***Introduction to Theoretical Ecology Assignment 5***

Age-Structured Models

COM(P)ADRE is an online repository containing matrix population models on hundreds of plants, animals, algae, fungi, bacteria, and viruses around the world. In this assignment, you will be analyzing the population matrix of a species (of your choice) using the data provided on the website and making some interpretations of your results.

Please follow the instructions below to select a suitable species for working on the assignment questions:

1. Visit the database at <https://compadre-db.org/ExploreDatabase>
2. Pick a species you like, either by clicking on the entries below or searching by organism type on the upper right.
3. This species should meet the following criteria:
4. It has data on populations at two or more sites.
5. These sites should be “environmentally” distinct enough for comparisons (e.g., sites at different latitudes, sites with different habitat types, sites with different soil profiles, etc.).
6. These sites should have population matrix data over the same time period. If there are multiple time periods, please use the overall period data for comparisons across sites.
7. If some of the criteria are not met, you may want to look for another species.
8. After you get an ideal species, you can now start answering your questions.
9. Briefly introduce the species you chose. (1 pts)

***Solution:***

1. Create Leslie matrices for the populations at different sites and derive their asymptotic growth rates λ (please provide your R code). (5 pts)

***Solution:***

1. Compare the λ’s of these populations and provide your interpretations/explanations of the results. You can think about the biology of that species and the environmental conditions of the sites. (4 pts)

***Solution:***