



White-Nose Syndrome: Guidance for bat workers in the UK and the Isle of Man

This document has been produced by the Bat Conservation Trust in collaboration with Natural England, the Countryside Council for Wales, Scottish Natural Heritage, the Department of Agriculture & Fisheries, and Animal Health Veterinary Laboratories Agency. The first section provides an overview of white-nose syndrome, and introduces what we are requesting bat workers in the UK to do and the reasons for this. Step-by-step guidelines for different types of bat workers involved in hibernation checks and swarming surveys are then provided in subsequent sections.

Contents

1. Background	2
1.1 What is white-nose syndrome?.....	2
1.2 What causes WNS?.....	2
1.3 Have there been any cases of WNS in the UK or Europe?	2
1.4 What is being asked of UK bat workers?.....	3
1.5 What should I do if I observe symptom(s) of WNS?.....	3
1.6 What decontamination products can I use?	4
1.7 Why are decontamination procedures recommended?	4
1.8 Why report negative cases?	5
1.9 What will happen if there is a confirmed case of <i>G. destructans</i> in the UK?.....	5
2. Guidelines for licensed bat workers undertaking hibernation checks	6
2.1 Preparation	6
2.2 Suggested Good Practice	6
2.3 On-site.....	6
2.4 Follow-up	7
3. Guidelines for licensed bat workers undertaking a swarming survey at an underground site	9
3.1 Preparation	9
3.2 Suggested Good Practice	9
3.3 On-site.....	9
3.4. Follow-up	10
4. Guidelines for unlicensed bat workers checking underground sites for potential use by bats	11
4.1 Preparation	11
4.2 Suggested Good Practice	11
4.3 On-site.....	11
4.4 Follow-up	12
5. Guidelines for volunteers assisting on a site visit.....	13
Appendix I: Photo examples of <i>G. destructans</i> from the US	14
Appendix II: Field surveillance form.....	16

1. Background

1.1 What is white-nose syndrome?

White-nose syndrome (WNS) is the name used to describe a group of symptoms associated with the deaths of over one million bats since 2006 across the Eastern USA (19 states) and Canada (four provinces)¹. These symptoms are:

- bats with a white fungus (*Geomyces destructans*), particularly around the nose, but also on the wings, ears and/or tail (see photos in Appendix I)
- bats clustered near the entrances of hibernacula, or in areas not normally identified as winter roost sites
- bats flying outside during the day in temperatures at or below freezing, and/or
- dead or dying bats in or near hibernation sites

In isolation, the symptoms do not necessarily indicate WNS; for example bats with a white fungus might otherwise be perfectly healthy. Conversely, not all bats affected with WNS will necessarily be found with white fungus on them.

1.2 What causes WNS?

The fungus, *G. destructans*, has been confirmed as the cause of WNS². It is a soil fungus that grows optimally at the temperatures found in winter hibernacula, which irritates the bats and causes energetically-expensive arousals from hibernation, loss of body fat and starvation. Recent research has also suggested that infections on the wing membranes of bats may lead to dehydration thereby increasing the frequency of arousals³. Additionally where the fungus causes lesions in the wing membrane, this may affect the fitness of bats that survive the hibernation period.

1.3 Have there been any cases of WNS in the UK or Europe?

The fungus *G. destructans* has been positively identified in bats in eight European countries including France, Germany, Switzerland and several countries in Eastern Europe (the first confirmed finding was in 2009) and there is photographic evidence from a further four countries⁴. However, this is the only 'symptom' identified in Europe; there have been no reports of mass die offs. Therefore there is no evidence of the syndrome itself.

There have been no confirmed cases of WNS and *G. destructans* has not been found in the UK.

