Observing animals and documenting specific animal behavior patterns

Environment, Animals

Introduction: The broader context of this lab was aimed at observing animals and documenting specific animal behavior patterns. Specifically, we were trying to determine if squirrels applied snakeskin randomly to certain areas of their body or if there was a specific technique to it in relation to escaping their predators. After an animal has determined that a predator is nearby, it must then take action to avoid encountering this threat.

Encounters are most easily avoided by preventing predators from detecting prey in the first instance (Rosier & Langklide, 2011), for squirrels this type of behavior is known as SSA, " snake scent application". In this lab we wanted to study two different species of squirrels, S. beecheyi and S. variegatus, in order to evaluate if SSA can be deemed as a species specific type of behavior. My hypothesis was that squirrels applied the snake skin scent to specific parts of their body in an organized manner. The null hypothesis is that squirrels apply the snake skin scent randomly to parts of their body.

My prediction of my hypothesis was that squirrels apply the snake skin scent to body parts that they find prove to be advantageous when trying to escape their predators. Methods: We watched videos of both species S. beecheyi and S. variegatus applying the SSA to their bodies. We were allowed to choose four videos from each species. Each video showed a squirrel applying the snake skin to their body within their own natural habitat. Some videos had more squirrels while others showed just one individual squirrel.

In this lab we were given a table where we had to record how many times SSA was applied to a specific part (flank, head, front leg, hind leg, tail) of the squirrel's body. My partner and I chose to assign one person to tally the

frequencies to each part of the body while the other watched the video and observed the application. I chose to do the observing, while my partner recorded. Every time a squirrel appeared to be licking or touching a certain body part was considered a tallied frequency, however, the squirrel had to be doing so for at least three seconds in order to be recorded.

Results: The table below (Table 1) shows the recording of the total frequencies that were tallied after seeing the squirrels apply the SSA to the respective specific body part. I included the total data in order to clearly show what I used for my calculations. In order to interpret our results we had to use the chi-squared test. This test compares the observed behaviors to the expected behavior if it was randomly distributed, also considered to be the null hypothesis where SSA is applied randomly on the squirrel’s body.

From using the chi-squared equation (shown to the right), I calculated the expected frequency for each species, 12. 6 per area for the S. beecheyi and 10 per area for the S. Variegatus. The chi-squared values for both the S. beecheyi and S. variegatus were 70. 13 and 65, respectively. For this lab experiment there were 5 independent pieces of data, therefore 4 degrees of freedom. Given that piece of information we were able to look up the critical values at a confidence of 0. 05 and 0. 01, which were 9. 488 and 13. 277, respectively.

The chi-squared value for both species exceeds these values and therefore we can reject our null hypothesis that states SSA is applied randomly. Discussion: Although we were able to accept our hypothesis, there is always room for improvement. The process of observing the squirrels and recording

the amount of times SSA was applied may have greatly affected the results if not done properly. It was important to determine if the squirrels were in fact applying the SSA, this proved to be difficult during the experiment.

In addition, determining whether it was flank or hind leg also proved to be difficult. Since we were able to reject our null hypothesis, we were able to accept our hypothesis that SSA is applied non randomly. The values that we derived from the chi-squared test helped support our hypothesis; we can then conclude that squirrels have a specific technique and process when applying snakeskin to their body. As I predicted these areas that they are constantly applying the snake skin scent proves to have a certain preference to them.

We can imply that their preference is based on the idea that certain body parts are more vulnerable or do a great job at masking their scent, therefore hiding well from their snake predators. This is something that has evolved over time, snake-scent application is likely a product of natural selection. Squirrels that had the genetic instinct to use the ploy might have had increased survival and reproductive success, thus passing the trait to following generations (Goudarzi, 2007). I think it would be really interesting to look at different age groups within the squirrel population and their application process.

This can help us find out whether squirrels at different stages in their life (young and old) find themselves to be more or less vulnerable and hence apply a lot or little of the SSA to specific areas of their body. It is also important to study different species of the squirrel population. I believethat

different environments lend to different processes and techniques. If given the opportunity, I would do research on at least 8 more species that are completely different in their geographical regions andenvironment(dry vs moist areas) to each other.