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## What we know about H5N1 (the bird flu) virus and ...

# Hunting upland game birds and waterfowl

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You have to assess for yourself the risks of running into H5N1 bird flu while hunting. Hunters should routinely monitor this website (<http://sdces.sdstate.edu/avianflu/>), since we learn more information about highly pathogenic H5N1 avian influenza virus with the discovery of each new case in birds, mammals, or humans.

In the field you may come upon representatives of the USDA, USF&WS, and state wildlife agencies testing approximately 100,000 wild birds across the flyways for evidence of avian influenza viruses, including H5N1. They may ask you for specimens from your birds. Your cooperation will assist them in learning more about H5N1.

Regularly updated results of the surveillance by these agencies is at <http://wildlifedisease.nbio.gov/ai>

Questions that scientists hope to answer from the surveillance data collected in 2006-2007 include:

- Which wild birds will become infected with the highly pathogenic H5N1 avian influenza virus?
- If infected with H5N1, will the birds die or will they survive?
- If they do survive, will the birds be healthy enough to migrate, and how many days will they shed the virus (in feces and respiratory secretions) while on the move?

In the spring of 2006, the most commonly affected wild birds in the United Kingdom were—in decreasing order of incidence—swans>ducks>geese>birds of prey (such as hawks and owls). H5N1 has also been documented in passerine (“perching”) birds such as the house sparrow, Eurasian tree sparrow, and the house finch.

We know that waterfowl such as ducks and geese can be subclinical carriers of H5N1 virus (may not show signs of the disease). “The potential role of wild birds and waterfowl as reservoirs of infection by high path avian influenza viruses has been described for only the Asian HPAI [Highly Pathogenic Avian Influenza] virus H5N1. The ecologic and epidemiologic implications of this unprecedented situation are not predictable” (Capua 2006). In other words, there is much we do not yet know about H5N1 and wild birds.

Experimental studies have shown that quail carry receptors for both avian strains of influenza and human strains of influenza. This means that quail may become infected with H5N1 and could potentially serve as an intermediate host, in which both an avian strain and a human strain could mix (“mixing vessel” model.)

We also know that pheasants are susceptible to avian influenza viruses. During an avian influenza outbreak in the Netherlands in 2003 (involving an H7N7 strain of the

virus) pheasants did not show signs of illness but did shed the virus in their feces and respiratory secretions. At this time we do not know if (or how many) pheasants in South Dakota will become infected with H5N1 avian influenza virus, and we do not know if they will be sub-clinical carriers of the virus if they do become infected.

You should follow precautions similar to those recommended by the Food & Agricultural Organization (FAO) of the United Nations when handling all game birds.

#### Care of game birds

- Do not eat, drink, or smoke while handling birds.
- Do not handle birds that act listless or are obviously sick.
- Keep birds cool, clean, dry, and iced in a chest. If possible use a chest you can clean and sanitize after you get home.
- Wear gloves to prevent germs (H5N1, Salmonella, other pathogens) from entering through small (even microscopic) cuts on your hands.
- When dressing birds, wear goggles and an N95 face mask to help protect against splashes and prevent you from inhaling clumps of virus-laden feather dander and dried feces.
- Properly dispose of feathers and innards safely away from pets, scavenging animals, and children.
- Wash and then sanitize with a 10% chlorine bleach solution (1 1/2 cup bleach to 1 gallon water, made up fresh for each use) all equipment before you remove your gloves, mask, and goggles. Do not rinse after sanitizing. Wash and sanitize the work area, back of truck (or wherever you carried the birds and your dog), and your clothes and boots.
- After removing your gloves, thoroughly wash your hands with soap and water or an alcohol-based sanitizer.

(The N95 face mask filters out 95% of particles that measure 0.3 micrometers or larger. Influenza virus particles are 0.08 to 0.12 micrometers, smaller than the mask pores. Face masks are still protective, however, because virus particles are often clumped together or stuck to other airborne debris such as dried secretions or feather dander.)

Over 90 species of wild, captive, and pet birds have been naturally or experimentally infected with H5N1 virus. A complete listing is at [http://www.nwhc.usgs.gov/disease\\_information/avian\\_influenza/affected\\_species\\_chart.jsp](http://www.nwhc.usgs.gov/disease_information/avian_influenza/affected_species_chart.jsp). All birds have the potential of carrying other diseases, even if not infected with H5N1.

#### H5N1 and your hunting dog

We do not know of any documented case of H5N1 infection in dogs. But because there is much we do not yet know about H5N1 infection, the following recommendations should be observed for hunting dogs:

#### DOGS: observe these precautions

- Keep routine vaccinations up-to-date on all dogs.
- Do not allow dogs to eat feces, dead animals, roll in unidentified substances, or lick your hands or face.
- Cook poultry products before feeding to pets (i.e. chicken and rice diet).
- Take any ill dog to your veterinarian.

Since “hunting dogs retrieve game in their mouths and are therefore very exposed to the virus carried by infected game birds...avoid or minimize the use of hunting dogs if the avian flu virus is in the area” (FAO).

There is no direct evidence to suggest that eating infected raw or undercooked bird flesh is a way to transmit avian influenza virus. However, there is mounting circumstantial evidence of H5N1 infection in some mammalian species after eating H5N1-infected birds. During a 2002 outbreak in geese, ducks, swans (and other wild birds) in Hong Kong, the H5N1 virus was isolated from the lung, brain, and fecal or tracheal swabs in 68 out of 88 birds tested, indicating that the virus was present in multiple organ systems. Therefore, as a precautionary measure, transmission of the H5N1 virus by ingestion cannot be ruled out.

#### H5N1 and humans

Scientists suspect there may be a genetic susceptibility to H5N1 virus in some people. “It is ... likely that a high

dose of virus may be needed to initiate an infection and that a readily accessible entry route for the virus does not exist. ... Studies on the exact route(s) of H5N1 virus entry in mammals are needed and may provide useful information for the human infection” (EFSA Journal 2006).

We know that most people in Asia who became infected with H5N1 were exposed while slaughtering, de-feathering, and butchering sick or dead domestic poultry.

Only one outbreak of human H5N1 disease (in Azerbaijan) has involved wild birds as the most likely source of infection for humans. Humans plucking feathers for pillows from wild swans that had died from H5N1 were likely exposed to the virus while collecting feathers. Of seven people who became ill, four later died.

A few human cases in Asia have involved family members who became infected while caring for an H5N1-infected relative. These family members were not wearing any personal protective equipment such as a face mask or gloves.

In two cases, consumption of a pudding containing raw duck blood is suspected to have resulted in infection with H5N1. With the exception of these two cases, there is no direct evidence to suggest that the food chain is a route of transmission for avian influenza virus in humans. Yet, because of circumstantial evidence of H5N1 infection

### Preparing game birds to eat

The following food preparation recommendations should be followed. These are the same steps you use to prevent exposure to germs such as Salmonella.

- Separate raw meat from cooked foods.
- Do not use the same chopping block or utensils for raw meat and other foods.
- Do not put cooked meat back on the raw meat platter unless the plate has been thoroughly washed with hot, soapy water.
- Wash your hands with soap and hot water after handling raw meat.
- Cook food to an internal temperature of 165 degrees Fahrenheit or higher. Do not eat meat that is still pink.
- Clean the chopping block, utensils, and all of the cooking area with hot, soapy water after using. Then sanitize the flat surfaces with a 10% chlorine bleach/water solution (1 1/2 cup bleach to 1 gallon water—made up fresh for each use because it goes stale easily), and allow to air dry.

via ingestion in some mammalian species, as a precautionary measure this mode of transmission cannot be ruled out.

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