April 2021

Student Pages - Answer Key - Analyzing Your Bird Biodiversity Data

Center for Urban Resilience

Name: _____ **Date:** _____ **Class/Period:**_____

Lesson 11: Analyzing your bird biodiversity data

In this section, you will calculate the biodiversity of you study sites and construct graphs to help you analyze these data.

1. For each day you collected data and for each site, calculate the following. If you have access to a computer, you may use this to calculate the biodiversity indices:
    a. Species Richness (or the number of different species you recorded each day)
    b. Abundance (or the total number of birds you saw each day)
    c. Shannon-Weaver Biodiversity Index and/or Simpson's Biodiversity Index

    Look back at lesson 2 if you need to remind yourself how to use the Excel sheet or calculate biodiversity.
2. Fill these data in the chart below: (or create an Excel spreadsheet which matches the columns below and record your data into Excel)

Site/Transect 1: _____ (describe location)

Date	Species Richness (total # of species)	Abundance (total # of birds)	Biodiversity Indices	
			Shannon-Weaver	Simpson's

Site/Transect 2: _____ (describe location)

Date	Species Richness (total # of species)	Abundance (total # of birds)	Biodiversity Indices	
			Shannon-Weaver	Simpson's

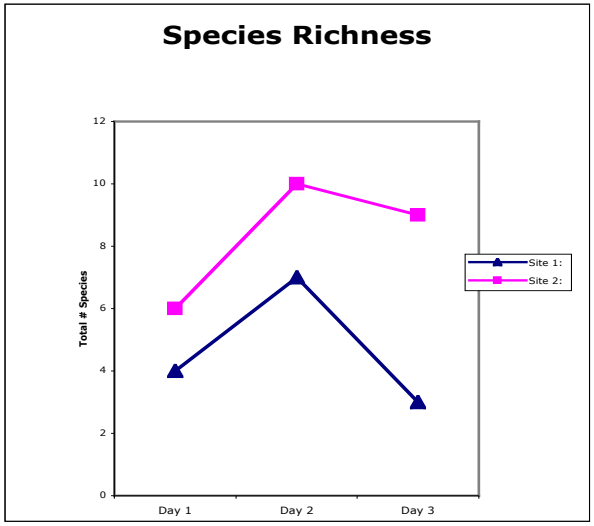
3. Create a graph for each of the four measures of biodiversity. You want to create a line graph for each site. For example, graph the species richness for site 1 and site 2.

For example, let's say the data you found looks like the following:

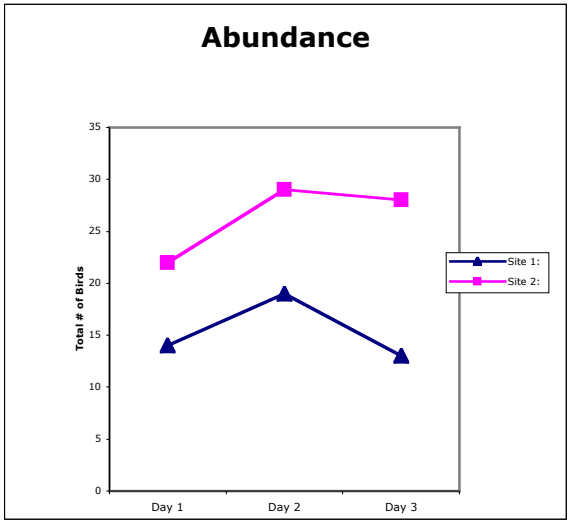
Date	Site 1:				Site 2:			
	Species Richness	Abundance	Shannon-Weaver Index	Simpson's Index	Species Richness	Abundance	Shannon-Weaver Index	Simpson's Index
Day 1	4	14	1.31	0.76	6	22	1.7	0.84
Day 2	7	19	1.80	0.86	10	29	2.2	0.91
Day 3	3	13	1.01	0.67	9	28	2.04	0.89

Below are examples of the types of graphs you should create.

