

National Wild Bird Interagency Avian Influenza Surveillance Program

OPERATIONAL PLAN 2016-17

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Objectives for 2016-17

1. To provide timely situational awareness of avian influenza A H5 or H7 types circulating in the environment through wild bird testing
2. To share information with decision makers on changes in epidemiological situations in a timely manner to reduce risk of transmission to wildlife, domestic birds and/or people
3. To contribute to monitoring the Canadian avian influenza situation to help understand viral presence and evolution
4. To recognize needs to modify biosecurity, surveillance or management plan and priorities
5. To meet national and international obligations for surveillance and reporting of avian influenza.

Program Background

An Inter-Agency Wild Bird Avian Influenza Survey has been undertaken by the governments of Canada and Canada's provinces and territories since 2005. It is part of national and global efforts to detect avian influenza (AI) viruses that could threaten the agricultural sector and human health.

Provincial and territorial governments take primary responsibility for organizing the detection of dead wild birds and their conveyance to participating veterinary diagnostic laboratories. Each responsible agency does what can be done within its program to obtain birds for the Survey. The extent to which these activities are deferred to a Canadian Wildlife Health Cooperative (CWHC) regional centre varies by jurisdiction. Procedures and the scale of activity differ among provinces and territories, as does the involvement of CWHC diagnostic centres in testing birds. The CWHC collects data from most jurisdictions and reports findings to the Canadian Food Inspection Agency (CFIA) and public as soon as results are available.

The Survey relies extensively on opportunistically submitted dead birds, emphasizing waterfowl. A limited live, wild waterfowl sampling program in Alberta and Saskatchewan has been undertaken

through an Environment Canada/CWHC collaboration. Other jurisdictions have undertaken additional testing that is not reported nor considered part of the Interagency program.

Epidemiological Situation Fiscal Year 2016-17

In 2014/2015, there were multiple economically significant highly pathogenic AI (HPAI) outbreaks in Canada and the USA. Three new intercontinental group A influenzas were found in North America; Eurasian origin H5N8, a novel mixed origin H5N2, and a novel H5N1. The novel H5N1 had N genes derived from a native North America wild bird virus. The H5N8 strain found in western North America had genes of Eurasian origin.

From Jan 1, 2015 until January 22, 2016, 2381 dead birds (34 matrix positive) and 2999 live birds (493 matrix positive) were examined by the Interagency Survey. Between January-August 2016, the CWHC examined or received reports from tests on 526 dead and 726 live waterfowl, of which 2 were H7 positive. None were reported as highly pathogenic AI (HPAI). In August 2016, the United States Department of Agriculture's Animal and Plant Health Inspection Service confirmed the presence of HPAI H5N2 avian influenza in a wild mallard duck near Fairbanks, Alaska.

Review of 2015-16 Interagency Survey performance

There are no standard performance expectations for national and international AI surveillance and reporting. Last year was the first time voluntary performance expectations were provided for the annual Interagency Wild Bird Avian Influenza Survey. These were developed in consultation with industry, wildlife experts, the CFIA and laboratorians across Canada. The Survey's performance was consistent with previous years, with some important improvements. The pre-existing network of collaborators was useful in mounting an increased effort in 2015 and early 2016 resulting in; (i) an increased number of live and dead birds sampled (ii) trial of an AI Information Portal which made information more accessible to industry and decision makers and (iii) a harmonized diagnostic approach across Canada. Progress was made in reaching many of the goals of the operational plan but there was substantial variation across Canada. Not all jurisdictions participated in the Interagency Survey. The time between submission of a bird and confirmation of its H type ranged from 3.5-9 weeks. Further delays in communicating results impeded timely situational awareness. Declines and inconsistency in efforts and funding for AI surveillance made comparisons and trend analysis across years qualitative and subject to bias.



Program Goals 2016-17

Goal 1: To achieve early warning of the presence and movements of highly pathogenic AI in wild birds in Canada by:

