April 2006

Indiana Wildlife Disease News, Volume 1, Issue 2 -- April 2006

A JOINT PROJECT BETWEEN

USDA APHIS WILDLIFE SERVICES

AND

INDIANA DNR DIVISION OF FISH AND WILDLIFE

Indiana Wildlife Disease News

Volume 1, Issue 2 April 2006

Special points of interest:

- Special Issue on feral swine
- Avian influenza surveillance in wild birds
- A case study of interaction between feral and wild swine in Indiana
- An update on wildlife disease in Indiana and surrounding states

Inside this issue:

A Brief Un-Natural History of Feral Swine

The Family Suidae consists of 5 genera and 16 species of swine. Feral swine generally include both feral domestic swine that have escaped captivity and the Eurasian wild boar that have been intentionally released in North America. Domestic swine, feral swine, and the Eurasian wild boar are all the same species (*Sus scrofa*). Feral swine are found in a wide variety of color types, hair lengths, and sizes.

Feral swine. (Photo: C. Everett, Texas Animal Health Commission

History: Swine were first introduced to North America by Christopher Columbus in 1493 in the West Indies. The first documented introduction to the United States was in Florida in 1593. Many people allowed their hogs to run free, which eventually led to free-ranging feral populations. Additional populations were established in this manner and by hunters in the 20th century looking for another game species to hunt.

Habitat: In general, feral swine prefer thick, brushy cover and mast-producing hardwood cover, but they can utilize almost any area with thick cover and a water source. During hot weather, feral swine spend much time wallowing in ponds, ditches, streams, and ephemeral water sources.

Food Habits: Feral swine are true omnivores. Much of their food consists of roots, acorns, nuts, fruit, insects, carrion, and earthworms. Feral swine will eat and destroy crops such as corn, milo, soybeans, rice, and wheat. Feral swine can also kill prey such as reptiles and amphibians, young lambs, bird eggs, goat kids, and deer.

Other Habits: Feral swine are generally nocturnal, but are sometimes active during the day, especially in winter. They may become completely nocturnal during heavy hunting pressure. Feral hogs have an excellent sense of smell, good hearing, and poor eyesight. Because feral swine cannot self-regulate their body temperature, they are dependent upon external methods of remaining cool, such as remaining in thick cover and wallowing during the heat of they day.

Reproduction and Social Structure: Sows have a gestation that lasts 115 days. They become solitary as birth becomes imminent and build a nest in which to suckle their young and protect them from the elements and predators for the first

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Nationwide surveillance of feral swine diseases

The USDA Veterinary and Wildlife Services cooperates with several state agencies across the country to conduct disease surveillance on feral swine. Feral swine samples are taken through collections specifically targeted to obtain disease samples, through Wildlife Services operational activities, or by sampling hunter-harvested animals. Samples are tested for three primary diseases: pseudorabies, swine brucellosis, and classical swine fever.

The results of the test are maintained on a national data base to monitor outbreaks or the spread of these diseases.

Personnel from Wildlife Services are available in Indiana to assist with identifying areas with feral swine populations, evaluating damage, removing individuals, and collecting samples for testing. Inquiries about feral swine disease surveillance or feral swine sightings can be directed to the Indiana Wildlife Conflicts Information Hotline at 1-800-893-4116.

Article by J.N. Caudell, UDSA

Are Feral Swine a Disease Threat to Indiana Livestock?

Both feral and domestic swine are susceptible to a wide range of diseases including viral and bacterial diseases (Table 1), nematodes (such as trichinosis), roundworms, flukes, lice, and ticks. Domestic swine husbandry practices and proper cooking, handling, processing, and cooking have reduce the threat of transmitting these pathogens to humans. However, feral swine are susceptible to becoming infected and transmitting these diseases, both to humans and livestock.

The rates of infection and diseases present in feral swine in Indiana are not currently known. In many states of the southeast, infection rates for various diseases are variable. Pseudorabies occurs in approximately 35% of the feral swine in Florida and Texas and from 0% (Tennessee) to 22% of the hogs in the southeastern states in general. Infection rates for brucellosis range from 0% to 53% in the southeast. Leptospirosis infection rates have been estimated in feral swine from Tennessee (44%) and Texas (8-21%). In 1986, vesicular stomatitis infections were reported in 4 states: Arkansas (100%), Louisiana (70%), Georgia (28%), and Florida (4%). So what do these numbers mean to Indiana? There is a chance that feral swine brought in illegally from other states, especially southeastern states, have the potential to bring these and other diseases to Indiana. And once feral swine are established they can be almost impossible to completely eradicate.

