

WHISPers—Providing Situational Awareness of Wildlife Disease Threats to the Nation—A Fact Sheet for the Biosurveillance Community

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Biosurveillance and Wildlife Disease Event Data

Factors such as global trade and travel, urbanization, and agricultural intensification have increased the interactions among diverse wildlife populations, domestic animals, and humans, which have promoted opportunities for the spillover of diseases that can be shared between humans and animals (zoonoses). Today, over 70 percent of emerging zoonotic diseases worldwide originate in wildlife (Jones and others, 2008).

Solutions for emerging infectious disease and bioterror threats can be improved by incorporating integrated biodefense strategies, including improved surveillance for animal and zoonotic diseases, strong national leadership (The White House, 2012), and effective management tools. Active biosurveillance for disease events is key to early detection, warning, and overall situational awareness and enables better

communication, coordination, decision making, and data-driven responses. The national biosurveillance infrastructure has well-established channels for human and domestic animal health data through the Centers for Disease Control and Prevention and U.S. Department of Agriculture, and State, county, and local authorities. Wildlife disease information, however, has been more challenging to acquire and access, in part, due to the comparatively small infrastructure and resources dedicated to wildlife health and also because regulatory authority for wildlife and wildlife health is split among Federal, State, Tribal, and indigenous natural resource authorities. To address these issues, the Wildlife Health Information Sharing Partnership-event reporting system (WHISPers; <https://whispers.usgs.gov>) was developed by the U.S. Geological Survey (USGS) National Wildlife Health Center (NWHC) to promote collaboration and sharing of wildlife health information and to provide situational awareness and timely information about wildlife disease

U.S. Geological Survey and U.S. Department of Agriculture employees partner to investigate and respond to an event of Newcastle disease to minimize its effect on wildlife, domestic animals, humans, and the environment. Photograph courtesy of Paul Wolf, U.S. Department of Agriculture.





Screenshot showing the Wildlife Health Information Sharing Partnership-event reporting systems (WHISPers) web page. WHISPers is a data portal that provides situational awareness and real-time information about wildlife disease threats. Screenshot by the U.S. Geological Survey.

threats. WHISPers is a free science gateway and data portal that provides interactive query, display, reporting, and export capabilities for wildlife health event summary information.

WHISPers provides many benefits to the biosurveillance community, including access to summarized wildlife health data collected by State, Federal, Tribal, and indigenous natural resource agencies, and other agency partners in a single repository. Information stored in WHISPers is also used to report detection and presence of pathogens in the United States to the World Organisation for Animal Health.

Wildlife health events are displayed in WHISPers as data become available, and access to details about specific events are secured through account and agency level credentials. All data are laboratory-verified by either the NWHC or partner diagnostic laboratories and validated through communication with the appropriate State, Federal, Tribal, or indigenous agency. As of mid-2022, over 230 partners from State, Federal, Tribal, indigenous, international, university, and nongovernmental organizations have registered to use WHISPers. WHISPers also includes more than 45 years of wildlife disease data collated by the NWHC, providing historical context for common wildlife diseases.

What is a Wildlife Health Event?

A wildlife health event is defined in WHISPers as any noteworthy occurrence of one or more sick or dead wild animals clustered in time or space. Morbidity (illness) and mortality (death) events may involve multiple locations, species, and diagnoses. Monitoring wildlife health contributes to a “One Health” approach (efforts aimed at simultaneously optimizing the health of people, animals, and the environment) and provides situational awareness of health threats to the Nation and parallels syndromic surveillance efforts in human and agricultural medicine.

Partners in Biosurveillance

The USGS NWHC has been monitoring the health of our Nation’s wildlife since 1975 and is the Nation’s only Federal Biosafety Level 3 diagnostic and research facility focused on wildlife health and disease. NWHC is also recognized by the World Organization for Animal Health as a Collaborating Centre for Research, Diagnosis, and Surveillance of Wildlife Pathogens and by the Food and Agriculture Organization of the United Nations as a Reference Centre for Wildlife Health and Wildlife Disease Diagnostics.

Beginning in 2019, the NWHC, in partnership with USGS Web Informatics and Mapping, developed an expanded and enhanced second generation WHISPers. The new system provides State, Federal, Tribal, and indigenous agencies in the wildlife health and biosurveillance communities with tools to directly input, manage, and visualize data collected during wildlife health events, promoting near real-time event reporting. Advanced system functionality, including event data sharing and customizable notification capabilities, allows WHISPers to serve as a true collaboration platform for the wildlife health and biosurveillance communities that provides situational awareness and early detection of disease threats to the Nation. Future development of WHISPers aims to integrate individual-level data and targeted surveillance efforts (testing for a specific disease in the absence of a mortality event) to

build an additional data stream that can be incorporated into system-wide analyses and predictive science.

