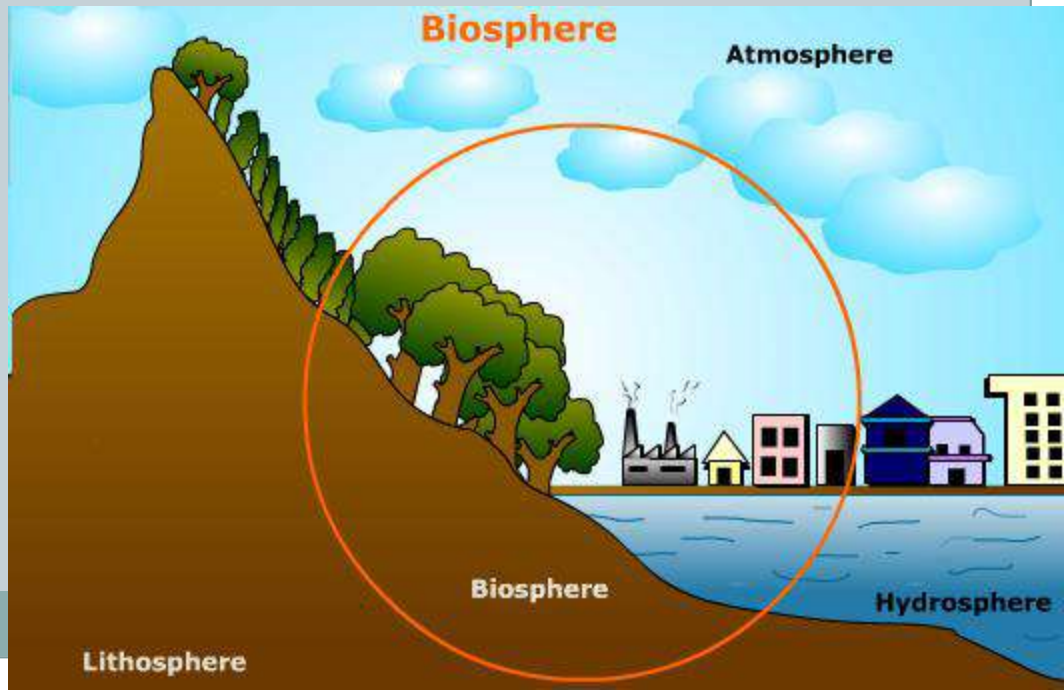
ORGANIZATION IN THE BIOSPHERE

ORGANIZATION IN THE BIOSPHERE

- LIVING THINGS, AS WE KNOW THEM, ARE CONFINED TO A SPECIFIC AREA OF EARTH THAT WE CALL…
- THE BIOSPHERE!!

