Ednita Tavarez-Jimenez

ECO - 601

Professor Nelson

September 16, 2022

Week 2 question

Q1: In 1 - 2 short paragraphs, explain the dichotomy in your own words and briefly describe how you might approach one of your research interests from each of the dichotomy endpoints.

Population viability analysis was one of the theoretical models mentioned. PVA looks into the relationship between factors that are known and gets an estimate if a population will become extinct within 5, 10, 15, 20 years or more, the time can be specific like 111 years. In addition, you can look at a specific event such as disease, climate change, etc. This analysis uses models that are math and simulation-based. My research interest includes, how disease/genetics affect the population of our endangered species within a few years, and how does pet trade illegal and legal plays a role in the population of our wildlife. I can use this in my research to explore what happens to the wildlife population over time. What is going to happen in the future to the wildlife population specifically with the illegal pet trade that is happening right now? And if the wildlife population would be extinct in 50 years?

Q2: Identify at least one source of bias or assumption (cultural, scientific, other). Hypothesize a practical impact these biases or assumptions might have on scientific communication and the effectiveness of management efforts.

I'm not sure if we can write about bias we have encountered, this idea was drawn from the Bang et al paper when they mentioned that, “Humans are cultural beings influenced by the contexts and times in which we live (Bang et al., 2018).” In addition, the madrigal paper mentioned that mentioned, In the “Western scientific method - if we want to suggest a change to the current way of thinking - the burden is on us (Madrigal et al.,).” During my search for a graduate program and speaking to advisors, I encountered many biases being a single parent who sought not only work-life balance but flexibility as well. This however could also be an assumption I am making, however, I was told by my own undergraduate advisors that I wouldn’t do well in grad school because I am a single parent.

I hypothesize that the bias of not choosing single parents for higher degree programs could have a great impact on the diversity and voices heard in the science community. Single parents may be afraid to apply to graduate programs because the current people in power view us as not being flexible with work schedules, will not promote us, or we being chosen as MS/Ph.D. students from PIs because we have children. This could also be my own bias and assumptions because of past experiences. I have seen many take action on I am an MS student today because one person believes in me and knows I can one day accomplish effectively scientific communication and management efforts.

Q3: Identify and briefly define the two primary components of a model constructed in the dual model paradigm. Give an example of the two components in the context of a system you are interested in studying.

The two primary components of a model contrasted in the dual model paradigm are deterministic functions and probability distributions. The deterministic function does not have any random deviation and can be used when a random variation or event does not influence what’s being modeled. Whereas the probability distribution is random in the fact that every time you run the model you get a different output. Two components am interested in studying in the context of a system are the probability of the wood turtle being extinct in 50 years due to the introduction of disease and detrimental alleles.

Q4: In 1 - 2 short paragraphs, describe the difference between a statistical and biological or ecological population.

There is a difference between Statistical and biological populations. In a statistical population, you are looking at all of the observations that are possible in an area of interest, and only a few observations are taken. A biological population may or may not includes the statistical population. The population that may vary due to spatial or temporal scale is the statistical population of the research question.

Q5 (2 pts.): For each of your two chosen variables: Describe your proposed entity or variable and explain your chosen data type/scale is appropriate.

During the model thinking activity in class, my group chose the white pine blister rust. My first proposed variable is the categorial, nominal variable because we can make a table with different categories as to how the fungal pathogen is affecting the white pine, Ribes spp., and the native plants that are resistant to rust. This is appropriate because we can able a table with trial numbers (for example seasons), and pine type and add categories that can be none, low, medium, or high rust.

The second data type/scale I chose is the proportion data. This is appropriate because we can multiply the observations made during the categorial, nominal variable from above to calculate the percent of infected trees in a particular season.