¹ Turner, G., Reeder, D.M. and Coleman, J.T.H. (2011) A Five-Year Assessment of Mortality and Geographic Spread of White-nose Syndrome in North American Bats and a Look to the Future. *Bat Research News* **52**(2): 13-27

² Lorch, J. M. *et al.* (2011) Experimental infection of bats with *Geomyces destructans* causes white-nose syndrome. *Nature* doi:10.1038/nature10590

³ Willis, C.K.R., *et al.* (2011) Evaporative Water Loss Is a Plausible Explanation for Mortality of Bats from White-Nose Syndrome. *Integrative and Comparative Biology* **51**(3): 364-373

⁴ Puechmaille, S.J., *et al.* (2011) Pan-European Distribution of White-Nose Syndrome Fungus (*Geomyces destructans*) Not Associated with Mass Mortality. *PLoS One* **6**(4) e19167

1.4 What is being asked of UK bat workers?

Primarily, we are asking all visitors to underground hibernation sites to remain vigilant for the symptoms commonly associated with WNS (as listed in 1.1) as part of their usual survey activities. We are not requesting that bat workers do additional checks for signs of WNS. Furthermore, licensed bat workers should not handle suspect live bats; in cases where a live bat is found with a suspect fungus, a sample should be taken from visible fungal lesions whilst the bat is in a hanging position.

All UK bats and their roosts are fully protected under UK and European legislation. This means that **you must not enter a known hibernaculum without an appropriate licence or accompanied by an appropriately licensed bat worker, and disturbance to bats during licensed work must be kept to a minimum.**

Detailed guidelines for bat workers are provided in sections 2 to 5 of this document; table 1.1 summarises what is being asked of different groups of bat workers.

1.5 What should I do if I observe symptom(s) of WNS?

If you observe any of the symptoms associated with WNS, please follow the step by step instructions (as relevant to you) provided in sections 2-5. In particular, please follow the recommended decontamination procedures and do not visit any further sites without having first decontaminated equipment and clothing.

Table 1.1 An overview of what is being requested of whom

	Licensed bat workers	Unlicensed ecologists checking sites for potential-use by bats	Volunteers assisting on a site visit
Familiarise yourself with commonly observed symptoms	✓	✓	✓
Be vigilant on site whilst undertaking usual survey activities	✓	✓	✓
Add items to your standard kit list	✓	✓	✗
Sample suspect dead bats	✓	✓	✗
Sample suspect LIVE bats	✓	✗	✗
Follow decontamination procedures	✓	✓	✓
Report suspect cases	✓	✓	✗
Report negative cases	✓	✗	✗

1.6 What decontamination products can I use?

The decontamination products you use need to contain an anti-fungal agent. Prior to use of a disinfectant please check the relevant product data sheets to ensure anti-fungal action and the correct dilution rates for use. An increased concentration should be used if boots, equipment, etc. are wet.

There are a number of disinfectants available that have anti-fungal properties:

- Ark-Klens – available online from www.vetark.co.uk/pages/Ark-Klens_4.aspx (the ‘ready to use’ product is £5.87; September 2011 price).
- Trigen – available from various suppliers including online from www.nutrecare.co.uk/Product-2749/Dog-Hygiene-and-Household-cleaning/Trigene-Disinfectant (from £14.55 per litre of concentrate; September 2011 price)
- Virkon S (DuPont) – available from various suppliers including online from www.animalmedicationdirect.co.uk/virkon-s-1kg-5kg-10kg-50x-50g-sachets-pr-6022.html (£16.39 for 1kg box; September 2011 price)
- F10 – available from Meadows Animal Health Care online at www.mah-shop.co.uk/f10-ready-to-use-disinfectant-160-p.asp (£7.75 for 1 litre of ready to use disinfectant; September 2011 price)
- Lysol (Reckitt Benckiser) – available from various suppliers including online from www.amazon.com (various sizes and prices)

For easy application, we suggest decanting ‘ready to use’ disinfectant into a trigger spray container, such as those available from hardware stores (check usage instructions on the product you have purchased). For example, www.arco.co.uk/products/5634489 – cost £1.36 (September 2011 price).

The skin cleaner Hibiscrub is also a useful antifungal for use on hands. This is available from Boots www.boots.com/en/Hibiscrub-Skin-Cleanser-250ml-1-bottle_872185/ for £8.29 (September 2011 price). You can, alternatively, wash your hands thoroughly with soap and water. However, this method can be more difficult in the field.

