

# OADDLE-News

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Photo courtesy of OSU Ag Communications Services

## Backyard Poultry Farming: Simple Biosecurity Strategies for a Healthy Flock

Backyard poultry farming has become a popular hobby and a sustainable food source for many families. However, recent outbreaks of Highly Pathogenic Avian Influenza underscore the vulnerability of poultry to infectious pathogens. These outbreaks serve as urgent reminders of the importance of biosecurity—not just for large-scale farms, but for backyard setups as well.

Backyard farmers face unique challenges due to close interaction with birds and limited resources, increasing the risk of disease transmission. Pathogens can spread quickly through infected birds, contaminated feed, water, equipment, or human carriers. By implementing the following simple practical steps, backyard farmers can minimize the risk of outbreaks and ensure long-term health and success of their flock.

1. **Isolation:** Keep new birds or birds that have traveled to events such as shows quarantined for at least 3-4 weeks and separate sick birds. Care for the new birds last. Use dedicated footwear and clothing specifically for the new birds or thoroughly disinfect footwear and clothing before returning to the original bird group.
2. **Sanitation:** Regularly clean the coop, remove droppings and spilled feed, and wash hands after handling birds.
3. **Traffic control:** Reduce disease risk by restricting visitor access and disinfecting tools, clothing, and equipment. Install footbaths with disinfectants to minimize the spread of pathogens.

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**VETERINARY MEDICINE**

## Backyard Poultry Farming: Simple Biosecurity Strategies for a Healthy Flock

(continued)

4. **Daily monitoring of flock health:** Identify issues early; watch for signs like lethargy, respiratory distress, or abnormal egg production, follow vaccination schedules, and maintain detailed health records. Track bird inventory and movements to aid disease tracing if necessary. Maintain a good veterinary-client-patient-relationship.
5. **Prevent access to wild birds and pests:** Use enclosed housing, store feed in rodent-proof containers, and eliminate standing water.
6. **Proper water and feed management:** Provide clean, uncontaminated nutrition by regularly refreshing water supplies and disposing of any spoiled or stale feed.
7. **Report:** Notify your veterinarian and State Veterinarian's office (Oklahoma 405-522-6141) immediately of any increase in unexpected illness and sudden death loss.
8. **Disposal:** Ensure prompt and safe disposal of dead birds through deep burial or incineration, disinfecting tools used in the process, and investigation of suspected illnesses.



Photo courtesy of OSU Ag Communications Services

9. **Prevent wildlife contact:** Prevent wild birds from mingling with your flock by using netting or enclosed runs. Avoid outdoor feeding to limit wild bird access to feed. Keep backyard birds away from ponds or natural water sources to reduce exposure to wild waterfowl carrying diseases like avian influenza. Position poultry housing and feeding areas far from

water sources and use deterrents like reflective tape, predator decoys, or motion-activated sprinklers. Manage pond vegetation to minimize perching or nesting spots, and regularly adjust deterrents to maintain their effectiveness.

— Dr. Sunil More,  
Dr. Akhilesh Ramachandran,  
Dr. Rosslyn Biggs and  
Dr. Dorrie Parrott

## Fowlpox Findings

Two adult chickens were independently submitted to OADDL for necropsy, both with a history of respiratory signs including increased respiratory effort and open-mouth breathing. On postmortem examination, each bird had an extensive, thick, yellow-tan, friable plaque covering the mucosa of the palate and occluding the choana, which also extended into the larynx of the more severely affected bird (Figure 1). Raised, tan crusts/crusting nodules were also present on the palpebra. Notable causes for this presentation of oral plaques or oral ulcerative/crusting lesions in poultry that were considered include candidiasis, trichomoniasis, fowlpox, capillariasis, and mycotoxicosis. Histopathology of the lesions revealed severe proliferative

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Figure 1. Gross lesions in two chickens with fowl pox: Yellow-tan, caseonecrotic masses and plaques are present extensively within the oral cavity.

