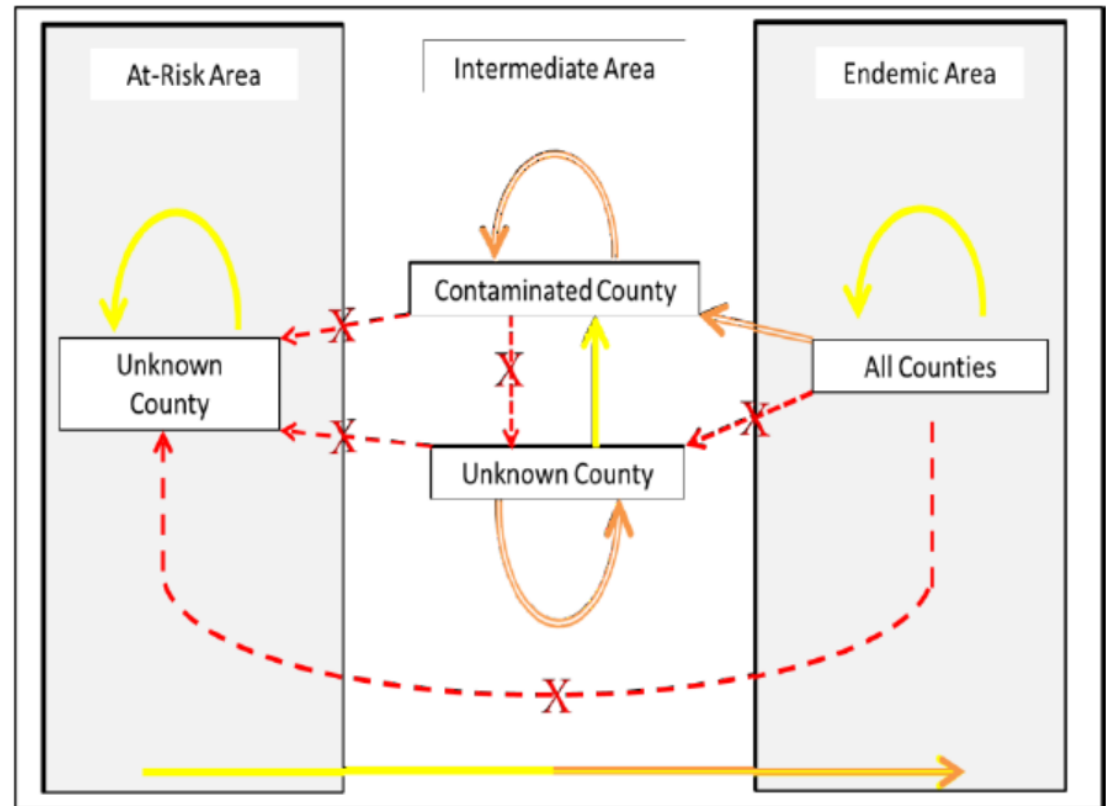
# Where

Basics= don't bring potentially infected gear to a clean place.

After cleaning and decontamination, the following symbols indicate that equipment transfer/movement is:

-  Not recommended
-  At the discretion of the responsible state/federal land management agency
-  Acceptable

## A. Subterranean Equipment recommendations by WNS Management Area and COUNTY



Just clean your gear!

and

Don't transport gear

out of region!



# HOW

#1 preferred method - keep designated gear for a cave/area and no decon is needed

