



Report to the Western Association of Fish and Wildlife Agencies From the USGS National Wildlife Health Center

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The USGS National Wildlife Health Center provides national leadership to safeguard wildlife and ecosystem health through dynamic partnerships and exceptional science.

The following information is of a topical nature for wildlife management agencies and entities; many partners and collaborators are involved in gathering and researching this information.

Wildlife Health Information Sharing Partnership – Event Reporting System (WHISPers)

The [Wildlife Health Information Sharing Partnership – event reporting system](#) (WHISPers) developed at the USGS National Wildlife Health Center (NWHC) is now available online. WHISPers is a partner-driven, web-based repository for sharing basic information about historic and ongoing mortality and morbidity events in wild animals. The system provides natural resource managers with timely, accurate information on these events to facilitate disease management and planning.

The records in WHISPers can be searched by species, disease, location (to county level), and event start and end dates. The system currently contains the verified (laboratory diagnosed) records that the NWHC has maintained on wildlife mortality events, which includes event information shared by state and federal partners. The system contains one of the largest wildlife disease databases available in the U.S.; however, since information is opportunistically collected and voluntarily reported to NWHC, it does not contain all the mortality events that have been documented in North America. The next phase of the project is to create a mechanism for partners to input information on wildlife mortality events thereby improving the temporal, species, and geographic coverage of this long-term dataset. A Frequently Asked Questions section and instructions for using and searching WHISPers is available [here](#).

Contact: LeAnn White, 608-270-2491, clwhite@usgs.gov.

An Emerging Disease of Salamanders

A recently described fungal pathogen, *Batrachochytrium salamandrivorans* (Bsal), has been associated with the near extinction of fire salamanders (*Salamandra salamandra*) in the Netherlands and Belgium. Initial infection trials suggest that this fungus is highly pathogenic for some salamander and newt species that occur in North America. International trade of amphibians is thought to be a primary route of spread for Bsal, similar to the closely related chytrid fungus *Batrachochytrium dendrobatidis* (Bd). Indeed, Bsal was most recently detected in commercially traded salamanders in the United Kingdom.

The NWHC conducted a risk assessment for Bsal to determine where introductions of Bsal are likely to occur and, if introduced, what species would be expected to decline. Preliminary results indicate that the overall risk of Bsal to North American salamanders is high with high potential for introduction and subsequent severe biological consequences.

The NWHC has adapted a previously developed molecular assay to detect Bd and Bsal in North American salamanders. NWHC maintains a large collection of archived amphibian tissues and is in the process of screening these samples to determine if Bsal is already present in the U.S. The assay will also be important for future surveillance efforts aimed at early detection of Bsal in the U.S. **Contact:** LeAnn White, 608-270-2491, clwhite@usgs.gov.

Wildlife Morbidity/Mortality Summaries: January 2015 to March 2015

Highly Pathogenic Avian Influenza in North America – 2015 First Quarter Update

Highly pathogenic avian influenza (HPAI) virus was first detected in wild waterfowl in the United States during the investigation of a waterfowl mortality event in Washington State (Pacific Flyway) during December, 2014, later attributed to aspergillosis. Subsequent field and laboratory investigations, conducted by the USGS National Wildlife Health Center (NWHC), the U.S. Department of Agriculture (USDA), Washington Department of Fish and Wildlife, and the Washington Animal Disease Diagnostic Laboratory, identified three HPAI viruses (H5N8, H5N2, and H5N1) in wild birds in this region. As of the end of May 2015, these three HPAI strains have been detected in varying degrees in commercial poultry operations, backyard poultry operation, wild birds, and captive wild birds in the Pacific, Central, and Mississippi Migratory Bird Flyways.

