UCDAVIS VETERINARY MEDICINE

Poultry Ponderings

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A quarterly newsletter detailing poultry related work at the UC system

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Questions or Comments?

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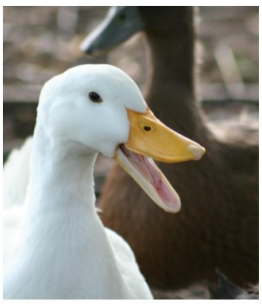
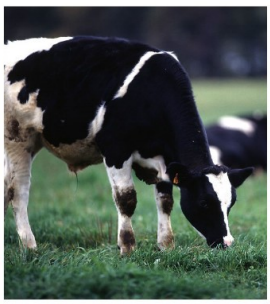
Editor: Anny Huang

UC Davis Awarded 5 year FDA grant to Study Anti-microbial Resistance in Retail Meats

Xunde Li, Rob Atwill and Maurice Pitesky from the UC Davis Western Institute for Food Safety and Security (WIFSS) and the UC Davis School of Veterinary Medicine Cooperative Extension received a 5-year grant to study antimicrobial resistance in retail meats sold in Southern California. Collaborators include the California Department of Food and Agriculture (CDFA) and the California Department of Public Health (CDPH). The objectives of the grant include antimicrobial testing of bacteria from retail meats (retail chicken, ground turkey, ground beef and pork chops) sold in West and East Los Angeles, Irvine and Ontario. In addition to the sampling and testing described above, in collaboration with the CDFA and CDPH, a database will be developed to better understand the connectivity between antimicrobial resistance on the farm, at the retail level, and at the patient level. The long-term goal is to better characterize trends in antimicrobial resistance in retail meats and to better understand the effect of policies implemented to mitigate the incidence of antimicrobial resistant bacteria in retail meats sold in California and beyond. The grant was awarded by the FDA National Antimicrobial Resistance Monitoring System (NARMS) program. The project will foster and leverage collaborations among federal and state agencies and universities in foodborne disease and antibiotic resistance detection and surveillance.

—Xunde Li, Rob Atwill, & Maurice Pitesky





Understanding clinically relevant Reoviruses using molecular techniques

Since 2015, hundreds of clinically relevant Reoviruses —associated with poultry with leg problems, poor performance and lack of uniformity— have been isolated from broiler chickens at the California Animal Health and Food Safety (CAHFS) Laboratory. Biological and serological characterizations are not always timely and accurate in order to strategize preventive measures. Between the broiler industry and our laboratory, we decided to continuously characterize isolates, based on a segment of the Sigma C gene, in order to detect early molecular changes in Reoviruses causing problems. Five and six Reovirus types have been described in the literature based on a partial segment of the Sigma C gene.

We based our classification on those types and the homology (i.e. genetic relationship) they show to commonly used vaccine strains. Initial results have shown that the molecular surveillance of Reoviruses is important because different variants of the virus escape from currently used vaccine protection.

This information is crucial for producing type specific vaccines. As part of an improved surveillance effort, viral isolates need to be confirmed by molecular and immunological techniques. Even though, the associationa of variant Reoviruses and clinical cases is clear, determining immunosuppression level in poultry flocks is crucial to determine the real role of Reoviruses in the generation of pathology in poultry flocks.

—Rodrigo A. Gallardo

Serological surveillance of wild and pen-reared pheasants in the Central Valley

Since their introduction to California in the late 19th century, hundreds of thousands of pen-reared ring-necked pheasants (Phasianus colchicus), most of which were raised at commercial game bird farms, have been released across the state each year. However, pheasant populations are decreasing in agricultural lands, public wildlife areas, and refuges across the Central Valley. There is currently no consensus on why these populations are decreasing.

A collaboration between Pheasants Forever, the UC Davis School of Veterinary Medicine-Cooperative Extension, California Health and Food Safety Laboratory, California Department of Fish and Wildlife (CDFW), and the U.S. Geological Survey (USGS) has been developed to investigate factors potentially influencing patterns of pheasant abundance across California. One area of research interest is the potential for disease transmission between pen-reared pheasants that are subsequently released onto public and private wildlands and wild pheasants on those same lands.