While it would be rare for feral swine to come into contact with commercial domestic swine in fully-enclosed, modern production facilities, there is the opportunity for feral swine to come into contact with transitional (i.e., pastured-raised) domestic swine, either through fences or by escaped domestic swine that intermingle with feral swine and then return to the farm. Domestic swine can be protected by localized removal of feral swine, on-going surveillance programs, and improved fencing for pasture-raised swine.

For more information see: 2003. Witmer, G. W., R. B. Sanders, and A. C. Taft. Feral swine – are they a disease threat to livestock in the United States? Proceedings of the 10th Wildlife Damage Conference. Full text PDF available at http://www.aphis.usda.gov/ws/nwrc/is/annpub2003.html

Viral Diseases		Bacterial Diseases
Bovine herpsvirus	Parainflenva virus	Anthrax
Classical swine fever	Pestivirus infections	Brucellosis
Coronaviral infections	Pseudorabies	Erysipelothrix infections
Encephalomyocarditis	Rabbit hemorrhagic disease	Helicobacter spp.
Foot-and-mouth disease	Rinderpest	Leptospirosis
Influenza A	San Miguel sea lion virus	Bovine tuberculosis
Louping-ill virus	Swinepox virus	Pasteurellosis
Malignant catarrhal fever	Swine vesicular disease	Plague
Menangle virus	Vesicular swine virus	Salmonellosis
Papillomavirus infections	Vesicular stomatitis	Yersiniosis

Table 1. A partial list of diseases to which feral swine are susceptible

Source USDA

Feral Swine in Indiana

The Southeastern Cooperative Wildlife Disease Study in Athens, Georgia, have been studying the distribution of feral swine throughout the United States since the early 1980's. In 1988, the population map was updated and in Indiana and all the surrounding states, only one southern county in Kentucky was reported to contain feral swine. The 2004 map indicated feral swine populations in all of the surrounding states except Michigan (see map to left).

Report Feral Swine

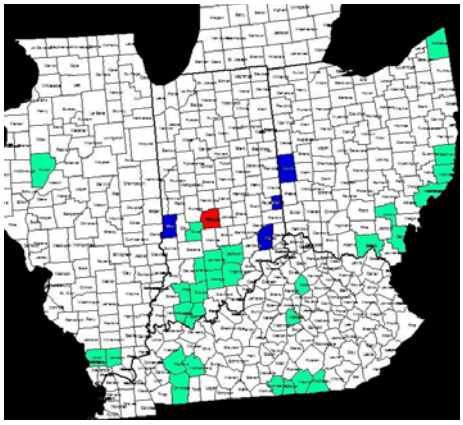
*Please call the Wildlife Conflicts Information Hotline at **1-800-893-4116** to report the location, damage, and numbers of feral swine or for assistance with feral swine damage.*

Figure Legend

Green counties are from the Southeastern Cooperative Disease Study Group in Athens, Georgia, 2004 data. Additional information can be found at http://www.uga.edu/scwds/dist_maps.htm)

Red counties are those additional counties identified from Parks, E. M., K. M. Hunt, S. C. Grado and R. B. Minnis. 2006. Stakeholder Attitudes towards Feral Hogs Based on Location and Perceived Relative Density. Masters Thesis. Mississippi State University, Starkville.

Blue counties are additional reports of counties where feral swine have been identified.



Feral swine in Indiana and surrounding states (Legend for color-coded counties in article text).

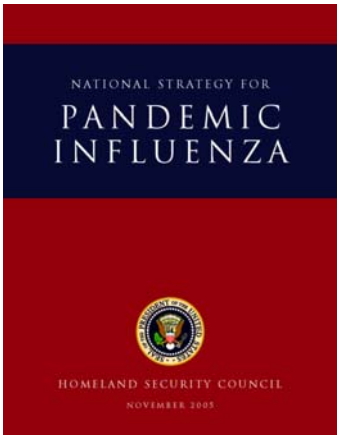
Identification of a feral swine sighting within a county does not imply an even-distribution or suggest prevalence within that county.