Flyway	Domestic Detection (No. farms) [†]	Wildlife Detection (No. birds) [†]
Pacific	Backyard (8) Commercial (2) <i>Highly Pathogenic Subtypes[‡]</i> EA H5N8 (3), EA/AM H5N2 (7)	Wild Duck (55) Wild Goose (2) Wild Raptor (5) Captive Raptor (6) <i>Highly Pathogenic Subtypes[‡]</i> EA H5N8 (22), EA/AM H5N2 (27), EA/AM H5N1 (3), EA H5 (10)
Central	Backyard (3) Commercial (13) <i>Highly Pathogenic Subtypes[‡]</i> EA/AM H5N2 (16)	Wild Duck (1) Wild Goose (2) <i>Highly Pathogenic Subtypes[‡]</i> EA/AM H5N2 (2), EA H5 (1)
Mississippi	Backyard (8) Commercial (168) <i>Highly Pathogenic Subtypes[‡]</i> EA H5N8 (1), EA/AM H5N2 (175)	Wild Duck (1) Wild Goose (4) Wild Raptor (2) Captive Raptor (1) <i>Highly Pathogenic Subtypes[‡]</i> EA/AM H5N2 (6), EA H5 (1)

[†] Data from USDA as of May 31, 2015, see <http://www.usda.gov/avianinfluenza> for details and up-to-date information

[‡] EA = Contains genetic material from Eurasian avian influenza strain only, EA/AM = Contains genetic material from both Eurasian and American strains, H5 = H5 icA assay identified Eurasian HPAI H5 clade 2.3.4.4 with no viral isolation for further subtyping

There have been no reports of clinical disease in North American wild ducks attributable to these HPAI viruses. However, multiple HPAI-infected Canada geese (*Branta canadensis*) exhibited neurologic signs (head thrown back, jerky movements, and swimming in circles) shortly before death. The range and

prevalence of severe neurological signs in HPAI-infected geese is not well characterized; please contact the [NWHC](#) or your [state wildlife health official](#) to report sick geese or other birds. These HPAI viruses are believed to be the primary or underlying cause of death in various raptor species including red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), captive gyrfalcons (*Falco rusticolus*), peregrine falcon (*F. peregrinus*), captive great-horned owl (*Bubo virginianus*), bald eagle (*Haliaeetus leucocephalus*), and snowy owl (*B. scandiacus*).

The NWHC is continuing to monitor for HPAI by testing sick and dead migratory birds submitted for cause of death determination, and has [expanded the submission criteria](#) to include single raptor mortalities, birds exhibiting neurological impairment, and birds with high relative risk of exposure based on proximity to infected domestic birds. During the first quarter of 2015, the NWHC accepted approximately 60% more avian submissions than during the first quarter of 2014, and has screened nearly 300 birds for HPAI through these diagnostic submissions. In addition, the NWHC has partnered with multiple state agencies to test over 1,200 hunter-harvested birds (waterfowl and turkey) for HPAI. The NWHC is also a partner in the Interagency Steering Committee for Surveillance for Highly Pathogenic Avian Influenza in Wild Birds.

To date, no humans or other mammals have shown signs of disease from these particular viruses but field personnel handling live or dead wild birds should take [appropriate precautions](#). As we learn more about these HPAI viruses, submission and testing criteria may change; please consult with a field epidemiologist at the NWHC if you have any specific concerns. The NWHC will continue to provide updates via [Wildlife Health Bulletins](#) as more information becomes available. **Contact:** NWHC Field Epidemiology Team, 608-270-2480, NWHC-epi@usgs.gov

White-Nose Syndrome Winter 2014/2015 Summary

Iowa joined the growing list of states and Canadian provinces with confirmed cases of white-nose syndrome (WNS) during the winter 2014/2015 surveillance season, bringing the current total to 26 states and 5 provinces. A combination of carcasses, non-lethal skin swabs, and/or environmental samples collected from 18 states and representing 99 bat hibernacula were evaluated by the USGS National Wildlife Health Center (NWHC) for *Pseudogymnoascus destructans* (Pd), the fungus that causes WNS. No further westward expansion of the disease was identified this past winter, although Pd now extends into eastern Oklahoma (Delaware County). At the time of this report, no updates on identification of this disease were available from Minnesota or Mississippi, which first identified Pd in spring 2013 and 2014, respectively. Interestingly, surveillance conducted during 2014/2015 in Rhode Island (within the WNS endemic area) failed to detect the presence of Pd. Winter surveys indicated that bat populations, although small, have remained stable there since surveys began in 2011. No new bat species were added to the list of those susceptible to WNS. Of the 14 cave hibernating species tested by the NWHC during the winter of 2014/2015 (including 6 western bat species) only little brown bats (*Myotis lucifugus*), Indiana bats (*M. sodalis*), tricolored bats (*Perimyotis subflavus*), and Northern long-eared bats (*M. septentrionalis*) tested positive for Pd.