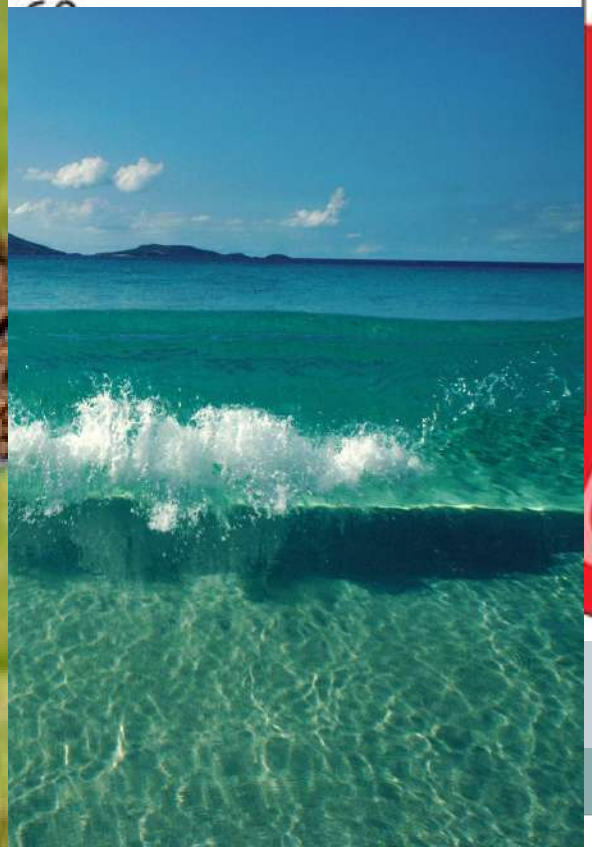


ORGANIZATION IN THE BIOSPHERE

- THE BIOSPHERE IS DEFINED AS:
  - THE AREA ON EARTH WHERE ALL LIVING THINGS EXIST
- THE BIOSPHERE IS COMPOSED OF:
  - LIVING THINGS (THE LIVING ENVIRONMENT)
    - EXAMPLES?
  - NON-LIVING THINGS (THE PHYSICAL ENVIRONMENT)
    - EXAMPLES??

ORGANIZATION IN THE BIOSPHERE

- THE PHYSICAL ENVIRONMENT (EARTH SCIENCE ANYONE??)
  - EXAMPLES INCLUDE



ORGANIZATION IN THE BIOSPHERE

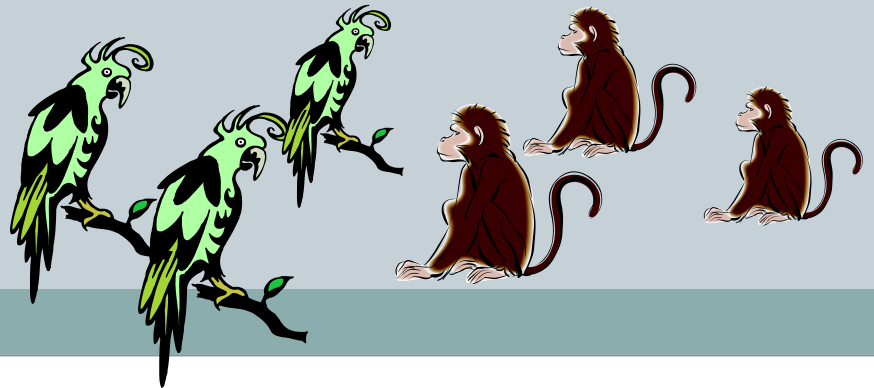
- THE LIVING ENVIRONMENT
  - WITH SO MANY DIFFERENT LIVING THINGS, WE NEED TO ORGANIZE THEM TO BE ABLE TO EFFECTIVELY STUDY THEM…
  - HIERARCHY of LIFE
    - SPECIES (ORGANISM) →
    - POPULATION →
    - COMMUNITY →
    - ECOSYSTEM →
    - BIOME →
    - BIOSPHERE

Hierarchy of Life

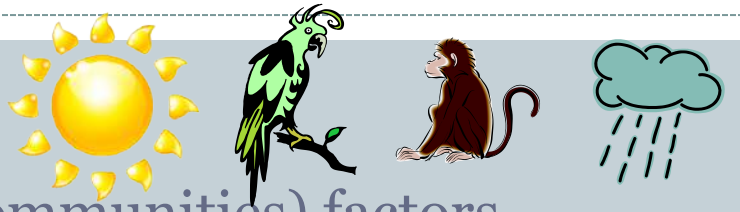
- 1. Species/organism/individual
  - a single individual representing a species

- 2. Population
  - All individuals of a SINGLE species in a given area

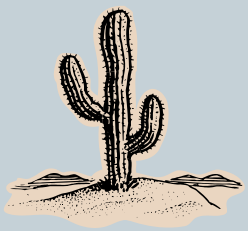
- 3. Community
  - Populations of different species interacting within an ecosystem