Please note: general antibacterial hand gels are NOT effective against fungal spores.

1.7 Why are decontamination procedures recommended?

Although we’ve had no confirmed cases of *G. destructans* in the UK, researchers suspect that WNS can be transferred between underground sites by humans visiting those sites. 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. Across Europe, bat workers are being asked to follow basic decontamination protocols. Please also 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.

1.8 Why report negative cases?

Negative sightings are as important as reports of suspect cases because they help to build a true picture of the fungus' distribution, which in turn will inform future action and policy. Therefore, even if you do not observe any of the signs commonly associated with WNS, please do report back.

You can do this by ticking the relevant box on your NBMP hibernation form or by keeping a simple spreadsheet of sites and submitting these to BCT at the end of the survey season. (See section 2.4 for more details).

1.9 What will happen if there is a confirmed case of *G. destructans* in the UK?

If *G. destructans* is identified in the UK, BCT and the SNCOs will notify bat workers immediately. We will request that all bat workers continue their usual activities, continue to follow the protocols and submit data to BCT/the AHVLA as this will help us to develop a better understanding of the fungus' presence in the UK.

However, as added measures if the fungus is found in the UK, bat workers will be asked to:

- Ensure that decontamination procedures are followed after each and every hibernation site visit, and
- Take the minimum number of volunteers to help on site, to further reduce the potential for transmission

The situation will then be reviewed based on new information over the following summer season and bat workers will be notified of the outcome.

2. Guidelines for licensed bat workers undertaking hibernation checks

2.1 Preparation

Prior to undertaking a site visit, please:

- Ensure you are familiar with the symptoms commonly associated with WNS described in 1.1, and photos of *G.destructans* fungal lesions provided in Appendix I
- Check to see whether there have been any suspect cases in your area by visiting www.bats.org.uk/pages/info_for_batworkers.html

Please also check you have the following with your equipment:

- Field surveillance form and pencil
- Digital camera
- Disposable, single-use gloves
- Standard, transparent sticky tape
- Small transparent plastic bags
- Sealable plastic bags
- A suitable disinfectant (see 1.6)
- Hibiscrub hand cleanser (see 1.6)
- Thermometer (if you have one)
- Humidity reader (if you have one)

2.2 Suggested Good Practice

After visiting a hibernation site, we suggest you:

- Scrape excess mud and soil off boots, clothing and equipment
- Complete the field survey form or keep an ongoing record as suggested at 2.4 below (negative results are as important as positive ones)
- In any regions where suspect cases have been reported (and status not yet determined) please spray your boots and clothes with a suitable disinfectant and wash hands with Hibiscrub between site visits

Please note: It is good practice to follow decontamination procedures after every visit but it is a MUST in regions where a suspect case has been reported.

2.3 On-site

If, as part of your usual hibernation check activities, you see a **dead bat** with the characteristic white fungus:

- Wearing single-use gloves, carefully carry the bat out of the site and away from any hibernating bats
- Take a digital photo(s) of fungal lesions
- Wearing single-use gloves, take a sample of the external fungus:
 - make a U-shaped loop with a strip of tape (adhesive side turned outside)
 - gently touch the tip of the loop onto the fungus letting only the superficial fungal structures adhere; try to avoid getting soil or other matter mixed in with the sample

- gently place your adhesive tape onto a transparent piece of plastic, for example a food storage bag, making sure there are no air bubbles or gaps between the fungal sample and plastic
- taking care not to squash it, store the sample until it can be securely packaged between two bits of card and posted to the AHVLA
- Still wearing the gloves, place the bat in a separate sealed bag or container, such as a AHVLA sample tube (available on request from BCT)
- Finally, remove gloves, spray them with disinfectant and dispose of them in a sealed bag

If you see a **live bat** with a characteristic fungus, please follow the procedure below, whilst taking measures to disturb the bat (and other bats at the site) as little as possible.