- a. Maintaining an outreach program with specimen submitters prior to waterfowl migration to encourage rapid submission of dead birds to diagnostic laboratories and to maintain vigilance for dead birds, especially but not exclusively in areas near poultry operations.
- b. Increasing diagnostic testing and reporting timeliness to improve the spatial and temporal representativeness of AI exposure risk for domestic poultry.
- c. Expanding opportunities to identify early warning signals through timely reporting from all jurisdiction of diagnostic results, along with appropriate sample identifiers, to the CWHC
- d. Sharing the results of other regional research, survey or surveillance efforts that are not routine parts of the Interagency Survey that may serve as early warning signals. These may include but are not restricted to detections of HPAI, unexplained die-offs of birds near poultry operations or AI sampling programs that test for but fail to find HPAI.
- e. Supporting rapid information sharing with jurisdictions and stakeholders on the occurrence or movement of AI sub-types of concern, especially but not exclusively to stakeholders or partners to use that information to forewarn local industry or modify their own detection, prevention or control activities.
- f. Investigating unexplained die-offs of clusters of 5 or more wild birds, regardless of species, but prioritizing plausible sources of HPAI such as waterfowl and raptors and by prioritizing birds found in the vicinity of poultry production.

Goal 2: To detect and track the presence and spread of all H5 and H7 low or highly pathogenic avian influenza in Canada by:

- a. Achieving all of goal 1 above
- b. Developing partnerships with agencies or organizations that can expand the number and geographic distribution of live birds that can be tested for AI



- c. Identifying and sharing information on wild bird studies that may be done at a provincial, territorial, university or other levels that may yield information on the presence, absence and diversity of AI viruses detected in wild birds Canada and reporting those findings with the CWHC for sharing nationally.

Goal 3: To increase knowledge of the implications of the 2016-17 epidemiological situation for wild birds by:

- a. Assessing whether or not AI has been responsible for morbidity or mortality in wild birds
- b. Including testing of birds for AI when investigating clusters of morbidity or mortality

Goal 4: To ensure a harmonized and consistent approach to AI surveillance across Canada by:

- a. Sharing protocols for diagnostic testing and encouraging their use by all diagnostic centres
- b. Supporting ongoing communication on developments in knowledge of the AI situation in Canada and any needs for modifications of the 2016-17 surveillance plan in a timely fashion.

NOTE: THE CAPACITY OF PARTICIPANTS IN THE INTERAGENCY SURVEY TO MEET THESE GOALS AND ADDRESS THE PERFORMANCE TARGETS BELOW WILL BE AFFECTED BY THEIR AVAILABLE CAPACITIES AND BUDGETS. THE CWHC HAS NO AUTHORITY TO ENFORCE OR REQUIRE ADHERENCE TO THIS PLAN BUT ONLY TO ENCOURAGE PARTICIPANTS TO STRIVE TO MEET THE PROGRAMS GOALS AND TARGETS

Performance Targets for 2016-17

In the absence of new resources for 2016-17, participants in the Interagency Wild Bird Avian Influenza Surveillance Program are encouraged to find opportunities to enhance national awareness of AI risks by focussing improvements and efficiencies in program delivery in three domains:

1. **TIMELINESS:** Reducing the time between dead bird detection or live bird sampling and the reporting of positive and negative findings to the CWHC, CFIA and risk managers
2. **COMMUNICATION AND PARTNERSHIPS:** Encouraging the sharing of information useful in risk assessment and communication to industry, the public and decision makers

3. **HARMONIZATION:** Harmonizing the performance standards and program priorities in testing and communicating AI results across laboratories across Canada.

The following performance targets are provided to guide actions to address these targeted areas for improvements.

1. Diagnostic targets
 - a. The time between bird submission and confirmation of the presence of sub-type of H 5 or H7 sub-type not to exceed 2 weeks
 - i. PCR testing of wild birds found dead should be completed within five working days or sooner after the bird is received by the laboratory.
 - ii. All samples that are positive by PCR test for H5 or H7 viruses will be sent the same or next day to the National Centre for Foreign Animal Diseases, Winnipeg
2. Communications
 - a. Reporting results
 - i. Reporting from CFIA National Centre for Foreign Animal Disease to submitting provincial or CWHC laboratories should be next business day after confirmation of H5 or H7 type and authorization from CFIA Science Branch
 - ii. Once the reference laboratory has confirmed a positive H type (H5 or H7) and received authorization, the H type will be placed in the CCWHC website within 2 days. As soon as the final H and N type have been determined (normally within 2 weeks) this additional sample information will be placed on the CCWHC website.
3. Sample size and distribution
 - a. Maintain or exceed the sample sizes typical of the last 3 years of the program (Approximately 1500-2000 dead birds across Canada reported to the CWHC)
 - b. Outreach efforts are encouraged to maximize strategic collection of birds by:
 - i. Increasing vigilance for dead or ill raptors to test for HPAI presence

- ii. Networking with the local natural history groups or using citizen science tools like eBirds¹ to alert people to the times and locations of wild bird movements
- iii. Targeting outreach for people collecting dead birds near poultry operations, ensuring messaging and outreach is done in conjunction with CFIA Operations.