Hierarchy of Life

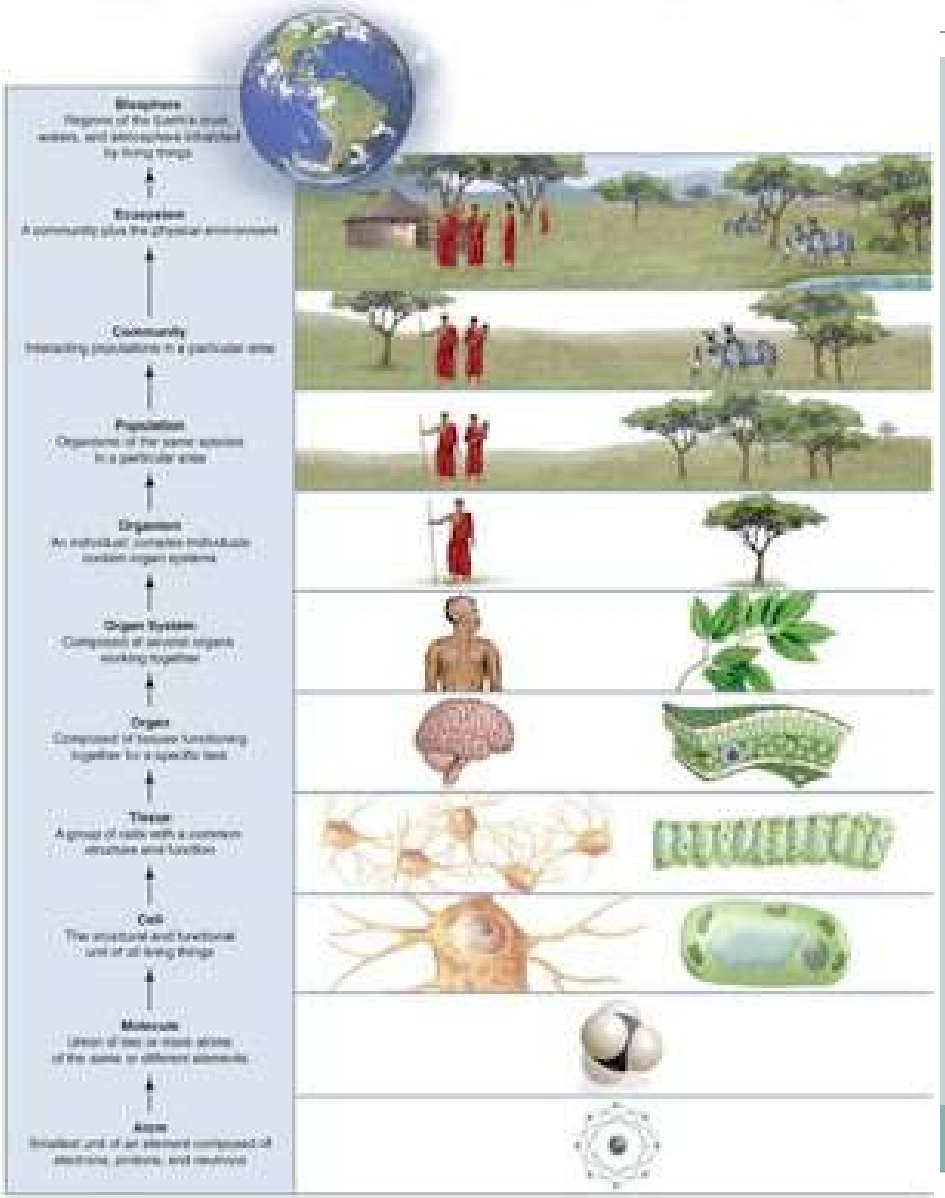


- Ecosystem
  - Includes all abiotic and biotic (communities) factors
- Biomes
  - Geographic regions with similar geological and climatic conditions




