



# Fact Sheet

## USDA AVIAN INFLUENZA FACT SHEET

*Updated: April 2015*

There are two types of avian influenza (AI) that are identified as H5N1. A difference exists in the virus classification; one is low pathogenic (LPAI) and the other is highly pathogenic (HPAI). Pathogenicity refers to the ability of the virus to produce disease. HPAI H5N1, often referred to as the “Asian” H5N1, is the type causing worldwide concern. LPAI H5N1, often referred to as the “North American” H5N1, is of less concern.

Recently, on January 16, 2015, USDA’s National Veterinary Services Laboratories (NVSL) confirmed a finding of a *novel* avian influenza virus in a wild green winged teal (a wild duck) in Washington State (new H5N1). ***This particular strain had not been identified in an animal or human host before.*** Following is an explanation of the differences among them, including the newly detected mixed origin HPAI viruses.

### Newly-Detected Mixed Origin HPAI Viruses

HPAI, or “high path” AI, spreads rapidly and is often fatal to chickens and turkeys. The HPAI H5N8 virus originated in Asia and spread rapidly along wild bird migratory pathways during 2014, including the Pacific flyway. In the Pacific flyway, the H5N8 virus has mixed with North American avian influenza viruses, creating new mixed-origin viruses.

- These mixed-origin viruses contain the Asian-origin H5 part of the virus, which is highly pathogenic to poultry.
- The N parts of these viruses came from native North American avian influenza viruses found in wild birds.

USDA has identified Eurasian H5N8 HPAI and mixed-origin viruses, H5N2 and a novel H5N1, in the Pacific Flyway.

The HPAI H5N2 virus strain has been confirmed in several states along three of the four North American Flyways: Pacific, Central and Mississippi.

The novel HPAI H5N1 virus is **not** the same virus as the H5N1 virus found in Asia, Europe and Africa that has caused some human illness. This HPAI H5N1 strain is a new mixed-origin virus that combines the H5 genes from the Asian HPAI H5N1 virus with N genes from native North American avian influenza viruses found in wild birds.

With several different viruses circulating in wild birds, it is not unexpected that a new mixed-origin virus was identified. Viruses continually mutate and form new combinations with genetic material from similar viruses. It’s not unexpected, nor is it cause for alarm. It is, however, a main reason why it is necessary to continue USDA surveillance efforts for avian influenza in migratory birds. USDA is part of the National Flyway Council and posts [confirmations of wild bird highly pathogenic avian influenza case in the U.S.](#)

### ***HPAI H5N1 (“Asian” H5N1)***

Because HPAI spreads rapidly and is often fatal to chickens and turkeys, this includes “Asian” HPAI H5N1 which has been found in Southeast Asia, Africa and Europe. Millions of birds have died in countries where “Asian” HPAI H5N1 has been detected. This virus also has infected people, most of whom have had direct contact with infected birds.

“Asian” HPAI H5N1 has not been detected in the United States. However, other strains of HPAI have been detected and eradicated three times in the United States: in 1924, 1983 and 2004. No significant human illness resulted from these outbreaks.

The 1924 HPAI H7 outbreak was contained and eradicated in East Coast live bird markets.

The 1983-84 HPAI H5N2 outbreak resulted in humanely euthanizing approximately 17 million chickens, turkeys and guinea fowl in Pennsylvania and Virginia to contain and eradicate the disease.

In 2004, USDA confirmed an HPAI H5N2 outbreak in chickens in Texas. The disease was quickly eradicated thanks to close coordination and cooperation between USDA and State, local, and industry leaders.

### ***LPAI H5N1 (“North American” H5N1)***

LPAI, or “low path” AI, commonly occurs in wild birds. In most cases, it causes minor sickness or no noticeable signs of disease. It is rarely fatal in birds. LPAI strains are not known to be a human health concern. This includes LPAI H5N1. Evidence of LPAI H5N1 has been found in wild birds in the United States in recent years and is not closely related to the more severe HPAI H5N1 circulating overseas. Examples of historical reports of LPAI H5N1 received by USDA include:

1975 – LPAI H5N1 was detected in a wild mallard duck and a wild blue goose in Wisconsin as part of routine sampling, not as a result of noticeable illness in the birds

1981 and 1985 – the University of Minnesota conducted a sampling procedure in which sentinel ducks were monitored in cages placed in the wild for a short period of time and LPAI H5N1 was detected in those ducks in both years.

1983 – LPAI H5N1 was detected in ring-billed gulls in Pennsylvania.

1986 - LPAI H5N1 was detected in a wild mallard duck in Ohio as part of routine sampling, not as a result of noticeable illness in the birds.

2002 – LPAI H5N1 antibodies were detected in turkeys in Michigan but the virus could not be isolated; therefore this detection could not be confirmed.

2005 - LPAI H5N1 was detected in ducks in Manitoba, Canada.

2006 – LPAI H5N1 was confirmed in two Michigan mute swans and mallard ducks; Maryland resident wild mallard ducks, and Pennsylvania wild mallard ducks; and Delaware green-winged teals, all sampled as part of USDA’s expanded avian influenza surveillance.

In the past, there was no requirement for reporting or tracking LPAI H5 or H7 detections in wild birds so states and universities tested wild bird samples independently of USDA. Because of this, the above list of previous detections might not be all inclusive of past LPAI H5N1 detections. However, the World Organization for Animal Health (OIE), in 2006, changed its requirement of reporting detections of avian influenza. Now, all confirmed LPAI H5 and H7 AI subtypes must be reported to the OIE because of their potential to mutate into highly pathogenic strains. Therefore, USDA now tracks these detections in wild birds, backyard flocks, commercial flocks and live bird markets.

## TERMINOLOGY

**Avian influenza (AI)**--the bird flu--is a virus that infects wild birds (such as ducks, gulls, and shorebirds) and domestic poultry (such as chickens, turkeys, ducks, and geese). There is flu for birds just as there is for humans and, as with people, some forms of the flu in birds are worse than others.

AI viruses are classified by a combination of two groups of proteins: the hemagglutinin or H proteins, of which there are 16 (H1-H16), and neuraminidase or N proteins, of which there are 9 (N1-N9).

**Pathogenicity:** the ability of the virus to produce disease. AI strains also are divided into two groups based upon the ability of the virus to produce disease: low pathogenic (LP) and highly pathogenic (HP).

**Low Pathogenic or “low path” avian influenza (LPAI):** LPAI occurs naturally in wild birds and can spread to domestic birds. In most cases it causes no signs of infection or only minor symptoms in birds. These strains of the disease pose little significant threat to human health. These strains are common in the U.S. and around the world.

**Highly Pathogenic or “high path” avian influenza (HPAI):** HPAI is often fatal in chickens and turkeys. HPAI spreads rapidly and has a higher death rate in birds than LPAI.

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