

**BIOMEDICAL & VETERINARY SCIENCES  
GRADUATE PROGRAM**



**ANNOUNCES**

The Master of Science Seminar and Examination of

**Hannah Hinson**

**“Seroprevalence of *Anaplasma phagocytophilum* in  
the equine population of Southwest Virginia”**

**Wednesday, June 30th, 2021  
8:00AM**

**Zoom link: <https://virginiatech.zoom.us/j/88096864418>**



### **Bio**

Hannah Hinson graduated from North Carolina State University College of Veterinary Medicine in 2016. She completed a field service internship with Equine Field Service at the Virginia-Maryland College of Veterinary Medicine in 2017. She returned in 2018 for a field service residency and to pursue a master's degree. Her professional interests include equine lameness, podiatry, and dentistry.

### **Funded by**

Virginia Horse Industry Board  
VMCVM Office of Research and Graduate Studies

## Lay Language Abstract

Equine granulocytic anaplasmosis (EGA) is a common tick-borne disease in the United States and worldwide. The causative bacteria, *Anaplasma phagocytophilum*, also infects humans, dogs, and various domestic animal species. In horses, signs of disease include fever, decreased appetite, leg swelling, and depression. Diagnostic testing that is both accurate and timely is still lacking. The point-of-care SNAP 4DX Plus Test® used to diagnose vector-borne infectious disease in dogs has been suggested for similar use in horses.

The objectives of the current study were to determine seroprevalence of antibodies to *A. phagocytophilum* in the equine population of Southwest Virginia and to characterize the clinical signs and diagnostic test findings of horse with clinical signs of EGA.

Seroprevalence was determined using the SNAP 4DX Plus Test®. Serum samples were obtained from horses presenting for annual Coggins testing in 2019-2020. Samples from 2013 were also tested to determine if seroprevalence had increased. Horses presenting with clinical signs consistent with *A. phagocytophilum* were examined by a veterinarian and had blood drawn for a complete blood count (CBC), blood smear evaluation, polymerase chain reaction analysis (PCR), immunofluorescent antibody testing (IFAT), and the SNAP 4DX Plus Test®.

Seroprevalence in 2019/2020 was 11.2% and 8.5% in 2013. This is similar to other endemic areas in the United States and Europe. In horses sampled from 2019-2020, the month of sampling was significantly associated with presence of antibodies to *A. phagocytophilum* with most of the positive samples being identified in November through February. Geldings were more likely to be seropositive than mares. Thirty five percent of horses with signs consistent with EGA were confirmed to have the disease. Within this population, PCR analysis and/or detection of morulae on the blood smear were reliable indicators of disease while diagnostic techniques utilizing serology were unreliable.

This is the first study to determine seroprevalence of *A. phagocytophilum* in Southwest Virginia. In the actively infected population, PCR and blood smear evaluation remain the most sensitive methods of diagnosis. While the

SNAP 4DX Plus Test® is useful for serologic data collection, it was not appropriate for acute diagnosis of EGA.

### **Examination Graduate Committee**

#### **Major Advisor/Chair:**

Rebecca Funk, DVM, MS, DACVIM  
Clinical Associate Professor  
Equine Field Service  
Department of Large Animal Clinical Sciences

#### **Graduate Advising Committee Members:**

Kevin Lahmers, DVM, PhD, DACVP  
Clinical Associate Professor  
Anatomic Pathology  
Department of Biomedical Sciences and Pathobiology

Katie M. Boes, DVM, MS, DACVP-Clinical Pathology  
Clinical Associate Professor  
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Department of Biomedical Sciences and Pathobiology



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