- Biosphere
  - The area of Earth where all living things exist

ORGANIZATION IN THE BIOSPHERE

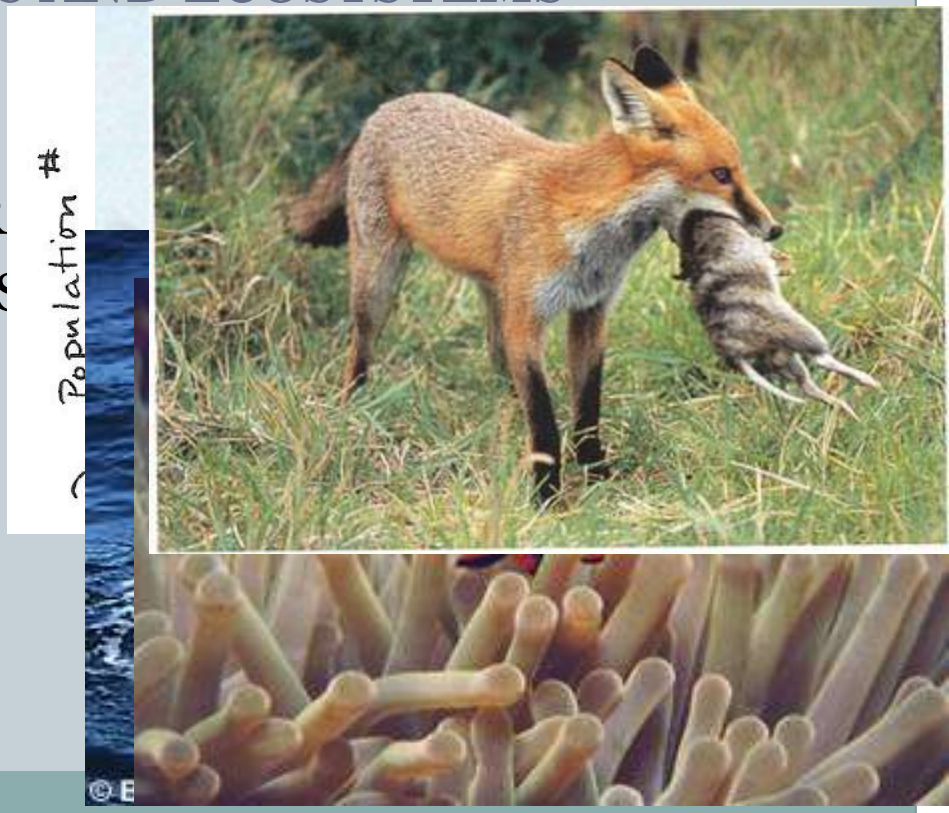


ORGANIZATION IN THE BIOSPHERE

- ECOLOGY
  - THE STUDY OF LIVING THINGS AND THEIR INTERACTIONS WITH EACH OTHER (LIVING ENVIRONMENT) AND THE ENVIRONMENT (PHYSICAL)

ORGANIZATION IN THE BIOSPHERE

- HOW DO LIVING THINGS INTERACT WITH OTHER LIVING THINGS?
  - ECOLOGY OF POPULATIONS AND ECOSYSTEMS
    - POPULATION DYNAMICS
      - CARRYING CAPACITY
    - AUTOTROPHS & HETEROTR
    - SYMBIOTIC RELATIONSHIPS
      - PARASITISM
      - COMMENSALISM
      - MUTUALISM
      - PREDATOR/PREY