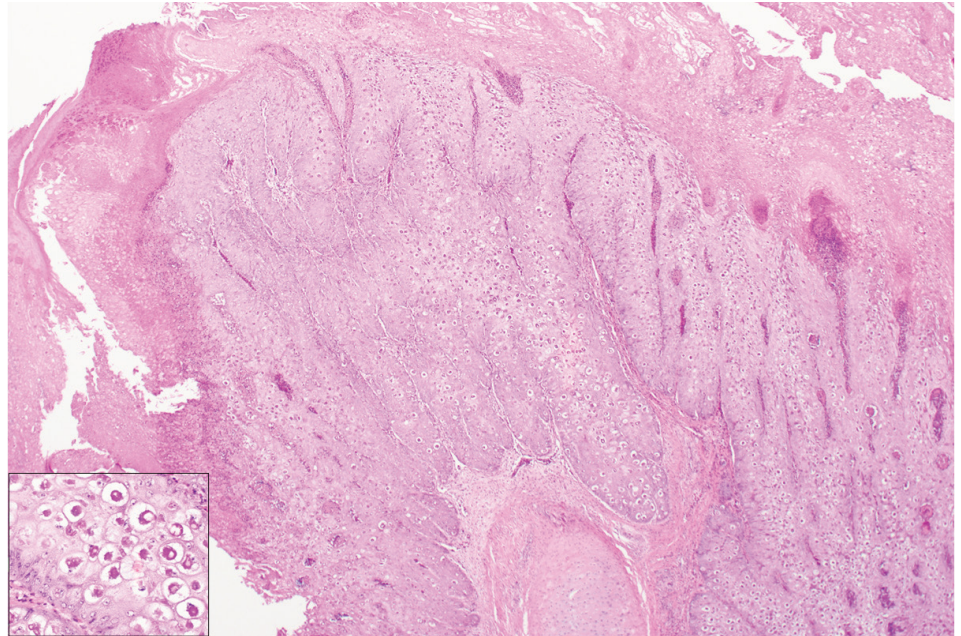


## Fowlpox Findings *(continued)*

and heterophilic stomatitis (Figure 2); keratinocytes were frequently swollen with abundant clear cytoplasm that often contained large, 10-15 µm diameter, eosinophilic, intracytoplasmic viral inclusions (Bollinger bodies; inset Figure 2).

These findings are consistent with fowlpox, a disease of domestic and wild poultry caused by fowlpox virus of the genus *Avipoxvirus* (family Poxviridae). Other viruses within this genus affect a variety of domestic and exotic species including canaries, psittacines, penguins, and others. Fowlpox is transmitted via biting insects (particularly mosquitoes) and contamination of open skin wounds. Outbreaks are more common in winter months when mosquitoes over-winter in coops. The virus may persist in the environment for a prolonged time, especially in dander.

The cutaneous form of fowlpox (dry pox) results in wart-like skin lesions, most commonly of non-feathered skin (face, feet, comb, wattles), whereas the diphtheric form (wet pox) causes necrotic plaques of the oral cavity, esophagus, and upper respiratory tract. Both forms may occur concomitantly. Affected birds are often lethargic with poor growth/production, and secondary bacterial infections of lesions can be fatal. Wet pox may often mimic



**Figure 2. Histopathology of oral lesions: The epithelium is severely hyperplastic, superficially necrotic, and infiltrated by heterophilic inflammation (proliferative stomatitis). Inset: Keratinocytes display ballooning degeneration and contain large eosinophilic viral inclusions (Bollinger bodies) within their cytoplasm.**

respiratory disease when occlusion of the airway occurs, as in the cases here, and tends to have a higher mortality rate than dry pox. Diagnosis can be made based on classic histopathologic lesions, though PCR is also available for confirmation (referral test). There is no established treatment for fowlpox, therefore control efforts should be targeted at management improvements and/or vaccination. A live vaccine for

chickens and turkeys is commercially available. Recommended preventative measures include mosquito control, good housing sanitation, and minimizing infighting among birds that may result in open wounds prone to infection.

*(Second case contributed courtesy of Dr. Brianne Taylor)*

— Clare Brown, DVM, DACVP

## Message from the Director

After a long hiatus, we are pleased to bring to you another issue of OADDL E-News. With highly pathogenic avian influenza (HPAI) raging on, with no end in sight, it is fitting this issue contains an article on biosecurity strategies for backyard flocks. OADDL was activated for HPAI testing by the NAHLN in 2022 and remains activated. The year 2024 was another successful year for the lab as we continued to provide valuable service to clients and government stakeholders. Highlights for 2024 include:

- Successfully filling one of our two open anatomic pathologist positions with Dr. Clare Brown, a board-certified pathologist.
- Expanded our infrastructure and capabilities by adding 1,062 sq ft of

renovated laboratory space. The new space will be used for our research and development efforts to assure continuous improvement and expansion of our molecular testing capacity.