- Take a digital photo of the affected bat(s)
- Complete the form in Appendix II
- Wearing single-use gloves, take a sample of the external fungus:
 - make a U-shaped loop with a strip of tape (adhesive side turned outside)
 - with the bat still in a hanging position, gently touch the tip of the loop onto the fungus letting only the superficial fungal structures adhere; try to avoid getting soil or other matter mixed in with the sample
 - place your adhesive tape onto a transparent piece of plastic, for example a food storage bag, gently making sure there are no air bubbles or gaps between the fungal sample and plastic
 - store this in a note book to keep flat, until it can be securely packaged between two bits of card before posting to the AHVLA
- Finally, remove gloves, spray them with disinfectant and dispose of them in a sealed bag

Please note fine tipped swabs are available from Alex Barlow at the AHVLA for use in situations where the above method is not appropriate, e.g. bats tucked tightly into crevices. If you are visiting a site where you know this is likely to be the case contact Alex Barlow to request swabs by telephone 01934 852421 or email alex.barlow@ahvla.gsi.gov.uk (please make sure you allow plenty of time ahead of your site visit for the swabs to be sent to you).

If you observe **ANY** of the signs commonly associated with WNS during your site visit, please do not visit any further sites that day and:

- Scrape excess mud and soil off boots, clothing and equipment
- Spray your boots and clothes with a suitable disinfectant
- Wash hands with Hibiscrub, if possible
- Complete the field survey form

Until the status of the finding(s) is confirmed, anyone visiting sites within the region of a suspect case should **carry out the decontamination procedures between site visits**. For the latest information about sites see www.bats.org.uk/pages/info_for_batworkers.html

2.4 Follow-up

Upon returning home, please wash your hands thoroughly with soap and water and either wash your outer clothes, or spray them with a suitable disinfectant (if you have not done this on site already).

If you have seen signs of WNS:

- Please send fungal samples, drawings of fungal lesions (see p. 20) and/or dead suspect bats chilled/frozen to: A M Barlow MRCVS, AHVLA Langford, Langford House, Langford, Somerset, BS40 5DX

The 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 on 01934 852421 or alex.barlow@ahvla.gsi.gov.uk.

- Please then submit observational data as soon as possible via our online surveillance form, which can be found at www.bats.org.uk/pages/report_form.html or send the form in Appendix II to BCT at: WNS Team, Bat Conservation Trust, Quadrant House, 250 Kennington Lane, London SE11 5RD

If you **have not** seen any signs of WNS, please mark this on your NBMP hibernation form prior to submission. Or, keep a record of your sites in a spreadsheet with the following column headings and send these to BCT via email to enquiries@bats.org.uk at the end of the survey season:

- Site name
- Site location (including county)
- Grid reference
- Site code (if NBMP site)
- Date of visit
- Confirmation of no signs of WNS

3. Guidelines for licensed bat workers undertaking a swarming survey at an underground site

3.1 Preparation

Prior to the survey, please:

- Ensure you are familiar with the symptoms commonly associated with WNS described in 1.1, and photos of *G.destructans* fungal lesions provided in Appendix I
- Check to see whether there have been any suspect cases in your area by visiting www.bats.org.uk/pages/info_for_batworkers.html

Please also check you have the following with your equipment:

- Field surveillance form and pencil
- Digital camera
- Spare gloves
- Standard, transparent sticky tape
- Small transparent plastic bags
- Sealable plastic bags
- Suitable disinfectant (see 1.6)
- Hibiscrub hand cleanser (see 1.6)

Please note: It is good practice to follow decontamination procedures after every visit but it is a MUST in regions where a suspect case has been reported.

