**Survey of blood parasites of the black-chested spiny-tailed iguana (Ctenosaura melanosternna)**

Andrew C. Benz¹ and Andrew K. Davis²

¹Biology Dept, University of Georgia, ²Odum School of Ecology, University of Georgia

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**Abstract**

Most animal species are susceptible to blood parasites, which are often transmitted by vectors (i.e. mosquitoes or biting arthropods). In this study, we conducted the first-ever survey of blood protozoa in a little-studied species of iguana from the Honduras - black-chested spiny-tailed iguana (Ctenosaura melanosternna). Using a collection of smears made in 2010, we screened 50 individual animals for blood parasites. We detected parasites in 17 animals overall. 16 were infected with an unknown species of Plasmodium. One was infected with a species of Haemogregarina. When we combined the parasite data with data collected at the time of trapping we found that there was no relationship between iguana gender and rate of infection by Plasmodium. However, there was a negative relationship between body size (a proxy for age) and number of parasites – as body size increased, parasite numbers decreased. This may indicate that animals become resistant to infections as they age.

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**Questions**

What is the frequency of infection with blood parasites in this population? Do infection rates differ between males and females? How does infection change with body size?

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**Results**

Out of 50 iguanas, 16 (32%) were infected with an unknown species of Plasmodium (see Figure 1). One animal was infected with a species of Haemogregarina parasite. Samples were sent to the UGA vet school for identification using molecular methods. Preliminary indications are that the Plasmodium parasite observed is a species new to science.

There was no difference in infection rates between male and female iguanas (Chi-square test, χ²=0.203, p=0.652)

Infected animals were significantly smaller (in snout-vent length) than uninfected ones (Student’s T-test, t=4.13, p<0.001; Figure 2).

Within the 16 infected animals, there was a significant negative relationship between body size and number of parasites (Pearson Correlation, r=-0.867, p<0.001; Figure 3).

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**Conclusions**

The overall infection rate of Plasmodium in this population (32%) was similar to that seen in other reptile populations.

The relationship observed between parasitemia level and body size indicates that as animals age, they become resistant to subsequent infections. This is consistent with patterns observed in human malaria and infections in other animals. In most cases of malaria, younger animals (or humans) are most susceptible to infections, but as they age their immune systems acquire immunity to the parasites.

Results from this project engender additional questions regarding the effect of the parasite (if any) on the host.

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**Methods**

In 2010, C. melanosternna were captured on the Honduran island of Isla Cayo Conchino Menor as part of a larger project. Blood samples were taken from all animals to make blood smears. Samples and smears were then sent to the University of Georgia. Blood parasitism was assessed using the smears and a compound light microscope. For each slide we examined 50 fields of view. Since fields had an average of 80 cells each, this indicates that approximately 4,000 cells were examined per slide. We noted the presence of all blood protozoa per slide. In total, we examined 50 individual iguanas for incidence of infection. We used basic statistics (t-test, pearson correlation, Chi-square test) to explore how infection prevalence and parasitemia (i.e. number of parasites per individual) varies between sexes and body sizes.

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