



National Wildlife Health Center

Wildlife Health Bulletin 2016-08

**Update on H5N8 and other Eurasian H5 Clade 2.3.4.4  
Highly Pathogenic Avian Influenza Viruses in Wild Birds**

To: Natural Resource and Conservation Managers  
From: Dr. Jonathan Sleeman, Center Director, USGS National Wildlife Health Center  
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The purpose of this Bulletin is to review events that led to the emergence of highly pathogenic avian influenza (HPAI) in North America in late 2014 and to provide an overview of HPAI mortality events and detections that are currently occurring in poultry and wild migratory birds of Europe and Asia.

In early 2014, the People's Republic of China, Japan, and the Republic of Korea reported outbreaks of novel Eurasian (EA) H5N8-reassortant clade 2.3.4.4 HPAI viruses in poultry and migratory wild birds. By November 2014, there were multiple reports of H5N8 clade 2.3.4.4 HPAI viruses in wild birds from Germany, Japan, the Netherlands, Republic of Korea, and Russia. Subsequently, the EA H5N8 HPAI virus and a reassortant strain of Eurasian/American (EA/AM) H5N2 HPAI were detected in North America, causing lethal infections in wild raptors and large-scale outbreaks among domestic turkey and layer chickens in the Midwestern United States. Outbreaks among US poultry producers were all resolved by June 2015, and [the last detection of HPAI in a North American wild bird](#) was an EA/AM H5N2 HPAI virus in a mallard duck (*Anas platyrhynchos*) sampled in August 2016 by the Alaska Department of Fish and Game in Fairbanks North Star Borough, Alaska as part of the national surveillance for HPAI in wild birds.

In 2016, a different variant of the EA H5N8 clade 2.3.4.4 HPAI virus was reported in wild birds in Russia (during summer) and India (during autumn). Additional outbreaks have subsequently been reported in a growing list of European countries (Austria, Croatia, Denmark, Finland, France, Germany, Hungary, the Netherlands, Poland, Romania, Serbia, Sweden, and Switzerland) and three countries in the Middle East (Egypt, Israel and Iran). Infected domestic animals have included chickens, ducks, and turkeys; affected wild birds have included at least 16 species of waterfowl, five species of gulls and terns, four species of raptors, two species of grebes, as well as a coot, cormorant, crow, heron, and moorhen.

Additionally, HPAI H5N6, a related virus that is also in clade 2.3.4.4, has been found this autumn in China, Hong Kong, Japan, and Republic of Korea. While H5N8 HPAI viruses have not been reported to cause disease in humans, H5N6 viruses have previously been associated with human infection with a greater than 50% mortality rate. Zoonotic potential of currently circulating strains of H5N6 viruses are not yet known.

For situational awareness, we emphasize that both the H5N8 and H5N6 HPAI viruses circulating in Eurasia in 2016 have been associated with mortality events in wild bird species and thus recommend heightened vigilance for morbidity or mortality in wild birds of North America. The USGS National Wildlife Health Center (NWHC) continues to work closely with the USDA APHIS Wildlife Services,

the U.S. Fish and Wildlife Service, and state wildlife agencies to implement enhanced mortality investigations and national surveillance in wild birds for HPAI viruses. For an up-to-date summary of positive results from combined federal and state agency HPAI national surveillance in wild birds for the 2016-2017 surveillance year, please view this table: [Wild Bird HPAI Cases in the U.S.](#)

#### **National surveillance for HPAI in wild birds:**

The NWHC is a member of the Interagency Steering Committee for Surveillance for Highly Pathogenic Avian Influenza in Wild Birds and, in this role, is accepting swab samples from live birds and hunter-harvested birds collected by participating agency partners in the Mississippi and Atlantic Flyways. See this link for a copy of the national surveillance plan: [Interagency Strategic Plan for Early Detection and Monitoring for Avian Influenzas of Significance in Wild Birds](#).