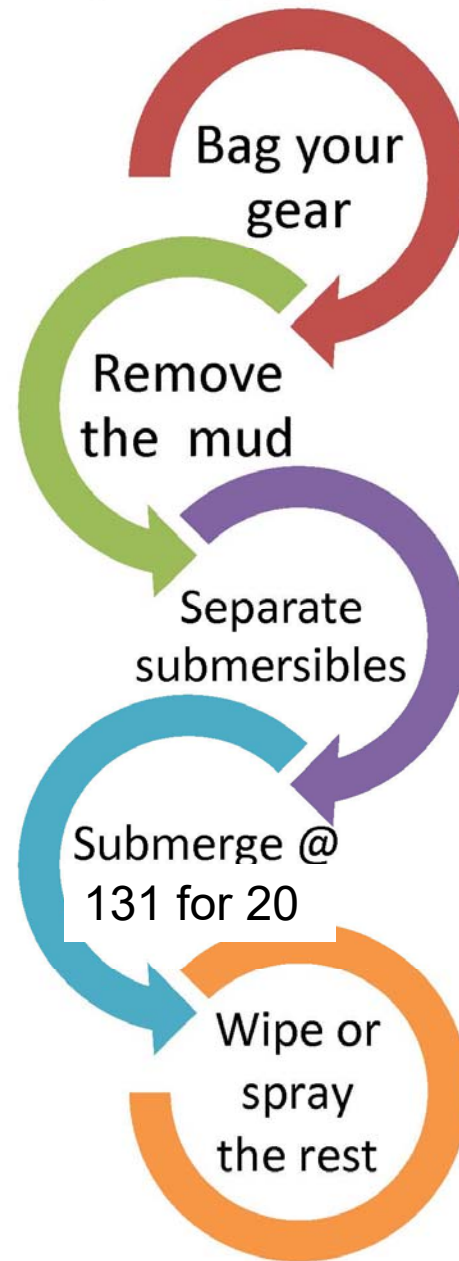
#2 preferred method is hot water

#3 method- chemicals



# Planning

- Pretrip –minimize gear, bag emergency gear so it stays “sealed” and doesn’t need decon.
- Plan how to containerize gear when get out. Have the trashbag/box, clean clothes and wipes near the door of the car.
- If having several sets of gear is not possible for individuals, consider grottos or projects purchasing dedicated loaner gear.

## 5 Easy Steps to WNS Decon!



\*Don't use gear from a WNS area in a clean area

	Tested Applications & Products <sup>3, 4, 5, 6, &amp; 7</sup>	Federal Reg No.:	Laboratory Results
Preferred Applications  <b>After containment and mud removal !</b>	Equipment Dedication	N/A	Clean according to manufacturer standards and dedicated to a site
	Submersion in Hot Water <sup>4, 6, &amp; 7</sup>	N/A	Laboratory effectiveness demonstrated upon submersion in water with sustained temperature $\geq 55^{\circ}\text{C}$ ( $131^{\circ}\text{F}$ ) for 20 minutes.
Other Products	Ethanol (60% or greater) <sup>4, 6, &amp; 7</sup>	CAS - 64-17-5	Laboratory effectiveness demonstrated upon exposure in solution for at least 1 minute.
	Isopropanol (60% or greater) <sup>4, 6, &amp; 7</sup>	CAS - 67-63-0	
	Isopropyl Alcohol Wipes (70%) <sup>4, 6, &amp; 7</sup>	CAS - 67-63-0	Laboratory effectiveness demonstrated immediately following contact and associated drying time. 
	Hydrogen Peroxide Wipes (3%) <sup>4, 6, &amp; 7</sup>	CAS - 7722-84-1	
	Accel <sup>4, 5, 6, &amp; 7</sup>	EPA - <a href="#">74559-4</a>	Laboratory effectiveness demonstrated when used in accordance with product label.
	Clorox <sup>®</sup> Bleach <sup>3, 4, 5, 6, &amp; 7</sup>	EPA - <a href="#">5813-100</a>	
	Clorox <sup>®</sup> Wipes <sup>4, 5, 6, &amp; 7</sup>	EPA - <a href="#">5813-79</a>	
	Clorox <sup>®</sup> Clean-Up Cleaner + Bleach <sup>4, 5, 6, &amp; 7</sup>	EPA - <a href="#">5813-21</a>	
	Hibiclens <sup>4, 5, 6, &amp; 7</sup>	NDA - <a href="#">017768</a>	
Lysol <sup>®</sup> IC Quaternary Disinfectant Cleaner <sup>3, 4, 5, 6, &amp; 7</sup>	EPA - <a href="#">47371-129</a>		

60% ethanol (120 proof)



# Ethanol

Keep wet  
for one  
minute



# 70 % isopropanol/isopropyl wipes, instant



# For nonporous objects -Read the label





# Washing yourself, soap and water ok

NDC 0234-0575-32

## HIBICLENS® (Chlorhexidine Gluconate solution 4.0% w/v)

### Antiseptic/Antimicrobial Skin Cleanser

HIBICLENS® prevents skin infections thereby reducing the risk of cross-infection. HIBICLENS® has antiseptic activity and a persistent antimicrobial effect with rapid bactericidal activity against a wide range of microorganisms.



