



Avian Influenza Surveillance of Wild Birds

The President's National Strategy for Pandemic Influenza directs federal agencies to expand the surveillance of United States domestic livestock and wildlife to ensure early warning of highly pathogenic avian influenza (HPAI) in the U.S. The immediate concern is a potential introduction of HPAI H5N1 virus into the U.S. The presidential directive resulted in the U.S. Interagency Strategic Plan for Early Detection of H5N1 Highly Pathogenic Avian Influenza in Wild Migratory Birds (referred to as the Wild Bird Surveillance Plan or the Plan).

Background

The Wild Bird Surveillance Plan, implemented in March 2006, was developed by wildlife biologists, migratory bird specialists, veterinarians, and epidemiologists from the U.S. Department of Interior (DOI), Department of Agriculture, and Health and Human Services, along with the Association of Fish and Wildlife Agencies, the National Association of Public Health Veterinarians and the State of Alaska. The Plan is unprecedented in scope because of the number of agencies and organizations participating; the range of wild bird species being sampled—waterfowl, shorebirds, gulls and terns, among others; the number of wild birds tested; and the geographical coverage that includes all 50 states and six freely-associated states and territories in the Pacific Basin.

The Wild Bird Surveillance Plan consists of five sampling strategies:

1. Wild Bird Morbidity/Mortality Investigations
2. Live Bird Surveillance
3. Surveillance of Hunter-Harvested Birds
4. Sentinel Birds Surveillance
5. Environmental Sample Testing

HPAI Early Detection Database System—HEDDS

The Wild Bird Surveillance Plan also called for the creation of a national database to store testing results for all agencies (federal, state, and tribal) and organizations.

As of October 2007, more than 190,000 wild birds in the U.S. have been tested for influenza viruses under the Wild Bird Surveillance Plan. Highly pathogenic avian influenza has not been detected in wild birds anywhere in North America. Surveillance results from testing across the U.S. are reported in an online data repository (HEDDS). To view the five sampling categories and see how those numbers break down by state, go to <http://wildlifedisease.nbio.gov/ai/>.



Testing samples for avian influenza inside a biological safety cabinet.

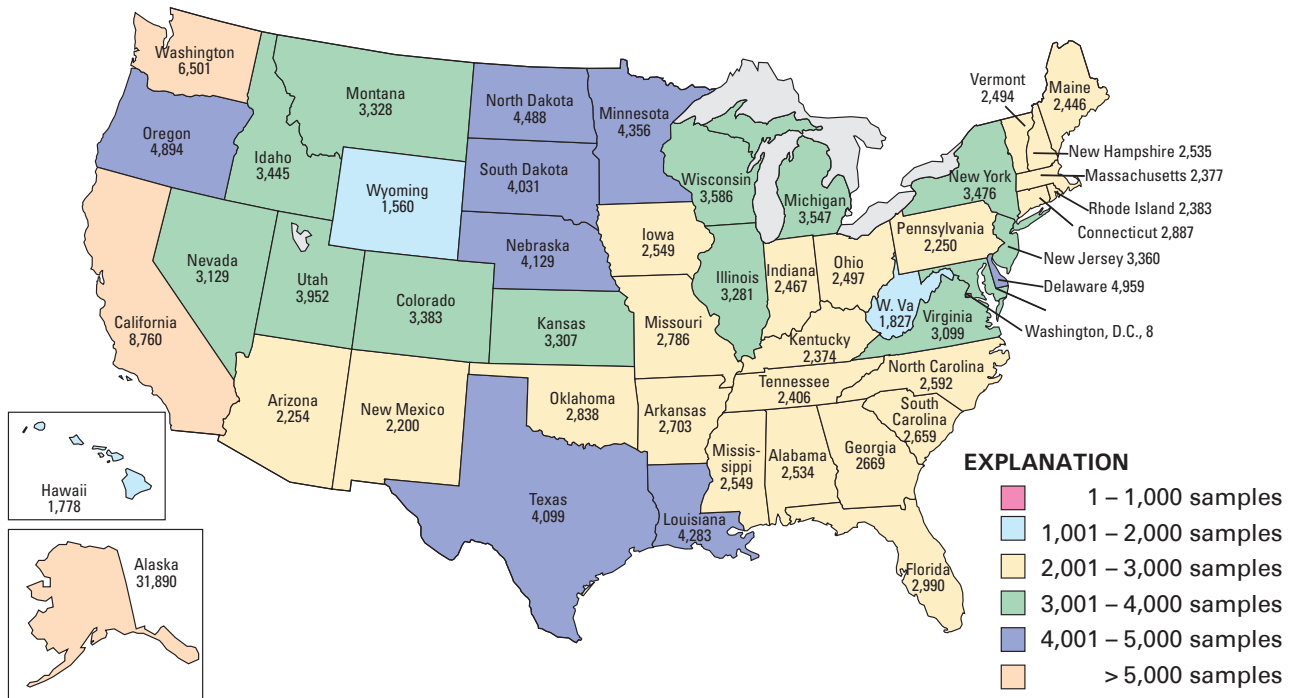
Photo by Don Becker, USGS.

