

OADDL E-News

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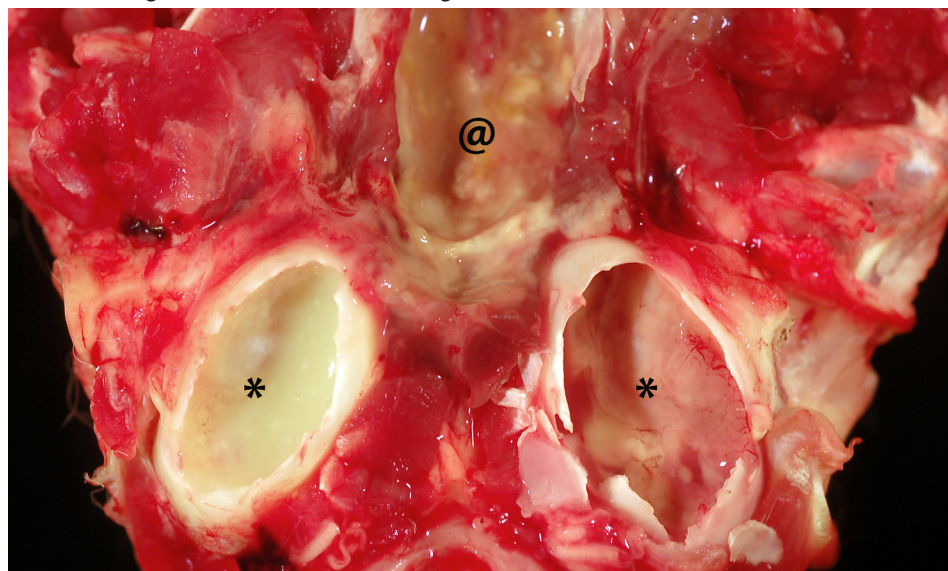
Otitis Media in Small Animals

Otitis media in dogs and cats has received little attention through the years largely owing to difficulty in recognition of disease. It is incorrect to assume that a head tilt is a sign of otitis media! Otitis media alone may manifest as facial nerve paralysis. Since the facial nerve is exposed to the middle ear cavity through the facial canal foramen, otitis media or middle ear neoplasia may lead to facial nerve dysfunction. The facial nerve and its branches represent the only innervation to the muscles of the pinnae, therefore, persistent drooping ears often indicates facial nerve paralysis which may be a sign of otitis media. Drooping ears, head tilt and loss of balance collectively indicate otitis media and otitis interna. Cats with bilateral otitis interna tend to depict wide right and left excursions of the head ([de Lahunta and Glass](#)).

The origin of otitis media in dogs

and cats is very different. In most instances of otitis media in dogs, there is historical and/or clinical evidence of concurrent or preceding otitis externa. The tympanic membrane may be intact or ruptured at the time of diagnosis. A recent study of otitis media in cats determined that none of the cats had concurrent evidence of otitis externa ([Sula et al.](#)). This would imply an ascending mechanism of inflammation and infection from the pharynx through the auditory tube (Eustachian tube) into the middle ear. An underlying auditory tube dysfunction is presumed which results in unilateral or bilateral otitis media. This may also represent a predisposing mechanism for the development of inflammatory middle ear polyps, most commonly seen in young cats.

— Dr. Brad Njaa



Ventral view of a young cat with severe nasal and ocular discharge and depression. Exudate is evident bilaterally in the now opened tympanic bullae (*). Similar, foul-smelling exudate is also present in the nasopharynx (@). *P. multocida* and *Streptococcus* spp. were cultured from the middle ear exudate.



CENTER FOR VETERINARY HEALTH SCIENCES
Healthy Animals — Healthy People

An Emerging Zoonotic Parasite, *Alaria* spp.

Alaria spp. are zoonotic trematodes found throughout the world. Prior to 1990, the parasite was not considered endemic in northcentral Oklahoma; however, prevalence of *Alaria* infection in companion animals has been increas-

ing in this area (Table 1). Additionally, infection of *Alaria* in wildlife has been confirmed in Oklahoma (Table 2).

