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A JOINT PROJECT
BETWEEN

USDA APHIS
WILDLIFE SERVICES

AND

INDIANA DNR
DIVISION OF FISH AND
WILDLIFE

Indiana Wildlife Disease News



Volume 3, Issue 2

April 2008

Special points of interest:

- Chronic wasting disease research
- West Nile virus testing in Indiana
- 2008 - 2009 AI surveillance update
- Wildlife Disease Association Meeting

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West Nile Virus Testing in Indiana: 2008 Update

The Indiana State Department of Health (ISDH) will again be testing certain birds and mosquitoes for West Nile Virus (WNV) during the warm months of 2008. Dr. Michael Sinsko, Senior Medical Entomologist for the ISDH, said "As in past years, we will be testing mosquitoes, and dead corvids and raptors for the presence of WNV. This is done to give us an advanced warning of the onset of transmission before we see human cases. We can thus alert the public and local authorities to start preventive measures."

The ISDH will only be accepting dead crows and bluejays, plus raptors like hawks and owls. These birds are highly sensitive to the virus, and



American crow. Photo: USDA

therefore are the best indicators of WNV activity in a community. The specimens should be in good condition (without maggots), double-bagged, and placed in a cooler with appropriate documentation for shipment. Any local health department may submit samples to the state lab for testing. Samples should not be frozen, and shipped early in the week rather than at the end of the week.

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Disease Update:

2008-2009 Indiana Avian Influenza Surveillance

The avian influenza surveillance in wild birds continues in Indiana in 2008-09. USDA Wildlife Services and the Indiana Department of Natural Resources (IDNR) implemented the surveillance plan for the H5N1 strain of high path avian influenza in wild birds in April 2008.

There are several important changes from the 2007 surveillance season. One of the major changes is that two swabs (one from the oral cavity and one from the cloaca) for each bird, will be collected in plastic cryovials, rather than the glass vials. Any remaining glass vials

can be returned to Wildlife Services.

Another significant change is that the data sheet has been changed this year. It is important that the new data sheets are used when collecting samples. Please note that the fax number at the National Wildlife Research Center, to which data sheets are faxed, has been changed. The new number is 970-266-6215.

All of these changes have been made to enhance our ability to achieve early detection of the H5N1 HPAI. This means that samples will continue to be

taken, delivered to the lab, and analyzed within a few days. This emphasis on early detection is the primary method by which USDA APHIS can meet its objective of protecting American agriculture.

During the 2008 surveillance season, which runs from April 1, 2008 until March 31, 2009 USDA APHIS Wildlife Services and the Indiana Department of Natural Resources Division of Fish and Wildlife will collect 800 samples from throughout Indiana. Approximately one-fourth of the samples will be taken during the resident bird

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*In Focus***USDA APHIS Foreign Animal Disease Diagnostic Laboratory**

The Foreign Animal Disease Diagnostic Laboratory (FADDL) is part of the only facility in the United States where many infectious foreign animal disease (FAD) agents are studied. It is located on Plum Island, which is 1.5 miles off the north-eastern end of Long Island, New York. Scientists at the FADDL are devoted to diagnosing foreign diseases of animals. They partner with scientists of the Department of Homeland Security and the USDA's Agricultural Research Service, also located on Plum Island, in foreign animal disease

research. Additionally, the FADDL is the custodian of the North American Foot-and-Mouth Disease (FMD) Antigen Bank. The Bank stores concentrated FMD antigen that can be formulated into vaccines if an FMD introduction occurs. The bank is co-owned by Canada, Mexico, and the United States. Personnel working in the vaccine bank are responsible for performing safety and potency testing of new antigen lots of FMD vaccine, and periodically testing the quality of stored antigen. The FADDL is composed of three sections: Diagnostic Services, Reagents and



Plum Island lab complex, decontamination, and power plant. Photo: USDA

Vaccine Services, and the Proficiency and Validation Section. Scientists in the Diagnostic Services Section have the capability to diagnose more than 30 exotic animal diseases (including FMD, classical swine fever, African swine fever, and other diseases listed by the World Organization for Animal Health (OIE)), and they perform thousands of diagnostic tests each year, looking for the presence of FAD agents. Tissue and blood samples to be tested are submitted by veterinarians suspecting an exotic disease in domestic

livestock or by animal import centers testing quarantined animals for foreign diseases. Samples also are submitted by animal health professionals in other countries who need help with a diagnosis.

