

Thomas Hoke  
BIOL 288  
IES Mid-Program Reflection

As I quickly advance towards the conclusion of my education here at Longwood it is helpful to look back on what I have learned so far and what I still want to complete in my time here. My Integrated Environmental Science (IES) major has turned out to be quite different from what I expected as a freshman, mainly due to the large emphasis places on climate change throughout the curriculum as well as the academic changes that have taken place as a result of Covid-19. I have certainly enjoyed my studies in this major however and believe I have gained a great amount of usable knowledge thus far that will benefit me in my future career.

The first goal of the IES major is to give students the information to be able to explain the connections between physical, biological, and social/cultural systems in the natural world. To do this we first must understand what drives the environmental issues that we are dealing with today. While there are many different drivers of these issues two common underpinnings, humans and climate change, have had a hand in most the environmental issues we've learned about. It's an unfortunate habit that has arose due to our species' desire to manipulate the environment around us leading to the destruction or degradation oof various parts of our biosphere. Climate change has also begun to have many visible effects on environments across the planet although this is certainly human effected as well. Another step in achieving this first goal is to also be able to utilize scientific reasoning which I have done extensively during this major and most frequently during research I participated in during the PRISM program this past summer. Our research tested a hypothesis that there had been significant changes in the abundance of waterfowl in the mid-Atlantic region which we found evidence to support and collecting 70 years' worth of Christmas Bird Count data. To wrap up this project I had to write a

conclusion which included drawing connections between the social shifts occurring throughout this region and the shifts we are seeing in ecosystems and indicator species, such as waterfowl, that let us know that issues may be arising.

The second goal of the IES major is for students to develop the ability to collect, organize, and evaluate scientific information through experimental learning which I have done during for many projects at Longwood with the most memorable being a study conducted at Lancer Park on the daily activity patterns of the avian community. In this study we tested the question of how time of day and weather conditions would affect the species richness at the feeders and then spent three weeks collecting data (<http://blogs.longwood.edu/hoketm/life-sciences-courses/biol-251/>). We found no significant connections between either variable, although our data did have a lack of variability when it came to weather. One area of collecting and organizing scientific information where I still feel that I need lots of practice is having the ability to critically interpret data from scientific literature and drawing conclusions from it. I have only had to complete a few literature reviews and still feel don't feel fully comfortable when performing some data analysis. One literature that I do believe demonstrates my current abilities with data analysis was an examination of how climate change has affected waterfowl migrations to date (<http://blogs.longwood.edu/hoketm/integrative-courses/>) which proved to be a very informative study. Another area of learning where I have made strides during my major is with the ability to connect theory and practice. Much of the scientific literature I read in my freshman year classes was somewhat daunting as it felt like the ideas they were explaining were beyond the grasp of what we'd ever do in a lab. During my BIOL 250 class last fall we really brought theory and practice together as we completed a genetic analysis of jellyfish DNA after

carefully studying the procedure for completing this analysis with human DNA

(<http://blogs.longwood.edu/hoketm/life-sciences-courses/biol-250/>).

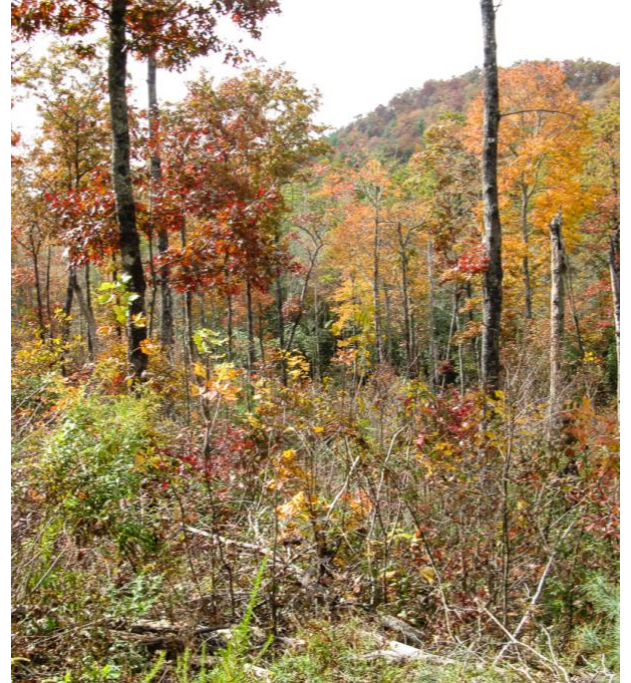
The third and final goal of the IES major and the one that I feel most confident about my abilities and learning progress in is the ability to communicate scientific material with diverse groups of people. I believe I have already demonstrated that a major part of the backbone of IES is being able to write to academic audiences but equally important for a professional in this field is having the ability to write to non-academic audiences. One non-academic audience I have addressed before is the general public when I had to create a flyer for a grouse conservation project (end of paper). This tested my ability to write to an audience while not only considering the scientific evidence but also the emotional and social elements. This past fall I participated in the student showcase, presenting our PRISM project, during which I had to address both my academic peers and friends/family. I felt that I effectively communicated the reasoning and significance for our project although I could certainly use some more practice in this area to feel completely confident in my abilities. Working in a group setting has been a component of the majority of my college courses but an early test for me during the fall of freshman year was the first group lab (Project II) I had during my BIOL 120 class

(<http://blogs.longwood.edu/hoketm/life-sciences-courses/biol-120/>) which tested my scientific abilities in a new setting.

I feel satisfied with my progress on these goals so far but more practice speaking in front of audiences and with scientific data analysis would help to prepare me for getting a job in the next couple years.

# Saving Virginia's Ruffed Grouse

## What You Can Do To Help Stop The Decline Of An Iconic Upland Birds Species



### The Current Problem: A Lack Of Young Forest Habitat Across Appalachia

- A lack of logging in the past 100 years has led to an overabundance of old growth forests across the Virginia landscape
- While young growth forests are not particularly scenic they provide excellent cover for many species to raise their young, escape predators, and shelter from winter
- This lack of habitat has specifically affected ruffed grouse populations in our state with research reporting declines of 3-7% in the last 10 years
- These declines have also come at a time when grouse hunting has been on the decline though, with researchers agreeing that hunting is not the cause of these declines

- #1 - Help spread the word by sharing this brochure as well as other reputable information about the decline of ruffed grouse with your friends, family, and community
- #2 - Support ruffed grouse conservation efforts in your area through volunteering for projects such as grouse research, habitat creation, or hunter mentoring
- #3 - Advocate for the creation of additional young forest habitat on public and private lands in western Virginia
- #4 - Donate to or become a member of the Ruffed Grouse Society who has a stated mission of "creating healthy forest habitat for grouse populations"

### Actions You Can Take To Help Stop The Decline