Die-offs from Unknown Cause Threatens Bat Population: Concerns Raised for Endangered Indiana Bat

Responding to an unprecedented die-off of thousands of hibernating bats in New York, biologists and researchers from around the country are working to determine the cause of death, and to assess the threat to bat populations nationwide. The disorder, dubbed white-nose syndrome (WNS) because of the presence of a white fungus around the muzzles of some affected bats, is a major concern to the bat conservation community. It is unknown if the fungus is contributing to the deaths or whether it is a symptom of another problem. Human health implications are not known; there is no information indicating that people have been affected after visiting sites where WNS has been found.

White-nose syndrome was first detected at caves and mines in New York last winter, where it is believed to be associated with the deaths of approximately 8,000 to 11,000 bats. This winter, WNS has again been found at the previously affected New York sites, and has spread to at least eight other sites there as well as two sites in Vermont and two sites in Massachusetts. Approximately 500,000 bats hibernate at affected sites.

Disease Update:

EHD in Indiana and Nearby States

In the past issues of the Indiana Wildlife Disease News, we have included a report on the effect of epizootic hemorrhagic disease (EHD) in Indiana. This article is to follow up on that information and provide additional information on the effects of EHD in nearby states.

Hemorrhagic disease of white-tailed deer can be caused by either epizootic hemorrhagic disease (EHD) viruses or bluetongue viruses, which are related, but genetically distinct viruses in the genus Orbivirus. Currently in the U.S., two serotypes (sub-species) of EHD virus (serotypes 1 and 2) and six serotypes of bluetongue virus (1, 2, 10, 11, 13, 17) have been isolated, and all, except bluetongue 2, have been associated with disease in white-tailed deer and have been confirmed in the southeastern U.S. by virus isolation or serology. Bluetongue viruses 1 and 2 were detected relatively recently and have been found only in limited geographic areas. (Field Manual of Wildlife Diseases in the Southeastern United States, pp. 26 – 37)

Wild and captive cervids are susceptible to EHD.

Photo: USDA

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Indiana Avian Influenza Surveillance Update

Since 1998, U.S. Department of Agriculture (USDA) scientists, in cooperation with the U.S. Department of the Interior (DOI), have monitored wild migratory birds for avian influenza (AI) viruses. The agencies have tested more than 12,000 birds in the Alaska flyway, and since 2000, tested more than 3,000 birds in the Atlantic flyway.

In 2006, the U.S. Geological Survey (USGS), U.S. Fish and Wildlife Services (USFWS), DOI, USDA, and state wildlife agencies began working to conduct avian influenza surveillance, which included all of the major migratory flyways. This program serves to provide an early warning to the agriculture, public health, and wildlife communities should migratory birds be found to carry this particular virus. Details about the surveillance in Indiana was in the January 2007 of the Indiana Wildlife Disease News.

The avian influenza surveillance in wild birds continued in Indiana in 2007 and 2008. USDA Wildlife Services and the Indiana Department of Natural Resources (DNR) implemented the surveillance plan for the H5N1 strain of high path avian influenza in wild birds in July.

During the 2007-2008 surveillance season, which runs from April 1 2007 until May 31 2008, USDA APHIS Wildlife Services and the Indiana Department of Natural Resources Division of Fish and Wildlife target was 750 samples from live and dead birds throughout Indiana.

Sample Numbers

A total of 777 samples were collected from 772 birds during the 2007-2008 sampling season (Table 1). In June, USDA APHIS Wildlife Services collected samples from 180 resident Canada geese during several of the Indiana DNR Division of Fish and Wildlife goose banding projects. After samples were collected from the geese, they were released on-site.

In July and August, approximately 45 free-ranging wood ducks were sampled by the Indiana DNR. During the waterfowl hunting season (September through the end of December), 479 birds were taken. An additional 69 Canada geese were sampled during the late goose hunting season.

Most (542) samples were collected through hunter-harvested birds. 225 birds were captured and released through banding projects. The remaining five birds were collected as part of the mortality surveillance. These included two dead mute swans, two dead mourning doves, and one dead mallard were reported to the Indiana Wildlife Conflicts Information Hotline. Although the sample goals have been reached, Wildlife Services will continue to respond to dead bird calls as they are received.