3.2 Suggested Good Practice

After visiting each swarming site, we suggest you:

- Scrape excess mud and soil off boots, clothing and equipment
- Complete the field survey form or keep a record as suggested at 2.4 above (negative results are as important as positive ones)
- In any regions where suspect cases have been reported (and status not yet determined) please spray your boots, clothes and equipment with a suitable disinfectant and wash hands with Hibiscrub between site visits

3.3 On-site

If you catch a bat with the characteristic white fungal lesions:

- Take a digital photo(s) of fungal lesions
- Wearing single-use gloves, take a sample of the external fungus:
 - make a U-shaped loop with a strip of tape (adhesive side turned outside)
 - gently touch the tip of the loop onto the fungus letting only the superficial fungal structures adhere; try to avoid getting soil or other matter mixed in with the sample
 - place your adhesive tape onto a transparent piece of plastic, for example a food storage bag, gently making sure there are no air bubbles or gaps between the fungal sample and plastic
 - store this in a note book to keep flat, until it can be securely packaged between two bits of card before posting to the AHVLA
- Finally, remove gloves, spray them with disinfectant and dispose of them in a sealed bag.

- Release the bat
- Complete the field survey form

Please spray your gloves and outer clothes with a suitable disinfectant after handling the bat and then use Hibiscrub on your hands.

The net or trap in which the suspect bat was caught should also be sprayed with the disinfectant spray. If a cloth bag was used this should also be sprayed with disinfectant and washed before being used again.

If you observe **ANY** of the signs commonly associated with WNS during your site visit, please do not visit any further sites that day and:

- Scrape excess mud and soil off boots, clothing and equipment
- Spray your boots, clothes and equipment with a suitable disinfectant
- Wash hands with Hibiscrub, if possible
- Complete the field survey form

Until the status of the finding(s) is confirmed, anyone visiting sites within the region of a suspect case should **carry out the decontamination procedures between site visits**. For the latest information about sites see www.bats.org.uk/pages/info_for_batworkers.html

3.4. Follow-up

If you have seen signs of WNS:

- Please send fungal samples and drawings of the fungal lesions (see p.20) to:
A M Barlow MRCVS, AHVLA Langford, Langford House, Langford, Somerset, BS40 5DX

The 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 on 01934 852421 or alex.barlow@ahvla.gsi.gov.uk

- Please then submit observational data as soon as possible via our online surveillance form, which can be found at www.bats.org.uk/pages/report_form.html or send the form in Appendix II to BCT at: WNS Team, Bat Conservation Trust, Quadrant House, 250 Kennington Lane, London SE11 5RD

4. Guidelines for unlicensed bat workers checking underground sites for potential use by bats

4.1 Preparation

Prior to undertaking a site visit, please:

- Ensure you are familiar with the symptoms commonly associated with WNS described in 1.1, and photos of *G.destructans* fungal lesions provided in Appendix I.
- Check to see whether there have been any suspect cases in your area by visiting www.bats.org.uk/pages/info_for_batworkers.html

Please also check you have the following with your equipment:

- Field surveillance form and pencil
- Digital camera
- Disposable, single-use gloves
- Standard, transparent sticky tape
- Small transparent plastic bags
- Sealable plastic bags
- Suitable disinfectant (see 1.7)
- Hibiscrub hand cleanser (see 1.7)

4.2 Suggested Good Practice

After visiting each underground site, we suggest you:

- Scrape excess mud and soil off boots, clothing and equipment
- Complete the field survey form or keep an ongoing record as suggested at 2.4 above (negative results are as important as positive ones)
- In any regions where suspect cases have been reported (and status not yet determined) please spray your boots and clothes with a suitable disinfectant and wash hands with Hibiscrub between site visits

Please note: It is good practice to follow decontamination procedures after every visit but it is a MUST in regions where a suspect case has been reported.

4.3 On-site

If you see a **dead bat** on the floor with fungal lesions characteristic of *G. destructans*, we ask that you:

- Wearing single-use gloves, carefully carry the bat out of the site and away from any hibernating bats.
- Take a digital photo(s) of fungal lesions.
- Wearing single-use gloves, take a sample of the external fungus:
 - make a U-shaped loop with a strip of tape (adhesive side turned outside)
 - gently touch the tip of the loop onto the fungus letting only the superficial fungal structures adhere; try to avoid getting soil or other matter mixed in with the sample
 - gently place your adhesive tape onto a transparent piece of plastic, for example a food storage bag, making sure there are no air bubbles or gaps between the fungal sample and plastic

- taking care not to squash it, store the sample until it can be securely packaged between two bits of card and posted to the AHVLA
- Still wearing the gloves, place the bat in a separate sealed bag or container, such as a VLA sample tube (available on request from BCT)
- Finally, remove gloves, spray them with disinfectant and dispose of them in a sealed bag. Complete the field survey form

Never take a bat from a hanging position, even if it appears to be dead. Report any unusual observations to the licensed bat worker.