The Reagents and Vaccine Services Section provides diagnostic reagents, assays, vaccines and other services for identification, control, and eradication of foreign animal diseases. The section is responsible for production and quality testing of reagents used at FADDL in diagnostic assays. It also partici-

pates in safety and potency evaluations of potential vaccines against foreign animal diseases.

The Proficiency and Validation Section develops and validates diagnostic technologies that can be deployed to the National Animal Health Laboratory Net-



Plum Island and Orient Point looking toward the west. Photo: USDA

work (NAHLN) and/or used at the NVSL reference laboratories. The section is responsible for a training and proficiency testing program for the NAHLN and collaborates with the Department of Homeland Security National Bioforensics Analysis Center to maintain and execute agricultural forensics capabilities. The FADDL provides training to State, Federal, and foreign officials in the clinical and laboratory diagnosis of foreign animal diseases.

FADDL contact information:

Director: Dr. Tammy Beckham

Phone: (631)323-3256

Fax: (631) 323-3366

Email: Tammy.R.Beckham@aphis.usda.gov

West Nile Virus Surveillance (Continued from pg. 1)

If you need to dispose of a dead bird, do not handle it with bare hands. Use gloves or a plastic bag turned inside out over your hand to pick up the bird and dispose of it in the trash.

In 2007 there were 30 human cases of WNV reported in Indiana. The virus was found in 122 mosquitoes sampled, eight birds and six horses. In 2006, most human cases occurred in Indiana between mid-July and mid-September. Health officials

recommend that those who work outdoors particularly dusk to dawn should wear long-sleeved shirts and long pants, plus apply insect repellent containing DEET, picaradin, or oil of lemon eucalyptus to clothes and exposed skin.

Article by: D. Zimmerman, IDFW

Student Wildlife Disease Research

A deer carcass dilemma: resource and potential reservoir of CWD for scavenger communities

Chronic wasting disease (CWD), a transmissible spongiform encephalopathy (TSE) related to bovine spongiform encephalopathy (i.e., mad cow disease) in cattle (*Bos spp.*), scrapie in sheep (*Ovis spp.*), and variant Creutzfeldt-Jakob disease in humans was first discovered in Colorado during the 1960s, and later found in Wisconsin white-tailed deer (*Odocoileus virginianus*) in 2001. The causative agent is a misfolded prion protein (PrP^{CWD}), which functions as a template and catalyst for transformation of normal prion proteins (PrP^C - cellular prion protein) into an aberrant form. During a long incubation period lasting up to several years, aggregates of PrP^{CWD} accumulate in the lymphoid tissues followed by the central nervous system and brain, invariably resulting in host death. The expanding distribution of CWD cases in mule deer (*O. hemionus*), white-tailed deer, rocky mountain elk (*Cervus elaphus nelsoni*), and moose (*Alces alces shirasi*) currently includes a dozen states and two Canadian provinces. While there is no evidence of CWD transmission to humans that consume deer meat, health guidelines recommend that humans avoid consumption of tissues from infected animals. In addition, experimental studies have demonstrated successful cross-species transmission to some animals via intracerebral inoculation.

The molecular structure of TSE prions makes them resistant to breakdown in



Domestic cat scavenging experimentally placed deer carcass. Photo courtesy of the Wisconsin Cooperative Wildlife Research Unit.

the environment, and evidence suggests they may remain infectious in the soil for many years. Therefore, environmental reservoirs such as infectious deer carcasses pose a threat to susceptible deer that may investigate carcass remains or consume soil and vegetation near the site.

There is also a threat of CWD transmission to scavengers of infectious carcass tissues. To evaluate the potential risk of CWD transmission, we studied the vertebrate scavengers in the CWD-affected area of south-central Wisconsin to determine species activity at experimentally placed deer carcasses and gut piles. We also estimated carcass persistence in the environment to quantify seasonal periods of potential exposure.