32 Fl. oz. (1 qt.) (946 mL)

Distributed by Mölnlycke Health Care US, LLC, Norcross, Georgia 30092

#### Drug Facts

**Active ingredient Purpose**  
Chlorhexidine gluconate  
solution 4.0% w/v ..... Antiseptic

#### Uses

- antimicrobial skin cleanser helps reduce bacteria that potentially can cause disease
- for skin wound and general skin cleansing
- surgical hand scrub
- healthcare personnel handwash

#### Warnings

##### For external use only

#### Do not use

- if you are allergic to chlorhexidine gluconate or any other ingredients in this preparation
- as a patient preoperative skin preparation of the head or face
- in contact with the meninges
- in the genital area
- on wounds that involve more than the superficial layers of skin

#### When using this product

- keep out of eyes, ears, and mouth. May cause serious and permanent eye injury if placed or kept in the eye during surgical procedures, or may cause deafness when instilled in the middle ear through perforated eardrums.
- if contact occurs in any of these areas, rinse with cold water right away

#### Drug Facts (continued)

**Stop use and ask a doctor if** irritation, sensitization, or allergic reaction occurs and lasts for 72 hours. These may be signs of a serious condition.

**Keep out of reach of children.** If swallowed, get medical help or contact a Poison Control Center right away.

#### Directions

- use with care in premature infants or infants under 2 months of age. These products may cause irritation or chemical burns.
- *skin wound and general skin cleansing.* Thoroughly rinse the area to be cleansed with water. Apply the minimum amount of the product necessary to cover the skin or wound area and wash gently. Rinse thoroughly.
- *surgical hand scrub.* Wet hands and forearms with water. Scrub for 3 minutes with about 5mL of the product with a brush. Rinse thoroughly under running water. Repeat. Dry thoroughly.
- *healthcare personnel handwash.* Wet hands with water. Dispense about 5mL of the product into cupped hands and wash in a vigorous manner for 15 seconds. Rinse and dry thoroughly.

#### Drug Facts (continued)

#### Other information

- store between 20-25°C (68-77°F)
- avoid excessive heat above 40°C (104°F)

**Inactive ingredients** fragrance, gluconolactone, isopropyl alcohol 4% w/v, lauramine oxide, poloxamer 237, purified water and red 40

**Questions? 1-800-843-8497**

**Laundry/Cleaning Instructions.** Chlorhexidine Gluconate skin cleansers will cause stains if laundered with chlorinated products. Rinse completely and use only non-chlorine detergents. See website for more details. [www.hibiclens.com](http://www.hibiclens.com)

Lot number and expiration date printed on bottom of container.

Part# 26006-09-MHC



Precleaning-  
Decontamination  
does not work  
through mud.

Wash clothes  
before deconning  
or mud may set.

Toothbrush for  
cameras



# Hot water

Coolers for home use.



# Potential for use of residential dishwashers and washing machines in WNS decontamination, Rickard S. Toomey III

Mammoth Cave International Center for Science and Learning, Western Kentucky University and Mammoth Cave National Park

## Washing Machine Test Results

Model	Approximate Purchase Date	Cycle	Minutes over 55°C	Maximum Temperature (°C)
Frigidaire FFFS5115PWO	2014	Sanitize	14	60.156
Frigidaire FFFS5115PWO	2014	Sanitize	16	62.463
Frigidaire FFFS5115PWO	2014	Sanitize	17	61.56
Frigidaire FFFS5115PWO	2014	Sanitize	15	61.919
Frigidaire FFFS5115PWO	2014	Sanitize / Heavy Soil	27	63.387
Kenmore 796.40272900	2013	Sanitize	33	62.463
Whirlpool WTW8800YC1	201X	Sanitize	~35	64.911
LG WM2450HRA	2011	Sanitize	19	60.242
LG WM2450HRA	2011	Sanitize	33	67.107
LG WM2450HRA	2011	Sanitize	38	66.094