In response, the Wildlife Disease Information Node of the National Biological Information Infrastructure created the HPAI Early Detection Data System (HEDDS) to manage data collected under the Wild Bird Surveillance Plan. Current information on the Plan, including the number of birds sampled and tested, the geographic distribution of samples collected, and information on low-pathogenic H5N1 virus isolates detected, is available at: <http://wildlifedisease.nbio.gov/ai/>.

U.S. Department of the Interior's Role

The Department of Interior's role in the Wild Bird Surveillance Plan, an essential part of the National Strategy for Pandemic Influenza, is to sample and test high-priority migratory bird species for HPAI. To accomplish this, the U.S. Geological Survey (USGS) and the U.S. Fish and Wildlife Service focused on the three strategies listed below and targeted wild bird species in North America that have the highest risk of being exposed to HPAI. The Plan included many species that migrate

Sampling strategy results from Interagency Wild Bird Surveillance Plan, April 2006–October 2007 (reported in HEDDS).		
Sampling strategy	Number of birds tested	H5N1 found
Wild Bird Mortality Investigations	3,181	No
Live Bird Surveillance	63,371	No
Hunter-Harvested Bird Surveillance	68,191	No
Sentinel Birds	579	No
Environmental Sample Testing	53,394	No
Total	193,716	



Number of samples reported by state to the HPAI Early Detection Database System, April 2006–October 2007.

directly between Asia and North America. The USGS National Wildlife Health Center performs laboratory testing of birds from DOI lands and is the lead agency for investigating wild bird mortality events throughout the United States.

Wild Bird Mortality Investigations

Sick and dead wild birds have frequently been the first indication of the introduction of HPAI H5N1. As of October 2007, more than 3,000 birds that were found dead have been tested for avian influenza. Between April 2006 and October 2007, USGS investigated a total of 172 separate events of wild bird mortality and disease from across the United States. Of these, 36 were large-scale events where more than 500 birds perished. None of the mortality events were found to be caused by HPAI H5N1.



Photo by Heather Wilson, USFWS

U.S. Fish and Wildlife Service employees collecting a sample from a tundra swan in Alaska to test for avian influenza.

Live Bird Surveillance

Scientists collected samples from live birds known to migrate between Asia, where HPAI H5N1 is known to occur, and North America. Samples were also collected from species that co-mingle with these intercontinental migrants. No highly pathogenic H5N1 viruses were found, but normally occurring low pathogenicity viruses were found in nearly 2% of the birds examined. Of the samples tested to date, a number of H5 avian influenza subtypes have been identified. None of these viruses have been found to be highly pathogenic H5N1.