The interplay of disease between wildlife and commercial poultry production is relatively well understood, but the interaction of released pen-reared pheasant with other wildlife is not. Hence, as a preliminary step toward understanding the potential for disease transmission, we investigated whether pen-reared (n=12 from 2 farms) and wild pheasants (n=33 from four hunting areas) have been exposed to common avian diseases via the detection of antibodies to those diseases in the Central Valley of California between 2014 and 2015. Initial pen-reared pheasant results showed the presence of antibodies (i.e historical evidence of pathogen exposure) to Hemorrhagic Enteritis (HE) (58.3%), Infectious Bursal Disease (IBD) (83.3%), and Newcastle Disease virus (NDV) (50.0%). Wild pheasant were found to be positive for antibodies against HE (15.2%), IBD (69.6%), NDV (18.2%), Infectious Bronchitis Virus (IBV) (6.1%), Infectious Laryngotracheitis (3.0%), and Pasteurella multocida (9.1%). While the results suggest the need for further investigation, it should be noted that the commercial antibody tests used have not been validated against pheasants and hence may not be as accurate as they are on the validated species (i.e. poultry).

In conclusion these early results suggest the need for outreach to communicate our initial results, and additional research investigating the potential for disease transmission between pen-reared pheasants and other avian species including wild pheasant. Specifically, a more in depth study that surveys disease (as opposed to antibodies) in pen-reared pheasants and wildlife associated with release sites before and after the release of captive birds would improve our ability to estimate the occurrence of disease transmission. This research has been supported by the CDFW Upland Game Bird Stamp Account and the Center for Food Animal Health (CFAH). A short communication has been submitted to the Journal of Wildlife Diseases.

—Ian Dwight & Maurice Pitesky

Using Social Network Analysis to Identify Stakeholders in the Live Backyard Poultry Market Network in California

Earlier this year, the UC Davis Cooperative Extension Poultry laboratory at the School of Veterinary Medicine administered an online survey for backyard poultry (BYP) owners. The purpose of the study was to better understand live bird movement in California and in turn, design and execute effective and efficient BYP outreach programs. Specifically, the goal was to identify where or whom BYP owners purchase, sell or trade live poultry with and link that to specific husbandry practices to better understand disease transmission in backyard poultry flocks. In total, there were 356 survey participants with 40 out of 58 counties being represented.

Below is a network of nodes representing people or places (ie. feedstore, hatchery) and links representing relationships (Figure 1). From the network, we can see that hatcheries, farms/ breeders, online sellers, and feed stores/ hardware stores are well connected in the network meaning that many BYP owners purchase poultry from them. Next steps include mapping the data onto a county-level map to obtain geographical insights (ie. what counties have the most live poultry movement.)

Final results will be posted on the website at: http://ucanr.edu/sites/poultry/CA_Backyard_Poultry_Survey/

Social Network Analysis (SNA) is an important tool that can allow our extension efforts to be more targeted and robust. These results can be used to better organize outreach efforts in BYP. Future studies in non-conventional commercial poultry are being designed.