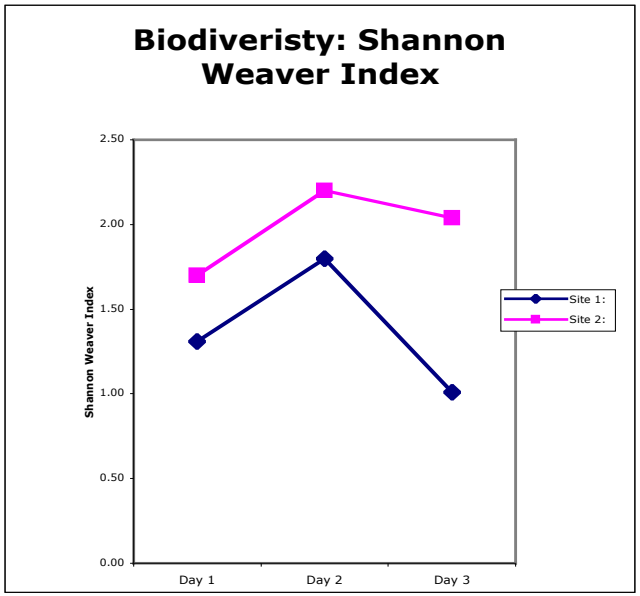
A. Comparing species richness between both sites:



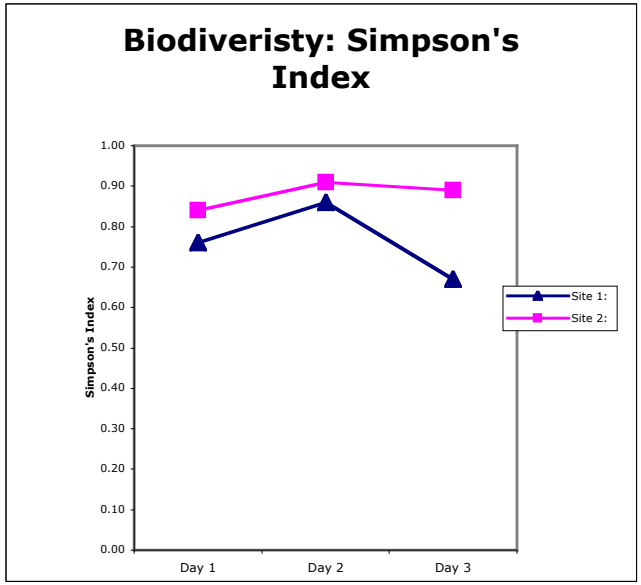
B. Comparing abundance of birds between sites:



C. Comparing Shannon-Weaver Indices between sites:



D. Comparing Simpson's Indices between sites:



4. Now that you've graphed your data, look at each graph. Consider how you would answer your original research question for your field study. Write a scientific argument answering your research question where you support the claim that you are making with appropriate evidence and reasoning.

Students' responses may vary depending on their research question. However, students should present or refer to their data, including the Simpson's and Shannon-Weaver biodiversity indices, in numeric and graph form. The data and the argument should address the question directly.

Who Needs to Hear What and How?!?

You will be watching the same video of Majora Carter's *Greening the Ghetto* presentation as you did earlier. While watching the video, take note of at least two pieces of information she presents, and figure out who would best benefit from this information and why. Use the table below to write down your observations and notes.

Piece of information What is the information, and what kind of information is it (statistics, story, photograph, etc.)?	***Audiences and Stakeholders*** For whom is this information intended? Who would most benefit from this piece of information?	***Why?*** Why did you connect this information with this audience and stakeholder?
Statistics of sewage, landfill, parks-to-people, etc.	*Scientists and City Officials*	*Statistics and quantitative data are useful to scientists and officials for detecting patterns and making decisions*
Story of finding riverfront with her dog	*Community members*	*This story is motivating and engaging and brings community members in.*
Photo of Majora with Mayor and Parks Commissioner	*Community members*	*Community members are introduced to the idea that they can make a difference*
Illustration of Hunts Point Park	*Planners, scientists, and community members*	*Provides all audiences with a sense of what will come, including environmental features, and it provides community members with a snapshot of what they can expect*
Leveraging $10,000 seed grant into a $3 million park	*City officials and potential benefactors*	*Ms. Carter, her organization, and the community is successful at raising funds and spending money efficiently and effectively.*