

Subject: Preliminary Report of 2007 Highly Pathogenic Avian Influenza Surveillance in the Atlantic Flyway

Date: February 22, 2008

Prepared for: Atlantic Flyway Council Technical Committee

Prepared by: USDA/APHIS Wildlife Services National Wildlife Disease Surveillance and Emergency Response Program

Introduction

Many questions remain regarding the role of wild migratory birds in the spread and maintenance of highly pathogenic avian influenza (HPAI); however, recent reports and publications have begun addressing these questions. In a report released by the Department for Environment, Food and Rural Affairs in January 2008, epidemiologists indicated the most plausible source of infection in the swans in Great Britain was migratory birds that constituted part of the wintering population on Fleet Reserve. Due to the mobility of wild migratory birds, detection of the virus is difficult at low levels but researchers determined that migratory birds were a more likely source of infection than other potential sources such as contaminated feed or infected domestic poultry waste products. In another study, Wang et al. (Journal of General Virology) provided a phylogenetic analysis of avian influenza viruses re-emerging at Lake Qinghai which indicated that domestic poultry and various species of wild migratory birds had avian influenza virus strains of similar lineage thus providing a justification for surveillance in both domestic poultry and wild birds. Flint (Virology Journal) recommends using the null hypothesis that birds can disperse H5N1 during migration because the consequences of assuming prematurely that wild birds are not carriers could lead to expansion of the range of the virus as well as hinder the response to outbreaks.

Wildlife Services is appreciative of the dedication of all those involved in administering a successful early detection system throughout the United States and feels that continued surveillance of wild migratory birds as potential disseminators of HPAI is justified based on current research. The following information is a preliminary report prepared for the Atlantic Flyway Council Technical Committee.

2007 Number of Samples and Collection Locations

Surveillance for HPAI in wild, migratory birds was conducted for the second year in all four North American Flyways with corresponding activities in Canada and Mexico to ensure the goal of early detection in wild, migratory birds. Although sample collection for biological year 2007 will not conclude until March 31st, the national goal of 50,000 samples has already been exceeded. This goal was achieved while continuing to emphasize passive surveillance in morbidity and mortality events. As of February 15, 2008, 19,475 wild bird samples had been collected in the Atlantic Flyway, 15,913 in the Mississippi Flyway, 12,530 in the Central Flyway, 12,413 in the Pacific Flyway, and 1002 in Hawaii and the Pacific Islands. Environmental sampling has not exceeded the national goal of 25,000 fecal samples, but this sampling strategy is on pace to reach the national goal by the end of the biological year with 4,782 fecal samples in the Atlantic Flyway, 5,837 in the Mississippi Flyway, 5,713 in the Central Flyway, and 6,409 in the Pacific Flyway. A brief description of environmental sampling in the Atlantic Flyway is provided in the Environmental Sampling section. Collection sites of all wild bird

samples collected by state wildlife agencies, tribal cooperators, and Wildlife Services are depicted in Figure 1. These numbers and sites do not include data or surveillance conducted by the Department of Interior or their cooperative efforts.