# Potential for use of residential dishwashers and washing machines in WNS decontamination, Rickard S. Toomey III

Mammoth Cave International Center for Science and Learning, Western Kentucky University and Mammoth Cave National Park

Dishwasher Test Results							
Model	Approximate Purchase Date	Cycle	Heat setting	Position	Heated Dry	Minutes over 55°C	Maximum Temperature (°C)
Whirlpool DU945PWPQ0	2005	Light	Regular	Top	No	26	59.471
Whirlpool DU945PWPQ0	2005	Light	Regular	Silverware (door)	No	18	59.301
Whirlpool DU945PWPQ0	2005	Light	Regular	Bottom	No	21	59.471
Whirlpool DU945PWPQ0	2005	Regular	Hi-Temp	Top	No	51	60.852
Whirlpool DU945PWPQ0	2005	Regular	Hi-Temp	Silverware (door)	No	48	60.502
Whirlpool DU945PWPQ0	2005	Regular	Hi-Temp	Bottom	No	43	60.677
Whirlpool DU945PWPQ0	2005	Regular	Hi-Temp	Top	No	55	59.687
Whirlpool DU945PWPQ0	2005	Regular	Regular	Top	No	21	59.687
Whirlpool DU945PWPQ0	2005	Heavy	Hi-Temp	Top	No	60	60.677
Whirlpool DU945PWPQ0	2005	Heavy	Hi-Temp	Silverware (door)	No	54	60.502
Whirlpool DU945PWPQ0	2005	Heavy	Hi-Temp	Bottom	No	58	60.502
Whirlpool DU945PWPQ0	2005	Heavy	Hi-Temp	Top	No	53	59.625
Whirlpool DU945PWPQ0	2005	Pots / Pans	Hi-Temp	Top	No	63	60.852
Whirlpool DU945PWPQ0	2005	Pots / Pans	Hi-Temp	Top	Yes	124	60.85 (wash) 65.70 (dry)
Whirlpool DU945PWPQ0	2005	Pots / Pans	Hi-Temp	Top	Yes	123	60.68 (wash) 60.33 (dry)
Kenmore 655_1373	2011	Regular	Hi-Temp	Top	Yes	82	60.85 (wash) 63.62 (dry)
Frigidaire FGBD2434PBOA	2015	Normal	Hi-Temp	Bottom	No	64	66.09
Whirlpool WDT710PAYM2	2011	Normal	Hi-Temp	Top	No	64	60.85
White-Westinghouse SU200PXW1	1980s?	Regular	NA	Bottom	No	0	52.293
RCA PSD965M-35	1980s?	Regular	NA	Bottom	No	2	55.117
White-Westinghouse SU200PXW1LE	1980s?	Heavy	NA	Bottom	No	0	50.042

