

SA #5**Ecology – Diversity of Experimental Approaches****LOOKING** Key Principles:

- BACK:**
1. Botany and Ecology play a crucial part in development and wise assessment of agricultural, medical, and biotechnological advancements (SA #3).
 2. Understanding of life processes and related technologies require a perspective that is informed by studies that are broad enough to include every level of biological organization from ecosystem to molecule (SA #3).
 3. Science was intended to be a tool in the hands of stewards who recognize their responsibility to their Creator as stewards willing to “serve with” God and His creation. Naturalistic science needs this perspective derived from Scripture (SA #4).

FORWARD: What are the experimental approaches that *ecology* uses to give us the broader understanding of life and the living world (noted in #2 above)?

READING & STUDY AIDS: To answer this question, turn to Chapter 1 of Molles' Ecology text. Here is a good place to begin implementing all or useful parts of the “**Reading and Study Plan**” accessible from the BIO 2130 Home Page under “**Lecture Resources.**”

PROCEDURE: SURVEY your assignment before “diving in.” Read the introduction to the *Study Guide* for the day (e.g. see above) which explains how to SURVEY the topic(s) you will be studying. Subsequent instructions and study questions will be provided to direct your study. For today’s assignment, please read the questions below and then, Chapter 1. Write answers to the STUDY QUESTIONS in your notes. Bring your text to class.

STUDY QUESTIONS:

1. What is a definition of *ecology*?
2. Why is ecology an important sub-discipline of the biological sciences?
3. Why are most people less concerned about *ecology* than *economics*? How are they related?
4. For each one of the experiments featured in Ch. 1 complete the following:
 - (a) state a question the researcher was asking;
 - (b) summarize the experimental approach;
 - (c) state one “take-home” message about ecological research.
5. The following table lists the experiments featured in Chapter 1. Complete the table using the footnotes as aids. Then, reflect on the breadth of perspectives about *life* that ecology provides.

Experiment	Subject	Level of Organization ^A	Time Scale ^B	Spatial Scale ^B
1) Energy Utilization	Bumblebees	Organism Level	minutes	cm or meters
2) Feeding niches				
3) Nutrient Budgets				
4) Nutrient Budgets				
5) Vegetation change				

^A Select from *ecosystem, community, population, organism, organ, tissue, cell, organelle, molecule, atom.*

^B Scale ≡ one among a hierarchy of levels of space and time. Here, choose units that would represent the scale of time and space featured in each experiment.