If you see a **live bat** with characteristic fungal lesions:

- Take a photo of the affected individual, taking measures to ensure that disturbance to the bat (and other bats at the site) is minimal.
- Leave the roost immediately and notify BCT of your observation(s).

Please note that as an unlicensed individual, if any signs of bats are observed within a site and you are not accompanied by an appropriately licensed bat worker, you should leave the site immediately.

If you observe **ANY** of the signs commonly associated with WNS during your site visit, please do not visit any further sites that day and:

- Scrape excess mud and soil off boots, clothing and equipment
- Spray your boots, clothes and equipment with a suitable disinfectant
- Wash hands with Hibiscrub, if possible
- Complete the field survey form

Until the status of the finding(s) is confirmed, anyone visiting sites within the region of a suspect case should **carry out the decontamination procedures between site visits**. For the latest information about sites see www.bats.org.uk/pages/info_for_batworkers.html

4.4 Follow-up

If you have seen signs of WNS:

- Please send any fungal samples and/or dead suspect bats should be sent chilled/frozen to: A M Barlow MRCVS, AHVLA Langford, Langford House, Langford, Somerset, BS40 5DX.

The 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 on 01934 852421 or alex.barlow@ahvla.gsi.gov.uk.

- Please then submit observational data as soon as possible via our online surveillance form, which can be found at www.bats.org.uk/pages/report_form.html or send the form in Appendix II to BCT at:
WNS Team, Bat Conservation Trust, Quadrant House, 250 Kennington Lane, London SE11 5RD






5. Guidelines for volunteers assisting on a site visit

If you are assisting on a site visit, please familiarise yourself with the commonly associated symptoms and photos of fungal lesions in advance of the site visit.

If you suspect any of the symptoms described, notify the licensed bat worker you are with immediately. They will then instruct you regarding decontamination where required.

Appendices

Appendix I: Photo examples of *G. destructans* from the US

	<p>www.fws.gov/northeast/whitenose/images/MYLU_BreathingCave2_0209.jpg</p> <p>Likely WNS symptoms at Breathing Cave, Bath County, Virginia, late February 2009</p> <p>Photo courtesy of Wil Orndorff, Virginia Department of Conservation and Recreation - Division of Natural Heritage</p>
	<p>www.fws.gov/northeast/whitenose/images/3841fungusondorsal.jpg</p> <p>Little brown bat; fungus on dorsal surface of wing and tail membranes, Oct. 2008, New York</p> <p>Photo courtesy of Ryan von Linden/New York Department of Environmental Conservation</p>
	<p>www.fws.gov/northeast/whitenose/images/3842close-upofnosewithfungus.jpg</p> <p>Little brown bat; close-up of nose with fungus, New York, Oct. 2008.</p> <p>Photo courtesy of Ryan von Linden/New York Department of Environmental Conservation</p>
	<p>www.fws.gov/northeast/whitenose/images/3844Fungusonwingandtailmembrane.jpg</p> <p>Little brown bat; Fungus on wing and tail membrane, Oct. 2008, New York</p> <p>Photo courtesy of Ryan von Linden/New York Department of Environmental Conservation</p>
	<p>www.fws.gov/northeast/whitenose/images/fungus_arm_and_lesion_crop.jpg</p> <p>Possible sign of fungal irritation on arm, Barton Cave, Pa.</p> <p>Photo courtesy of Greg Turner, Pennsylvania Game Commission</p>



www.fws.gov/northeast/whitenose/images/Ear_fungus_Canoe_Creek_interior.jpg

Possible sign of fungal irritation on ear, Canoe Creek, Blair County, Pa.