# Group Events-Make it easy with a Decon Station



# BLM and Fort Stanton Cave Study Project Recirculates water with on demand water heater and cattle tank



# Propane burners and big pots

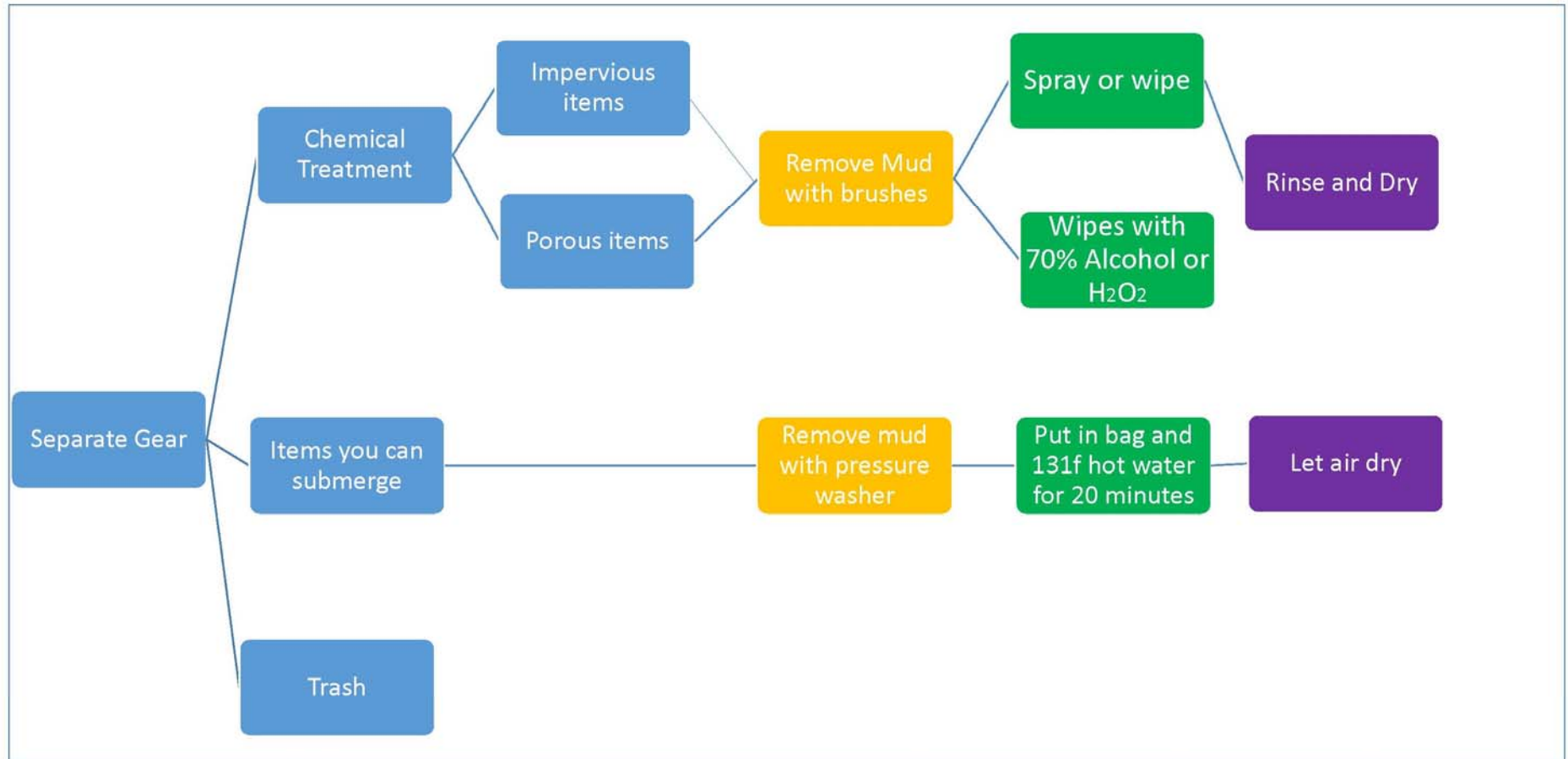




# Signage can be helpful for large groups

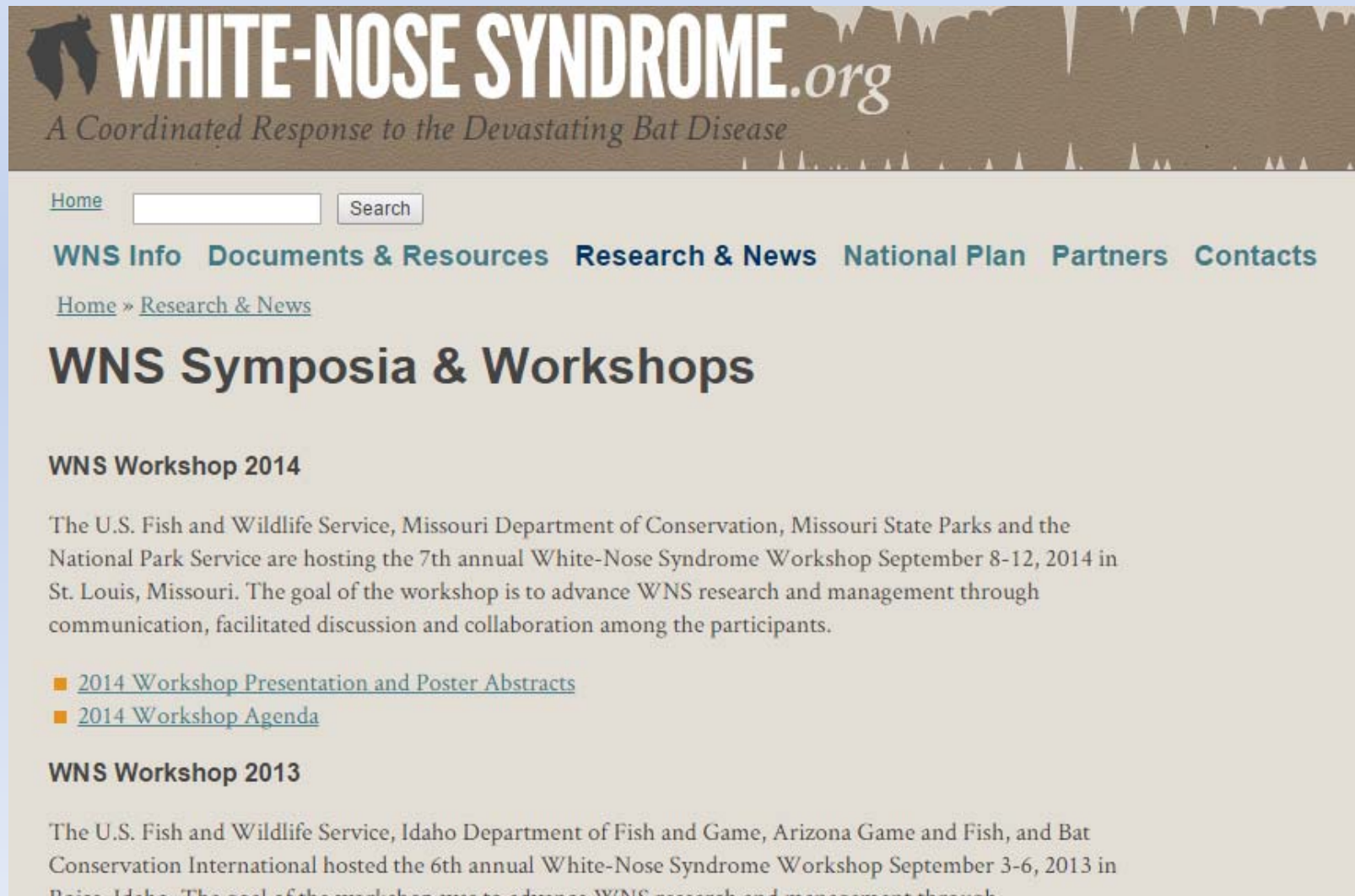


## Decontamination Station Procedure



# Where to find more info

- [www.whitenosesyndrome.org](http://www.whitenosesyndrome.org)



**WHITE-NOSE SYNDROME.org**  
*A Coordinated Response to the Devastating Bat Disease*

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## WNS Symposia & Workshops

### WNS Workshop 2014

The U.S. Fish and Wildlife Service, Missouri Department of Conservation, Missouri State Parks and the National Park Service are hosting the 7th annual White-Nose Syndrome Workshop September 8-12, 2014 in St. Louis, Missouri. The goal of the workshop is to advance WNS research and management through communication, facilitated discussion and collaboration among the participants.

- [2014 Workshop Presentation and Poster Abstracts](#)
- [2014 Workshop Agenda](#)

### WNS Workshop 2013

The U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, Arizona Game and Fish, and Bat Conservation International hosted the 6th annual White-Nose Syndrome Workshop September 3-6, 2013 in Boise, Idaho. The goal of the workshop was to advance WNS research and management through



[www.caves.org/WNS](http://www.caves.org/WNS)

- Contact [WNSLiaison@caves.org](mailto:WNSLiaison@caves.org)
- email list  
<http://lists.caves.org/mailman/listinfo/wns>

We explore, we study, we protect. Visit [www.caves.org](http://www.caves.org).

# 5 Easy Steps for WNS Decontamination!

Bag your gear

- Bag your gear at the cave and keep your car clean

Wash the mud off

- Disinfection doesn't work through mud

Sort your gear

- Separate submersibles from delicate gear

Submerge @ 131 °f for 20

- Some clothes washers can be set to sanitize cycles or use an insulated cooler to maintain high temperatures

Wipe or spray the rest

- Use approved products like 70% alcohol wipes or Clorox Clean-up Cleaner Spray on items like cameras

\*Don't use gear used in a WNS cave in an uncontaminated area