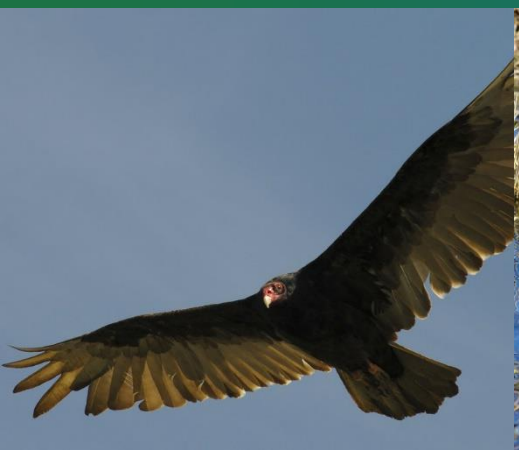
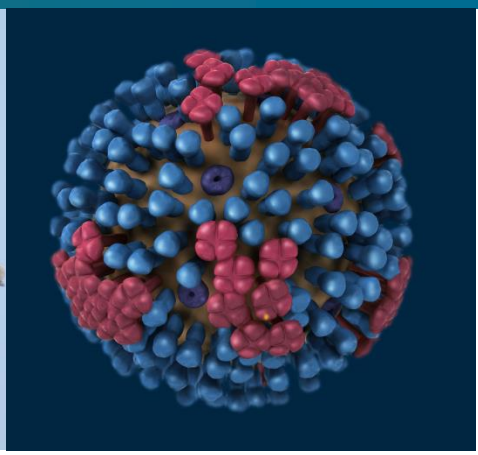
Avian Influenza

Office of Fish and Wildlife Health and Forensics



Introduction

Avian influenza (AI) can occur in many wild bird species. Common distinctions of AI strains are low pathogenic AI (LPAI) and highly pathogenic AI (HPAI). Typically, low pathogenicity forms of AI viruses are present in wild populations. Regular genetic mutation can result in more pathogenic forms that spread to cause disease outbreaks. Many subtypes of AI exist, with their specific strain names (HxNx) being determined by the hemagglutinin (H) and neuraminidase (N) proteins found on the viral surface. There are 18 forms of hemagglutinin and 9 forms of neuraminidase that combine to form the various strains.

Species Affected

In the wild, AI is particularly common among the *Anseriformes* and *Charadriiformes* families which include waterfowl and shorebirds, respectively. These families function as viral reservoirs and may not get sick. HPAI strains can become more widespread and affect other groups of birds including raptors and vultures. The species most affected are domestic fowl including chickens, turkeys, and ducks.

Clinical Signs

AI typically shows no signs in waterfowl and shore birds. In cases within other wild birds, upper respiratory signs and neurologic symptoms may occur. Lesions or edema may occur. Bloody discharges may also occur.

Transmission

Transmission of AI occurs commonly through the fecal-oral route. AI is replicated in the intestinal tract and shed in feces. It survives well in cold water, which is the presumed route of transmission in wild populations. The highly migratory nature of wild birds is substantial in the spread of AI.

Diagnosis

Diagnosing AI requires laboratory testing. Birds are typically tested via oropharyngeal and cloacal swabs, followed by molecular testing.

Epidemiology

A large amount of surveillance and monitoring occurs on both a national and global scale for strains of avian influenza. In the United States, both the US Department of Agriculture and the US Geological Survey monitor HPAI outbreaks. The USGS's National Wildlife Health Center reports on the latest distributions of AI cases across North America.

Surveillance/Management

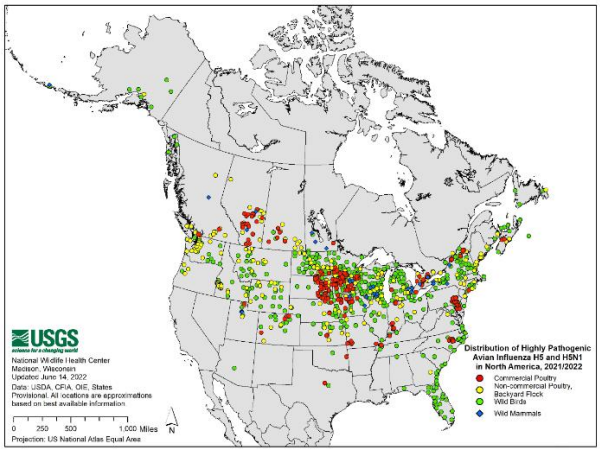


Figure 1 For most recent, visit: https://www.usgs.gov/media/images/distribution-highly-pathogenic-avian-influenza-h5-and-h5n1-north-america-20212022

Additional Information

[cwhl-fact-sheets-ai.pdf (cornell.edu)]

[USDA APHIS | 2022 Detections of Highly Pathogenic Avian Influenza]

[Distribution of Highly Pathogenic Avian Influenza H5 and H5N1 in North America, 2021/2022 | U.S. Geological Survey (usgs.gov)]