Photo courtesy of Greg Turner, Pennsylvania Game Commission



www.fws.gov/northeast/whitenose/images/MLuciWhiteNose2428.jpg

Little brown bat with white-nose syndrome, New York

Photo courtesy of Al Hicks, New York Department of Environmental Conservation

PART 4: Observations in relation to suspect fungus (on live bats in situ)	
Bat species	
Ring number (where applicable)	
Body condition (very good / good / moderate / bad / emaciated)	
Outdoor Temperature	
Temperature near animals position	
Humidity near animals position	
No. of individuals in hibernaculum	
No. of individuals with fungal growth <i>(please sketch where you see the fungal lesions using the illustrations overleaf)</i>	
Colour of fungus	
Number of fungal patches	
Size of fungal patches (min and max, in mm)	
Sample taken?*	
Photograph(s) taken?	

***Sampling method** (based on the protocol developed by Leibniz Institute for Zoo and Wildlife Research)

Wearing single-use gloves, and whilst the bat is still in a hanging position, gently touch the visible fungal lesion with the adhesive tape, letting only the superficial fungal structures adhere. Try to avoid getting soil or other matter mixed in with the sample. Gently, press your adhesive tape onto a transparent piece of plastic, for example a food storage bag, making sure there are no air bubbles or gaps between the spore sample and plastic. Taking care not to squash it, store the sample until it can be securely packaged between two bits of card and posted to the AHVLA.

Please note fine tipped swabs are available from Alex Barlow at the AHVLA for use in situations where the above method is not appropriate, e.g. bats tucked tightly into crevices. If you are visiting a site where you know this is likely to be the case contact Alex Barlow to request swabs by telephone 01934 852421 or email alex.barlow@ahvla.gsi.gov.uk (please make sure you allow plenty of time ahead of your site visit for the swabs to be sent to you).

PART 5: Observations in relation to suspect fungus (on live bats caught at swarming sites)	
Bat species	
Ring number (where applicable)	
Sex	
Age (juvenile / adult)	
Body weight (grams)	
Body condition (very good / good / moderate / bad / emaciated)	
Outdoor Temperature	
No. of individuals with fungal growth <i>(please sketch where you see the fungal lesions using the illustrations overleaf)</i>	
Colour of fungus	
Number of fungal patches	
Size of fungal patches (min and max, in mm)	
Sample taken?*	
Photograph(s) taken?	

