

A Survey of the Mites on *Anolis oculatus* in Dominica

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ABSTRACT

A survey of the mites that parasitize *Anolis oculatus* on Dominica was mainly conducted on two regions of the island. Lizards were used in association with another study at the time of the survey and kept in captivity with other lizards from the same location. With a few lizards being obtained from other areas on the island, it was found that there was a correlation between the presence of mites and the elevation or region the lizards inhabited. At least one species of mites was found with a possible second one to be verified with further study. More research is needed to compare other regions of the island as well as the endemic *Anolis* and the introduced Puerto Rican anole in order to accurately determine factors that affect the presence and distribution of mites.

INTRODUCTION

The island of Dominica is home to many species of vegetation and wildlife. With habitats ranging from the dry forest to the rain forest, and montane to sea level regions, the diversity on the island is high. Included in this biological diversity are the mites. Mites belong to the order Acari, class Arachnida and are ubiquitous, meaning they can be found in any type of habitat, aquatic or terrestrial. Many mites can be beneficial in breaking down organic matter while others are pests on plants. Some are also parasitic on humans and animals and can be harmful by being vectors of diseases (Tripplehorn,Johnson 2005). One of the hosts that some mites may occupy is reptiles.

Dominica is home to two species of *Anolis* lizards, the introduced Puerto Rican anole, *Anolis cristatellus*, and the Dominican anole, *Anolis oculatus*. Through initial observation and examination it was noted that lizards found in the lowland areas did not seem to be parasitized by mites whereas those found in the montane regions were heavily parasitized. A survey was then completed on two general areas on the island for the presence of mites on the host in the region.

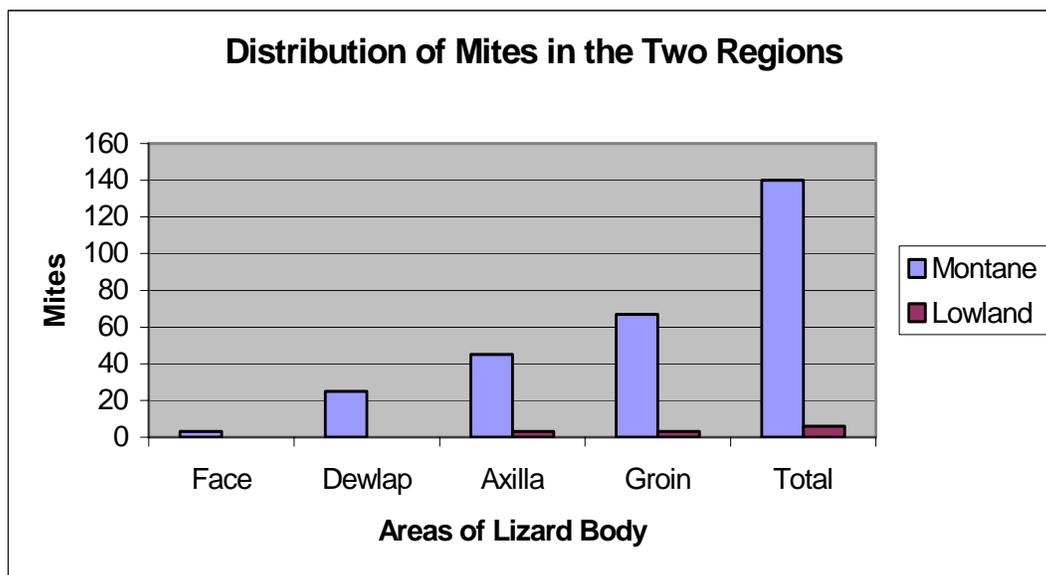
METHODS AND MATERIALS

Anolis oculatus were collected from two main areas on Dominica, the Springfield Station and Emerald Pool. Other areas were also included but with only a few specimens being observed. There were 10 lizards collected from Hummingbird Inn, 2 from Cabritz with one being found in a malaise trap, 2 from Syndicate Trail with one also being found in a malaise trap, 13 from Emerald Pool, and 14 from Springfield Station. The lizards were examined for mites using a hand lens once they were captured and released if mites were not found. When mites were found the lizard was taken back to the station for further observation in order to collect the specimens. In cases such as collecting from Emerald Pool and Springfield Station the lizards were placed in terrariums in order to be used for other studies. The lizards were initially examined for the presence of mites before being used for another project. When the lizards were ready for further examination they were observed under a microscope and the presence and the location on each lizard were recorded. To simplify counting and comparing, the regions of the body the mites were found on were divided into four main areas: the face and neck (the dorsal region of the head including the eyes ears and neck), the dewlap (the ventral area of the