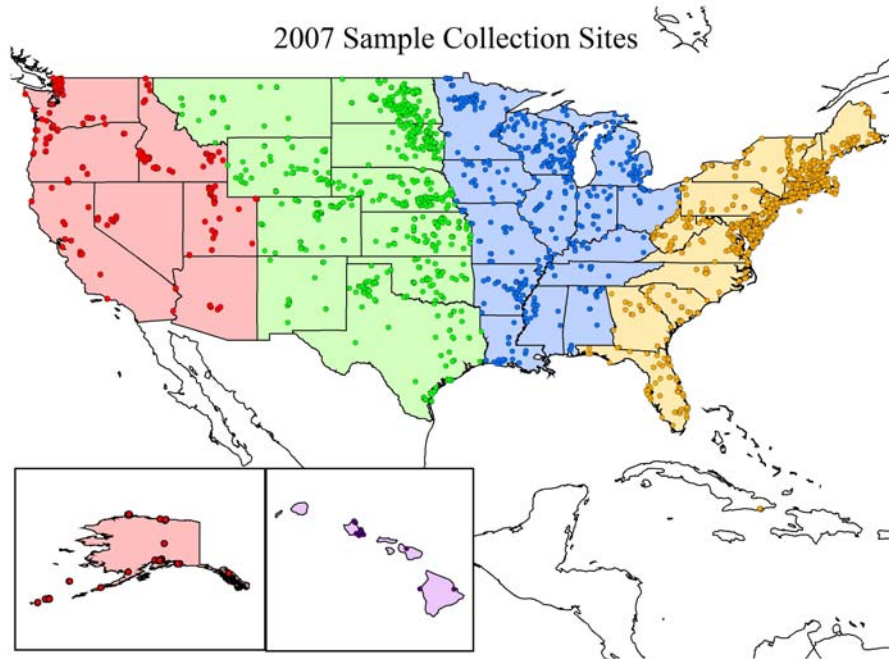


Figure 1. Collection Sites of Wild Birds Sampled in 2007

Wild, migratory birds were collected and sampled across the entire Atlantic Flyway with good spatial distribution of collection sites across each state (Figure 2). Many of the collection sites were dependent on presence of priority species, hunter success, landowner permission, and weather conditions. Over 19,000 samples have been collected in the Atlantic Flyway with 51.3% of the samples collected from dabbling ducks, 19.1% from geese and swans, 11.6% from diving ducks, 8.9% from shorebirds 7% from gulls and terns, and the remaining 2.1 % from miscellaneous other birds. The miscellaneous birds, although not priority species, and some of the other species, were sampled during investigations of morbidity and mortality events. Although mallards (*Anas platyrhynchos*) accounted for 32% of the dabbling ducks sampled, 17 other species of dabbling ducks were sampled. Species specific information is included in Figure 3.

