Dean's Colloquium

Gabrielle Smith
Department of Mathematics

When: Wednesday, February 08, 2023
Where: Turner 129
Time: 3:00 – 3:20 pm, Q&A: 10 min

Title: Temporal and Land-Type Trends of Banded Mongoose (*Mungos mungo*) Survival in Northern Botswana

Abstract: Parameter estimation through data assimilation, and its subsequent analysis, is integral to the development of robust models and accurate demographic data. For the group-living banded mongoose (*Mungos mungo*) in northern Botswana, infection from the novel Mycobacterium tuberculosis pathogen, *Mycobacterium mungi*, is fatal. While high mortality and increased risk of pathogen transmission through social communication and dispersal threaten smaller groups and populations, the zoonotic potential of this pathogen is still unknown. Consequently, it is of great importance to develop a robust model of these population and disease dynamics for demographic and potential outbreak response purposes. Overall age-class survival rates were quantified using the Kaplan-Meier estimator. While this survival analysis does not provide cause-specific mortality rates, the findings are still useful for future modeling purposes and contribute to the characterization of banded mongoose demography in northern Botswana.

Bio: Gabrielle Smith received her B.S. in Mathematics with a minor in Secondary Education from the University of Virginia's College at Wise and will receive her Ph.D. in Genetics, Bioinformatics, and Computational Biology from Virginia Tech. She joined Hampton University in the fall of 2021. Gabrielle began her research journey in road ecology where she conducted a study mathematically identifying roadkill hot spots in two major highways in southwest Virginia. She has since shifted her focus toward more public health oriented projects through which she can implement her many skills in a One Health manner. She specializes in mathematical modeling for biological systems. Her current projects include modeling infectious disease transmission dynamics in banded mongoose (*Mungos mungo*) and identifying agricultural investments integral to the reduction of undernutrition through a series of computational models. Her skills in data science and analytics lead her primary research interests to lie in highly collaborative and interdisciplinary projects.