

3. Record prey manipulation and swallowing at “normal” speed (60 frames per second) with

Week 1: Instruct students in animal maintenance chores; supervise literature search; familiarize students with snake head anatomy; record preliminary data to gain experience using the camera equipment.

Weeks 2-8: Make digital video recordings of snakes capturing and swallowing prey; analyze resulting data on snout and upper jaw movements each day; relate observed kinematics to head anatomy.

Weeks 9-10: Finish data analysis, synthesize experimental and anatomical data for presentation, draft poster.

Emma is currently planning to go to veterinary school, so familiarity with the techniques of experimental morphology should have particular relevance for her. Tevo'n plans to pursue graduate studies in Forensic Science, where the ability to analyze and solve unexpected problems (which often arise when working with live animals) should be a useful skill. Emma and Tevo'n both took General Zoology (Biology 112) from me, so they have had important background material that should help them understand the context of this study. This project will require them to elucidate the anatomy without the aid of a dissection manual, as the anatomy of these snakes is, in many cases, poorly known. Hands-on research experience and formal presentation of the results should make Emma and

Kinematics of prey handling in arboreal snakes

Dr. Frances Irish

Emma Adam and Tevo'n Campbell

\$ 300	Expendable supplies. Includes dissection materials, animal food & bedding, additional research animals (if required), etc. The primary research equipment for this project (cameras, lights, filming box, computer software, etc.) is available in-house. The Department of Biological Sciences will supply additional equipment and supplies if required.
<hr/> \$ 300	Total

: ***Kinematics of prey handling in arboreal snakes***

Emma Adam

Chemistry (Pre-Vet track)

: 2019

: Dr. Frances Irish

: Requested

I have been interested in veterinary medicine since I was six years of age. As I grew older, the desire to help animals slowly formed into a desire to study them as well. Animal studies have always been my passion, and I am currently trying to expand my knowledge on exotic species of animals. My passion for animals has led me to the opportunity to perform research in a field that I hope to have a career in as well as perform research on exotic animals to gain more knowledge of their living habits and eating techniques.

I approached Dr. Irish about participating in the SOAR program with a project revolving around snakes in particular. This project specifically deals with arboreal snakes, such as Asian vine snakes (*Ahaetulla prasina*), juvenile Hispaniolan boas (*Chilabothrus striatus*), and Solomon Island tree boas (*Candoia bibroni*). By studying these snakes, I will gain knowledge of their living environments, how to care for them, and the snout and upper jaw movements when feeding. I will also research if these results are similar to or different from other species of snakes. This will be important research in the biology and exotic veterinary community, helping scientists and veterinarians to better understand these interesting animals. As a student who wants to have a career in a small animal and small exotic veterinary practice, this project will provide crucial information on these snake species that could be used for future experiments and research.

From this incredible opportunity to engage with species of snakes that are not as well known, I will gain valuable insight into arboreal snake behavior and the small exotic animal discipline. From a veterinary point of view, I will have the opportunity to care for these snakes. This includes feeding, devising a suitable enclosure, and overall care of the snakes, as well as learning about the snakes' behavior. I will also learn more about how these species of snakes twist their snouts when they eat. This will provide me with skills to analyze live animals as well as gain experience working with live animals, skills that are difficult to develop in the 3-hour labs at Moravian College. This project will give me insight into the exotic veterinary and biology field, helping me prepare for my future postgraduate studies. Working closely with Dr. Irish, I will get firsthand experience on the methodology and techniques experienced scientists use in live animal and biology research, giving me practical and beneficial experience in the laboratory and helping to develop my skills as an independent scientist. Also, committing my time to a single project will allow me to submerge myself in my research and develop the ability to trouble shoot and experiment with these snakes. I will carry this useful experience over into my graduate studies at veterinary school, where I will continue my journey to study small animals and small exotics.

applying learnt work to practical situations---as an unknown author once said: “A mind when stretched by a new idea never regains its original dimensions.”