The NWHC is also a leading partner in wildlife morbidity and mortality investigation as part of the Interagency Strategic Plan and continues to monitor for HPAI viruses nationwide by testing dead birds submitted for diagnostic evaluation. Mortality-based investigations serve to enhance capability for early detection of HPAI in wild birds and increase understanding of the spatial extent and species involvement. Wildlife managers should remain vigilant for wild bird morbidity and mortality events and continue to contact NWHC to discuss submission and testing of carcasses from events that meet the expanded criteria described below. Note that the following is not an all-inclusive list of cases accepted by the NWHC (see standard [NWHC Submission Guidelines](#)). Wildlife management agencies that investigate morbidity and mortality events independently or in collaboration with other diagnostic laboratories are strongly encouraged to report these events to the NWHC using our [reporting form](#) so that information can be captured on a national scale and displayed on [WHISPers, a wildlife health information sharing website](#), to increase situational awareness.

#### **Expanded NWHC submission criteria for HPAI diagnostics:**

- Mortality involving wild bird species where estimated number of dead exceeds 500 birds.
- Mortality involving wild birds of any species in close proximity to facilities housing domestic birds in which HPAI has been detected.
- Mortality involving gallinaceous birds such as wild turkeys, quail, and sage grouse.
- Mortality involving five or more waterfowl (ducks, geese, or swans) or other water birds (loons, grebes, coots, shorebirds, or wading birds such as egrets, herons, or cranes).
- Mortality involving any number of raptors, waterfowl, or avian scavengers (ravens, crows, or gulls) observed in the same or adjacent counties to confirmed HPAI in poultry or wild birds.
- Mortality involving any number of raptors or avian scavengers (ravens, crows or gulls) near locations with on-going waterfowl mortality.
- Mortality involving raptors, waterfowl, or avian scavengers (ravens, crows, or gulls) observed with clinical signs consistent with neurological impairment, which may include swimming or walking in circles, moving the head in a “jerky” motion, and holding the neck and head in an unusual position (more drastic than simply drooping). Neurological signs associated with HPAI infection are not well characterized; thus please collect detailed descriptions of the observed signs and call the NWHC with questions. Video and photos are strongly encouraged.
- Wild raptors with neurologic/respiratory signs that die or are euthanized within 72 hours of admission to a rehabilitation facility. Please also provide treatment records.
- Raptors held in captivity (*i.e.*, falconry birds, rehabilitation facility) with sudden, unexplained morbidity/mortality after exposure to wild waterfowl or a known/suspect case of HPAI H5.

*NOTE: If your agency receives a report that falls outside of these criteria but you suspect there is elevated potential for HPAI infection, please do not hesitate to contact the NWHC. Unless otherwise instructed, the NWHC may only screen carcasses for HPAI if this is the primary reason for submission.*

**General safety guidelines for hunters and biologists handling wildlife and their tissues:**

- Do not handle or eat sick game.
- Field dress and prepare game outdoors or in a well-ventilated area.
- Wear rubber or disposable latex gloves while handling and cleaning game.
- When done handling game, wash hands thoroughly with soap or disinfectant and clean knives, equipment, and surfaces that came in contact with game.
- Do not eat, drink, or smoke while handling animals.
- All game should be thoroughly cooked to an internal temperature of 165 degrees F.
- Additional guidance for hunters: [Guidance for Hunters – Protect Yourself and Your Birds from Avian Influenza](#)

**Field biologists should follow these minimum precautions when handling sick or dead birds associated with a mortality event:**

- Wear protective clothing including aprons, coveralls, rubber boots, rubber or latex gloves, eye protection, and face shields that can be disinfected or discarded to prevent skin and mucous membrane contact with biological materials and movement of biological materials among sites.
- Work in well-ventilated areas or upwind of animals to decrease the risk of inhaling airborne particulate matter such as dust, feathers, or dander.
- A particulate respirator (NIOSH N95 respirator/mask or better) is recommended when working in confined spaces or conditions that promote production of aerosol. Review your agency's policies for specific guidance for respirator use while handling sick and dead wildlife.
- Wash hands often and thoroughly for at least 30 seconds with soap or alcohol-based hand sanitizer.
- Do not eat, drink, or smoke while handling animals.
- Decontaminate work areas and properly dispose of potentially infectious material including carcasses.