Sample Results

All results have been negative for highly pathogenic H5N1. Seventy-six of the 777 samples were either positive or suspected of being positive for the avian influenza matrix. Of those, none were positive for H7, although there has been reports of the reagents that were used in the testing were giving false negatives for H7. Seven samples which tested positive for H5 using PCR, were forwarded to the National Veterinary Services Laboratory in Ames, Iowa for further testing. Of those seven, six were confirmed to be a low pathogenic strain of H5.

<table>
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<tr>
<th>Species</th>
<th>Number of Birds</th>
<th>% Matrix Pos</th>
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<td>201</td>
<td>13.9</td>
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<tr>
<td>Canada goose</td>
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<tr>
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<td>199</td>
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<td>Dabbling Ducks</td>
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<tr>
<td>Other</td>
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Table 1. Number of birds and % matrix positives from April 1 2007 through February 25 2008. ¹All matrix positive geese were collected during the late season goose hunt.
White nose syndrome (continued from pg. 1)

Wildlife managers are concerned about the outbreak because bats congregate by the thousands in caves and mines to hibernate during winter months. If WNS is caused by an infectious agent, this behavior increases the potential that the disease will spread among hibernating bats. In addition, hibernating bats disperse in spring and migrate, sometimes hundreds of miles away, to spend the summer.

Most bats with WNS are little brown bats, but endangered Indiana bats have also died, raising concerns about the impacts on a species already at risk. Other affected bat species include the eastern pipistrelle and the northern long-eared bat.

Indiana bats, protected by the federal Endangered Species Act, as well as state laws, range across much of the eastern United States. Indiana supports the largest hibernating population of the species. About 238,000 Indiana bats, approximately 46 percent of the total population, winter in Indiana caves. Another 15 states have populations of hibernating Indiana bats.

Indiana State University’s Center for North American Bat Research and Conservation has established a fund for research and response activities related to WNS – information is available at http://www.indstate.edu/ecology/centers/bat.htm.

What is the U.S. Fish and Wildlife Service doing to help?

The focus of current efforts among conservation agencies and organizations is on determining the cause of bat deaths. Until the cause is known, it is not possible to determine how the ailment is spread and evaluate possible treatments. The Service is working closely with the states of New York and Vermont, where biologists are investigating the geographic extent of the outbreaks and collecting samples of affected bats. Many laboratories, including government, university and private facilities, are coordinating their efforts to analyze samples to help determine the cause of the bat deaths.

In addition, the Service is developing a geographic database to track the location of sites where WNS has been found, and is collecting information at each site, such as the number of bats affected. This information will be critical in tracking the extent and spread of WNS and in coordinating research efforts. The Service is also partnering with the Northeastern Cave Conservancy to track movements of cavers that have visited affected sites in New York (see http://www.necaveconservancy.org/default.php).

Message to Cavers

The Service applauds the caving community’s strong conservation ethic and longtime support of bat conservation efforts, and we ask for your continued cooperation and assistance as we address WNS.

It is more important than ever that cavers continue to observe all existing seasonal cave closures at known Indiana bat hibernacula, and when possible, to avoid caves or passages of caves containing large hibernating populations of any bat species. The Service is not encouraging individual cavers or caving groups to systematically search for bats with White Nose Syndrome in caves or mines.

Some states have instituted closures and issued advisories beyond normal permanent and seasonal closures. New York has closed all affected sites. New York, Vermont, and New Jersey have advised all individuals to stay out of all caves with bats. Other states have instituted, or are considering instituting, closures of caves with bats and/or advisories to stay out of caves with bats. The U.S. Fish and Wildlife Service’s Northeast Regional Office is tracking cave closures in the Northeast (for more information see http://www.fws.gov/northeast/white_nose.html).

If, while caving this winter, you observe a hibernating bat with a white muzzle or other odd white, fungus-like patches, please follow the interim guidelines below.

Do not touch any bats (living or dead), especially those with a white muzzle/nose.