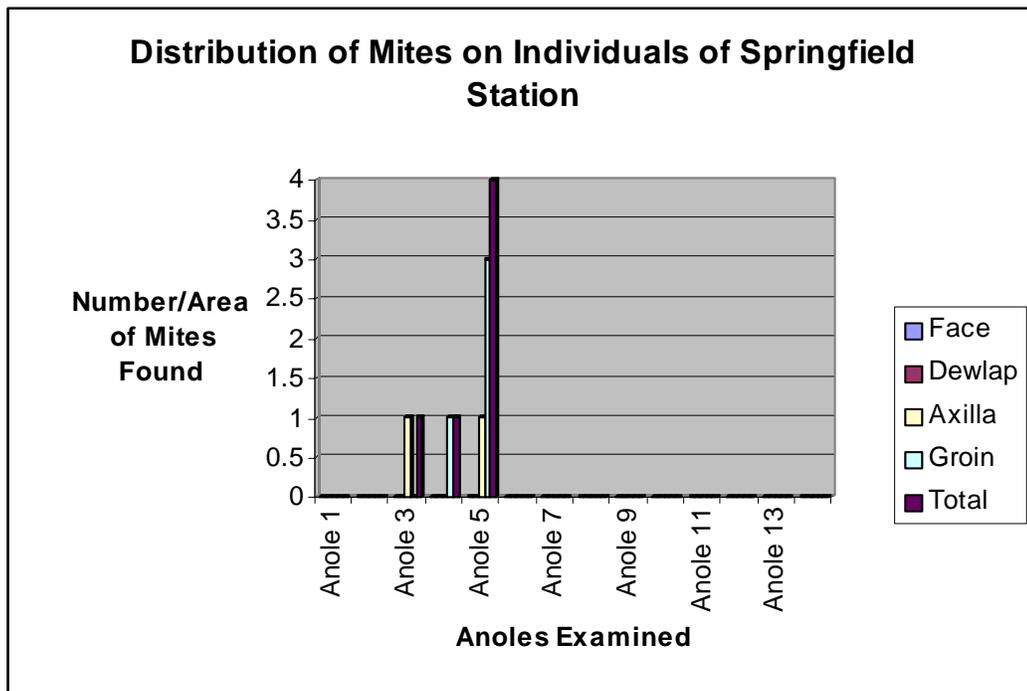
head), the axilla (forelimbs and anterior portion of the abdomen), and the groin (the posterior portion of the abdomen, hind legs and tail) (K.C. Zippel et al 1996). Mites were carefully removed using a pair of fine tip forceps and placed in vials of alcohol. In order to obtain the full specimen the forceps were placed as close to the mouthparts of the mite as possible and pulled in the exact opposite direction in which they were facing. When the voucher specimens were collected, the anoles were then released back into their natural habitats at the sites where they were originally collected.