Article by J.N. Caudell, USDA

Avian Influenza Surveillance in Wild Birds: Update

As reported in the last issue of Indiana Wildlife Disease News, federal, state, and local agencies have begun planning for avian influenza surveillance in wild birds throughout the United States, based on the President's National Strategy for Pandemic Influenza.

Avian influenza issues have become a focus of attention for Wildlife Services Wildlife Disease Program. In March, An Early Detection System for Asian H5N1 Highly Pathogenic Avian Influenza in Wild Migratory Birds, US Interagency Strategic Plan was finalized (available from http://www.aphis.usda.gov/newsroom/hot_issues/avian_influenza/avian_influenza.shtml). Dr. Tom DeLiberto, USDA/APHIS/Wildlife Services National Wildlife Disease Coordinator, co-chaired a working group to develop the Plan at the request of the Homeland Security Council's Presidential Coordinating Committee. The working group was comprised of representatives from the International Association of Fish and Wildlife Agencies, Departments of Agriculture and Interior, Centers for Disease Control and Prevention, and the State of Alaska.



The plan outlines 5 strategies for conducting wild bird surveillance, identifies laboratory capabilities, standardizes collection, submission, and data management protocols, and serves as a guidance document for both domestic and international partners interested in wild bird surveillance. The Plan is currently being discussed in the four Flyway Councils for implementation.

In Indiana, USDA Wildlife Services and IDNR Division of Fish and Wildlife will begin sampling free-living wild birds in late summer. The sampling effort will peak during the fall waterfowl migratory (hunting) season and continue through early 2007.

Approximately 1,200 samples taken directly from either live, dead, or hunter-harvested birds will be collected through a joint effort between Wildlife Services and the Indiana Division of Fish and Wildlife. The samples will be used for early detection of the virus and will be processed at Purdue University Animal Disease Diagnostic Lab or other labs in the National Animal Health Lab Network.

An additional 1,000 environmental samples will be collected by Wildlife Services and analyzed at the USDA National Wildlife Research Center in Fort Collins, Colorado.

Article by J.N. Caudell, USDA

Feral Swine and Domestic Swine Mix in Indiana: A Case-Study

In late April, 2005, the Indiana Board of Animal Health (BOAH) received a call from the Ohio Department of Agriculture with a report that an Indiana swine producer had observed 2 wild boars interacting with his domestic swine in an outdoor enclosure on his farm. The wild boars cleared the fence and ran off as he approached. The farmer saw them again a few days later and was able to shoot one of the animals. It was a young European-type wild boar that weighed about 150 pounds. The animal had no visible means of identification (such as ear tag, notches, tattoo, etc.).

Samples from the animal were sent to the Animal Disease Diagnostic Laboratory at Purdue University for analysis. Tests for brucellosis and pseudorabies were negative.

In late August, 2005 the farmer saw and shot another feral boar. Again, all tests were negative.

Feral swine. (Photo: USDA)

In December, 2005 the farmer left a message for Dr. Hollis that apparently some of his sows had been bred by a feral boar. The farmer had 7 litters of pigs that were thought to have been sired by feral boars.

On March 29, 2006, BOAH purchased 2 pigs from each of 3 litters that were apparently sired by the feral boars. Tests for brucellosis, pseudorabies and classical swine fever (formerly known as hog cholera) were negative.

The farmer has approximately 50 breeding animals and part of their life cycle is in fenced areas that gives feral swine access to feed and to the females for breeding. The farm is on the Indiana-Ohio state line and is very close to the Hueston Woods State Park in Ohio. The Ohio Department of Agriculture has been aware of the feral swine in the area and has been working to depopulate them.

Article by J. Johnston, BOAH

I Found A Dead Bird…..Now What Do I Do?

I found a dead bird, now what do I do? Because of the media surrounding Avian Influenza, this will be a question you may often hear. The Indiana Department of Health, Indiana DNR Division of Fish and Wildlife, Board of Animal Health, USDA Wildlife Services, and USDA Veterinary Services have collaborated to answer this questions for the residents of Indiana.

I found a dead bird, now what do I do?

