

**Summer Internship Report 2017**

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*(Molly is on the right)*

**Provide an overview of the organization/research project and a summary of your responsibilities, tasks, and/or projects.**

In order to gain a better understanding of the impact of different types of forest management, our team set out to survey small mammal populations in different types of habitat on the Domain. Small mammals have a very important role in forest ecology as bioindicators, meaning the condition of these individuals can reveal the condition of the larger ecosystem. They are a necessary part of the food chain, serving as a food source for species such as birds of prey, snakes, and carnivorous and omnivorous mammals, and also play a key role in seed dispersal and soil management (Carey and Harrington, 2001). Additionally, as they go about their daily activities acquiring food resources and scurrying about they help perform essential functions including mixing soil and organic matter and facilitating the movement of seeds and spores (Carey and Harrington, 2001).

It is necessary for this type of study to be performed on the Domain of the University of the South in order to inform future management decisions. To make the best decision possible for treating areas, one must have as thorough of an understanding as possible of all the layers on the ecosystem that is being considered to be managed.

The objectives of our study were to:

- Compare the conditions and abundance of small mammals on different types of managed sites on the Domain
- Create a baseline analysis of the condition and abundance of small mammals for future studies to be performed as the areas of the Domain continue to be managed

#### Our Study sites:

- Managed areas: Compartment 20, 46, 8
- Recently Managed area: 22
- Pretreatment area: Compartment 46
- Cove: Lost Cove, 1, 33

#### Methods:

Using a predetermined compass bearing, most grids were arranged in either a 40 m x 120 m pattern or a 20 m x 240 m pattern depending upon the topography of the managed areas or habitat suitability. A total of 48 traps were used at each site. Large Sherman aluminum folding traps were baited with sunflower seeds and Sevin dust was placed beneath the traps in order to prevent ants interfering with mammals caught in traps.

Traps were checked early every morning to prevent desiccation, following set out day for a period of five days. Walking each transect line, we were able to visually see any closed traps. Traps were checked, re-baited, and the sensitivity was adjusted if needed. Mammals that were captured were identified to species, sexed, and hind foot length, tail, and body measured to the nearest millimeter. All mammals captured, were released at the capture site and the traps were re-baited and adjusted. Data was recorded on rain proof paper and entered each day after returning from the field. On trap day 4, traps were collected while processing and the site was closed. Traps were then cleaned and rinsed in order to avoid contamination between sites.

#### Results:

During the summer of 2017, our total trap effort included 2,736 trap nights. Across all sites, we detected six species of rodents [Deermice; *P. leucopus* (Rafinesque) (White-footed Deermouse); *P. maniculatus bairdii* (Le Conte) (Deermouse); *P. gossypinus* (Le Conte) (Cotton Deermouse); Golden Mouse *Ochrotomys nuttali* (Harlan); Eastern chipmunk *Tamias striatus* (Richardson); Eastern woodrat *Neotoma floridana* (Ord); Hispid cotton rat (*Sigmodon hispidus*) (Say and Ord)] (Table 1). In total we captured 335 individuals, (220 males, 72 female), with 49 escapes. The *P. leucopus* mouse most abundant the most often (n= 238; 163 males and 53 females), followed by *P. gossypinus*.

#### Discussion:

Small mammals in this study included field mice (*P. gossypinus*, *P. maniculatus*, *P. leucopus*, and *O. nuttali*), rats (*Sigmodon hispidus* and *Neotoma floridana*), and chipmunks (*Tamias striatus*). By measuring the mammal's mass, tail length, hind foot length, body length and sexed of each individual, we were then able to compare the conditions of the individuals across different managed compartments on the Domain such as logged, thinned and burned, and unmanaged or pre-treatment sites. These species were studied due to their abundance across the South Cumberland Plateau and its diverse habitats and relative resilience to fragmentation.

#### Literature Cited:

Carey, Andrew B., and Constance A. Harrington. "Small Mammals in Young Forests: Implications for Management for Sustainability." *Forest Ecology and Management* (2001): n. pag. *Small Mammals in Young Forests: Implications for Management for Sustainability* - ScienceDirect. Elsevier. Web. 11 July 2017.

**During your internship, what did you accomplish or how did you make a difference? In what ways did you grow in your professional and technical skills?**

By completing our study, the Domain will be able to make more informed decisions on what forest management practices they want to take based on the population and quality of the small mammal population which are bioindicators, meaning they can predict the quality of all of the wildlife in the area.

I grew professionally by learning how to deal with difficult situations while keeping my composure, whether that be dealing with a feisty small mammal to an defensive snapping turtle.

Technically speaking, I learned new surveying techniques and was able to receive a chainsaw certification.

**Describe a problem that you helped to solve at your internship. What skills or knowledge from your education at Sewanee helped you address the problem?**

My studies in Ecology and Biodiversity at Sewanee certainly helped me throughout my day in my internship. Through my major, I have had the opportunity to do projects that required similar techniques which really helped me throughout the summer.

**In what way were your teamwork skills strengthened?**

Mary Hannah and I made a great team. She was great at fixing issues on the fly, and I was able to process and read our data in the field and in the office to find interesting pieces and parts of our findings. We were a very balanced team and would always share the load. Most days when mammal trapping, we would walk our transects together and take turns getting the mice out of the traps and recording data. This ensured no one got bored, and we stayed fresh minded.

**How did your internship affect your career plans?**

This internship confirmed for me that I want to do research-based work after I graduate Sewanee. This type of work is intense, but this summer gave my affirmation that I can handle it and am ready to start the rest of my life.

**In what ways did your internship cause you to encounter people of different backgrounds from your own? What steps did you take to communicate effectively with such persons? What did you learn from such persons' perspectives?**

We would often work with the Physical Plant Services staff (now Facilities Management). They were so great about helping us with chainsaws, wood chippers, and other construction tasks. Also, working alongside Nate Wilson, Domain Manager, and Sandy Gilliam, Domain Ranger, was so educational. Their knowledge of the Domain is endless.

**Words of thanks to your internship funding donors:**

Thank you so much for this opportunity! I cannot express my gratitude enough for providing me with this amazing summer that has truly changed my life!