



Report to the Fish and Wildlife Health Committee of the Association of Fish and Wildlife Agencies from the USGS National Wildlife Health Center September 16, 2015

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

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 are 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.

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

As of early September 2015, the most recent detection of highly pathogenic avian influenza (HPAI) viruses in wild North American birds was a mallard from Davis County, Utah, sampled in late-July 2015. This mallard, and the [June detections of HPAI](#) in Canada geese (*Branta canadensis*) in Michigan (reported by the Michigan Department of Natural Resources) and a black-capped chickadee (*Poecile atricapillus*) in Minnesota (reported by

the Minnesota Department of Natural Resources), demonstrate that HPAI was present in resident wild birds during the summer.

The NWHC is a member of the Interagency Steering Committee for Surveillance for Highly Pathogenic Avian Influenza in Wild Birds and, in this role, is testing samples from live birds and hunter-harvested birds that are collected by participating agency partners in the Mississippi and Atlantic Flyways.

The NWHC also continues to monitor for HPAI viruses by testing dead birds submitted for diagnostic evaluation (nationwide) and is the leading partner in mortality and morbidity investigation and associated diagnostics within the [Interagency Strategic Plan](#). Mortality investigations will facilitate early detection of HPAI in wild birds and will increase our knowledge of the spatial extent and species involved. Wildlife managers should remain vigilant for wild bird morbidity and mortality events and continue to contact NWHC to discuss submission and testing of carcasses from events that meet the [expanded submission criteria](#). Wildlife management agencies that investigate morbidity and mortality events independently or in collaboration with other diagnostic laboratories are strongly encouraged to report these events to the NWHC using our [reporting form](#) so that information can be captured on a national scale and displayed on [WHISPers, a wildlife health information sharing website](#), to increase situational awareness.

In addition, the NWHC is conducting research into the ecology of HPAI and other avian influenza viruses in the Mississippi Flyway. This research began in the summer of 2015 and involves sampling wild waterfowl and peridomestic avian and mammalian species to test for active infection with avian influenza viruses and serological exposure to the HPAI viruses that were previously detected in 2015. This collaborative effort includes partnerships with the U.S. Fish and Wildlife Service, Wildlife Services within the U.S. Department of Agriculture Animal and Plant Health Inspection Service, the Iowa Department of Natural Resources, the Minnesota Department of Natural Resources, the University of Minnesota, the Wisconsin Department of Agriculture, Trade and Consumer Protection, the Wisconsin Department of Natural Resources, and private landowners.

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](#).

For more information on specific detections of HPAI, the following links summarize results from national disease surveillance efforts confirmed by the USDA's National Veterinary Services Laboratories: [HPAI in Wild Birds](#) and HPAI in [Captive Birds](#).

For additional information, see the fact sheet: [USGS Role and Response to Highly Pathogenic Avian Influenza](#). The NWHC will continue to provide updates via [Wildlife Health Bulletins](#). **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

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.

Small Mammal Mortality in Idaho

Mortality among small rodents, including southern red-backed voles (*Myodes* [formerly *Clethrionomys*] *gapperi*), montane voles (*Microtus montanus*), gophers (*Thomomys* sp.), red squirrels (*Tamiasciurus hudsonicus*), bushy-tailed woodrats (*Neotoma cinerea*), and unspecified mice, was reported in southwestern Idaho beginning in early June 2015. Carcasses were found on lawns and in parking lots individually or in clusters of five to 20 animals. Total dead was estimated at 2,000 individuals as of early July. In May 2015, plague mortality resulting from an infection with the bacterium *Yersinia pestis* had been confirmed by Idaho Bureau of Laboratories and Idaho Fish and Game in Piute ground squirrels (*Urocitellus mollis*) around Boise. The NWHC examined carcasses of 10 montane voles, two meadow voles (*Microtus pennsylvanicus*), and one red squirrel. No definitive evidence of a causative agent was identified. Grossly, the majority of voles were emaciated and had evidence of impact trauma. Enlarged submandibular lymph nodes were detected in two voles. Bacterial cultures and/or polymerase chain reaction (PCR) tests of lungs, livers, and spleens from multiple voles tested negative for *Francisella*, *Pasteurella*, *Salmonella*, and *Yersinia* spp.

There have been numerous cases of plague and tularemia in wildlife, domestic pets, and humans (some fatal) reported in western states this spring and summer. Plague reports began in April in Arizona, and have continued through August, involving seven additional states (California, Colorado, Idaho, Nebraska, New Mexico, Utah, and Wyoming). Tularemia, caused by the bacterium *Francisella tularensis*, was first reported in May among rabbits and rodents and cases have continued through August involving eight states (Arizona, Colorado, Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming). Transmission of these agents can occur through consumption of contaminated food or water, inhalation, contact with infected individuals (including pets) and carcasses, or through the bite of infected insect vectors such as fleas or ticks. Therefore, proper handling and cooking of game meat, safe water sources, and insect repellent are advised to reduce exposure. For more information, visit the [Centers for Disease Control and Prevention](http://www.cdc.gov) website or see the NWHC Circulars on [Tularemia](#) and [Plague](#). For further information, please contact the NWHC epidemiology team via email: nwhc-epi@usgs.gov or phone: (608) 270-2480.