Wild birds die for a variety of reasons and most wild bird deaths have no impact on human health.

Natural Death – naturally short life span, severe weather, predators, competition between species.

Accidental – impacts with power lines, vehicle collisions, aircraft strikes, impacts with windows or buildings.

Toxicants – birds that die from toxicants may include:

Legal pest control – three EPA/OISC registered pesticides are used to manage pest pigeon, starling, or House sparrow problems in Indiana. The legal application of these products presents no threat to human health and safety.

Illegal or accidental pesticide exposure – sometimes people apply other pesticides (insecticides, herbicides, etc.) incorrectly or the birds enter a recently treated area before the designated safe re-entry time has passed.

Environmental contamination – chemical or other contaminate spills, leaks, or releases.

Spoiled grain crop residues – Crop residues are a primary food source for many of our wild birds. Bacteria, fungi, and molds can grow on crop residues left in the field and some of these organisms can cause mortality.

Dirty bird feeders – the same organisms found in spoiled crop residues can also be found in backyard bird feeders if they are not kept clean.

Disease – most wild bird diseases present no threat to human health. However, there are two wild bird-related diseases about which Hoosiers are most worried. Diseases may include:

Wildlife Services personnel sampling for avian influenza in wild birds (Photo: J. Wiscomb, USDA).

West Nile Virus – Wild birds serve as an amplifying host for West Nile virus. Mosquitoes become infected by feeding on infected birds and then biting humans. Wild birds are also killed by the West Nile virus. Blue jays, robins, cardinals, crows, and raptors (falcons, hawks, and owls) are highly sensitive to the virus, and therefore are the best indicators of West Nile virus activity in a community. They are the only species of birds that the Indiana State Department of Health Laboratory is testing for the virus. If you find a dead blue jay, robin, cardinal, crow, falcon, owl, or hawk during mosquito season (May – October), please call your local health department (numbers are available at http://www.in.gov/isdh/links/local_dep/index.htm) and ask them if they would like to pick it up and send it to the State Laboratory.

Report Dead Waterfowl

*Please call the Wildlife Conflicts Information Hotline at **1-800-893-4116** to report the location and number of dead waterfowl.*

Highly Pathogenic Asian H5N1 (HPAI) - commonly known as Avian Influenza or bird flu is a disease that concerns many people. Avian Influenza (AI) occurs in North America naturally in a form that does not infect humans (Low Path AI, or LPAI). The disease that has affected humans in other countries, **HPAI**, is not currently found in North America. In the worldwide wild bird population, AI is most often found in waterbirds, such as waterfowl (geese, ducks, swans) and shorebirds (sandpiper-type birds). However, there are no documented cases of the disease ever being transmitted to humans from wild birds. Wild, migrating birds may be one possible route of entry for **HPAI** into North America. If the disease is spread by wild birds, the first evidence of **HPAI** in North America would be expected to be found in Alaska due to its proximity to the natural Asian wild bird migration paths. The Indiana Department of Natural Resources has joined forces with USDA APHIS Wildlife Services in a state/federal partnership to initiate a pro-active wild waterfowl surveillance program. This will establish an early warning system for any evidence of **HPAI** in our migratory waterfowl. Wildlife Biologists from IDNR and Wildlife Services will be handling all sampling and monitoring activities for **HPAI** in Indiana. Since our resident geese and ducks do not migrate a significant distance, those waterfowl are not at risk for initial exposure to **HPAI** and are not a priority in the surveillance program. If you find dead migratory geese, ducks, swans, or shorebirds, **DO NOT PICK UP THE BIRDS FOR TESTING.** Please call the Wildlife Conflicts Information Hotline at 1-800-893-4116 to report the location and number of dead waterfowl. IDNR and Wildlife Services professional staff will determine if testing is necessary.

Dead wild birds should not be handled with bare hands. If you need to dispose of a dead bird, use gloves or a plastic bag turned inside out over your hand to pick up the bird, double bag it, and dispose of it in the trash.

Midwest Wildlife Disease Update

Minnesota- The Minnesota Board of Animal Health announced in March that a farmed white-tailed deer in their state tested positive for Chronic Wasting Disease (CWD). The 10 year old doe was euthanized due to illness. Subsequent testing revealed the deer was infected with CWD.