During 2003-04 and 2004-05, we experimentally placed 40 deer carcasses (6-9 months old) and nine gut piles (viscera consisting of lung, heart, spleen, liver, and GI tract of harvested deer) on private property during autumn (October), winter (November through January), and winter-spring (February or March) in four habitat types (woods, field, edge, stream). We monitored carcass remains for 2 to 3 months using remotely activated cameras to quantify scavenger activity. Our motion-sensitive cameras recorded animal use at 3-minute or 30-second time intervals from which we identified each animal to species and counted distinct individuals in each picture. We conservatively distinguished between scavengers and visitors based on animal behavior in each picture; species observed feeding at a carcass or gut pile were defined as scavengers, while species observed strictly inspecting carcasses were classified as visitors. We summarized counts of each species and compared relative activity levels between all scavengers. To evaluate the effects of season, habitat, temperature, mam-



White-tailed deer visiting experimentally placed deer carcass. Photo courtesy of the Wisconsin Cooperative Wildlife Research Unit.

mal activity, and bird activity on weekly carcass decomposition, we performed a repeated measures analysis, and used Kaplan-Meier survival analysis to estimate the time that flesh remains of carcasses persisted in the environment.

In total, we identified 14 species of scavenging mammals and 8 species of scavenging birds, along with 6 mammalian and 14 avian species that visited carcasses. The primary scavenging mammals included raccoons (*Procyon lotor*), Virginia opossums (*Didelphis virginiana*), and striped skunks (*Mephitis mephitis*), while the primary scavenging birds included American crows (*Corvus brachyrhynchos*), turkey vultures (*Cathartes aura*), and red-tailed hawks (*Buteo jamaicensis*). We also recorded several species that have direct contact with humans or human food supplies including domestic dogs (*Canis familiaris*), cats (*Felis sylvestrus catus*), and cows (*Bos spp.*). In addition, deer frequently visited both carcasses and gut piles and we identified four mustelid species at deer remains, all of which are susceptible to some form of TSE infection. There was a positive relationship between temperature (a proxy for microbial and arthropod activity), bird activity, and mammal activity with respect to weekly carcass decomposition. It took between 3 to 15 weeks until flesh remains of deer carcasses were consumed and decomposed, whereas gut piles lasted a median of three days before disappearance.

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Conference Announcement

57th Annual Meeting of the Wildlife Disease Association

It's time to get serious about coming to the 57th Annual Meeting of the Wildlife Disease Association, August 3-8, 2008 in Edmonton, Alberta, Canada. The conference web site at www.biology.ualberta.ca/parasites/WDA08 has all the information you need to get started.

There you can:

- Register for the WDA conference (note the great rates for students and reduced rates for WDA, AAWV, and CAZWV members!)
- Submit your abstract (oral and poster presentations)
- Choose accommodation
- Register for the pre-conference Wildlife Immobilization Course
- Register for the post-conference Chronic Wasting Disease Workshop
- Pre-order conference T-shirts and toques
- See some of the items submitted for the annual auction (remember proceeds benefit wildlife disease initiatives).

Please send scanned images of other auction items to the conference web master [al.shostak@ualberta.ca] so we can post them for pre-conference viewing on the conference pages.

Other program elements already lined up include:

- Plenary Symposium: Wildlife Health in a Changing North
- Carleton Herman speaker - Dr Mark Hafner
- Veterinary Continuing Education credits
- Picnic and field trips in historic Elk Island National Park
- Student activities and opportunities to make connections
- ... and did I mention one-of-a-kind conference t-shirts and toques (who else but the Canadians can offer you a chance to buy a toque)??

An exciting new element for this year - we are offering one item in a unique online auction of a one-day float trip on the North Saskatchewan River to be taken on August



9, 2008. Online bids on this item are accepted up to July 1, 2008. Bid early and bid often for this great river trip.

Lots of other great information is yours to find at the conference web page www.biology.ualberta.ca/parasites/WDA08.

We will continue to provide new information as it becomes available so be sure to bookmark the site and check back regularly.

Margo Pybus (margo.pybus@gov.ab.ca), Edmonton 2008 Program Chair and on behalf of the local organizing committee, regional partner hosts, American Association of Wildlife Veterinarians, and Canadian Association of Zoo and Wildlife Veterinarians.