A large winter bat mortality event involving approximately 2,000 little brown bats was investigated at an active mine complex in Pierce County, Wisconsin. Bronchopneumonia (for which the underlying cause was not identified) was consistently found among specimens examined at the NWHC; WNS was not detected in this event. Partners are reminded that the NWHC provides diagnostic and epidemiological assistance to investigate unusual bat mortality events throughout the year. Federal, state, or tribal agencies wishing to participate in the expanded national Pd surveillance strategy should contact Dr. Anne Ballmann (contact information below) to discuss options for their region.

View the current map of WNS Occurrence by County created by the Pennsylvania Game Commission at http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/ Current NWHC bat submission guidelines are available at: http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/USGS_NWHC_Bat_WNS_submission_protocol.pdf. **Contact:** Anne Ballmann, National Wildlife Health Center, 608-270-2445, aballmann@usgs.gov

Exposure of Bald and Golden Eagles to Contaminants

The NWHC, in collaboration with the USFWS Mountain Prairie Region 6 Environmental Contaminants Program, has initiated a study to evaluate opportunistically recovered bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagle carcasses for cause of death determination, as well as to determine exposure to anticoagulant rodenticides, lead, and mercury. These contaminants were identified in 2014 as priorities for FWS Region 6. The goal is to evaluate up to 140 eagle carcasses annually over the next two years from the Dakotas, Montana, Nebraska, Colorado, Kansas, Utah, and Wyoming for evidence of exposure to these contaminants. Data generated from this effort will expand upon the bald and golden eagle toxicant studies being performed in other USFWS regions, and will also supplement on-going golden eagle assessments conducted by the USGS Snake River Field Station (Boise, Idaho). Based on the results of these studies, USFWS will develop public outreach materials that describe exposure pathways and suggest alternatives to lead ammunition and anticoagulant rodenticides. In addition to the current focus on Region 6, the NWHC accepts any intact and freshly dead bald or golden eagles for cause of death determination from federal, state, or tribal partners. Diagnostic data are shared with USFWS for management purposes and eagle carcasses deemed free of zoonotic disease are transferred to the National Eagle Repository for distribution to Native American tribal members. **Contact:** Barb Bodenstein, National Wildlife Health Center, 608-270-2480, bbodenstein@usgs.gov

Coral Disease in Kaneohe Bay: New Lesion Described

The NWHC Honolulu Field Station has been collaborating with the University of Hawaii & the Hawaii Division of Aquatic Resources to investigate an unusual mortality of corals in Central Kaneohe Bay, Oahu. Corals affected were *Montipora capitata*, a dominant species in the area. Animals manifested acute tissue loss, and histology revealed a new heretofore undescribed microscopic lesion where coral cells were losing protein leading to secondary invasion by helminths and algae. The cause of this protein loss remains unknown, but the lesion was most prevalent in central Kaneohe Bay where tissue loss lesions were most evident. **Contact:** Thierry Work, NWHC Honolulu Field Station, 808-792-9520, thierry_work@usgs.gov

International Workshop on Fibropapillomatosis of Green Turtles

The USGS NWHC Honolulu Field Station co-hosted with NOAA an international workshop on fibropapillomatosis of green turtles in June, 2015. The workshop convened investigators from Brazil, West Africa, Puerto Rico, Australia, Hawaii and Florida to determine what kind of demographic effects the disease may be having on green turtle populations globally. **Contact:** Thierry Work, NWHC Honolulu Field Station, 808-792-9520, thierry_work@usgs.gov

Request for Wildlife Mortality and Morbidity Event Reporting (All States)

The NWHC Quarterly Wildlife Mortality Report, published in the Wildlife Disease Association's newsletter and on the NWHC Web site, is intended to inform wildlife professionals of wildlife events of interest. We kindly request the help of wildlife professionals in submitting investigations of recent die-offs of mammals, birds, amphibians, and reptiles for inclusion in this report. Credit will be given to

appropriate diagnostic laboratories and wildlife management agencies. The report can be found online at http://www.nwhc.usgs.gov/mortality_events/ongoing.jsp.

