

Evaluating *Toxoplasma gondii* in Wild Pigs (*Sus scrofa*)

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Wild pigs (*Sus scrofa*; Figure 1) are one of the most destructive invasive species in the southeast United States, including Alabama, where they were introduced in 1988 and subsequently spread across the entire state. One issue with wild pigs is that they contribute to the spread of diseases, such as toxoplasmosis. Toxoplasmosis is a disease caused by *Toxoplasmosis gondii*, a zoonotic parasite that reproduces in felids (i.e., cats). This disease is the second most common food-borne illness in the United States and is linked to behavioral changes in the human brain that contribute to incidence of schizophrenia, epilepsy, Alzheimer's disease, and cancer (Uttah, 2013; Ngô et al., 2017). Given the human health risks associated with *T. gondii*, our objective was to evaluate its presence in wild pigs in Alabama.

To address our objective, we analyzed 50 tongue and tissue samples from wild pigs from Dale, Macon, and Coffee counties in Alabama that were collected by U. S. Fish and Wildlife Services. From these samples, DNA extractions and molecular detection using conventional polymerase chain reaction (PCR) and Sanger sequencing were used to determine whether the pigs were infected with *T. gondii*. We identified three wild pigs that tested positive for *T. gondii*—two from Dale County and one from Coffee County. The positive samples will be used to determine the specific strain of *T. gondii* in future analyses.

Our results confirm that *T. gondii* is present in wild pigs in Alabama and as such may pose a risk to human health. For instance, possible infections from improperly cooked wild pig meat or from the consumption of contaminated food or water could lead to infection. More sampling should be conducted across the state of Alabama to determine the prevalence of toxoplasmosis in human communities.

Statement of Research Advisor

Hannah showed great creativity and enthusiasm in this project, which helps to advance our knowledge of a disease that is of concern to both people and wildlife.

– Christopher A. Lepczyk, School of Forestry and Wildlife Sciences

References

Ngô, H. M., and 30 others. 2017. Toxoplasma modulates signature pathways of human epilepsy, neurodegeneration & cancer, *Scientific reports* 7(1): 11496.

Uttah, E. Ogban, E., and Okonofua, C. 2013. Toxoplasmosis: A global infection, so widespread, so neglected, *International Journal of Scientific and Research Publications* 3(6): 1-6.



Figure 1. Image of wild pigs (*Sus scrofa*).