

## Wildlife Health Bulletin 2022-01

National Wildlife Health Center  
Jonathan Sleeman, Center Director  
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# Winter 2021/2022 Bat Submission Guidelines and Highlights of the 2020/2021 White-Nose Syndrome Surveillance Season

### Summary

- The USGS National Wildlife Health Center has released updated guidance for bat diagnostic submissions for the 2021/2022 white-nose syndrome (WNS) surveillance season.
- During the 2020/2021 surveillance season, WNS was detected for the first time in Wyoming and Montana, increasing the number of states where WNS has been confirmed to 37.
- Field testing of several vaccine candidates to prevent WNS in susceptible bat species is ongoing, and field vaccination has proven to be safe in WNS susceptible animals.

Updated guidance from the USGS National Wildlife Health Center (NWHC) is now available for bat diagnostic submissions for the [2021/2022 white-nose syndrome \(WNS\) surveillance season](#). These guidelines are posted on the [NWHC WNS web page](#) and replace all previous NWHC bat submission criteria. NWHC continues to support a designed surveillance approach based on a dynamic diffusion model that identifies high risk areas where *Pseudogymnoascus destructans* (*Pd*) is predicted to spread this season in western and southern states. The approach provides managers data-driven guidance on where to focus their surveillance efforts and resources to assist with early detection in new geographic areas. An [overview of the benefits of designed surveillance](#) is available on our website. As in previous years, reference charts and a WNS Management Area map are included to assist submitters in identifying priority species by region and collecting appropriate samples for submission to a diagnostic laboratory. These guidelines support surveillance objectives of the [WNS National Plan](#) designed to identify new geographic locations and bat species impacted by *Pd* and WNS.

Videos demonstrating proper techniques for the various sampling methods described in the submission guidelines for WNS/*Pd* surveillance including [skin swab collection](#), [wing biopsy](#), [UV screening](#), [bat euthanasia](#), and [environmental sampling](#) are available for viewing on our website.

The NWHC can answer questions about WNS surveillance relevant to your state, territory, or region. The NWHC diagnostic laboratories can also test samples collected as part of general or targeted surveillance efforts in accordance with the national *Pd* surveillance strategy. Representatives from tribal, state, and federal agencies who wish to participate in ongoing surveillance efforts or who have questions should contact Anne Ballmann (608-270-2445, [aballmann@usgs.gov](mailto:aballmann@usgs.gov)).

### 2020/2021 season highlights from national surveillance for white-nose syndrome and *Pseudogymnoascus destructans*

The NWHC evaluated samples from over 200 locations in 28 states last season, including samples from 2,141 bats, representing 26 species, and 1,529 environmental samples. The fungus (*Pd*), was detected at 27 sites, including 15 new counties from a combination of opportunistic screening of sick or dead bats reported by the general public and active surveillance efforts. Wyoming and Montana confirmed their first cases of WNS following initial *Pd* detection

within their borders in spring 2019 and 2020, respectively, increasing the number of states where WNS has been confirmed to 37. Further spread of the disease was also detected in Texas, Nebraska, North Dakota, and Washington. Evidence suggests that the range of *Pd* now extends into eastern New Mexico, although WNS has yet to be confirmed in New Mexico, California, or Mississippi, where only the fungus has been reported. The Southeastern myotis (*Myotis austroriparius*) was removed from the [list of North American bat species confirmed with WNS](#) after genetic analysis revealed a misidentification of this specimen, and on-going surveillance has yet to detect *Pd*-positive individuals of the species. The number of North American bat species confirmed with WNS is currently 12, while *Pd* has been reported on another six species and two *Corynorhinus* subspecies.

A current map of the distribution of confirmed and suspected cases of WNS is [available online](#).

### **WNS vaccine research update**

Since the USDA Center for Veterinary Biologics authorized the field testing of several vaccine candidates to prevent WNS in susceptible bat species, 10 field trials across 4 states have been initiated, including over 2,200 free-flying *Myotis* bats. Trials are currently underway in Wisconsin, Texas, Idaho, and Washington at both maternity colonies and hibernacula. Field vaccination has proven to be safe in WNS susceptible animals and current trials to determine vaccine efficacy are assessing pathogen loads, disease severity, time to emergence from hibernation, and survival. Additionally, host demographics and timing of vaccination are being analyzed for their contributions to vaccine efficacy. For more details, contact Dr. Tonie Rocke (trocke@usgs.gov).

