



**National Wildlife Health Center  
Wildlife Health Bulletin 2014-05**

**Detection of Highly Pathogenic Avian Influenza Viruses  
H5N2 and H5N8 in the United States**

**To: Natural Resource/Conservation Managers**  
**From: Dr. Jonathan Sleeman, Center Director, USGS National Wildlife Health Center**  
**Date: December 16, 2014**

This Bulletin provides information on the current situation regarding the recent detection of highly pathogenic avian influenza viruses (HPAIV) H5N2 and H5N8 in wild and captive birds in the United States. Following reports of recent outbreaks of HPAIV in poultry in British Columbia, Canada, the Washington Department of Fish and Wildlife together with the USGS National Wildlife Health Center (NWHC) and the US Department of Agriculture's (USDA) Wildlife Services investigated a waterfowl mortality event on Wiser Lake in Whatcom County, Washington adjacent to the affected area in Canada. Mortality of a captive gyrfalcon that had recently been fed waterfowl meat from the area was also investigated. Gross examinations and microbiological culture analyses of the waterfowl carcasses indicated aspergillosis in several of the birds. In addition, virology analyses conducted in collaboration with the USDA National Veterinary Services Laboratories confirmed the presence of HPAIV H5 avian influenza in two of the birds.

Two separate virus strains were identified: HPAIV H5N2 in a wild northern pintail duck (*Anas acuta*) and HPAIV H5N8 in a captive gyrfalcon (*Falco rusticolus*) that was fed wild waterfowl from this site. Both viruses have been determined to have an amino acid sequence at the hemagglutinin cleavage site consistent with HPAIV. Preliminary data suggest that these virus strains (H5N2 and H5N8) may be related to an HPAIV H5N8 previously known to have circulated during 2014 among wild birds and poultry (chickens and ducks) in Asia and Western Europe. Wild bird species known to be infected with HPAIV H5N8 and a timeline of major HPAIV H5N8 events during 2014 are summarized in Tables 1 and 2, respectively. The novel H5N2 and H5N8 detections in the United States that are described in this Bulletin only involve free-ranging and captive wild birds, and further investigation and characterization of the HPAIVs is ongoing. Neither of these viruses has been found in commercial poultry anywhere in the United States.

**Table 1. Wild birds known to be infected with HPAIV H5N8 during 2014.**

| Common Name            | Scientific Name            | Status |
|------------------------|----------------------------|--------|
| Baikal teal            | <i>Anas formosa</i>        | Dead   |
| Bean goose             | <i>Anser fabalis</i>       | Dead   |
| Eurasian coot          | <i>Fulica atra</i>         | Dead   |
| Common (Eurasian) teal | <i>Anas crecca</i>         | Live   |
| Gyrfalcon              | <i>Falco rusticolus</i>    | Dead   |
| Hooded crane           | <i>Grus monacha</i>        | Dead   |
| Mallard                | <i>Anas platyrhynchos</i>  | Live   |
| Spot-billed duck       | <i>Anas poecilorhyncha</i> | Live   |
| Tundra swan            | <i>Cygnus columbianus</i>  | Dead   |
| White-naped crane      | <i>Grus vipio</i>          | Dead   |
| Eurasian wigeon        | <i>Anas penelope</i>       | Live   |

**Table 2. Timeline of major HPAIV H5N8 events during 2014.**

| Date (2014) | Event   | Country     |
|-------------|---|-------------|
| 1/15–5/8    | 161 poultry farms and 20 additional wild birds tested positive              | S. Korea    |
| 4/11        | 1 poultry farm in Kuma-gun, Kumamoto prefecture                             | Japan       |
| 7/27        | Last farm in South Korea infected with H5N8 HPAIV                           | S. Korea    |
| 9/3         | Korean H5N8 outbreak is officially declared over; 14 million poultry culled | S. Korea    |
| 9/12        | Fecal sample from the Laio River, Panjin City, Liaoning province            | China       |
| 9/12        | Duck sample from a slaughterhouse in Panjin City, Liaoning province         | China       |
| 11/3        | 1 of 2 whooper swans that died near Yasugi-shi, Shimane prefecture          | Japan       |
| 11/4        | Turkey fattening farm in Heintichwalde, Mecklenburg-Western Pomerania       | Germany     |
| 11/14       | Layer farm in Hekendorn, Utrecht province                                   | Netherlands |
| 11/14       | Duck breeding farm in Nafferton, East Riding, Yorkshire                     | England     |
| 11/17       | Common (Eurasian) teal, Island of Rugen, Mecklenburg-Western Pomerania      | Germany     |
| 11/18       | Fecal sample from unidentified wild bird in Chosei, Chiba prefecture        | Japan       |
| 11/18       | Fecal sample from 'duck' in Tottori, Tottori prefecture                     | Japan       |
| 11/19       | Chicken farm in Ter Aar, Zuid-Holland province                              | Netherlands |
| 11/21       | 2 farms in Kamperveen, Overijssel province (Index + adjacent farm)          | Netherlands |
| 11/29       | White-naped crane, Izumi, Kagoshima prefecture                              | Japan       |
| 11/30       | Layer farm in Zoeterwoude, Zuid-Holland province                            | Netherlands |
| 12/1        | Eurasian wigeon fecal samples, Kamerik, Utrecht province                    | Netherlands |
| 12/10       | Hooded crane, Izumi, Kagoshima prefecture                                   | Japan       |
| 12/10       | Wild and captive birds, Whatcom County, Washington State                    | USA         |
| 12/14       | Poultry, Nobeoka-shi, Kitagawa-machi, Miyazaki prefecture                   | Japan       |
| 12/15       | Fattening turkey holding facility, Porto Viro, Rovigo, Veneto               | Italy       |