If you have a camera with you, please take a few photographs of the potentially affected bat(s).

Exit the cave immediately, avoiding contact with other bats, and please do not enter any other caves prior to reporting your potential WNS observations to your state fish and wildlife agency or your nearest U.S. Fish and Wildlife Service Field Office.

Anyone who observes any unusual numbers of bats outside during cold weather, especially near a cave or mine where bats hibernate, is asked to report those observations as well. An increased number of bats flying outside and increased reports of dead bats in the vicinity of hibernacula have been observed in affected areas in the Northeast.

Continued on pg. 4
For Individuals Who Have Caved or Plan to Cave in the Northeast

Upon exiting a cave (whether or not there are bats in the cave) in New York, Vermont, and adjacent states (New Hampshire, Massachusetts, Connecticut, New Jersey, and Pennsylvania), follow the containment and decontamination procedures found on the Service’s Northeast Region web site: http://www.fws.gov/northeast/white_nose.html.

The caving community can help in the effort to control white-nose syndrome by encouraging all cavers to adopt these precautions. This may be important in preventing what could be a continent-wide spread of a previously unidentified pathogen to all caves and mines, and all our cave-dwelling bat populations.

Because clothing, footwear, and gear used in accessing a cave in New York or Vermont within the past 2 years could pose a risk of spreading the syndrome, the U.S. Fish and Wildlife Service advises that these items not be used when accessing caves anywhere and that these items not be transported out of New York or Vermont — until the cause of the syndrome is identified and the effectiveness of decontamination procedures can be evaluated. We advise that you decontaminate these items immediately (see containment and decontamination procedures at website above) and store them away, and that you thoroughly wash and decontaminate any surfaces with which these items may have come into contact (e.g., car trunk).

More Information:
Updates on white-nose syndrome will be posted at this site as they become available.

For information about the Indiana bat, click on http://www.fws.gov/midwest/Endangered/mammals/inba/index.html

Information on white-nose syndrome in the Northeast is available from the Service’s Northeast website www.fws.gov/northeast/white_nose.html.

Indiana State University - Center for North American Bat Research and Conservation: Funding for “White-Nose Syndrome” of hibernating bats

In Indiana, if you would like to report bats active in the winter months or dead bats on your property, or for additional information, you can call the Indiana Wildlife Conflicts Information Hotline at 1-800-893-4116.

Source: USFWS website

In Focus
Caudell...Joe Caudell, Wildlife Disease Biologist

Joe Caudell, a native of the rural areas outside of the bustling metropolis of Homer, Georgia (home of the world’s largest Easter egg hunt) grew up surrounded by cattle, hogs, and chickens (several hundred thousand of the latter). Caudell attended the University of Georgia and earned a bachelor’s degree in Wildlife Management. Joe moved to Australia for a year where he studied brown tree snakes for his Master’s degree from Utah State University. After returning to the states, he stayed at Utah State to complete a Ph.D.

Joe worked for the University of Georgia Cooperative Extension Service for about 8 years with the 4-H program, for the University of Notre Dame as the Assistant Director for their Environmental Research Center for about a year, and now works for USDA APHIS Wildlife Services. His career with Wildlife Services began in Maine (way cool). About a year later, he moved to Las Vegas, Nevada (way weird) as an urban wildlife biologist. He moved back to Indiana in 2005 as the Wildlife Disease Biologist for Wildlife Services, where he is currently stationed at Purdue University.

His primary responsibility is conducting wildlife disease surveillance in Indiana. As part of the national Wildlife Disease Surveillance and Emergency Response program, he responds to wildlife disease and other emergencies wherever assistance is requested. He has protected the black-footed ferret in South Dakota, worked with rabid vampire bats in Mexico, and sampled deer for tuberculosis in Michigan, just to name a few. In his spare time, Joe enjoys renovating houses, getting tossed off of horses, recovering from injuries, and sleeping.
2008 National Conference on Feral Hogs

Typically, the National Conference on Feral Hogs is held in the southern tier of states, where feral hogs are entrenched. This year's conference location reflects the spread of feral hogs northward. States such as Missouri, Kansas, Nebraska, Iowa, Illinois, and even as far north as Michigan are seeing the appearance and spread of feral hogs. By bringing the 2008 conference to Missouri, we aim to “bar the gate” on the further spread of feral hogs. To this end, the conference gives those coping with new invasions the chance to learn from Southern managers’ and researchers’ experience.