**Additional minimum precautions for field biologists working with wild birds in areas where H5 HPAI viruses have been detected:**

- Follow recommendations for handling sick or dead birds associated with a mortality event.
- Remove dirty protective clothing and equipment, store in a tied bag for washing or disposal upon leaving a site, and change into clean protective clothing and equipment before handling birds at a new site.
- Disinfect work surfaces and equipment between sites with 10% bleach solution or other product registered as [effective at killing influenza A viruses](#). Allow disinfected surfaces and equipment to air dry between sites.
- If possible, avoid bringing vehicles into contact with avian fecal materials. If vehicles (trucks, ATVs, boats) are in contact with potentially infectious materials (feces, feathers, tissues) remove all debris from tires, wheel wells, vehicle bodies, and watercraft and wash down with a water sprayer on site, if possible. Potential vehicle cleaning mechanisms include a hand pump water sprayer or gas powered sprayer. If the vehicle undercarriage or side panels are heavily soiled, a commercial carwash is an option to remove debris. Once clean, disinfect tires, wheel

wells, and watercraft surfaces with a 10% bleach solution or other product rated effective at killing influenza A viruses before moving to a new site.

- Check with your state environmental quality agency for local guidelines on using and disposing of disinfectants in the field.
- Monitor personnel health\* for fever and respiratory symptoms for one week following exposure to live or dead wild birds. If symptoms develop, contact your health care provider.

\*The CDC states that while the health risk posed to the general public by domestic HPAI outbreaks is low, it is possible that human infections with these viruses could occur. Consult the CDC and your local agency policies for updated personal biosafety recommendations related to human health.

#### **Additional information:**

- [OIE: Update on HPAI in Animals \(Type H5 and H7\), 2016](#)
- [NWHC Avian Influenza Information](#)
- [USDA Avian Influenza Information](#)
- [USDA Biosecurity for Birds](#)
- [2016 Surveillance Plan for Highly Pathogenic Avian Influenza in Wild Migratory Birds in the United States](#)
- [EPA Fact Sheet: Antimicrobial Products Registered for Disinfection Use against Avian Influenza on Poultry Farms and Other Facilities](#)
- [Department of the Interior Employee Health and Safety Guidance for Avian Influenza Surveillance and Control Activities in Wild Bird Populations](#)
- [Highly Pathogenic Avian Influenza and North American Wild Birds: Frequently Asked Questions](#)

#### Disease Investigation Services

To request diagnostic services or report wildlife mortality, please contact the NWHC at **608-270-2480** or by email at [NWHC-epi@usgs.gov](mailto:NWHC-epi@usgs.gov), and a field epidemiologist will be available to discuss the case. To report wildlife mortality events in Hawaii or Pacific Island territories, please contact the Honolulu Field Station at 808-792-9520 or email Thierry Work at [thierry\\_work@usgs.gov](mailto:thierry_work@usgs.gov). Further information can be found at <http://www.nwhc.usgs.gov/services/>. See also the [Wildlife Mortality Reporting and Diagnostic Services Request Worksheet](#).

If you have any questions or concerns regarding the scientific and technical services we provide, please do not hesitate to contact NWHC Director Jonathan Sleeman at 608-270-2401, [jsleeman@usgs.gov](mailto:jsleeman@usgs.gov).

To see past Wildlife Health Bulletins, click [here](#). WILDLIFE HEALTH BULLETINS are distributed to natural resource/conservation agencies to provide and promote information exchange about significant wildlife health threats. If you would like to be added to or removed from the mailing list for these bulletins, please contact Gail Moede Rogall at 608-270-2438 or e-mail: [nwhc-outreach@usgs.gov](mailto:nwhc-outreach@usgs.gov).