Aquatic pulmonate snails are the primary host, and tadpoles and frogs are the secondary host. Birds, reptiles,

and mammals (including humans) can become infected by consuming infected tadpoles, frogs, or other infected animals. Domestic and wild carnivores that ingest infected tadpoles, frogs, or infected animals can serve as definitive hosts.

In dogs and cats, infections are generally nonpathogenic. However, *Alaria* can be a fatal zoonotic risk to humans. Cases of human alariosis have been reported in North America and acquired through eating improperly cooked game meats. Clinical signs in humans vary ranging from low-grade respiratory and cutaneous symptoms to a diffuse unilateral subacute neuroretinitis and even death. It is important for veterinarians to keep our clients and patients healthy and safe from this potentially health-threatening parasite.

The parasitology team located at OADDL can diagnose alariosis in companion animals and other carnivores by a fecal sedimentation or centrifugal fecal flotation technique to look for *Alaria* eggs (figure 1). To diagnose alariosis in other wild animals, the muscle samples are required to look for a juvenile stage of *Alaria*, called mesocercaria (Figure 2), by a mesocercariae migration technique. To run fecal examination, approximately 10 grams of fecal samples are needed. For the migration technique, preferred samples include tongue, cheek muscles, diaphragm, and lymph nodes.

— Dr. Yoko Nagamori



Figure 1 – *Alaria* egg (left) with *Toxocara* eggs (right) recovered from feral cat feces

Table 1: Summary of *Alaria* spp. infection in dogs and cats

Type of animals	Number of positive cases	Number of total cases	Prevalence of infection (%)	Years
Client-owned dogs	9	5,417	0.2	2006-2014
Client-owned cats	17	1,246	1.4	2006-2014
Shelter/rescue dogs	15	837	1.8	2013-2014
Shelter/rescue cats	2	331	0.6	2013-2014
Feral cats	76	603	12.6	2015

Table 2: Summary of *Alaria* spp. infection in wildlife in 2015

Type of animals	Number of positive cases	Number of total cases	Prevalence of infection (%)	PCR
Coyotes	6	6	100.0	+
Feral hogs	11	43	25.6	+
Opossums	1	3	33.3	+
Raccoon	0	1	0.0	N/A



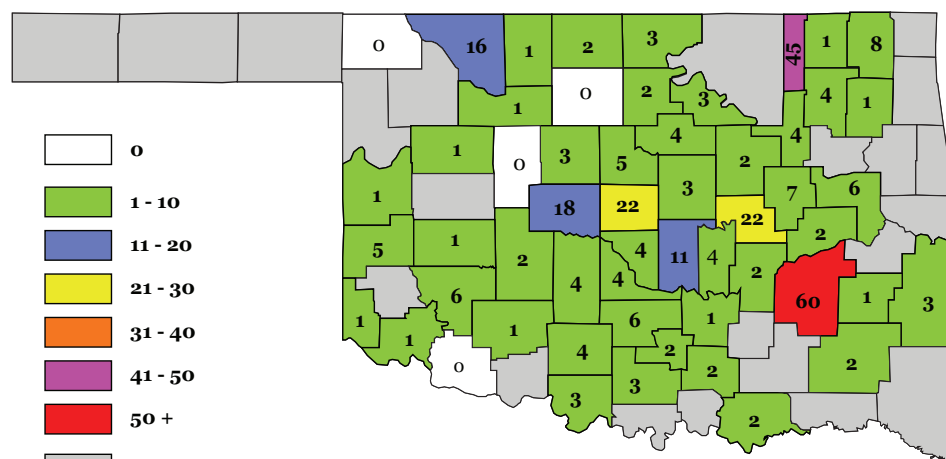
Figure 2 – *Alaria* mesocercaria recovered from a feral hog

Bovine Anaplasmosis 2015

Bovine anaplasmosis is caused by infection of red blood cells with the intracellular bacterium *Anaplasma marginale*. Anaplasmosis is endemic in Oklahoma cattle. Disease may be transmitted biologically by ticks or mechanically by biting flies, blood-contaminated needles, or castration and dehorning equipment (Figure 1). Once cattle become infected with *A. marginale* they remain persistently infected for life and are the most important reservoir for infection in nature. Increased rainfall in 2015 has been favorable for higher tick and fly populations in Oklahoma and general herd expansion has contributed to an increased population of susceptible cattle.