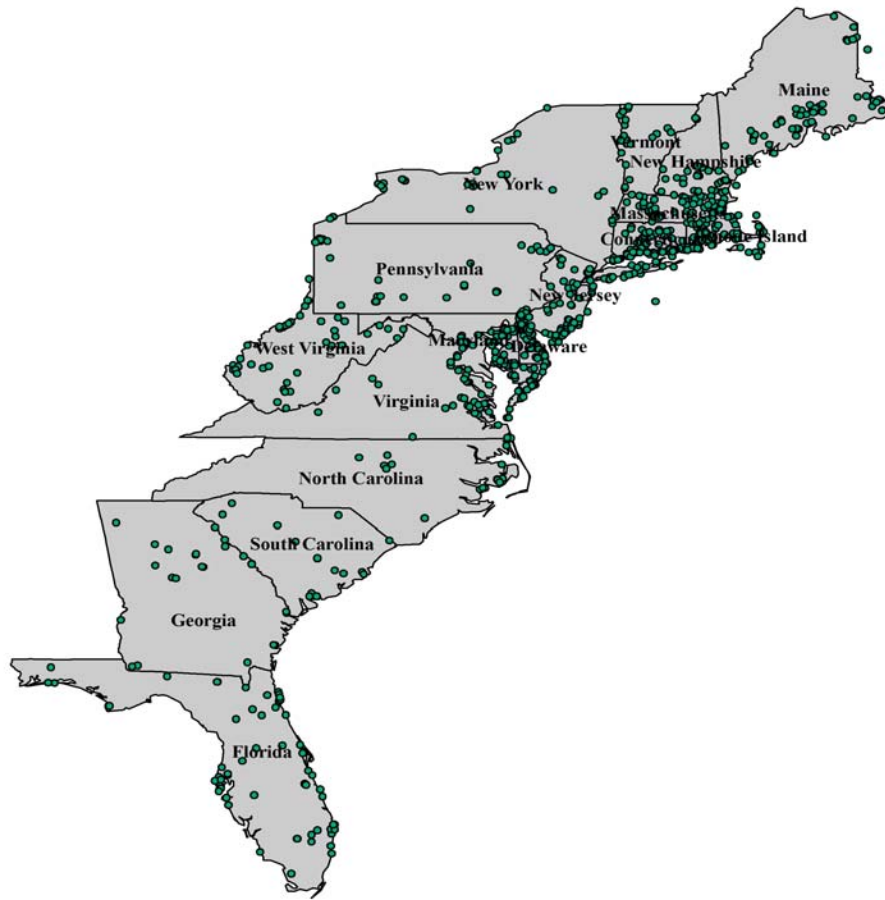


Figure 2. Collection Sites of Wild Birds Sampled in the Atlantic Flyway

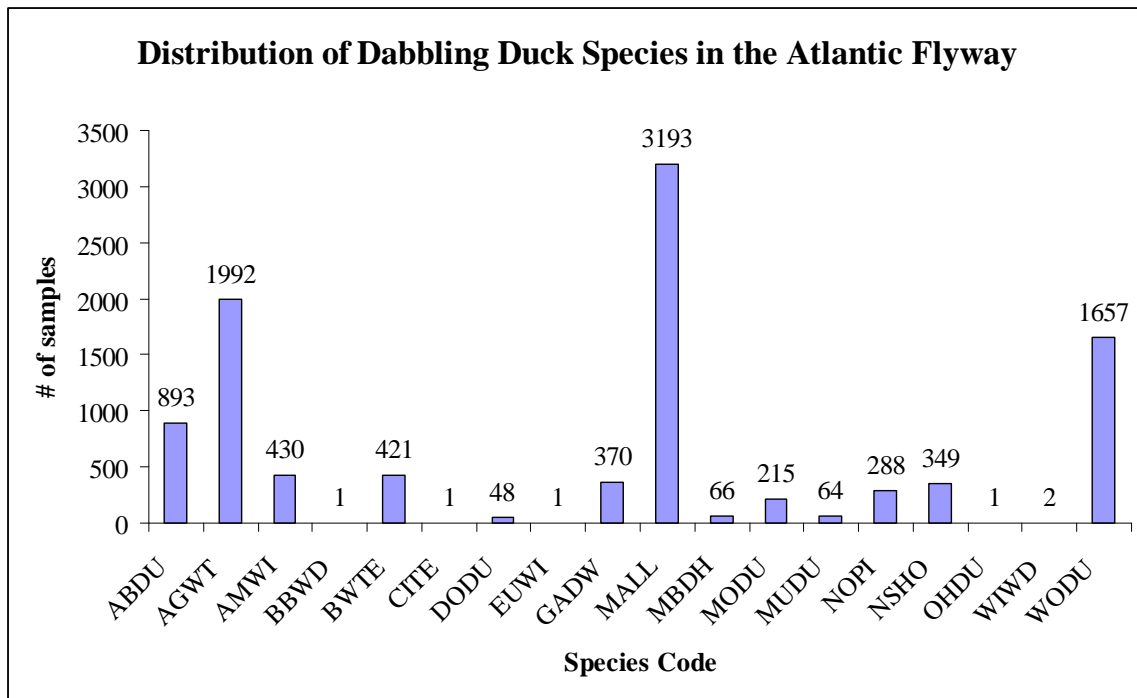


Figure 3. Distribution of Dabbling Duck Species in the Atlantic Flyway

Environmental Sampling

Fecal sampling is being conducted in 31 states this biological year based on input from a design committee and risk analysis team. These states were selected on the basis of band recoveries, low pathogenic avian influenza test results from 2006, and habitat known to be used by large concentrations of migratory waterfowl, shorebirds, or other migratory birds. Within the Atlantic Flyway 4,782 fecal samples have been collected accounting for 21% of the fecal sampling effort. States selected for fecal sample collection in 2007 include Delaware, Maryland, North Carolina, New Jersey, New York, and Pennsylvania.

Results of Samples Submitted for HPAI detection

HPAI has not been detected in any of the wild bird or environmental samples submitted for analysis. National Animal Health Laboratory Network (NAHLN) laboratories continued to conduct initial screening of samples with nearly one lab in each state testing for HPAI in wild migratory birds. Samples testing rRT-PCR positive for either H5 or H7 assays were forwarded to the National Veterinary Services Laboratories (NVSL) in Ames, Iowa for confirmatory testing. Although virus was isolated from some of the samples sent to NVSL, all of them were consistent with low pathogenic North American strains of avian influenza. Low pathogenic results will be compiled in the final report submitted at the end of the biological year.

Changes in HPAI Surveillance for 2008

Due to the success of the 2007 program and input from many representatives in the Atlantic Flyway, very few changes are necessary to ensure another successful year of surveillance. Changes will be minor and primarily impact Wildlife Services employees involved in environmental sampling. The goal of the changes is to improve efficiency in sampling and field activities and data management. The procedural changes will be outlined in the 2008 Biological Year Procedures Manual as well as the Implementation Plan. Both documents are scheduled for completion by the end of March.

The wild bird and environmental datasheets have been combined to create one datasheet for collecting data during environmental and wild bird sampling efforts. A single type of media (brain-heart-infusion) will also be used for both types of sampling. This change will not impact state wildlife agencies or tribal cooperators. Environmental data will be entered into the same Veterinary Services Laboratory Submission website where wild bird sample data are entered. Including all data in one location will make all surveillance data accessible to collectors and submitters.

Glass vials will be replaced with plastic cryovials this year which should ensure that barcodes remain adhered to the vials, no samples are lost due to broken vials, and most importantly to ensure the safety of field personnel and laboratory technicians handling the vials.

In an effort to improve data management, each state will receive two handheld personal digital assistants (PDA), one for each Wildlife Services program and the other for the cooperating state game agency. An electronic data sheet has been created that will allow collectors to enter and save all avian influenza surveillance data in the field on the PDA. The collector may then electronically upload the data directly into Veterinary Services Laboratory Submission website once they return to an area with internet access.

Requesting Additional Information

If you would like more detailed information related to sample collection in your state please feel free to contact Kerri Pedersen (Kerri.Pedersen@aphis.usda.gov or 970-266-6272), Seth Swafford (Seth.Swafford@aphis.usda.gov or 970-266-6071) or your local Wildlife Services Wildlife Disease Biologist. Reports with summary information of species, sampling strategy, county, etc. are also available by accessing the Veterinary Services Laboratory Submission website (<https://cowebapps.aphis.usda.gov/vslabsub/login.do>). A final report will be submitted to the Atlantic Flyway Council Technical committee once the biological year has been concluded. Additional information regarding next year's cooperative agreements and funding will be forthcoming.

A weekly report including updated sampling numbers and major activities relating to avian influenza surveillance in wild, migratory birds is distributed weekly. If you would like to be added to the distribution list please contact Mary Kimball (Mary.L.Kimball@aphis.usda.gov).