

Krystal Purnell, Animal Science

University: University of Missouri-Columbia

Year in School: Junior

Hometown: Kansas City, MO

Faculty Mentor: Dr. Matt Gompper, Fisheries & Wildlife

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The influence of increased contact rate among raccoons on a directly transmitted nematode, *Baylisascaris procyonis*

Krystal Purnell, Ryan Monello, and Matthew Gompper

Human encroachment on wildlife habitat can result in anthropogenic food sources that aggregate raccoons. This may have unintended consequences to wildlife and human health, as theoretical models predict parasite transmission is highly dependent on the contact rate and density of individuals within a population. We examined the influence of contact rate on a directly transmitted nematode (*Baylisascaris procyonis*) of raccoons that can infect and cause disease and mortality in a wide range of accidental hosts, including humans. Twelve populations of free-ranging raccoons were monitored for three years. After one year of baseline data collection, we experimentally altered the contact rate and resource availability of randomly selected populations via dispersed or clumped food distributions. Prior to manipulation, prevalence of *B. procyonis* averaged 9% across all sites (range 0-35%). During the experiment, prevalence of *B. procyonis* averaged 4% at control sites (no food added), 18% at sites that had dispersed food additions (which did not increase contact), and 22% at sites with clumped food additions that aggregated raccoons. Data collected prior to the experiment indicated that sites that were assigned to the dispersed food treatment had a naturally-occurring higher prevalence (13%) than the sites assigned to the control (5%) and aggregation treatment (9%), indicating that the high values observed in the dispersed food sites during the experiment may be due to site-specific differences rather than the addition of dispersed food. These results support the hypothesis that increased rates of contact can increase transmission of directly transmitted parasites such as *B. procyonis*, and emphasize the potentially important role of anthropogenic activity in the ecology of diseases when dealing with wildlife species that can take advantage of such resources and tolerate large aggregations of conspecifics.