Feral hogs rooting and feeding behavior contribute to soil erosion, reduce water quality and result in direct competition with native wildlife for food and cover. Feral hogs can destroy sensitive natural areas, such as glades, fens and springs, habitats commonly found on state and federal land holdings. The potential spread of disease is also a major concern for the pork and cattle industries. Whether you manage public or private land, you’ll come away from this year’s conference with more effective tools for controlling feral hog damage.

Feral Hogs Hurt Public and Private Land
Wherever they occur, feral hogs pose a serious concern to natural resource management agencies and livestock farmers.

Conference Location
The conference will be held in St. Louis, Missouri at the Crowne Plaza Hotel in the downtown area. To reserve rooms, call 1-800-925-1395 and mention the Feral Hog Conference. Room rates are $103 for a single king bed or two double beds. To guarantee the rate and room, make your reservation by March 24, 2008. If you will be arriving from Lambert-St. Louis International Airport, please arrange for a shuttle to the hotel when you make your reservation. The shuttle service is $16 one way.

Air Travel/Transportation
For those arriving by plane, you will be flying into the Lambert-St. Louis International Airport. The airport is located only about 20 minutes driving time to the Crowne Plaza Hotel. A shuttle service is available for $16 one way.

More Information
More information about the conference can be found at: http://mdc.mo.gov/landown/hog_conf.

Second Annual CL Davis Symposium on Diagnostic Pathology of Diseases of Aerial, Terrestrial, and Aquatic Wildlife

The Second Annual CL Davis Symposium on Diagnostic Pathology of Diseases of Aerial, Terrestrial and Aquatic Wildlife will begin on Wednesday, April 09, 2008 and run for 3 days at the Covance Laboratory Learning Center, Madison, WI. This is the Foundation’s primary course on the pathology of wildlife takes a more in-depth look at several growing areas in this sector. This year’s course focuses on forensic pathology, growing human impact on patterns of wildlife disease, and pathology of cervids and marine mammals. In addition, Thursday boasts a lineup of speakers from the National Wildlife Health Center, and culminates with a tour of their facility in Madison Wisconsin. Participants also will receive a copy of Gardiner and Poynton’s excellent Atlas of Metazoan Parasites in Tissue Section as part of their registration. Don’t miss this outstanding symposium! The course is appropriate for veterinary pathologists, veterinarians working with zoo and wildlife species, and wildlife biologists.

We have reserved a block of 50 rooms reserved at the Concourse hotel in downtown Madison at 1 W Dayton St., (608) 257-6000, http://www.concoursehotel.com/. The rate is $99 for single or double occupancy. Be sure to mention the C.L. Davis Foundation when making your reservation. There is an additional charge of $7 per night for parking.

This course meets the continuing education credit requirements 20 hours in jurisdictions which recognize American Association of Veterinary State Boards (AAVSB) Registry of Approved Continuing Education (RACE) approval program. Please contact the AAVSB RACE program at race@aaavs.org should you have any comments/concerns regarding this program’s validity or relevancy to the veterinary profession.

The cost of the program is $400 and includes continuing education credits, lunch and refreshment breaks, CD containing the course syllabus, and a copy of Gardiner’s An Atlas of Metazoan Parasites in Tissue Section. Don’t miss this outstanding symposium! The course is appropriate for veterinary pathologists, veterinarians working with zoo and wildlife species, and wildlife biologists.

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Contact the program director Scott D. Fitzgerald, DVM, PhD, Diagnostic Centers for Population & Animal Health, Michigan State University, Fitzgerald@dcpah.msu.edu for more information or visit the web site at: http://www.cldavis.org/courses/upcoming.html#66 for registration information.

