

SA #6**Ecology – Investigating Life in Context****LOOKING** Key Principles:

- BACK:**
1. Botany and Ecology play a crucial part in development and wise assessment of agricultural, medical, and biotechnological advancements.
 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.
 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.

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. Follow the “**Reading and Study Plan**” (from BIO 2500 website) to first SURVEY your assignment before “diving in.” Consider the following approach:

- a. Read “Looking Back” (above) to review the context of this assignment.
- b. Read “Forward” (above) to get the emphasis for this assignment.
- c. Read the questions below and then skim (first) and then, read Chapter 1; plus an added excerpt of Ch. 4, pp 98-99 describing Bernd Heinrich’s experiments.
- d. Answer the STUDY QUESTIONS in your ‘Journal.’ Bring journal & 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. 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 they used;
 - (c) state one “take-home” message” about ecological research.
4. The following table lists the experiments featured in Chapter 1, but first includes an experiment by Heinrich to illustrate “Organismic” level (see Molles, p98-99). 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* (see SA #5).

^B Scale \equiv one among a hierarchy of levels of space and time. Here, choose units that would represent the scale of time and space used to express quantitative data in each experiment; see example in row #1.