OADDL offers both an ELISA test to detect antibodies to *A. marginale*

Positive Anaplasmosis Cases in 2015 (ELISA and PCR)



in the serum and a polymerase chain reaction (PCR) test to detect *A. marginale* organisms in the whole blood. The number of serum samples submit-

ted to OADDL for Anaplasma serology and number of positive animals both doubled in the fall of 2015 compared to 2014, although the seroprevalence in these years was comparable (Table 1). Between August 1 and November 30 the laboratory performed 413 ELISA tests and 66 PCR tests with 48% ELISA positive and 74% PCR positive (Table 2). The PCR test can identify early infections, prior to an animal developing detectible antibody levels and this test has been performed with increased frequency since becoming available. Direct examination of blood smears for Anaplasmosis is also available at OADDL and can serve as a point-of-service test in veterinary hospitals.

— Dr. Grant B. Rezabek, Ms. Janisue Jones and Dr. Katherine M. Kocan

FIGURE 1: Transmission of bovine anaplasmosis.

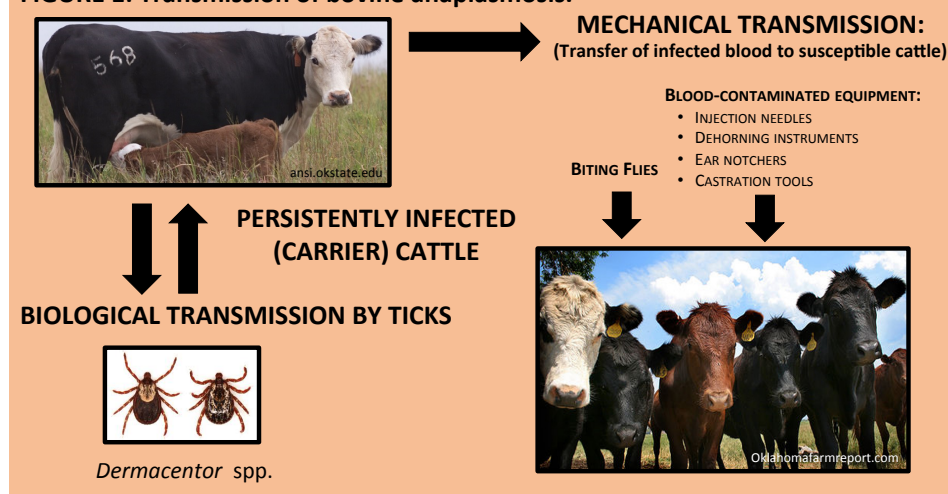


Table 1: OADDL Anaplasmosis ELISA Testing August-November 2013-2015

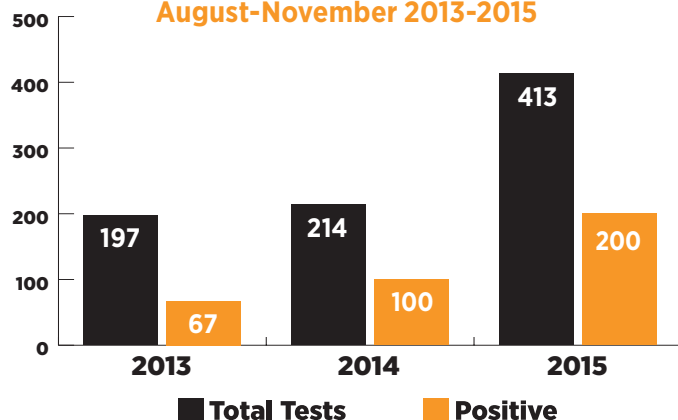
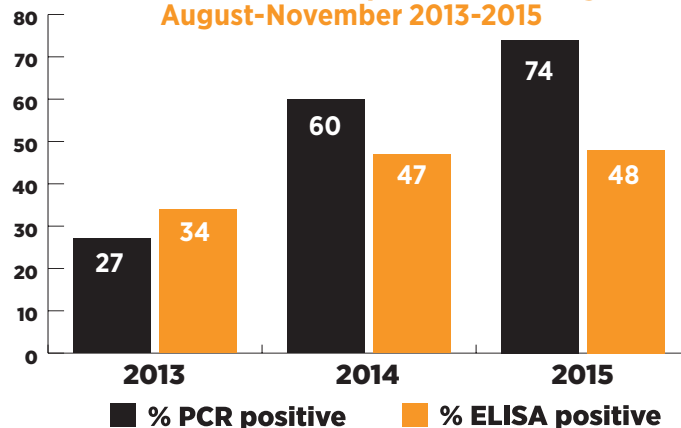


Table 2: OADDL Anaplasmosis Testing August-November 2013-2015



Kocan KM, de la Fuente J, Step DL, Blouin EF, Coetzee JF, Simpson KM, Genova SG, Boileau MJ. 2010. Current challenges of the management and epidemiology of bovine anaplasmosis. *Bovine Practitioner*, 44(2):93-102.

Kocan KM, Coetzee JF, Step DL, de la Fuente J, Blouin EF, Reppert E, Simpson KM, Boileau MJ. 2012. Current challenges in the diagnosis and control of bovine anaplasmosis. *Bovine Practitioner*, 46:67-77.

Letter from the Director

The start of a new year is generally a time of reflection on the previous year and preparation for the 12 months ahead. In addition to generating data for our annual report, faculty and staff at OADDL have been meeting for the past few weeks to outline our goals for 2016.

As Oklahoma's only accredited veterinary diagnostic laboratory, our primary goal is to provide diagnostic services of the highest quality. Even though the state is facing a significant revenue shortfall and we have been told to brace for budget cuts, rest assured that our commitment to the service mission of OADDL is unwavering.