Additional Disease Research

Sylvatic Plague Vaccine for Prairie Dogs

Laboratory studies have demonstrated that oral vaccination of prairie dogs against plague using raccoon pox-vectored vaccine is feasible, resulting in significant protection against challenge with *Yersinia pestis*, the bacterium that causes sylvatic plague. The Sylvatic Plague Vaccine (SPV) Subcommittee, under the direction of the Executive Committee of the Black-footed Ferret Recovery Implementation Team, is continuing its work to complete development and delivery of the sylvatic plague vaccine as a management tool to combat plague in prairie dogs and promote the recovery of the black-footed ferret. Field trials completed by Colorado Parks and Wildlife and USGS National Wildlife Health Center (NWHC) in 2012 confirmed the safety of the vaccine in wild prairie dogs and non-target animals. NWHC and numerous federal, state, and tribal partners are beginning the third year of field trials to assess vaccine efficacy in free-ranging prairie dogs. Vaccine and placebo baits are being distributed in select prairie dog colonies in seven western states: Arizona, Colorado, Montana, South Dakota, Texas, Utah, and Wyoming. The field study will continue into 2016. Additional field trials will begin in 2015 in New Mexico and Canada, and possibly Mexico. **Contact:** Tonie Rocke, 608-270-2451, trocke@usgs.gov.

Results of Ring Test for Bighorn Sheep Pathogens

Reliable diagnostic test results are required for accurate disease investigation, and ideally diagnostic test results are consistent among laboratories and repeatable within laboratories. Bighorn sheep respiratory disease is believed to be associated with *Mycoplasma ovipneumoniae* and leukotoxin-producing Pasteurellaceae bacteria, both of which offer considerable diagnostic challenges. To evaluate the reliability of bighorn sheep pneumonia agent diagnostics, we conducted ring tests to evaluate the consistency and repeatability testing by nine laboratories routinely involved in detection of *M. ovipneumoniae*, Pasteurellaceae, and/or *lktA* (the Pasteurellaceae gene family encoding leukotoxin). The first ring test, conducted in 2014, targeted only *M. ovipneumoniae* and consisted of 21 mycoplasma broth specimens including samples inoculated with material from pneumonic bighorn sheep, samples spiked with *M. ovipneumoniae*, and negative control samples. The second ring test, conducted in 2015, targeted *M. ovipneumoniae*, Pasteurellaceae, and *lktA*, and consisted of 30 tissue homogenate supernatants from pneumonic bighorn sheep lungs, and from non-pneumonic domestic dog lungs either unspiked or spiked with either *M. ovipneumoniae*, *Bibersteinia trehalosi*, *Mannheimia haemolytica*, or *M. glucosida*. Both ring tests included multiple replicated samples. The consistency of detection of the various pathogens among laboratories was evaluated using Bayesian kappa statistics and the within-laboratory repeatability was assessed using the results of replicated specimens. Overall, these trials revealed generally good inter-laboratory agreement and intra-laboratory repeatability, but significant variability for some pathogens and testing methods was observed. Thus, this ring test served to provide new insights on current methods and the consistency of inter-laboratory results for the benefit of bighorn sheep disease management efforts. For more information about the ring test and the report, please contact Dan Walsh. **Contact:** Daniel Walsh, 608-270-2481, dwalsh@usgs.gov.

THANK YOU

The NWHC thanks all the state, federal and tribal agencies who worked with us the past year. We are at your service to provide technical support, field investigation assistance, diagnostic capabilities, and collaborative research projects.

Disease Investigation Services

To request diagnostic services or report wildlife mortality events in the lower 48 states, Alaska, or Puerto Rico, please contact the NWHC at 608-270-2480 or by email at NWHC-epi@usgs.gov, and a field epidemiologist will be available to discuss the case. To request these services or 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.

A field epidemiologist will be your primary point of contact for questions on disease epidemiology and management. A wildlife pathologist will be your primary point of contact on diagnostic findings and cause of morbidity or mortality. Further information can be found at our Website: <http://www.nwhc.usgs.gov/services/>.

[Wildlife Mortality Reporting and Diagnostic Submission Request Form](#)

Updates on nationwide mortality events can be viewed in WHISPerS: <https://www.nwhc.usgs.gov/whispers/>

To view NWHC Quarterly Wildlife Mortality Reports, please visit: http://www.nwhc.usgs.gov/publications/quarterly_reports/index.jsp

To be added to the NWHC list to receive Wildlife Health Bulletins and our quarterly newsletter, please contact Gail Moede Rogall at gmrogall@usgs.gov

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