—Myna Cadena & Maurice Pitesky

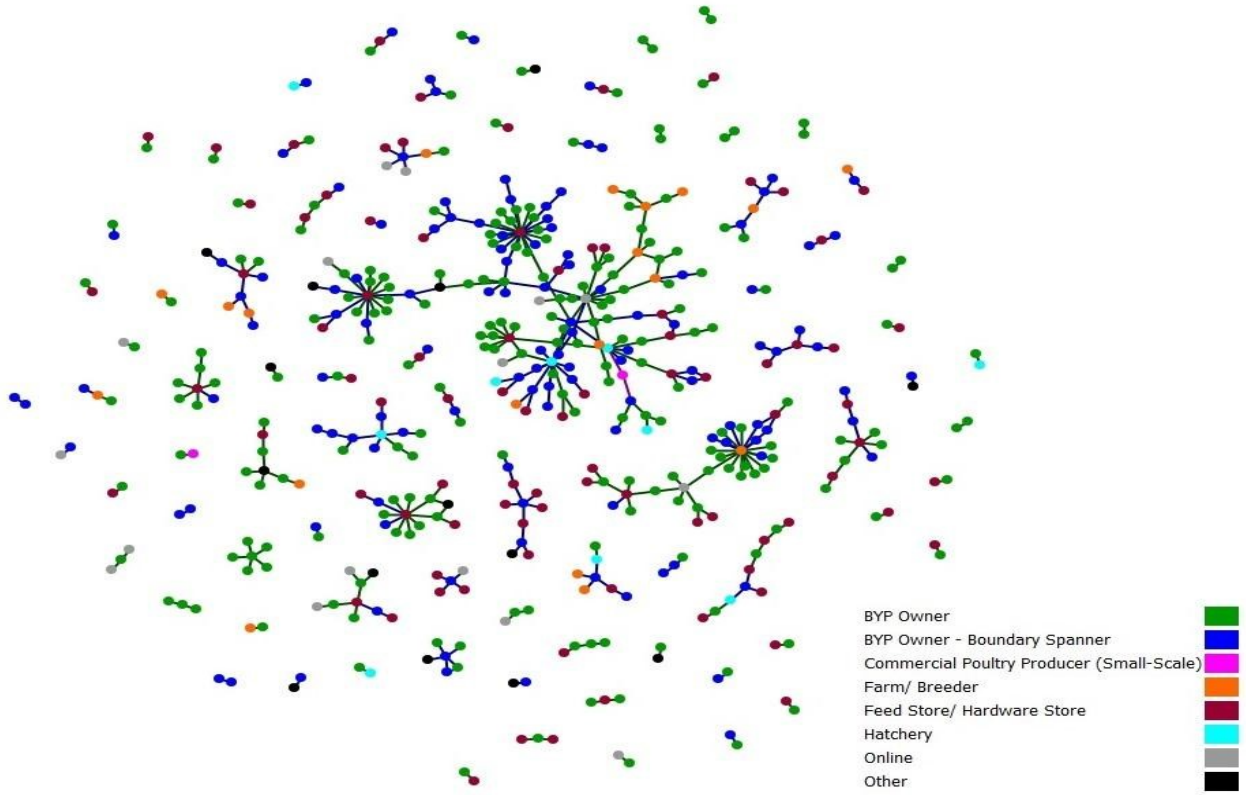
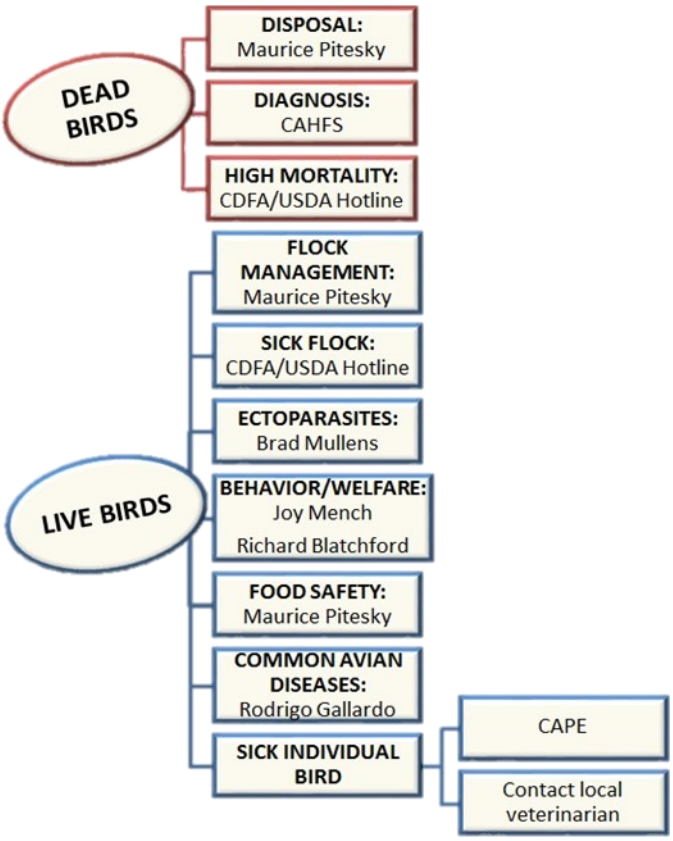


Figure 1. SNA analysis of 356 BYP enthusiasts in California. Next steps will include mapping of this data to understand regional differences in social networks related to backyard poultry (BYP).

Who can you contact with poultry-related questions?



The new Eggsercise Book is now available at:
ucanr.edu/sites/poultry/files/260435.pdf

Dr. Cluck's Trivia

What is the heaviest species of bird that is still capable of flight?

Email mepitesky@ucdavis.edu with your answer!

Last quarter's trivia: *What is the #1 cause of bird mortalities in urban areas?*

Answer: Window Strike. According to a study at Oklahoma State University as reported in the Washington Post, as many as 988 million birds die annually due to window strike, leading it to be the primary cause of bird mortalities in urban areas.

Useful information on Highly Pathogenic Avian Influenza can be found at:

Www.cdfa.ca.gov/ahfss/Animal_Health/Avian_Influenza.html