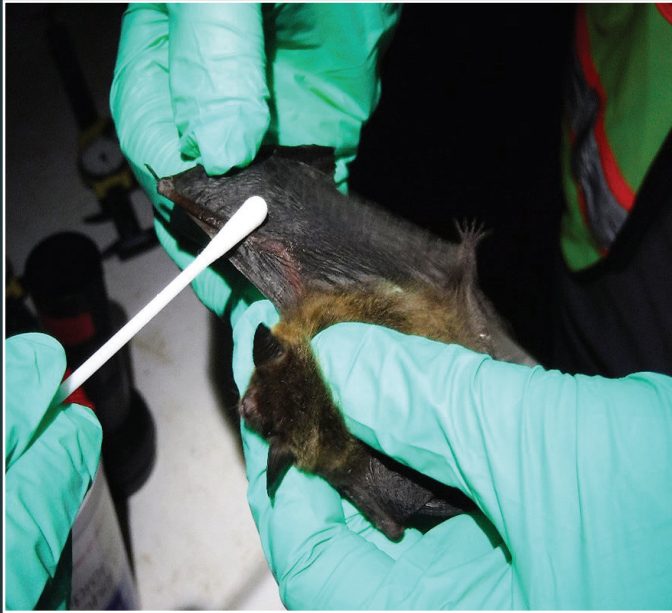
The enhancement of WHISPers was made possible through a partnership with the Department of Homeland Security, Countering Weapons of Mass Destruction, National Biosurveillance Integration Center (NBIC). NBIC's legislatively mandated mission is to facilitate early warning of events, share situational awareness of acute biological events, and support better informed responses to biological events of national significance. The NWHC and NBIC are collaborating on advanced WHISPers functionalities, including developing a data portal to the Biosurveillance Ecosystem, a virtual biosurveillance analyst workbench that integrates multiple data streams and provides customized data analytics to support informed decision making within the national biosurveillance and biodefense communities.



A U.S. Geological Survey wildlife pathologist examines a bat for cause of death determination in Biosafety Level 3 facilities at the U.S. Geological Survey National Wildlife Health Center in Madison, Wisconsin. Photograph by Allison Klein, U.S. Geological Survey.



Personal protective equipment and biosafety controls ensure that research on zoonotic pathogens (for example, highly pathogenic avian influenza) is conducted safely. Photograph by Hon Ip, U.S. Geological Survey.



Designed surveillance sampling of wildlife allows for early detection of pathogens, such as *Pseudogymnoascus destructans*, the fungus that causes bat white-nose syndrome. Wildlife Health Information Sharing Partnership-event reporting systems contains information on white-nose syndrome mortality and surveillance dating back to 2010. Photograph by Katrien Werner, U.S. Geological Survey.

Beyond Wildlife Disease

WHISPers is a secure, extensible platform the biosurveillance community can use to monitor wildlife disease outbreak information shared by State, Federal, Tribal, and indigenous wildlife health professionals. This unified data stream provides value to the biosurveillance community by creating an understanding of the immediate potential for wildlife related disease risks to humans, domestic animals, and other wildlife. Documenting where disease occurs, which species carry it, its impacts, and changes to the disease over time are also vital to understanding factors that create resilience in wildlife populations. NWHC and other collaborators plan to use WHISPers data to better understand drivers of disease, which is necessary to develop predictive tools and risk mitigation strategies. Long-term WHISPers goals include developing the ability to capture active, targeted surveillance data (in addition to morbidity and mortality data), creating mobile applications and advanced search and data visualization tools, and continuing further development of a national and international partner network to share data about priority pathogens. WHISPers is an integral part of the NWHC strategic science plan for advancing wildlife health science for the benefit of animals, humans, and the environment. To learn more about how WHISPers and the NWHC can be beneficial to your mission, visit our website at <https://whispers.usgs.gov/home> or contact us at WHISPers@usgs.gov.

References Cited

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For additional information visit
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Publishing support provided by the
Indianapolis Publishing Service Center

ISSN 2327–6916 (print)
ISSN 2327–6932 (online)
<https://doi.org/10.3133/fs20223022>