***Sampling method** (based on the protocol developed by Leibniz Institute for Zoo and Wildlife Research)

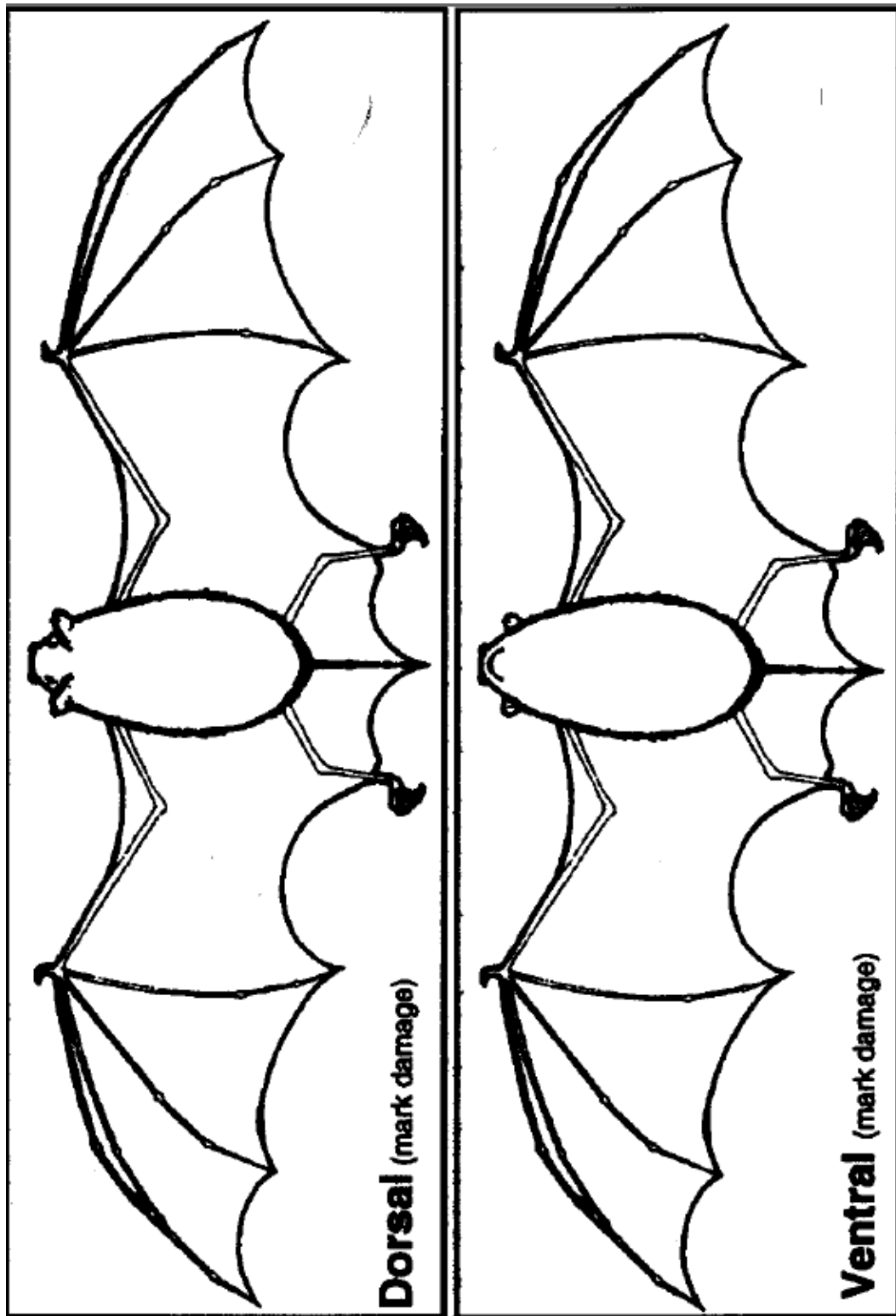
Wearing single-use gloves, and whilst the bat is in the hand, gently touch the visible fungal lesion with the adhesive tape, letting only the superficial fungal structures adhere. Try to avoid getting soil or other matter mixed in with the sample. Gently, press your adhesive tape onto a transparent piece of plastic, for example a food storage bag, making sure there are no air bubbles or gaps between the spore sample and plastic. Taking care not to squash it, store the sample until it can be securely packaged between two bits of card and posted to the AHVLA.

PART 6: Observations in relation to suspect fungus (on dead bats)	
Bat species	
Ring number (where applicable)	
Outdoor Temperature	
Temperature near animals position	
Humidity near animals position	
No. of individuals in hibernaculum	
No. of individuals with fungal growth <i>(please sketch where you see the fungal lesions using the illustrations overleaf)</i>	
Colour of fungus	
Number of fungal patches	
Size of fungal patches (min and max, in mm)	
Sample taken?*	
Photograph(s) taken ?	

***Sampling method** (based on the protocol developed by Leibniz Institute for Zoo and Wildlife Research)

Wearing single-use gloves, gently touch the visible fungal lesion with the adhesive tape, letting only the superficial fungal structures adhere. Try to avoid getting soil or other matter mixed in with the sample. Gently, press your adhesive tape onto a transparent piece of plastic, for example a food storage bag, making sure there are no air bubbles or gaps between the spore sample and plastic. Taking care not to squash it, store the sample until it can be securely packaged between two bits of card and posted to the AHVLA along with the dead bat.

Localisation of fungal infection(s) (please mark in the sketch)



If you are a licensed bat worker, and you find a live bat with fungal lesions, please return this page to the AHVLA with the fungal sample.