The reality of the economic challenges will require us to continue to make changes in 2016. As some

of you are aware, we increased the number of toxicology tests that we outsource in 2015. We are also in the process of transitioning some of our more traditional testing methods to contemporary platforms. We will be upgrading our reporting software in the coming weeks to better serve you. A much needed feature in the new software system will provide remote access to your results any time of the day. We ask for your patience and feedback during this process improvement.

One of the benefits of working closely with veterinarians is the shared commitment to our profession and the willingness to go the extra mile. Let's face it – veterinarians are tough folks and at the end of the day we get the job done!

Equine CNS Disease Surveillance Program Discontinued

The Oklahoma Department of Agriculture, Food and Forestry (ODAFF) announced January 5, 2016 that they are no longer able to subsidize testing of horses with neurologic disease due to state budget cuts. Testing is still available at OADDL at the submitters' expense. A total of 586 horses were screened in this program from 2012-2015. We extend our gratitude to ODAFF for supporting this program.



Getting to Know Us

Abbey Kates is originally from Kings Mountain, NC. She received her Bachelor's and Master's degrees from North Carolina State University. Abbey has lived in Stillwater since 2013 and began working at OSU in 2016. In her free time, Abbey likes to read and spend time with her basset hound, Toby.



Dr. Yoko Nagamori grew up in Tokyo, Japan. She earned her veterinary degree from Iowa State University College of Veterinary Medicine in 2013. In the same year, she moved to Stillwater to start a veterinary parasitology residency program through National Center for Veterinary Parasitology at Oklahoma State University. She is very passionate about diagnostic parasitology and teaching clinical parasitology to veterinary students. In her spare time, she enjoys traveling, shopping, playing/watching sports, and playing



with her two cute pet rabbits and chinchilla.

Ideas/Suggestions for Future Content

We want to hear from you. Send us your ideas and suggestions to oaddl@okstate.edu.

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