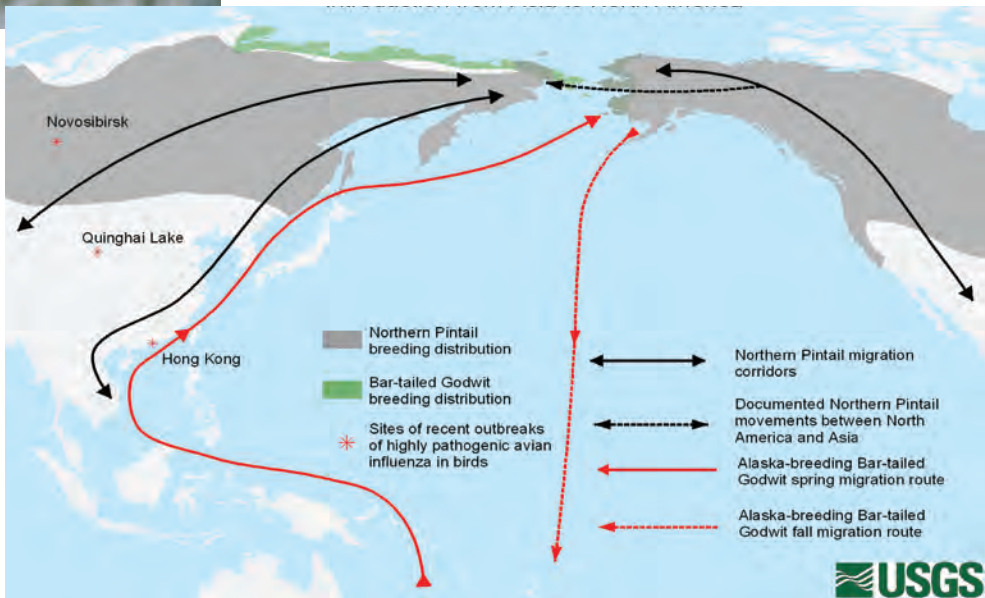


Photo by Dave Menke, USFWS.

Northern pintail ducks are one of the high-priority species specified in the Plan for avian influenza testing.

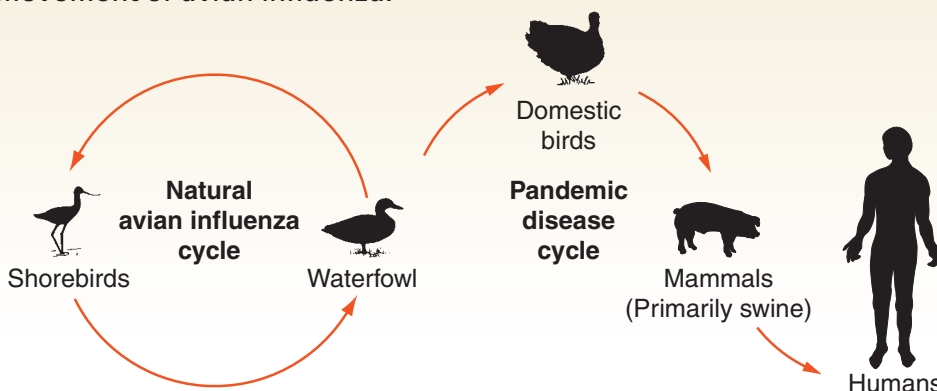
Surveillance of Hunter-Harvested Birds

DOI samples were also collected from hunter-harvested birds, primarily waterfowl in Alaska and the Pacific Flyway. Alaska was chosen for the initial focus of surveillance because it is a major crossroad for several migratory flyways used by species that travel directly to Alaska from Southeast Asia or the Australasian Flyway. Spring hunting in Alaska is an important aspect of subsistence for many Native Alaskans and represents some of the earliest opportunities to test birds recently returning to North America. Samples from approximately 6,700 wild birds taken by participating Native Alaskan subsistence hunters were tested as part of the Wild Bird Surveillance Plan. The regular autumn waterfowl hunt represented another opportunity to test additional birds for HPAI in Alaska and other states.