Seabird Mortality Along Southern Coastal Alaska

Since May 2015, the USGS National Wildlife Health Center (NWHC) has been assisting the U.S. Fish and Wildlife Service (USFWS) Region 7 Migratory Bird Management Office, several USFWS refuges, the National Park Service, and the Alaska Department of Fish and Game with investigations of multiple seabird mortality events along the Bering Sea and Pacific Ocean coastal areas of the Aleutian Islands East, Kodiak Island, Kenai Peninsula, and Prince William Sound. Estimates of the size and scope of these events have ranged from a few birds affected (~5-10) to >100 birds being found sick or dead at one time and location. The primary avian species reported to be affected to date include murre (common [*Uria aalge*] and thick-billed [*U. lomvia*]), sooty shearwaters (*Puffinus griseus*), black-legged kittiwakes (*Rissa tridactyla*), horned puffins (*Fratercula corniculata*), and glaucous-winged gulls (*Larus glaucescens*). Some of these avian mortalities have been

concurrent with significant [whale](#), pinniped, sea otter (*Enhydra lutris*), and fish mortalities throughout the summer.

Diagnostic investigations have been challenging due to remote locations and/or lack of suitable carcasses. As of August 2015, the NWHC has received multiple avian carcasses from field partners. The primary finding for both juvenile and adult bird specimens received has been emaciation; a few individuals have also had mild to moderate intestinal parasite infections. All birds examined have tested negative for highly pathogenic avian influenza viruses and pathogenic bacteria such as *Pasteurella multocida*. The cause(s) of the emaciation are still being pursued and diagnostic tests are still in progress, including algal toxin analysis. An extensive *Pseudo-nitzschia* bloom (the algae that causes domoic acid poisoning) in Kachemak Bay and other areas has been reported for much of this summer, but it is unknown at this time if it is responsible for these mortality events. Water temperatures have been higher than normal off the coast of Alaska during the spring/summer 2015, likely due to “the blob” (unusual and persistent masses of warm water) and/or El Nino activity in the Pacific Ocean.

The NWHC is partnering with the USFWS, the National Oceanic and Atmospheric Administration (NOAA) Marine Mammal Stranding Network, the Aleutian Pribilof Islands Association, the USGS Alaska Science Center, and others to gather more information regarding ecosystem parameters concurrent to these mortalities such as oceanographic conditions, shellfish closures due to paralytic shellfish poisoning, forage fish availability, and marine bird populations. According to the NWHC historic records, significant mortalities involving these avian species have previously been reported from these areas of Alaska during 1983, 1989, and 1998, but time frames were March-May and September-October. Diagnostic findings on birds examined during previous events were emaciation with unknown underlying causes.

The NWHC encourages wildlife biologists and resource managers along the west coast of the lower 48 states to be aware that mortalities might become more widespread during migration and as environmental conditions change in autumn; please report marine bird and mammal mortality event observations to help determine the overall magnitude and scope of these events and potential impacts to species involved. For further information, please contact the NWHC epidemiology team via email: nwhc-epi@usgs.gov or phone: (608) 270-2480.

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.

New chapters: 2015 Field Manual of Wildlife Diseases

New and updated chapters of the [USGS Field Manual of Wildlife Diseases](#) are now available online. Chapters will be added online as they are completed.

This manual provides information that will enhance the ecological understanding of wildlife diseases by nonspecialists so they can address various aspects of wildlife disease in the context of wildlife conservation and management. Other readers, from students to science professionals, may also find the information presented to be of interest and value.

The introduction provides context and historical background about the convergence of wildlife disease with wildlife management as a wildlife conservation concern. The remainder of the publication is focused on pragmatic information and considerations for addressing various aspects of wildlife disease. Section B focuses on concepts associated with disease surveillance and response to outbreaks, and section C deals with specific techniques for disease surveillance and investigation. Section D, “Diseases of Wild Birds,” and others that follow will address diseases of concern in various species groups. Electronic links facilitate timely access to a wide variety of supplemental information and processes relevant to content in this new version of the field manual.

The [1999 Field Manual of Wildlife Diseases – General Field Procedures and Diseases of Birds](#) remains available online.

Disease Investigation Services

To request diagnostic services or report wildlife mortality, 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 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 <http://www.nwhc.usgs.gov/services/>.

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

Weekly updates on nationwide mortality events can be viewed in tabular format at http://www.nwhc.usgs.gov/mortality_events/ongoing.jsp.

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

USGS Wildlife Health Information on Twitter

Follow us at <http://twitter.com/USGSWILDLIFE>