

# **Tiffanie Hamilton, Fisheries & Wildlife Sciences**

Year in School: Junior

Hometown: Columbia, MO

Faculty Mentor: Dr. Matthew Gompper, Fisheries & Wildlife Sciences

Funding Source: McNair Scholars Program, Dudley & Virgie Alexander Gift

## **Infection rates of American dog ticks (*Dermacentor variabilis*) by disease-causing bacteria in central Missouri**

American dog ticks (*Dermacentor variabilis*) can have profound direct and indirect effects on human and wildlife hosts. In Missouri, raccoons (*Procyon lotor*) are the principal host of dog ticks, with tick prevalence reaching up to 90%. Raccoons may serve as reservoirs for various tick-borne diseases that are important to human health, such as babesia, ehrlichiosis, Rocky Mountain spotted fever and tularemia which are vectored by the American dog tick. There is little information on the occurrence of these diseases in American dog ticks in Missouri. Our goal was to determine the prevalence of *Babesia microti*, *Francisella tularemia*, *Ehrlichia chaffeensis* and *Rickettsia rickettsii* infecting engorged American dog ticks in central Missouri. From May to July 2005 we collected 500 replete American dog ticks from 105 raccoons across eight populations residing in predominantly forested ecosystems of central Missouri. Ticks were immediately preserved in 70% ethanol for storage. DNA was extracted by digestion in TE buffer followed by phenol-chloroform-isoamyl alcohol extraction and ethanol precipitation. Primers were taken from the literature and common PCR techniques were used to amplify the DNA (Armstrong et al. 1998, Paddock and Childs 2003, Spletstoesser et al. 2005, Parola et al. 2005).