- The College of Veterinary Medicine administration granted a new faculty position at OADDL to be filled with a clinical assistant professor who will lead our research and development efforts.
- The OADDL accreditation site visit occurred in August, resulting in full accreditation being granted by the AAVLD through December 2029.
- The Oklahoma Legislature approved a \$20M allocation for OADDL to be used for equipment and renovation. We intend to use these funds to com-

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pletely renovate the 1975 wing of the building, replace major equipment, and perform deferred maintenance to some of our mechanical systems.

We look forward to 2025 with excitement as we continue to expand and improve both infrastructure and services. In the meantime, we thank you for your support and partnership to help us serve you the best we can. Please, do not hesitate to contact us ([oaddl@okstate.edu](mailto:oaddl@okstate.edu); 405-744-6623) with any questions or suggestions. Happy reading!

— Dr. Jerry Saliki

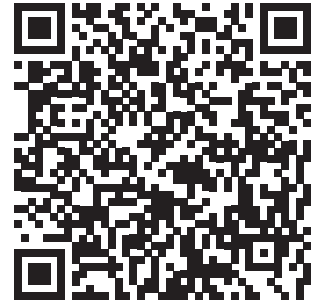


Photo courtesy of Clarissa Walton, Fulton Farms

## Have a Cattle Herd? Participate in Our New Research Project!

### RESEARCH TITLE: *Theileria orientalis* and *Haemaphysalis longicornis* in Oklahoma and border Eastern states. Current status, future options.

Thank you for considering participation in this research project. Our objective in this experiment is to assess the status of the pathogenic *Theileria orientalis* genotype Ikeda and its vector *Haemaphysalis longicornis* in cattle herds from Oklahoma and border Eastern states. We hope to engage 30 to 50 farms across the state of Oklahoma and Eastern border states. Please see the protocol summary below and if you are interested in participating, please fill out [the research interest form](#) or scan the QR code.



### Objectives:

The main purpose of this project is to:

**Aim 1:** To determine the status of *Theileria* species and *T. orientalis* genotypes in cattle from Oklahoma and border Eastern states.

**Aim 2:** To survey the status of the recently detected *Haemaphysalis longicornis* in cattle herds and the environment in the state of Oklahoma and border Eastern states, including possible geographic expansion and pathogen detection.

### Methodology

#### Blood sample collection

Each herd will provide a minimum of 5 samples and a maximum of 20. Herds that test positive to *T. orientalis* will be followed up once or twice during the study. Whole blood samples will be collected in EDTA tubes and transported or submitted with cold packs to the parasitology research laboratory at the Oklahoma Animal Disease Diagnostic Laboratory.

#### Tick collection

Ticks will be collected from the animals by cattle producers, or the graduate student hired for this project. Tick trapping will also be performed from areas where the cattle is sampled utilizing CO<sub>2</sub> traps and the flagging or dragging method. A maximum of 15 ticks will be analyzed from each sample collection site.

- Sampling supplies and pre-paid shipping labels will be provided.
- Samples may be collected by veterinarians or producers as long as they have a consulting herd veterinarian.
- Blood submissions will process twice weekly with results emailed to the address on the submittal form and the consulting herd veterinarian.
- *Anaplasma marginale* testing will also be provided free of charge (up to 20 samples/herd) if anaplasmosis is suspected in the herd.
- Should *Theileria orientalis* genotype Ikeda or the *Haemaphysalis longicornis* (Asian Longhorned Tick) be identified. Researchers are required to notify the State Veterinarian in the respective state of the herd of origin if either the Asian Longhorned Tick or *Theileria Orientalis* genotype Ikeda are identified. The Oklahoma State Veterinarian has indicated that no movement restrictions of farms or ranches are anticipated.

### Oklahoma State University Personnel Contact Information:

#### Dr. Ruth Scimeca:

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#### Dr. John Gilliam:

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## Liver Flukes and Cattle Production in Oklahoma

Liver flukes (*Fasciola hepatica*) are parasitic flatworms that may cause disease in ruminants leading to potential production losses. In the past five years, cases diagnosed at the Oklahoma Animal Disease Diagnostic Laboratory (OADDL) have been detected mainly in cattle during the months of May and November from Eastern and Central Oklahoma regions. Small ruminants, alpacas and camels can also be infected.

