

Bat Conservation Trust



White-nose Syndrome: Guidelines for Bat Workers and Cavers

1. Background

White-nose syndrome (WNS) has been associated with the deaths of over one million bats in North East USA. In some hibernation sites, numbers have declined by 80-100% since 2006 when the condition was first identified. WNS continues to spread southwards and westwards at the rate of 200 miles each winter.

Named after the distinctive white-fungal growth found on many of the affected bats, WNS has been linked with a new species of soil fungus *Geomyces destructans*. WNS is still poorly understood but a proposed hypothesis is that the fungus irritates the bats and causes energetically-expensive arousals from hibernation, loss of stored energy and starvation.

There has been a confirmed diagnosis of the fungus associated with WNS on a bat (*Myotis myotis*) hibernating near Périgueux in France (Puechmaille et al. Feb 2010, *Emerging Infectious Diseases*). The affected bat was found hibernating in March 2009. This bat was not underweight, unlike the infected bats in the US, and was released after examination. Bats with fungal growths on the muzzle have been reported in parts of Europe (including the Netherlands and Germany) since the 1980s, but these have not been associated with mass mortalities. To date there has not been a confirmed diagnosis of WNS or the associated fungus in the UK.

It has been suggested that the fungus was introduced into the US from Europe by human intervention, perhaps by a caver or batworker. Since *Geomyces destructans* appears to be a recent mutant, there are concerns that a soil fungus in caves in Europe might also mutate so that it becomes lethal to bats.

As a precautionary measure, BCT has set up a surveillance system to monitor the observations of bat workers in the UK, in collaboration with DEFRA and the Veterinary Laboratories Agency (VLA).

The purpose of this surveillance is to:

- Facilitate quick identification of suspected cases at a national level
- Raise awareness and promote vigilance
- Ensure consistency of approach
- Provide a framework to ensure effective communications

This guidance note documents commonly reported symptoms of WNS in the US to help identification of suspected cases in the UK, details how bat workers and others can contribute to the national surveillance programme, and gives advice on how all cave users can help minimise the risk of spread.

2. What to look out for

In the US, WNS has commonly been associated with:

- bats with white fungus, particularly around the nose, but also on the wings, ears and/or tail;
- bats clustered near the entrance of hibernacula, or in areas not normally identified as winter roost sites
- bats flying outside during the day in temperatures at or below freezing
- dead or dying bats near hibernation sites

However, not all dead or dying bats have obvious visual signs of the fungus.

Dead and dying bats may also be individuals affected by WNS that have used up fat reserves long before the winter is over. Alternatively, if affected bats disturb the whole colony, healthy bats may become active and also use up valuable fat reserves as a result of this disturbance.

In isolation, the symptoms do not necessarily indicate WNS. For example, WNS is not the only cause of white fungus on hibernating bats, and not all bats affected with WNS will necessarily have the white fungus. Therefore, it is important to be vigilant for all symptoms.

3. How to contribute to the national surveillance programme

All UK bats and their roosts are fully protected under UK and European legislation. This means that you should not enter a known hibernaculum without an appropriate licence, or a licensed bat worker.

We request that all licensed bat workers who take part in hibernation surveys whether as part of the National Bat Monitoring Programme (NBMP), or other voluntary activities, please complete a short questionnaire after surveying underground sites. A copy of the form can be found in Appendix 2 and is also available from the BCT website at http://www.bats.org.uk/pages/about_bats-white-nose_syndrome-586.html. This form will only take a couple of minutes to complete, but the data generated will be invaluable in gaining a UK and subsequently European picture of WNS. Forms can be submitted on-line at the web address above; emailed to nbmp@bats.org.uk; or posted to NBMP, FREEPOST, LON10138, London SW8 4BR.

Anyone who observes any unusual activity of bats flying during the day in cold temperatures, especially near hibernation sites, is asked to report those observations as well.

4. How to minimise risk of spread

If you see live or dead bats with white fungus, please do not touch them. Where possible, photograph the potentially affected bat(s) and exit the site immediately. Make an accurate recording of where the bat was found within the site and call the Bat Conservation Trust at 0845 1300 228 to report the incident.

Photographs are requested to speed up identification of suspected cases, as they will be passed on to specialists from around the world. This is important due to the high potential risk that WNS poses to bat populations. However, please note that only appropriately licensed bat workers are permitted to photograph live bats; and furthermore, that any such photography must be incidental to their licensed work, causing no additional disturbance to bats.

Keep up to date with sites of suspected and confirmed WNS by regularly checking the BCT website http://www.bats.org.uk/pages/about_bats-white-nose_syndrome-586.html.

Researchers suspect that WNS can be transferred between underground sites by bat workers and others. Therefore, it is important that precautionary measures are undertaken to minimise the risk of transmission. Travel between underground/hibernation sites in or near suspected or confirmed regions (and countries) should be avoided. Decontaminate all equipment used and any surfaces that that equipment came into contact with (e.g., car trunk), following the US Fish and Wildlife Service recommended decontamination process (see Appendix 1). Note that clothing, footwear, and equipment, such as harp traps, bat bags, weighing tubes, rulers, and gloves, have not yet been ruled out as vectors of WNS.

5. What to do if you find a bat suspected to be affected by white nose syndrome

Phone the Bat Helpline to notify BCT and receive the latest advice about the procedure to be followed in the event of encountering sick or dead bats suspected of being affected by white nose syndrome.