Protocols for 2016-17

Sample acquisition

Species, date of collection, and site of collection information must be recorded and linked with every sample tested. This information must accompany samples submitted to Provincial, Territorial and/or CWHC laboratories as well as samples submitted to the NCFAD.

Dead birds

- Opportunistically collected dead wild birds will remain the focus for AI surveillance this fiscal year
 - Public awareness and outreach to groups who have historically been important submitters of dead birds is encouraged throughout the year but especially prior to waterfowl migrations
 - Several of the detections of highly pathogenic AI wild bird in the past year in the USA have been identified in birds that died for other reasons such as avian cholera or aspergillosis.
 - Clinical signs of influenza have been seen in raptors and some geese.
- Provincial and Territorial governments will take primary responsibility for organizing the detection and collection of dead wild birds and their conveyance to participating veterinary diagnostic laboratories.
 - Procedures and the scale of activity may differ among provinces and territories.
 - CWHC regional centres will assist in these efforts as resources allow and on the request of Provincial or Territorial governments.

¹ <http://ebird.org/ebird/eBirdReports?cmd=Start>



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- Ensure that personnel collecting, submitting and testing dead birds are aware of and practice appropriate biosafety practices.
 - Dead wild birds will be examined in participating laboratories for cause of death and will be tested by PCR for AI virus. Samples to be tested for AI will consist of two swabs, one from the oropharynx and one from the cloaca, combined in one vial of virus transport medium and tested as a single sample
 - The universal transport medium (UTM) kit by COPAN innovation (www.copaninnovation.com) is recommended by the influenza lab of NCFAD; all samples should be kept cold continuously or frozen between collection and testing.
 - Both a cloacal and an oral swab will be taken from each bird and combined in a single vial containing 3 ml of virus transport medium with ends cut off so that swab tips will remain in the vials until the samples are tested. For samples taken in the field, vials should be placed directly into a liquid nitrogen container and held at -80C or colder until processed at a laboratory. Samples should be re-frozen at -80C or colder immediately after testing at regional laboratories if further testing is anticipated.
 - Triage principles for bird selection for testing
 - Diagnostic laboratories or agencies organizing dead bird sampling will not have control over the source of birds as an opportunistic, convenience sampling approach will be used. Outreach and encouragement of key groups in areas of special concern may be one means to influence which birds are submitted and the degree of vigilance in certain geographic locations. If submissions exceed resources, laboratories may wish to triage samples using the following principles:
 - Prioritize species that have historically provided AI positive samples and/or have been found to carry highly pathogenic strains such as ducks, geese and raptors.
 - Prioritize species that may provide most locally meaningful risk information such as those located on or around poultry operations, on water sources supplying poultry operations, in areas of waterfowl aggregation.

Live birds

- Live bird testing is not currently funded as part of the Interagency Program
- Participating organizations are encouraged to share any live bird testing results arising from other research, projects or programs
- Research scientists in Environment Canada and the Canadian Food Inspection Agency have collaborated in the past to sample and test several hundred apparently-healthy live wild ducks for Influenza A viruses. If possible, this collaboration will continue in 2016-17.

Diagnostic Testing

Participating laboratories will test each paired swab sample by PCR for the matrix protein gene. Matrix positive cases will be tested for H5 and H7 protein genes. The PCR primers for matrix protein gene, H5 and H7 genes available from National Centre for Foreign Animal Disease (NCFAD CFIA – Winnipeg) will be used to ensure detection of the broadest possible range of Influenza A viruses. All samples that are positive by PCR for H5 or H7 viruses must be sent immediately to the NCFAD for further characterization. As viruses are further characterized, these results, also, will be entered into the Survey database.

Communication and Reporting

Sample acquisition

- Program announcement
 - CFIA will prepare and circulate an annual press release announcing Interagency program as soon as possible and repeating on a regular basis
 - Provincial and Territorial agencies will conduct a targeted outreach to key groups such as waterfowl biologists, natural history organizations and other relevant groups encouraging sample submission and recommending safe and standard procedures for sample collection and/or submission
 - Coordination of timing of these activities and messaging is necessary for success and is encouraged

Diagnostic findings

- The CWHC will maintain a web-based update of negative and positive test results.
 - Collaborators should strive to communicate results in a timely fashion to help this web page reflect the current situation,