

Integrative Biology 102: Lecture Outline

Energy Flows, Matter Cycles

Lecture Objectives

By the end of this lecture, you should be able to:

1. give examples of biotic and abiotic components within an ecosystem.
2. contrast and explain the flow of energy and the cycling of matter in ecosystems.
3. give an example of a food web.
4. list the four basic types and functions of organic compounds in living organisms.
5. describe and diagram the carbon and nitrogen cycles.
6. list the anthropogenic changes to these cycles and describe the effects of these changes.
7. explain the concept of limiting factors.

Reading: Ch. 3.

Terms

* omnivore	* food chain	* biogeochemical cycle
* herbivore	* trophic levels	* nitrogen fixation
* carnivore	* community	* nitrification
* biomass	* energy pyramid	* denitrification
* population		

1. Levels of organization in the natural world

2. Abiotic components of ecosystems

3. Energy flows

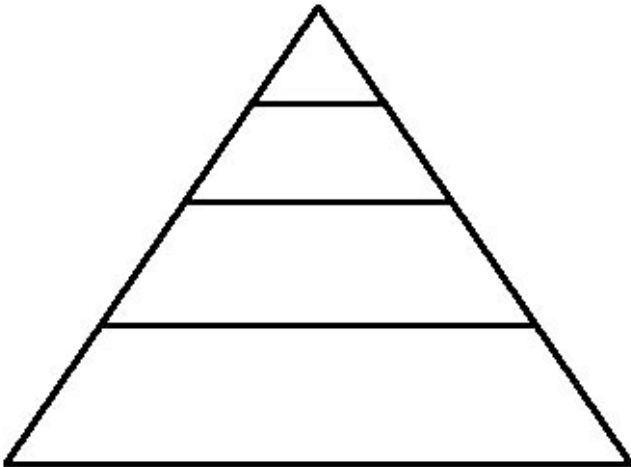
- * Ways to capture energy

- * Food Chain

- * Productivity

- * Energy loss

- * Energy pyramid



- * Food web

4. Matter cycles

- * Decomposers

- * Human food chain

- * Types and functions of organic compounds

- * Biogeochemical cycles

 - o Carbon

 - + Anthropogenic changes and effects

 - o Nitrogen

 - + Anthropogenic changes and effects

- * Limiting factors

5. Ecosystem services

For the next lecture on Community Relationships, read Ch. 4.

Be ready to answer these questions:

- * In what kind of community relationships are you involved?
- * What is important about biological diversity?