

**Centennial Honors College
Thomas E. Helm Undergraduate Research Day 2024**

ABSTRACT

Major: Biology

Poster

Faculty Mentor(s): Shawn Meagher

**Sex-biased parasitism is due to sex, not size differences, in Illinois white-footed mice
(*Peromyscus leucopus*)**

Kevin Delgado

Parasites reduce their hosts' health and survival; therefore, it is important to understand the determinants of host infection. Sex-biased parasitism, where male hosts are more heavily parasitized than female hosts, is frequently observed and could be caused by sex differences in hormones. However, sexual dimorphism, in which males are larger than females, could also lead to higher infections if large hosts provide larger 'targets' or more habitat for parasites. Thus, it is difficult to determine whether males are more parasitized due to their sex, or size, or both. Here, I examined patterns of tick infestations on white-footed mice (*Peromyscus leucopus*), first to test for sex-biased parasitism, and then to try to determine whether it is due to sex differences or size differences. A total of 1,771 ticks were removed from 322 *P. leucopus* collected from WIU's Alice L. Kibbe Life Science Station over 3 years. Bivariate statistical tests revealed several significant patterns. Males were infested with significantly more ticks than females (i.e., sex-biased parasitism), and large mice had more ticks than small mice. However, we also found significant sexual dimorphism: males were significantly larger than females (sexual dimorphism). Finally, there were significant differences in tick infestation across years. I performed multiple regression analysis including sex, mass, and year, as possible tick infestation predictors, and found significant effects of only sex and year, but not mass. These data suggest that male *P. leucopus* are more heavily parasitized than females due to their sex and not their larger size.