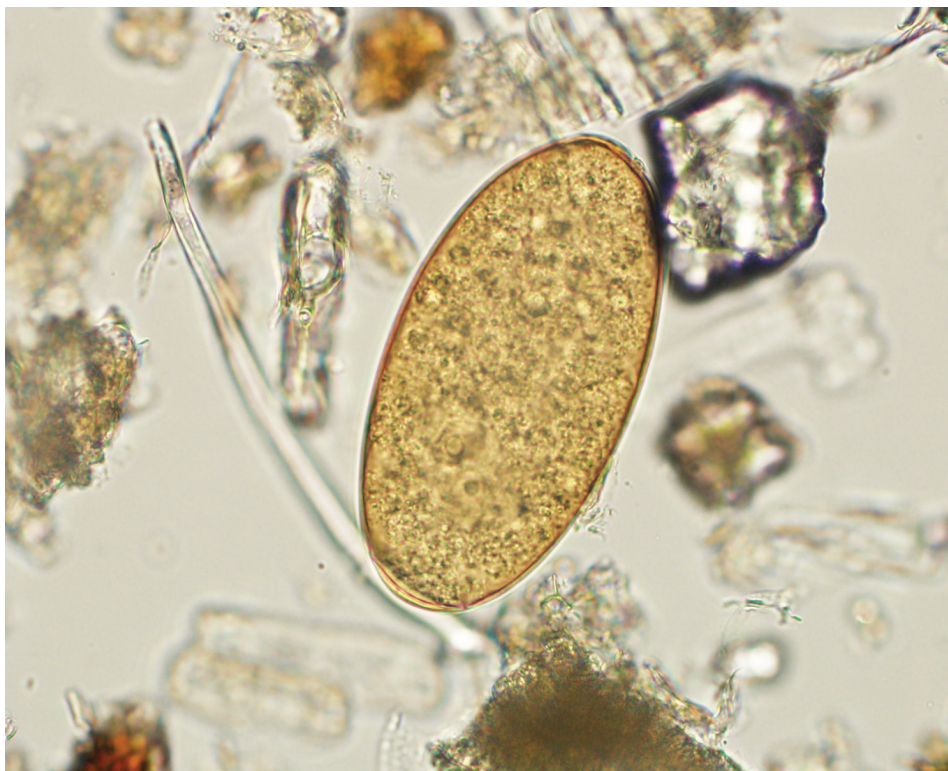
Ruminants shed low numbers of heavy operculated eggs in feces (*Image 1*), which are better detected by the **fecal sedimentation method**. After some time, these eggs hatch in water, infect a snail and sometime later the larva leaves the snail tissue and encysts in pasture as an infective state. When ruminants ingest the pasture, they become infected. The juvenile flukes migrate to the liver and approximately 2 months after ingestion they mature in the bile ducts where they can create a long-term inflammation, fibrosis and calcification also called “pipestem liver” (*Image 2*).

The migration of juveniles can predispose ruminants, especially young animals to secondary infections with bacteria, such as *Clostridium novyi*. Over time the tissue damage caused by the juveniles’ migration can lead to loss of liver function, liver disease, and resultant unthrifty dull animals with a decreased weight gain and production losses. The adults create long-term inflammation in the bile ducts.

When suspecting liver fluke infections in your herd you should work with your veterinarian, submit fecal samples for fecal sedimentation testing and consider them into your parasite control program.

If you have further questions please contact OADDL for more information about testing and diagnosis of liver flukes.

— Dr. Kathryn Duncan (DVM, PhD, DACVM) and Dr. Ruth Scimeca (VMD, MSc, PhD, DACVM)



*Image 1. Egg of Fasciola hepatica, detected by fecal sedimentation.*



*Image 2. Liver lesions caused by Fasciola hepatica. Image provided by Dr. Clare Brown.*



## Getting to Know Us: Receiving Team



**Blaine Bennett** is from Little Axe, Oklahoma. He graduated in May 2024 with a bachelor’s in animal science. Blaine enjoys traveling, fishing, and everything OSU sports. He has a strong passion for learning especially in science/the natural world.



**Brandy Bassham** is from Plymouth, California. She graduated in 2024 and received her BS in Animal Science with a concentration in Pre-Vet and minored in Microbiology. She joined OADDL in July 2024 as a Necropsy/Receiving Technician. In her free time, she enjoys serving as an officer for the Oklahoma CattleWomen and spending time with her dog, Milo.



**Ella Cox** is from The Woodlands, Texas. She graduated from Oklahoma State University in May 2024 and received her Bachelor’s Degree in Animal Science with a concentration in Pre-Vet. She joined the OADDL Necropsy/Receiving department in June 2024. During her time at OSU, she was a member of the All-Girl Cheerleading team, where she earned three national championship titles.

### Ideas/Suggestions for Future Content

We want to hear from you. Send your ideas and suggestions to [oaddl@okstate.edu](mailto:oaddl@okstate.edu).



### Contact Us

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