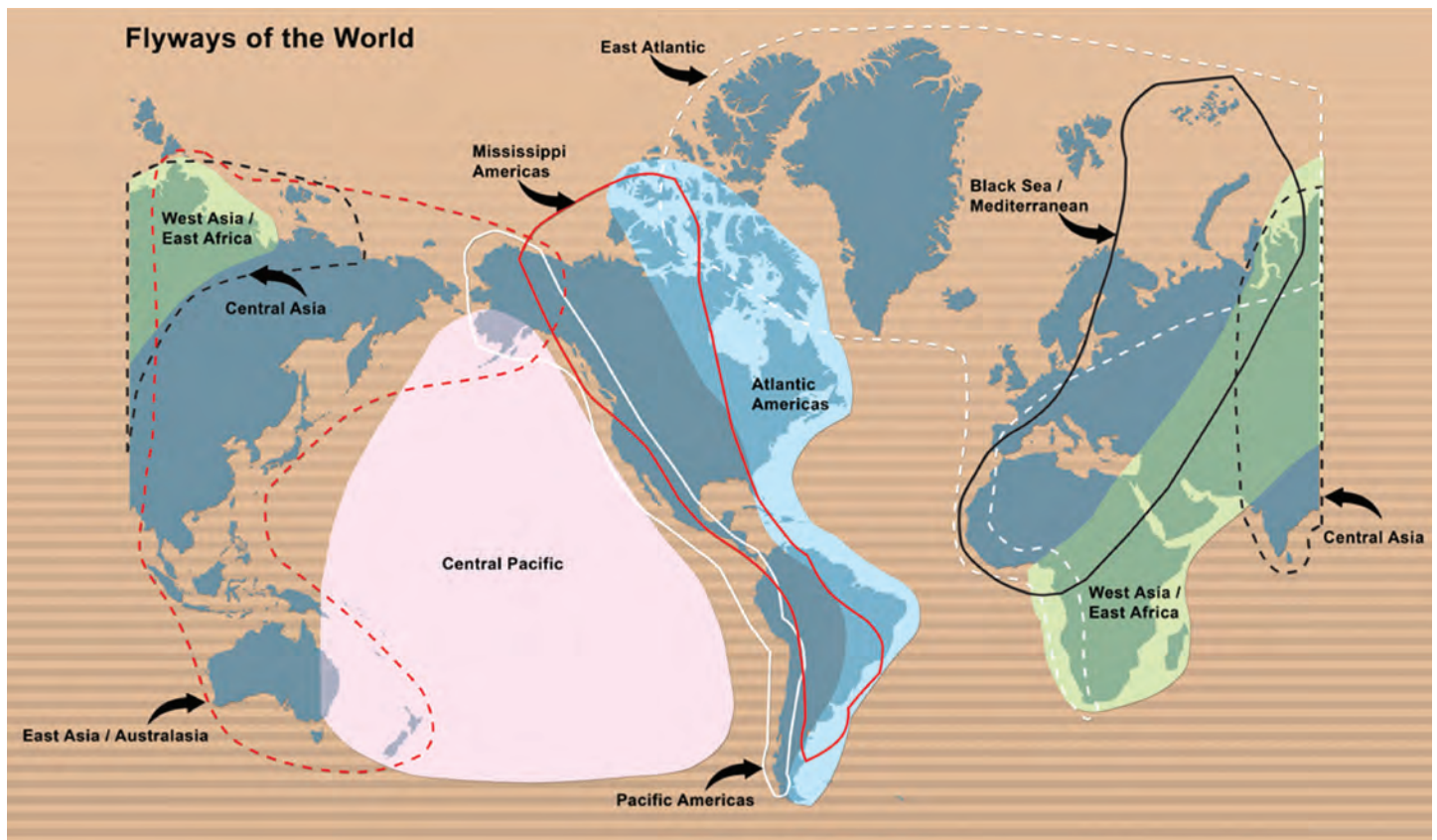


Potential pathways of avian influenza introduction from Asia to North America.

While no highly pathogenic avian influenza has been detected in the U.S., several hundred low pathogenic avian influenza viruses have been isolated during the surveillance program, as expected. These viruses are commonly found in wild birds and their detection provides scientists with data that greatly improves our understanding of the role that wild birds play in the global movement of avian influenza.



Global cycle of avian influenza viruses in animals.



Migration flyways of the world. Note that Alaska is a major crossroads for several flyways.

Federal Web Sites with Avian Influenza Information

Pandemic Flu, <http://www.pandemicflu.gov/>

U.S. Department of Interior, <http://www.doi.gov/issues/avianflu.html>

USGS National Wildlife Health Center, http://www.nwhc.usgs.gov/disease_information/avian_influenza/index.jsp

USGS Alaska Science Center, http://alaska.usgs.gov/science/biology/avian_influenza/index.html

U.S. Fish and Wildlife Service, <http://www.fws.gov/home/avianflul>

U.S. Department of Agriculture, http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?navid=AVIAN_INFLUENZA&navtype=SU

For more information, contact

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For a summary of the Wild Bird Surveillance Plan, please see USGS Fact Sheet 2009-3025 (http://www.nwhc.usgs.gov/publications/fact_sheets/pdfs/ai/AIFEB06.pdf). A link to the plan is available at the USGS National Wildlife Health Center's Web site: http://www.nwhc.usgs.gov/publications/other/Final_Wild_Bird_Strategic_Plan_0322.pdf