Source: CL Davis website
EHD in Indiana and Nearby States (Continued from pg. 1)

The virus is transmitted by the bite of a midge. Outbreaks usually occur during the driest time of the year, when conditions are ideal for the midge. Hard freezes usually stop major outbreaks because the cold kills the midges. The virus is not infectious to humans and cannot be spread from the carcass of a deer. Both EHD and bluetongue viruses are spread by the same midge (Culicoides – 3 species), and occasionally the two viruses travel in parallel or series. This is significant because you can’t really tell the two viruses apart when they infect deer.

Until recently, cattle have been known to be susceptible to both EHD and bluetongue viruses but have seldom exhibited clinical signs, and if they do, such signs are very mild. However, Ibaraki virus (an EHD virus serotype) has been associated with sporadic outbreaks of severe disease in cattle in Japan. With sheep EHD viruses do not cause disease, but severe disease is associated with bluetongue viruses. (Field Manual of Wildlife Diseases in the Southeastern United States, pp. 26 – 37)

Even though the EHD virus rarely causes disease in cattle, mortality rates have been as high as 10 percent. Clinical signs consist of fever, erosive and ulcerative lesions of the oral and esophageal mucosa, stiffness, lameness, and thickened, edematous skin. In addition, there has been a report of a combined EHD virus and bluetongue virus disease of cattle. In pregnant cows, EHD infections can result in fetal resorption or hydramnios if infection occurs between days 70 and 120 of gestation. (FAD Handbook)

Most affected cattle recover uneventfully with supportive care, but they do tend to lose several hundred pounds of weight. During the acute phase of the disease, their feet and mouth are painful so it is important to bring affected cattle closer to evaluate, feed, and especially have easy access to water.

Indiana

For the last two years, deer farmers in Indiana have been hit hard by EHD. Typically, EHD is cyclic and occurs on a 5-10 year cycle. However, in 2007, Indiana farmers were hit a second time in two years. The Indiana Department of Natural Resources (IDNR), the Indiana State Board of Animal Health (BOAH), and USDA APHIS Veterinary Services and Wildlife Services have worked together to monitor both wild and captive deer populations and cattle for EHD. Calls about dead deer received on the Indiana Wildlife Conflicts Informa-

Ohio

The Ohio Department of Agriculture (ODA) officials confirmed on August 30, 2007, that EHD has been discovered on two Pike County cattle farms, located in southern portion of the state. Officials are calling this a “wild strain” of the EHD virus, which will run its course much like the common flu. In deer, EHD is typically fatal. According to ODA, this marks the first-ever case of the virus in cattle in Ohio. Even more unusual, this is the first time cattle have become infected without deer in the area becoming infected, although Ohio DNR will continue to monitor and test deer in the area for the virus.

Kentucky

In December, the Kentucky Department of Fish and Wildlife Resources had documented more than 4,000 deer deaths this year due to an outbreak of the disease. That number is only a fraction of Kentucky’s estimated deer herd of nearly one million.

The University of Kentucky-College of Agriculture Cooperative Extension Service reported several livestock farms have had cattle affected. They also advised livestock producers to contact their veterinarian for diagnosis and treatment because the physical signs can be similar with foot and mouth disease, vesicular stomatitis, bluetongue, and EHD.

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Bovine TB Moves South in Michigan-
Test results have confirmed that a deer harvested in the late antlerless deer season in Shiawassee County was infected with bovine tuberculosis (TB; Mycobacterium bovis). This discovery comes over 100 miles south of the current bovine TB zone in Northern Michigan which encompasses four counties in far northeast Lower Michigan. Further testing is needed to determine the exact strain of TB. On 3 Mar 2008, the Michigan Department of Agriculture (MDA) designated a “potential high-risk area” within a 10-mile radius of where the Shiawassee County deer was taken. Any cattle, bison, and cervid farms within the 10-mile radius will need to be checked for bovine TB beginning in early March 2008. There are approximately 100 farms around the positive deer site in Shiawassee County. Surveillance efforts in deer will be increased in Shiawassee County which is the fourth county north of the northeast corner of Indiana. Since 1995 the Michigan DNR has tested 162,000 wild white-tailed deer with 594 testing positive for bovine TB, all but this one in the four county TB zone. (Source- ProMed)