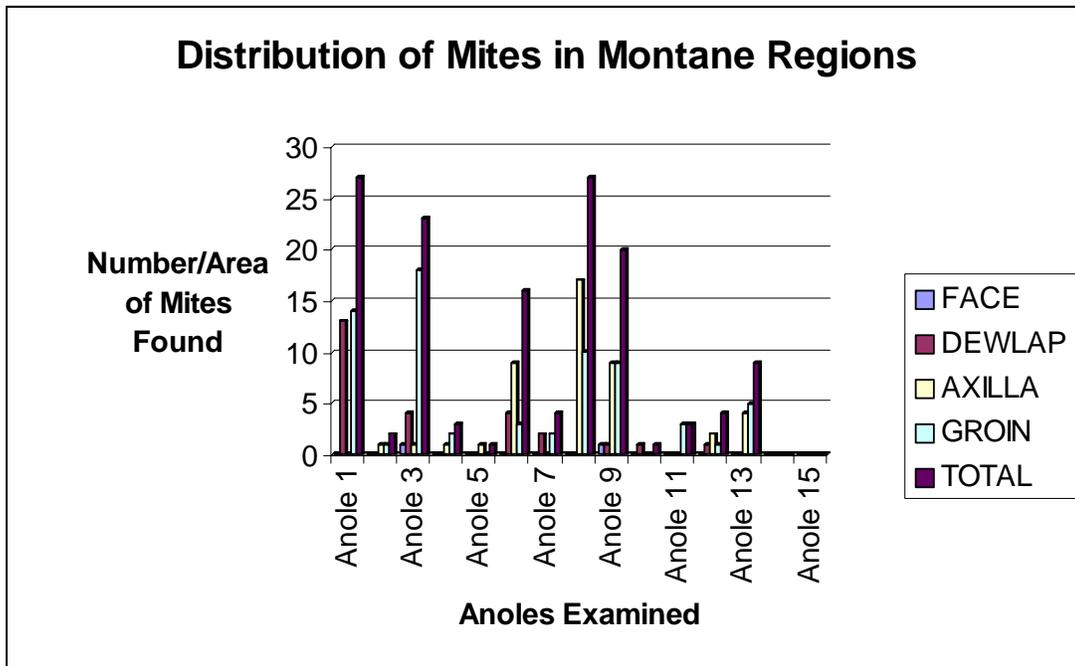
RESULTS

It was found that in the montane regions the prevalence of *Anolis oculatus* being parasitized by mites was greater than that of regions close to sea level. Out of the 26 lizards I observed in the lowland areas from Hummingbird Inn, Cabritz, and Springfield Station, only 3 lizards from Springfield Station were found to have mites on them. On the other hand out 14 that I observed in the montane regions from Syndicate Trail and Emerald Pool all but two of the lizards were parasitized with the two without mites being



from Emerald Pool. The chart above shows the comparison of the distribution of mites found on the lizards in each region. It was also found that there were significant differences between Springfield Station and the montane regions of Emerald Pool and Syndicate Trail. The montane regions were found to not only contain a large amount of parasitized lizards but also the distribution and abundance of the mites were greater as well. The following two charts show the distribution for each lizard collected and examined in these regions.





The mites that were collected from the 16 anoles were all a reddish orange color with the exception of two lizards found to have a white mite. For the purpose of this survey the mites will be classified as separate species until further identification can be completed to determine whether or not they are the same.

DISCUSSION

It is possible that some of the data could have been skewed during captivity. The lizards that were found to contain parasites were all kept within the same terrarium due to limited supply of containers for them to be placed in. These lizards that were kept in captivity were also used for other research at the same time. Mites could not be removed prior to the other project due to the high stress they would encounter while being put under a microscope. Mites could have detached and traveled to other areas on the body, other lizards or even fallen off due to excessive handling. As a result of this, further research should be completed in order to accurately assess the intensity of infestation and

density of mites on each lizard as well before they are disturbed or placed in close quarters with other parasitized lizards.

Some mites were collected from 3 dead lizards. Unfortunately two of the lizards died while in captivity and observation which could have affected the total number of mites present on the lizard. There is a possibility that the mites could have detached once the lizard died. Only one of the dead lizards had been observed initially for the presence of mites and then quickly had them removed. The other lizard had been dead for about a day but 3 mites were still found on it. The lizard from the malaise trap from Syndicate Trail was found to have both orange and white mites. There is a possibility that this could have been a result of the lizard and mites being in alcohol for an extended period of time. Until further examination can be completed these mites will be considered separate species.

However, it is clear that there is a correlation between the elevation and the presence of mites. This could be an indication of a preference for certain weather conditions or even habitat. The lowland areas have a higher chance of being drier secondary forest whereas in the montane regions it is mainly wet primary forest. Vegetation could be a factor in presence of mites especially being that the two regions are very different. The montane regions are filled with rainforests with heavy rainfall and a dense canopy whereas the lowland areas tend to be more open areas.

REFERENCES

- Johnson, Norman F. and Triplehorn, Charles A. Borror and Delong's Introduction to the Study of Insects. 7th Edition. pp. 129-134. Brooks/Cole 2005.
- Zippel, K.C. et al. 1996 The Distribution of Larval *Eutrombicula alfreddugesi* (Atari: Trombiculidae) Infesting *Anolis* Lizards (Lacertilia: Polychrotidae) from Different Habitats on Hispaniola. *Caribbean Journal of Science* 32:43-49.