

# Highly Pathogenic Avian Influenza (HPAI) Early Detection Data System

Avian influenza (AI) is a type A influenza virus naturally found in certain species of waterfowl and shorebirds. The occurrence of highly pathogenic avian influenza (HPAI) subtype H5N1 circulating in Southeast Asia has raised concerns regarding its potential impact on wild birds, domestic poultry, and human health, should it be introduced into the United States (U.S.).

At the request of the White House Policy Coordinating Committee for Pandemic Influenza Preparedness, the U.S. Departments of Agriculture (USDA) and Interior (DOI) developed an early detection plan for highly pathogenic avian influenza (HPAI) in the U.S. The plan calls for the establishment of a national database for use by all agencies, organizations and policy makers. The Wildlife Disease Information Node (WDIN), housed at the U.S. Geological Survey's National Wildlife Health Center (NWHC), has created the HPAI Early Detection Data System, <http://wildlifedisease.nbii.gov/ai>, to meet this goal.

## The HPAI Early Detection Data System (HEDDS)

HEDDS was developed to manage animal and sample collection data taken by many groups and individuals, and analyzed by multiple laboratories. It provides a secure, accessible platform for the generation of reports, graphs, and maps and can be used for spatial modeling.

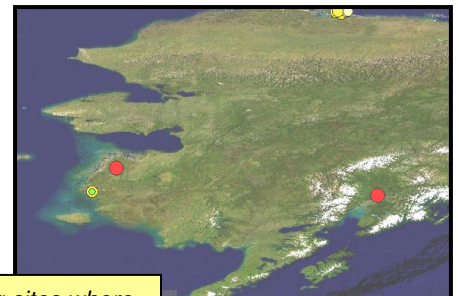
The U.S. Interagency Strategic Plan for Early Detection of Asian H5N1 Highly Pathogenic Avian Influenza in Wild Migratory Birds describes five different surveillance strategies:

- Investigation of morbidity and mortality events
- Surveillance in live wild birds
- Surveillance of hunter-killed birds
- Sentinel species
- Environmental sampling

HEDDS is a versatile system that can hold data from these surveillance strategies and can provide a critical comprehensive view of national sampling efforts.

Managing data includes ensuring that the resulting data are available for viewing and analysis by all partners. For this purpose, incorporating appropriate standards into the data system is essential to facilitate information sharing and to improve surveillance strategic planning.

Map created by HEDDS showing sites where samples were collected.



## System Interface and Functions

### Access and Security

The system is password protected. Each partner agency or organization agrees to share summaries from the core data fields. The core data fields are comparable to those provided to the USGS Bird Banding Laboratory when a band is placed on a bird. While HEDDS is a collaborative system, partners maintain control of their data and decide who may have access to their data records. A minimum number of universally shared fields will be discussed by contributing partners.

### Data Viewing and Entry

Data may be browsed in their entirety, or filtered by various parameters (e.g. species, sex, location). Standardized reports for individual partners, as well as customized report options are available. The core data fields are used to construct standardized summaries of results in the database (e.g. number of samples tabulated, by location and species). Active partners will define publicly viewable reports and maps.

Data can be entered using web entry forms or through uploading an Excel spreadsheet which converts data to the required HEDDS data format. A tracking function is available to monitor sample shipments, and thereby enhances coordination between diagnostic laboratories and field personnel who are collecting the samples.

### Mapping Capabilities

In addition to using the database to generate generic or customized AI sampling/testing reports, the system provides on-demand maps, with customizable data fields, overlain on a wide range of layers. These layers are made possible by the utilization of the NBII Geospatial Information Framework toolset.

This framework is an implementation of Open GIS Standards and allows users to incorporate layers from external sources. Users can search and add a wide variety of background and foreground layers including USGS Topographic maps, Digital Orthophotos, road networks, waterbodies, and species population distribution.

### Connecting to the WDIN Avian Influenza Library

While HPAI data, maps and reports provide critical insight to avian influenza sampling efforts, access to the diverse body of influenza knowledge is equally as valuable to surveillance projects and to the understanding of this disease. From the HEDDS system, users can access authoritative avian influenza web resources on the WDIN web site. This organized and searchable resource guide contains an AI bibliography (over 150 articles), maps, news sources and selected web sites linkages.

<b>Bird Information:</b>	
ID Type:	Bird
ID Value:	123456
Species:	Northern Pintail
Sex:	Female
Age Class:	After Hatch Year
<b>Collection Information:</b>	
What was the reason for collection?	Surveillance in Live Wild Birds
Date of collection:	06/15/2006
<b>Location Information:</b>	
Coordinate System:	NAD 27
Latitude:	56.889
Longitude:	-165.976
State collected:	Alaska
County collected:	North Slope
Place Name:	North Slope
<b>Sample Information:</b>	
Sample ID:	88888
Select sample type:	Cloacal Swab
Date Collected:	06/15/2006
Diagnostic Lab:	National Wildlife Health Center
Date Submitted to lab:	06/15/2006

Data entry form. All data fields and elements link to established standards, consistent with those of the National Animal Health Laboratory Network (NAHLN).

### Future

The HEDDS system offers a unique opportunity for multiagency cooperation for data sharing and visualization. The system will evolve as necessary to meet partner needs and integrate data from new partners engaged in avian influenza surveillance and research efforts.

### Background on the NBII

The National Biological Information Infrastructure (NBII) [www.nbii.gov](http://www.nbii.gov) is an electronic information network that provides access to biological data and information on our nation's plants, animals, and ecosystems.

Information contributed by federal, state, and local government agencies, non-government organizations, and private-sector organizations is linked through the NBII gateway and made accessible to a variety of audiences, including researchers, natural resource managers, decision-makers, educators, students, and other members of the general public. Implementation of the NBII is being accomplished through the development of "nodes" that serve as entry points to the network. These nodes function as fully digital, distributed, and interactive systems that focus on content in a defined subject area or a geographic region. The NBII Wildlife Disease Information Node (WDIN) addresses the need for information on a variety of disease agents in wildlife and their implications, including those affecting domestic animals and people.


### For More Information

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**Avian Influenza: Publications**

[Overview](#) | [Fact Sheet](#) | [Websites](#) | [News](#) | [Publications](#) | [Research](#)



**USGS**  
National Wildlife Health Center

This bibliography of avian influenza publications was compiled through the cooperative effort of the [USGS National Wildlife Health Center](#) and the Wildlife Disease Information Node






Search Publications:

[\[Antigenic Characterization of Influenza A virus Isolated from Birds captured in Ontario, Quebec, and the Maritime Provinces During the 1977 Season\]](#) [\[Article in French\]](#)  
*Revue Canadienne de Biologie*. 1980 Jun;39(2):107-14.

ON-LINE ABSTRACT ONLY: A total of 145 influenza A viruses were isolated from ducks, geese and passerine birds in Ontario, Quebec and the Maritimes in July-August 1977. Antigenic characterization of these isolates included five hemagglutinin (Hsw1, Hav4, Hav5, Hav6, Hav7) and five neuraminidase subtypes (N1, N2, Neq1, Neq2, Nav1) in nine different combinations; one combination Hav7 Neq1 had not been previously reported. The

Avian Influenza publications are searchable on the WDIN web site, <http://wildlifedisease.nbii.gov/index.jsp>

**Current HEDDS Partners**

 U.S. Fish and Wildlife Service 
  US Geological Survey 
  National Park Service  
 U.S. Department of Agriculture/APHIS/ VS and WS 
  Alaska Department of Fish and Game