CWD Comes Closer To Indiana-
During July 2007, the Illinois DNR identified a CWD-positive deer in LaSalle County after testing an animal showing classic signs of the illness. This was the first instance of the disease in this county. The deer was a 3 year old doe collected by a Conservation Police Officer after someone reported a sick, emaciated deer. The location was south of I-80, about 2 miles west of Grundy County, near the town of Seneca. This represents about a 25 mile distance from the previous southernmost positive in DeKalb County. This finding in LaSalle County is a significant departure from the previously known distribution in Illinois. The new location is the first deer detected in the Illinois River basin, which winds southwest through Illinois towards St. Louis. The Kankakee River is part of this river basin and provides an eastward corridor of 55-60 miles to the Indiana border.

Cerebral Abscess in Deer-
On December 3, 2007 a wild white-tail deer was discovered by a hunter in Boone County, Indiana somewhat thin, walking awkwardly, and unafraid of people. The deer was euthanized by gunshot and transported to the Purdue Animal Disease Diagnostic Lab (ADDL). The necropsy indicated there was a cerebral abscess which was affecting much of the brain in various ways. One necropsy statement indicated that “Bacteria were present in large clumps, making evaluation of morphology difficult.” The bacteria involved were Arcanobacterium pyogenes and Pseudomonas aeruginosa. The obex was tested for Chronic Wasting Disease, and was negative. Field biologists often receive reports of deer behaving in this way, and it’s helpful to know one possible explanation. (Source- Dean Zimmerman, DNR)

EHD in Indiana and Nearby States (Continued from pg. 5)

Pennsylvania

On October 17, 2007 Patriot-News (Harrisburg) reported, “EHD has killed more than 1,000 deer in southwestern Pennsylvania and has reached into the mid-state.” The state Department of Agriculture has confirmed the disease in farmed deer and cattle in Franklin County. The Pennsylvania Deer Farmer’s Association formed a special EHD Task Force to spear-head the project of getting vaccine into the hands of local veterinarians for use on captive cervid operations. EHD was confirmed on nine deer farms in 2007.

For the handful of cattle cases Pennsylvania experienced in 2007, the Pennsylvania Department of Agriculture conducted formal Foreign Animal Disease investigations with temporary quarantines. The cattle lesions ranged from mild to dramatic, but there were no losses from death as far as they were aware. The cases in Pennsylvania were located in the southwest and south central areas. There were seven confirmed cattle premises infected with EHD.

Locations of EHD-positive cases in Pennsylvania. The yellow counties are cattle, blue are deer, and the green is both deer and cattle.

Article by: W. McIlvane and J. Caudell,USDA
The total number of CWD-infected deer found in Illinois now numbers 189. Prior to this, the CWD had been confined to Winnebago, Boone, McHenry, Ogle, and DeKalb counties. More than 28,000 deer have been tested in Illinois during the past 5 years. Illinois DNR CWD information is available at: http://dnr.state.il.us/cwd. (Source- Paul Shelton, Illinois DNR and Dean Zimmerman)

Indiana CWD Test Results- The Indiana DNR has been monitoring Indiana’s deer herd for chronic wasting disease (CWD) since 2002. So far, no Indiana deer have tested positive for Chronic Wasting Disease (CWD) prions. CWD is a serious neurologic disease affecting white-tailed deer and of particular concern since it has been found in white-tailed deer in Illinois and Wisconsin. During 2007, DNR biologists collected samples from 552 at 51 deer hunter check stations in 49 counties during opening weekend of the 2007 firearms season (Nov. 17-18). An additional 90 road-killed deer were sampled, resulting in a total of 642 deer sampled. Tissue samples were sent to Purdue's Animal Disease Diagnostic Laboratory for CWD testing. Samples sent for analysis represented 72 different counties. Results from 610 usable samples detected no sign of CWD. Since 2002, 9,609 samples from check stations and road-killed deer have been tested, with CWD failing to be detected in all samples. In addition, through 2007, 33 outwardly noticeable sick wild deer have also been tested. CWD was also not detected in these deer. (Source- DNR Wildbulletin)