Ohio/Indiana- According to the ProMED-mail list serve, in March 2006 tuberculosis affected swine were discovered in Ohio and West Virginia. Suspected lesions were processed by the National Veterinary Services Lab, and Mycobacterium avium was diagnosed in all cases. M. avium infects mainly birds and is found in the environment. The organism is shed in large numbers in bird droppings making contaminated food or bedding the likely source of infection.

Secondary Raptor Poisoning- Dr. Mark Pokras, at Tufts Cummings School of Veterinary Medicine in Massachusetts, has noted an apparent significant increase in raptors (usually red-tail hawks) presented to their clinic for secondary rodenticide poisoning. Raptors display widespread bruising, internal bleeding, and blood that does not clot when placed in a test tube. Lab testing is revealing brodifacoum as the primary culprit which is a commonly used ingredient in rodenticides.

Indiana- Indiana is fortunate to see very few rabies cases each year. Animals considered to be most likely to transmit rabies in the Hoosier state include bats, skunks, foxes, raccoons, and coyotes. From the 1960's to 1988 skunks were the most commonly found rabid animals. Since 1988, bats have become the most common rabid animal, and have been found somewhere in the state every year since 1965. Since 1962 the top six rabid animals include: skunk (822 positives), bats (445), dogs (182), foxes (99), cows (79), and cats (47).

Michigan- DNR officials in Michigan confirmed another two deer tested positive for Eastern Equine Encephalitis (EEE) in October 2005, one each in Kent and Ionia County. This brings the total positive EEE cases to seven, all within a 25 square mile area. All infected deer were showing signs of illness and abnormal behavior. The virus that causes EEE is transmitted by mosquitoes that have fed on infected songbirds. Mosquitoes can

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A Brief Un-Natural History of Feral Swine (Continued from pg. 1)

few days after they are born. They generally have 2 litters per year that contain 5-6 piglets with equal numbers of males and females, each weighing approximately 1 pound. The adult female and her young rejoin their sounder after approximately 10 days. Although they have the potential to grow larger, feral sows typically weigh 150-200 pounds and boars weigh 250-300 pounds. Adult boars are generally solitary and cover relatively large areas in search of females to breed and for food. They fight other males for breeding rights with sows. Two or three sows and their offspring form social groups called "sounders" that often include 15-20 animals of several sizes.

Legal Status in Indiana: Feral swine are not protected by hunting or other regulations in Indiana and can be taken throughout the year.

Extension Disaster Education Network (EDEN)

The Extension Disaster Education Network (EDEN) is a collaborative multi-state effort by Extension Services across the country to improve the delivery of services to citizens affected by disasters. The mission of EDEN is to share education resources to reduce the impact of natural and man-made disasters.

This mission is carried out through:

- Interdisciplinary and multi-state research and education programs addressing disaster mitigation, preparation, response and recovery;
- Linkages with federal state and local agencies and organizations;
- Anticipation of future disaster education needs and actions;
- Timely and prompt communications and delivery of information that meets audience needs;

Credible and reliable information.

EDEN is the premier provider of disaster education resources delivered through the Land Grant University system. In Indiana, Purdue University is the EDEN representative institution.

For more information on the EDEN network in Indiana, visit their website at http://www.ces.purdue.edu/eden/ or contact:

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Indiana Wildlife Disease News

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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.

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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.

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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.

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Midwest Wildlife Disease Update Continued from pg 5

also transmit the disease to deer, horses, and humans. The last recorded human case in Michigan was in 2002. There is no evidence that humans can be infected with EEE by handling or eating an infected animal.

Rocky Mountain Spotted Fever (RMSF)- With warmer weather here, tick diseases become more of a concern. During spring and early summer, dog ticks and the lone-star tick become more active, and with that comes the threat of contracting RMSF. This disease can be transmitted through tick bites, handling crushed ticks or contacting tick feces on animal fur. It is important to wash hands thoroughly after handling ticks or tick infested animals. RMSF symptoms include "flu-like" symptoms of fever, muscle aches and chills, and a characteristic red rash appears on wrists and ankles within several days.

Ticks from feral swine. (Photo: C. Everett, Texas Animal Health Commission)

Column by D. Zimmerman, IDNR