BIOl 410 Tutorial 10

Community composition

BCI Vegetation data

- Barro Colorado Island
  - Forest data from central Panama
  - All trees with a DBH > 10cm recorded
  - Large data set
    - 225 species
    - 50+ plots
  - Using a subset
    - 24 plots
    - Only include 20 species
  - Two data sets “BCIveg_number.csv”, “BCIveg_presence.csv”

Questions

Calculate

1. Species richness
2. Margalef's index
3. Menhinich's index
   - Is the relationship between S and N linear (assumption of Margalef's and Menhinich's index
     - Plot S-1 vs ln(N)
     - Plot S vs sqrt(N)
   - Plot the relationship between species richness and Margaleg's and Menhinich's index
     - Which index is more highly correlated with species richness?
     - Is this good or bad?

Questions

Calculate

4. Simpson's dominance metric
5. Simpson's diversity index
6. Shannon's diversity index
7. Shannon's evenness
   - Plot Simpson's diversity index against Shannon's diversity index. How correlated are they?
   - Plot Shannon's diversity index against both Shannon's evenness and species richness. With this data set which is the most important component of Shannon's diversity index?
   - Plot Simpson's dominance index against Shannon's evenness index. Does the slope of the relationship make sense?

Questions

Calculate

8. Beta diversity (γ/α)
    - What does this value indicate about the diversity between these sites?
9. Jaccard's dissimilarity index between site 11 and 12

Hints

rowSums(data) : calculates the sum across rows

colSums(data) : calculates the sum down columns

log(x) : equivalent to ln(x)

plot(x,y) : plots x vs. y

is.na(x) : returns whether or not a value in a vector, matrix etc. is NaN