Dead bats. Suspect **dead** WNS bats should be sent chilled/frozen to:

A M Barlow MRCVS,
VLA Langford,
Langford House,
Langford,
Somerset,
BS40 5DX

The appropriate package should be clearly marked with “Suspected White-nose syndrome”, and also “Pathological specimen. Handle with care”. Please telephone or email Alex Barlow first if possible.

Tel 01934 852421
Fax 01934 852981
email a.barlow@vla.defra.gsi.gov.uk

The VLA will arrange for such bats to be tested both for white nose syndrome, and also enter the routine passive surveillance testing for EBLV.

Note only dead bats suspected of being affected by WNS should be sent to VLA via this route. All other dead bats should be sent to the VLA passive surveillance programme for rabies testing following the instructions at <http://www.bats.org.uk/pages/vla.html>.

6. Is there a risk to human health?

Human health implications from WNS are not suspected: there is no information indicating that people have been affected after exposure to WNS. However, because we are still learning about WNS, we cannot rule out a risk to humans from contact with affected bats.

7. The future

Research is currently being undertaken to investigate the origin of WNS, how it kills bats, the extent to which it is spreading, and how its impact can be minimised. Captive breeding programmes have been initiated for affected species that are also included in the US Endangered Species Act.

In addition to providing general guidelines for those who may come into contact with WNS, BCT will provide up-to-date information on WNS and relevant web-links. Furthermore, potential WNS sightings will be documented, and affected sites will be tracked by use of an online submission form on the website. Countries and regions with suspect and confirmed cases of WNS will be reported on the BCT website.

8. Further reading

Containment and decontamination procedures:
<http://www.fws.gov/northeast/wnscavers.html> (see Appendix 1)

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U.S. Fish and Wildlife Service information and guidelines (including photos):

<http://www.fws.gov/midwest/Endangered/mammals/inba/BatAilment.html>

White nose syndrome FAQs:

<http://www.fws.gov/northeast/pdf/white-nosefaqs.pdf>

Article on White nose syndrome in the US:

http://www.fws.gov/northeast/white_nose.html

Article on bat with WNS fungus in France:

<http://www.cdc.gov/eid/content/16/2/pdfs/09-1391.pdf>

Appendix 1 Recommended decontamination process (USA)

(N.B. These guidelines are aimed at batworkers/cavers in the USA. Some brand-name products may not be available outside the USA, so this is intended as a guide to decontamination procedures, not a strict checklist for batworkers/cavers in the UK.)

From: US Fish and Wildlife Service, NE Region <http://www.fws.gov/northeast/wnscavers.html>

Before caving:

A cave should only be entered with clothing, boots, and equipment that have been fully cleaned using the protocol below. We ask that you not take gear into a cave if that gear cannot be thoroughly decontaminated or disposed of (i.e. if harnesses, ropes or webbing, etc. cannot be decontaminated, we advise that you not enter caves or parts of caves requiring use of this gear).

After EVERY caving trip please abide by the following steps.

Step 1: Upon exiting a cave...

- Thoroughly scrape or brush off any dirt and mud from your clothes, boots, and gear and then place them in a sealed plastic bag or plastic container with lid to be cleaned and disinfected off site.
- Outer clothing should be removed prior to entering a vehicle after/between a site visit. A clean change of clothing is recommended. Surface cleaning of exposed skin (arms, face, neck, hands, etc.) with antibacterial hand sanitizer (i.e. Purell®) should occur prior to entering the vehicle's cab.

Step 2:

- For clothing – Wash all clothing and any appropriate equipment in washing machine using the hottest cycle possible for material and conventional detergents. Laboratory testing has found Woolite® fabric wash to be the best surfactant for clothing. Rinse thoroughly, and then follow by soaking with sodium hypochlorite bleach (i.e. household bleach) solution diluted to 1 part bleach to 9 parts water in a tub or plastic container. Soak for 10 minutes, then rinse and air dry.
- For submersible gear (i.e. soft-sided gear.) – Disinfect any equipment that can be submersed in a solution with an appropriate and compatible disinfectant such as sodium hypochlorite bleach (i.e. household bleach) solution diluted to 1 part bleach to 9 parts water in a tub or plastic container or 0.3% concentration of quaternary ammonium compounds (i.e. Lysol® All-purpose Professional Cleaner or the antibacterial form of Formula 409®). Keep submersed for 10 minutes, then rinse and air dry.
- For non-submersible gear (i.e. hard-sided gear) – Disinfect any equipment that cannot be submersed by applying an appropriate and compatible disinfectant to the outside surface by using $\geq 0.3\%$ concentration of quaternary ammonium compounds such as Lysol® All-purpose Professional Cleaner, Lysol® disinfecting wipes or the antibacterial form of Formula 409®; or use sodium hypochlorite bleach (i.e. household bleach) solution diluted to 1 part bleach to 9 parts water. Keep on surface for 10 minutes, then rinse and air dry.
- For boots – Boots need to be fully scrubbed and rinsed so that all soil and organic material is removed. The entire rubber and leather boots, including soles and leather uppers, can then be disinfected with an appropriate disinfectant such as $\geq 0.3\%$ concentration of quaternary ammonium compounds (i.e. Lysol® All-purpose Professional Cleaner or the antibacterial form of Formula 409®) or sodium hypochlorite bleach (i.e. household bleach) solution diluted to 1 part bleach to 9 parts water. Keep on surface for 10 minutes, then rinse and air dry.
- For ropes and harnesses – This equipment should be dedicated to one cave or not used at all. Decontamination of vertical equipment is recommended. However, the performance integrity may be compromised by using these disinfecting agents mentioned above repeatedly. Laboratory testing is ongoing.

Note: This protocol is updated as of 6-9-09.

