

AVIAN HEALTH INTERNSHIP STATEWIDE

Mary Graham
DVM student, Class of 2025,
CVMBS, CSU

Heather Reider
Director CSU Avian Health
Team, Veterinary Diagnostic
Laboratory, CSU

Dr. Ragan Adams, MA, DVM
State Veterinary Specialist,
CSU Extension, CVMBS, CSU

PROJECT INTRODUCTION

In December 2021, the Eurasian strain of highly pathogenic avian influenza occurred in Canada and soon thereafter was reported in the United States. Highly pathogenic avian influenza (HPAI) is a virus that occurs in birds and is highly contagious, spreading rapidly through entire flocks and resulting in sudden death. Signs of HPAI include sudden death, wheezing, coughing, nasal discharge, decreased energy, decreased feed intake, drop in egg production, swelling and/or discoloration of eyes, head and neck. The most common carrier of HPAI is waterfowl, though it is easily spread to other birds. The current outbreak of HPAI has been devastating to commercial and non-commercial flock owners as well as many species of wild birds. Due to the outbreak of HPAI, surveillance and biosecurity measures for the virus in commercial and non-commercial flocks are now more important than ever to try to stop the rapid spread of this virus. At CSU, the Colorado Avian Health Program (CAHP) Coordinator works closely with the state veterinarian’s office (CDA) to test and monitor for different diseases, including HPAI. The CAHP is also the Official State Agency (OSA) for the National Poultry Improvement Plan (NPIP) for Colorado which is a voluntary program in which many small and commercial poultry operations participate.

INTERNSHIP GOALS

The main goal of this internship was to gain experience testing various species of birds for avian influenza virus, *Salmonella* Pullorum and *Salmonella* Gallinarum (known as Pullorum Typhoid Disease) through the NPIP program. Pullorum Typhoid Disease is caused by a Salmonella species that infects chickens, turkeys, and other types of poultry. With the avian influenza outbreak, it was extremely important this year to test and monitor flocks for HPAI. Additionally, due to the CDAs Emergency Rule to temporarily suspend Colorado poultry events for 90 days after March 30th, several county fairs continued to modify or cancel events. As part of the internship, we contacted county fairs to better understand how different fairs responded.

HOW DOES THIS APPLY TO YOUR EDUCATION

While I do not plan to go into avian health specifically, the goal of me accepting this internship was to help me become better equipped to answer questions I may have from clients in the future who may own chickens. Through the NPIP program internship this summer, I was trained as an NPIP Certified Field Tester (CFT). I was able to gain experience and knowledge in the field of avian health, specifically in regards to HPAI and biosecurity practices. Additionally, this internship has equipped me with some tools and knowledge to help prevent the spread of disease and to deal with disease outbreaks in the future.

During this summer, I interacted with many clients and through these interactions, it became apparent to me how important client communication and education are, especially during disease outbreaks. These interactions were very valuable in helping me refine my client communication skills which will be extremely useful to me throughout my education and career.

WHAT YOU DID

This summer I worked with the Colorado Avian Health Program Coordinator at CSU as well as the Veterinary Extension Office to test and monitor birds for highly pathogenic avian influenza (HPAI) and Pullorum Typhoid Disease through the NPIP. The NPIP was originally established in the 1930’s to provide a cooperative industry, state, and federal program through which diagnostic testing can be effectively applied to the improvement of poultry and poultry products throughout the country. While this program is voluntary, the testing provided also allows for interstate movement of poultry as many states require a negative Pullorum Typhoid and avian influenza test.

Over the summer, we traveled to several different counties throughout Colorado, testing different species of poultry for HPAI and Pullorum Typhoid Disease. With the ongoing outbreak of HPAI, we placed a lot of emphasis on testing and monitoring flocks and educating flock owners about biosecurity practices on their farms. Because many operations had a variety of species, it was critical to emphasize the importance of keeping different species separated from each other and using footbaths to help minimize the possibility of disease introduction and spread.

In addition to testing poultry farms throughout the state of Colorado, CAHP also plays a critical role in monitoring for diseases at the Colorado county fair poultry shows. This year, we attended the fairs in Douglas, Adams, Elbert and Jefferson Counties to examine poultry for signs of disease upon entry into the fairgrounds. However, despite the expiration of the CDAs Emergency Rule, many county fairs were still cancelled or modified. Surveys were sent out to each county fair to get a better idea of how different counties were responding. While not all counties responded to our survey, of the ones that did, 51.5% cancelled their poultry shows and 48.5% still held their shows. The majority of counties that still held their poultry shows modified them to reduce both the number of poultry on the grounds and the time that the poultry spent on the grounds. Additionally, a fair number of counties that cancelled their poultry shows had other projects in place for children who normally showed their poultry. Despite the varying responses, in almost all cases, the risk of HPAI was the driving factor behind these decisions.

Figure 1.



Figure 1. The avian health team on a routine flock visit.

WHAT YOU LEARNED

Through this internship, I learned how to handle different poultry and gamebird species during testing. Additionally, I was taught how to perform the avian influenza and Pullorum Typhoid Disease tests and to draw blood samples from birds for additional testing as needed. For the avian influenza test, I learned how to properly collect oropharyngeal (OP) swabs on different bird species. The swabs were placed in a brain-heart-infusion broth (BHI) and then taken to the lab for further testing, which I did not participate in.

The Pullorum Typhoid test was performed by taking a small drop of whole blood from the brachial vein on the underside of a bird’s wing. The drop of blood was then immediately mixed with Pullorum antigen on a testing plate and observed for agglutination. In addition to learning how to test for HPAI and *salmonella*, I also learned how to draw blood from chickens and turkeys.

I also spent some time in the lab practicing how to plate and read an agar gel immunodiffusion test, a skill that I had not learned previously. Aside from learning how to perform these tests, perhaps one of the most valuable takeaways from this internship involved biosecurity measures. I have owned poultry for many years, but until I took this internship, I did not realize that ducks are carriers of HPAI and should be housed separately from chickens. Overall, this internship taught me about the importance of biosecurity measures and client interactions as well as how to test and monitor poultry for diseases.

Table 1.

Poultry shows cancelled	17
Poultry shows held	16
Risk of HPAI as determining factor	31
Fairs not providing data	4

Table 1. shows some of the results of our county fair poultry survey. Of the county fairs that responded to our survey, 51.5% cancelled their poultry shows and 48.5% still held their poultry shows, with 94% basing their decision on the risk of HPAI.

NEXT STEPS

Since this internship was a single summer internship for me and we did not really do any research beyond the county fair surveys, my project with the avian health team is not a continuing project beyond this. However, the knowledge I have gained through this internship will be valuable to me now and throughout my career as a veterinarian. My next steps do not specifically involve the avian health program itself, but are centered around continuing education, personal growth, development and the pursuit of unique opportunities and experiences within the field of veterinary medicine.