CWD Study (Continued from pg. 3)

Our study provides an entry point for further investigations on the relationship between CWD epidemiology, prion environmental contamination from deer remains, and scavenging animals. Our results suggest that future investigations of potential cross-species CWD transmission (at least in the Midwestern US) should initially focus on the primary scavengers of deer remains, namely opossums, raccoons, crows, red-tailed hawks, and turkey vultures as well as mustelids. These studies could use experimental inoculations to determine the susceptibility of mammalian species to infection and the likelihood of CWD agent passage and amplification through the digestive system. There is also the potential for indirect CWD exposure to humans given the contact between deer carcasses and domestic animals such as cats, dogs, and cows. In general, susceptible scavenger species might be useful "bio-indicators" of environmental contamination with PrP^{CWD}, and could indicate a potential cascade of infectious prions through food webs.

Article by Chris Jennelle, University of Wisconsin.



Cows visiting experimentally placed deer carcass. Photo courtesy of the Wisconsin Cooperative Wildlife Research Unit.



Midwest Wildlife Disease Update

Pseudorabies (PRV) Found In Michigan Feral Hogs-

A highly contagious swine virus

has been detected on a privately owned game ranch in Saginaw County, Michigan officials said. The Michigan Department of Agriculture's Geagley Laboratory confirmed the outbreak of PRV at the ranch, which has 19 sport swine. Michigan had been pseudorabies free since 2000 and is quite concerned about spread to their domestic swine. All swine on the game ranch will be caught and destroyed. Additionally, all farms and ranches with commercial or sport swine in a 5-mile radius around the ranch where pseudorabies was found will be quarantined and the swine tested.

PRV is a highly contagious viral disease that kills newborn piglets. In rare cases, it can cause sudden death in cats and dogs. It also can sicken cattle, sheep and deer but does not hurt people. Despite its name, the virus is not related to rabies. PRV is transmitted through nasal and oral secretions, food, water and the environ-

ment and can be carried on car tires, boots, and clothing. State officials are encouraging Michigan residents to shoot feral swine and submit the carcasses for disease checks.

(Source- ProMed, edited)

Lyme Disease Increases in Minnesota-

The Minnesota Department of Health said they saw more than 1,200 cases of Lyme disease in 2007. Normally, the number of Lyme disease cases is between 900 and 1000. Epidemiologist Melissa Kemperman said there could be a number of reasons behind the increase, including ticks expanding their range into new areas (documented), more human activity in woody or brushy areas, and differences in doctors diagnosing the disease.

(Source- ProMed, edited)



Bull elk bugling. Photo: Corel, used with permission

Minnesota DNR Targets Elk To Stop Bovine TB-

The spread of bovine TB in northwestern Minnesota has forced the DNR to consider killing some wild elk there. Bovine TB was first discovered in area cattle herds in 2005.

Since that time, 17 free-ranging deer have been confirmed with TB out of more than 3,000 tested in northwestern Minnesota.

Two small elk herds, each about 30 animals, roam that area. Limited hunting seasons have kept the herd in check. It's uncertain what impact bovine TB could have on the elk herd, but the agency is killing all the deer it can in the TB-infected area. Elk permits will be considered on a case-by-case basis in areas where there is direct interaction with elk and either cattle or

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2008-2009 AI Surveillance (Continued from pg. 1)

season. Samples during this period will consist primarily of Canada geese (~150) taken during the annual IDNR Canada Goose Roundup and nesting wood ducks (~50) taken during the regularly scheduled banding projects. Personnel from USDA Wildlife Services and interns from the Indiana State Board of Animal Health will be on-hand to assist with the round-up and collect samples.

The remaining samples will be taken during the migratory season from hunter-harvested birds. During the hunting season, the samples will come from mallards (~200 birds), American green-winged teal (~200 birds), and other dabbling ducks such as American black ducks, pintails, northern shovelers, American wigeon, and gadwalls (~150 birds). An additional 50 Canada geese will be taken during the late-season Canada goose hunt in February.



Canada geese being banded and sampled by Wildlife Services, IDNR, BOAH during the 2007 IDNR Canada goose round-up.