### **Coronavirus screening in bats and other North American wildlife**

The USGS National Wildlife Health Center (NWHC) has recently entered into a partnership with the Centers for Disease Control and Prevention (CDC) One Health Office to assess the prevalence of SARS-CoV-2 and the diversity of other coronaviruses in North American wildlife (see [Wildlife Health Bulletin 2021-02](#)). Bat carcasses submitted to NWHC for WNS surveillance or investigations for other causes of mortality will be screened for coronaviruses, including SARS-CoV-2. Earlier opportunistic viral screening of bat submissions to NWHC showed that approximately 10% of bats from the U.S. collected between 2008-2020 harbored alpha-coronaviruses (NWHC, unpublished data) which differ from SARS-CoV-2 (a beta-coronavirus). Research is also underway to evaluate coronavirus detection from environmental guano samples as a means for non-invasive, active surveillance for these viruses in bat populations. For more details, contact Dr. Hon Ip (hip@usgs.gov).

### **Recent WNS related publications from NWHC**

Blehert, D.S., Lorch, J.M., 2021. Laboratory maintenance and culture of *Pseudogymnoascus destructans*, the fungus that causes bat white-nose syndrome. Current Protocols 1. <https://doi.org/10.1002/cpz1.23>

Bombaci, S., Russell, R.E., St. Germain, M.J., Dobony, C.A., Ford, W.M., Loeb, S., Jachowski, D.S., 2021. Context dependency of disease-mediated competitive release in bat assemblages following white-nose syndrome. Ecosphere 12. <https://doi.org/10.1002/ecs2.3825>

Grider, J., Russell, R.E., Ballmann, A., Hefley, T.J., 2021. Long-term *Pseudogymnoascus destructans* surveillance data reveal factors contributing to pathogen presence. Ecosphere 12(11):e03808. <https://doi.org/10.1002/ecs2.3808>

Keller, S., Lorch, J.M., Berlowski-Zier, B.M., Ballmann, A., Blehert, D.S., 2021. Analysis of archival specimens confirms white-nose syndrome in little brown bats (*Myotis lucifugus*) from New York, USA, in spring 2007. Journal of Wildlife Diseases 57, 457-460. <https://doi.org/10.7589/JWD-D-20-00137>

Vanderwolf, K.J., Campbell, L.J., Taylor, D.R., Goldberg, T.L., Blehert, D.S., Lorch, J.M., 2021. Mycobiome traits associated with disease tolerance predict many western North American bat species will be susceptible to white-nose syndrome. Microbiology Spectrum 9. <https://doi.org/10.1128/Spectrum.00254-21>

## Disease Investigation Services

To request diagnostic services or report wildlife mortality, please contact the USGS National Wildlife Health Center at 608-270-2480, by email at [NWHC-epi@usgs.gov](mailto:NWHC-epi@usgs.gov), or through the Wildlife Health Information Sharing Partnership – event reporting system ([WHISPers](#)) interface and a field epidemiologist will be available to discuss the case. To report wildlife mortality events in Hawaii or Pacific Island territories, please contact the Honolulu Field Station at 808-792-9520 or email Thierry Work at [thierry\\_work@usgs.gov](mailto:thierry_work@usgs.gov).

Further information about our services can be found at <https://www.usgs.gov/centers/nwhc/science/disease-investigation-services>. To learn more about submitting samples and reporting events, go to <https://www.usgs.gov/centers/nwhc/science/report-mortality-events-and-submit-specimens>. The [WHISPers](#) system can also be used to enter event information, request diagnostic services, and to view and search summary information on wildlife morbidity/mortality events. If you have questions or concerns regarding the scientific and technical services we provide, please do not hesitate to contact NWHC Director Jonathan Sleeman at [jsleeman@usgs.gov](mailto:jsleeman@usgs.gov).

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