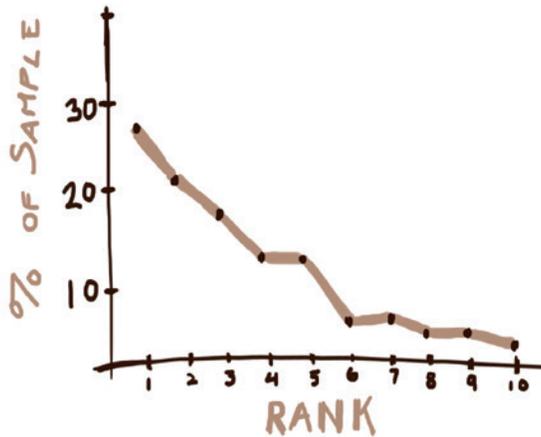


- c. "In the third column, calculate the proportional abundance of species by dividing the number of individuals by the total number of individuals in all the species combined."
- d. "Assign a rank to each species starting with 1 for the most abundant species. If two species have the same number of individuals, choose one to be a higher rank, the other to be the next highest."



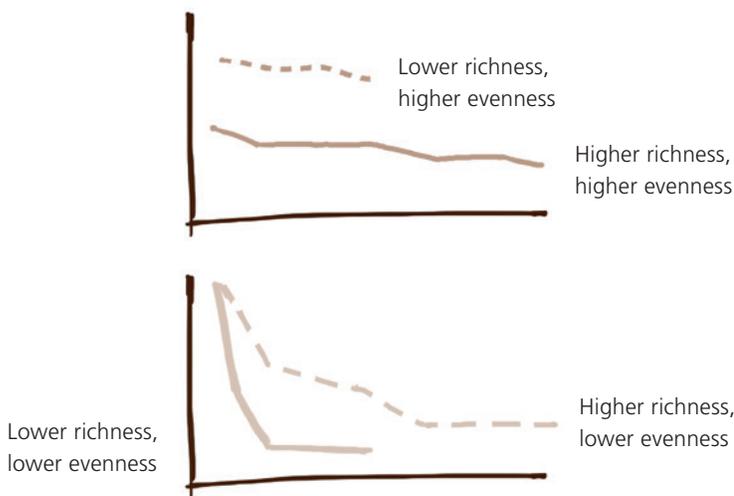
- e. "Repeat this process for the second community or system."
- f. "Graph the results with the rank on the horizontal axis and the percent of the sample on the vertical axis. To convert proportional abundance (number in sample divided by total) to percent, move the decimal point two places to the right."
- g. "Now graph the second community on the same chart and compare the shapes of the two lines. How do the lines describe richness and evenness? What differences do you see between the two communities?"

Going Further: Advanced Math—Calculating Diversity Indices Using Algebra and Logarithms

Species richness, the Shannon Diversity Index, and evenness are useful ways of quantifying biodiversity.

- Species richness, denoted by R , is simply the number of species found.
- The Shannon Diversity Index, denoted by H , takes into account the number of individuals found in each species. To calculate this index requires the use of algebra and logarithms.
- Evenness, denoted by E_H , converts the value of the Shannon Diversity Index to a number between 0 and 1, where 1 is total evenness, with the same number of individuals found in each species.

If you are not familiar with these indices, there are many good free online tutorials, videos, and step-by-step walkthroughs of how to calculate them. You may choose to calculate these by hand or to help your students format spreadsheets to calculate the indices for their data sets. Learning how to format spreadsheets is a skill equally as valuable as solving problems by hand.



If graphed lines are roughly horizontal, the community they represent has high evenness, whereas lines that start high and then dip sharply indicate low evenness, as you might see in a highly disturbed area or a habitat being overrun by an invasive species. Short lines indicate low richness (fewer species). Longer lines show higher richness.