Similar to last year, surveillance of morbidity and waterfowl mortality events will occur year-round. Any mortality events consisting of waterfowl or shorebirds can be reported to USDA APHIS Wildlife Services Wildlife Conflicts Information Hotline at 1-800-893-4116. Mortality events consisting of any species reported to the hotline, consisting of 5 or more individuals first will be investigated through phone evaluation. Based on the phone evaluations, a biologist may decide to investigate the mortality event and sample individuals for avian influenza.

Any questions about the results from the 2007-2008 sampling season or the upcoming season can be addressed to Dr. Joe Caudell at joe.n.caudell@aphis.usda.gov or 765-496-3913.

Indiana Wildlife Disease News

A joint project between:

Indiana DNR
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and

USDA APHIS Wildlife Services
National Wildlife Disease Surveillance and Emergency Response Program

to provide information on wildlife diseases in Indiana and surrounding states.

Editorial Staff

Editors

Joe N. Caudell, Wildlife Services
jcaudell@aphis.usda.gov

Dean Zimmerman, IDNR DFW
dzimmerman@dnr.IN.gov

Reviewers

Judy Loven, Wildlife Services
APHIS—LPA

Subscriptions

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Submissions or Participation

If you would like to submit a wildlife disease related article, ideas, comments, or other information, please contact one of the editors.

We welcome individuals or agency representatives to act as reviewers or to provide assistance in the production of this newsletter. To assist, please contact one of the editors.

Providing information on wildlife diseases in Indiana and surrounding states



Indiana Department of Natural Resources Division of Fish and Wildlife

The mission of the Division of Fish and Wildlife is to professionally manage Indiana's fish and wildlife for present and future generations, balancing ecological, recreational, and economic benefits. Professional management is essential to the long term welfare of fish and wildlife resources, and providing for human health and safety. Communication between agency professionals and educating the public are important aspects of professional management.

DNR- Div. Fish and Wildlife
402 W. Washington St., Room W-273
Indianapolis, IN 46204
Phone: 317-232-4080
Website: www.wildlife.IN.gov

USDA APHIS Wildlife Services NATIONAL WILDLIFE DISEASE SURVEILLANCE AND EMERGENCY RESPONSE PROGRAM

The mission of the National Wildlife Disease Surveillance and Emergency Response Program is to provide Federal leadership in managing wildlife disease threats to agriculture, human health and safety, and natural resources by assisting Federal, State, Tribal, and Local governments, private industry, and citizens with management of zoonotic and other wildlife diseases of concern.

USDA APHIS Wildlife Services
Purdue University, SMTH Hall, 901 W. State Street
West Lafayette, IN 47907-2089
Phone: 800-893-4116
Website: www.entm.purdue.edu/wildlife/wild.htm



Midwest Wildlife Disease Update (Continued from pg. 6)

stored feed, and there are no other feasible options.

The DNR began issuing deer permits to landowners and tenants on March 18, 2008 to shoot deer in management area 101. Any deer taken must be submitted for TB testing. DNR officials also are seeking approval for an emergency rule to allow landowners or tenants in deer management area 101 to take deer without a permit or license provided the deer are submitted for testing. (Source- Minneapolis Star Tribune)

Malignant Catarrhal Fever (MCF) Shows Up In Texas Cattle- About 130 cows grazing on a ranch near Bryan, TX were exposed to the deadly virus carried only by wildebeests. The Texas cattle, 134 breeding heifers, were sold prior to knowing about the exposure, to people in five different states including Illinois. Six of the cows became infected and have died. Temporary quarantines were issued and the

USDA-APHIS will be working with the states and owners to depopulate the animals. A later news report indicated there were 15-20 wildebeests involved and they will be depopulated as well.

Health officials stressed that the virus is not a contagious disease in cattle and poses no threat to people. Investigators speculate that although the cattle and wildebeests were in separate pastures, they might have gathered near an adjoining fence line. Transmission of the virus can occur through virus-laden nasal secretions either directly or through poorly defined airborne routes, by aerosol transmission from infected individuals, or young can be infected in the prenatal period by horizontal and occasional intrauterine transmission. MCF is principally a disease of domestic cattle, water buffalo, Bali cattle, American bison, and deer. (Source- ProMed and Houston Chronicle, edited)

Column by D. Zimmerman, IDNR