

Genomic Analysis of Wetland Sediment as a Tool for Avian Influenza Virus Surveillance in Wild Waterfowl

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From December 2014 to January 2015 there was an outbreak of highly-pathogenic Avian Influenza (AI) in the Fraser Valley. This outbreak involved 11 commercial poultry production farms and two non-regulated (backyard) farms.

Given the negative impacts of avian influenza on the poultry industry there is a need to better a) understand the source of the H5N2 virus, and b) to predict and prevent future AI outbreaks.

This project is a totally novel and new method to tests wild birds for AI. Rather than testing dead or live birds, sediment samples are taken from where water fowl overnight and is analysed for the presence of AI. AI is shed in bird feces and the sediment samples are easy to collect and does not involve the handling of wild birds. Sediment sampling is starting to be used to study AI in a research capacity in the United States. However, this methodology remains poorly developed and has never before been used to respond to an AI outbreak or as part of a systematic AI surveillance program.

Objectives:

The objective of the project is to determine if genomic analysis of wetlands sediments could be an effective tool to understand the 2014/2015 HPAI H5N2 outbreak and to develop a methodological approach that can be used for future AI surveillance. More specifically,

1. Characterise the ecology of water fowl in the Fraser Valley and identify sentinel wetlands for sampling
2. Analyse sediments for the presence of AI
3. To synthesize the ecological and molecular information in order to develop a better understanding of the 2014/2015 outbreak and to develop a possible sediment surveillance strategy

The study may result in an early warning system for AI and may be part of a future AI surveillance system.