The NWHC is continuing to monitor for HPAIV by testing sick and dead migratory birds. In an effort to maximize early detection of HPAIV and to understand the spatial extent and species involvement of H5 HPAIV in North America, wildlife managers should remain vigilant for wild bird morbidity and mortality events and continue to submit carcasses from any events that meet the criteria described below.

**Submission criteria:**

- 1) Mortality events of any size involving waterfowl (ducks, geese and swans) or other water birds (loons, grebes, coots, shorebirds or wading birds such as egrets/herons).
- 2) Mortality events of any size involving North American avian scavenger species (raptors, ravens, crows, or gulls), particularly those observed near locations with on-going waterbird mortality.
- 3) Mortality events involving single- or multiple bird species where estimated total mortality exceeds 500 birds.
- 4) Other examples of events that warrant investigation include mortality events involving any wild bird species occurring in close proximity to poultry operations, or mortality events associated with captive birds that have been imported from countries where H5 or H7 HPAIVs are known to occur.

NWHC will also test for HPAIV in other species when the circumstances of disease outbreaks, including rapid mortality progression or pathologic findings, suggest that avian influenza may be a factor.

These criteria may be revised in the future as more information on pathogen distribution is obtained from enhanced HPAIV surveillance efforts. NWHC will continue submitting samples to the USDA's National Veterinary Services Laboratories for confirmatory testing and for mortality events exceeding 500 birds.

There has to date been no evidence of HPAIV H5N2- or H5N8-related illness in humans, but appropriate hygiene measures should be observed when handling wild birds. Recommended hygiene measures and useful links are also provided below.

### **Additional Information:**

[OIE: Questions and Answers on Highly Pathogenic H5N8 Avian Influenza strain](#)  
[Scientific Task Force on Avian Influenza and Wild Birds statement on H5N8 HPAI in Poultry and Wild Birds](#)  
[NWHC Avian Influenza Information](#)  
[USDA Avian Influenza Information](#)  
[USDA Biosecurity for Birds](#)

### **Recommendations:**

Hunters should follow these routine precautions when handling game:

- Do not handle or eat sick game.
- Wear rubber or disposable latex gloves while handling and cleaning game.
- Wash hands and thoroughly clean knives, equipment and surfaces that come into contact with game.
- Do not eat, drink or smoke while handling animals.
- All game should be thoroughly cooked (internal temperature of 165 °F).

Field biologists handling sick or dead birds associated with a mortality event should:

- Wear rubber, latex, or nitrile gloves that can be disinfected or discarded and protective eyewear or a face shield while handling animals.
- Wear protective clothing, including coveralls and rubber boots.
- Minimize respiratory exposure by wearing a respirator/mask (NIOSH N95 or better).
- Wash hands often and disinfect work surfaces and equipment before travelling between sites.
- Do not eat, drink, or smoke while handling animals.
- Properly dispose of potentially infectious material including carcasses. For additional information see the [USGS Field Manual of Wildlife Diseases](#).
- Additional health and safety information can be found using the following link:  
<http://www.doi.gov/emergency/employeeemergency/upload/Updated-Employee-Health-and-Safety-Guidance-for-AI-Surveillance-and-Control-Activities-in-Wild-Bird-Pops-2014-FINAL-w-SIGNED-memo-JULY2014.pdf>

### 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/>.

### Wildlife Mortality Reporting and Diagnostic Submission Request Form

If you have any questions or concerns regarding the scientific and technical services the NWHC provides, 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](#).

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