

**DISCUSSION OF DATA:** Time will be given to discussion of our “Prairie Community Structure and Diversity” lab data as necessary. Please bring your data and lab report notes representing your efforts to statistically analyze and display the data, and to prepare your lab report. The skills you are using to prepare the lab report are those which you will need to demonstrate on Exam I as outlined below.

### Review Suggestions for Unit I

**GETTING THE “BIG PICTURE:”** Your review for the exam should begin with an overview of the topics we have studied. This approach will help you grasp the flow of the material to see interconnections while at the same time permitting you to divide the information into manageable “chunks,” each with its own vocabulary and concepts. Here are some suggestions for getting an overview:

1. Read “**LOOKING BACK**” in each of the Study Assignments –they provide a “running thread” through our sequence of topics. You may wish to diagram the flow of topics.
2. “**CONCEPTS**” and “**OVERVIEW**” are included by Molles and Stern texts, respectively. These should help you to identify several major “chunks” or “major topics” we have covered. For example: “Patterns in Plant Structures for Identification”, “Biotic Community Characteristics.” For each “**CONCEPT**,” use your study notes, laboratory data and notes, and your memory based upon regular study during the past few weeks to do the following:

**DIVIDE & MASTER:** 1. Each “**CONCEPT**” statement is like a zipped computer file. Can you “unzip” it by first restating it in your own words or dissecting the statement and considering what vocabulary and terminology [*i.e.* structures, processes, properties, *etc.*] are necessary to understand this “**CONCEPT**?”

EXAMPLE: Molles, Chapter 16, the second “**CONCEPT**” states “*A combination of the number of species and their relative abundance defines species diversity*” To unzip this statement, consider such topics as the following: population, species richness, evenness, species diversity, relative cover, proportional abundance curve, *etc.*

2. Under each “**CONCEPT**” or Study Assignment topic, *define* the terms (*i.e.* separate them from each other in your mind) then relate them to their context as defined by the “**CONCEPT**” statement or SA Title.

EXAMPLE: **CONCEPT** in Chapter 16: “*Species diversity is higher in complex environments.*” Go to Chapter 16, your notes and your Lab #3 Procedure and field notes/data and list concepts necessary to discuss the above concept. Here you will find that SA #7-8, Study Question 1. already has a good list of such concepts. Have you defined these terms in your Journal (notes)?

3. “STICKY TERMS:” Identify vocabulary (structures, processes, parameters, conditions) that you are likely to confuse and work on distinguishing them. How do each relate to a larger “CONCEPT?”

EXAMPLES within several concepts follow:

- > Landscape features – Edge, Patch, Ecotone, Matrix, Canopy, Stratification
- > Leaf morphology – simple/entire, serrated, lobed, pinnatifid, compound
- > Inflorescences – spike, raceme, panicle, umbel
- > Statistics – mean, median, variance, standard deviation, probability, errors

## **LAB SKILLS TO MASTER:**

You have at your fingertips a variety of study resources from which you can draw to match your learning style and study approaches. The PowerPoint slides from lectures on the S:\drive, and some that relate to our field laboratory studies (e.g. Lab Resources Page) provide visual material. Field labs have provided opportunities to analyze data, write a report and make application of concepts. As a result of these experiences and assignments, you should be able to complete the following lab-related activities:

1. Given a sample table of quadrat sampling data similar to our Tables 1 or 2 in Lab #3:
  - a. Complete the table with hand calculator (in parts of the table to show comprehension).
  - b. Interpret parameters to characterize the biotic community in question.
  - c. Write a short “explanatory legend” reflecting good scientific writing skills.
2. Describe how you would lay out a random sampling “grid” or “line transect” to obtain representative data on plant or animal populations from a biotic community.
3. Describe a landscape with respect to land uses, drainage, types of biotic communities, and animal habitat value (e.g. based upon your understanding of species diversity, plant height diversity, corridors, etc.).
4. Describe a biotic community such as the prairie restoration area using the “measuring sticks” discussed in Chapter 16 and SA #7-8. Illustrate the concepts of zonation and stratification by contrasting the prairie restoration with an adjacent agricultural field.
5. Perform a t-test on two data sets using *BIOSTATS* and report the means and standard deviation of the difference of means ( $s_D$ ); or given two means and the  $s_D$ , compute the t-value. Then, given critical t-values or a t-table to determine corresponding probability levels, present your decision regarding whether or not to reject the  $H_0$ .
6. List major characters which are most frequently used in distinguishing plant species in a key such as that in *Michigan Trees*. You will not be asked to use the key but to understand the terms we have been using and how they could be used to narrow options to a single species.

**INTERDISCIPLINARY LEVEL:** This is the highest level of the biological literacy scale (see “Reading-Study Plan”) – What questions do you find in your Study Assignments that require thinking at this level? For example, questions surrounding our Roundup discussion and the role of different disciplines of biology in providing context.