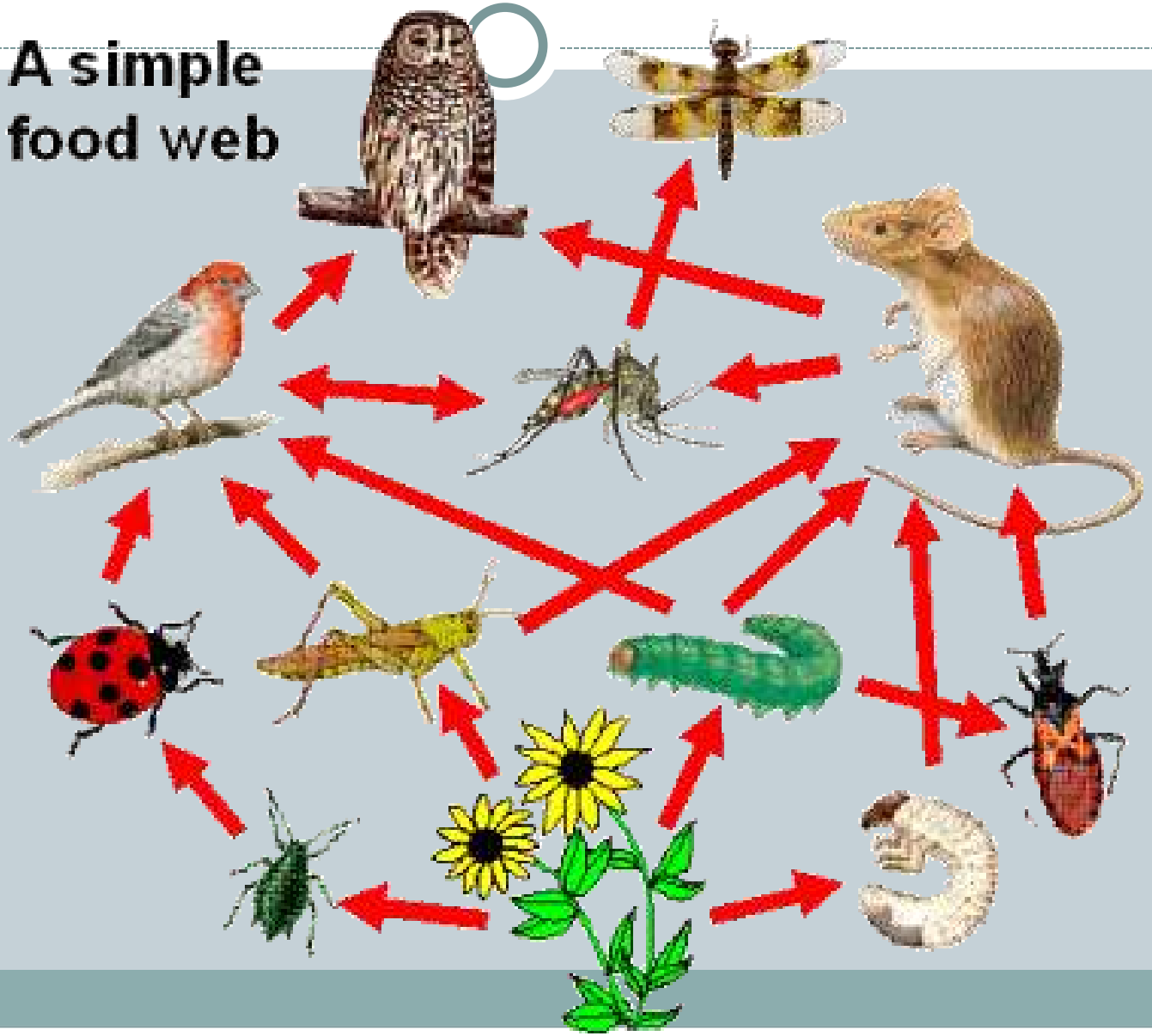
ORGANIZATION IN THE BIOSPHERE

- OTHER INTERACTIONS INCLUDE
  - COMPETITION
    - INTERSPECIFIC VS INTRASPECIFIC
    - FOR WHAT DO LIVING THINGS HAVE TO COMPETE?
      - RESOURCES (EXAMPLES?)

ORGANIZATION IN THE BIOSPHERE

- ORGANISMS CAN TAKE ON THE FOLLOWING ROLES IN AN ECOSYSTEM
  - PRODUCER → DEFINITION?
  - CONSUMER → DEFINITION?
  - DECOMPOSER → DEFINITION?
- WE USE FOOD CHAINS AND FOOD WEBS TO ORGANIZE RELATIONSHIPS BETWEEN ORGANISMS WITH THESE ROLES

ORGANIZATION IN THE BIOSPHERE

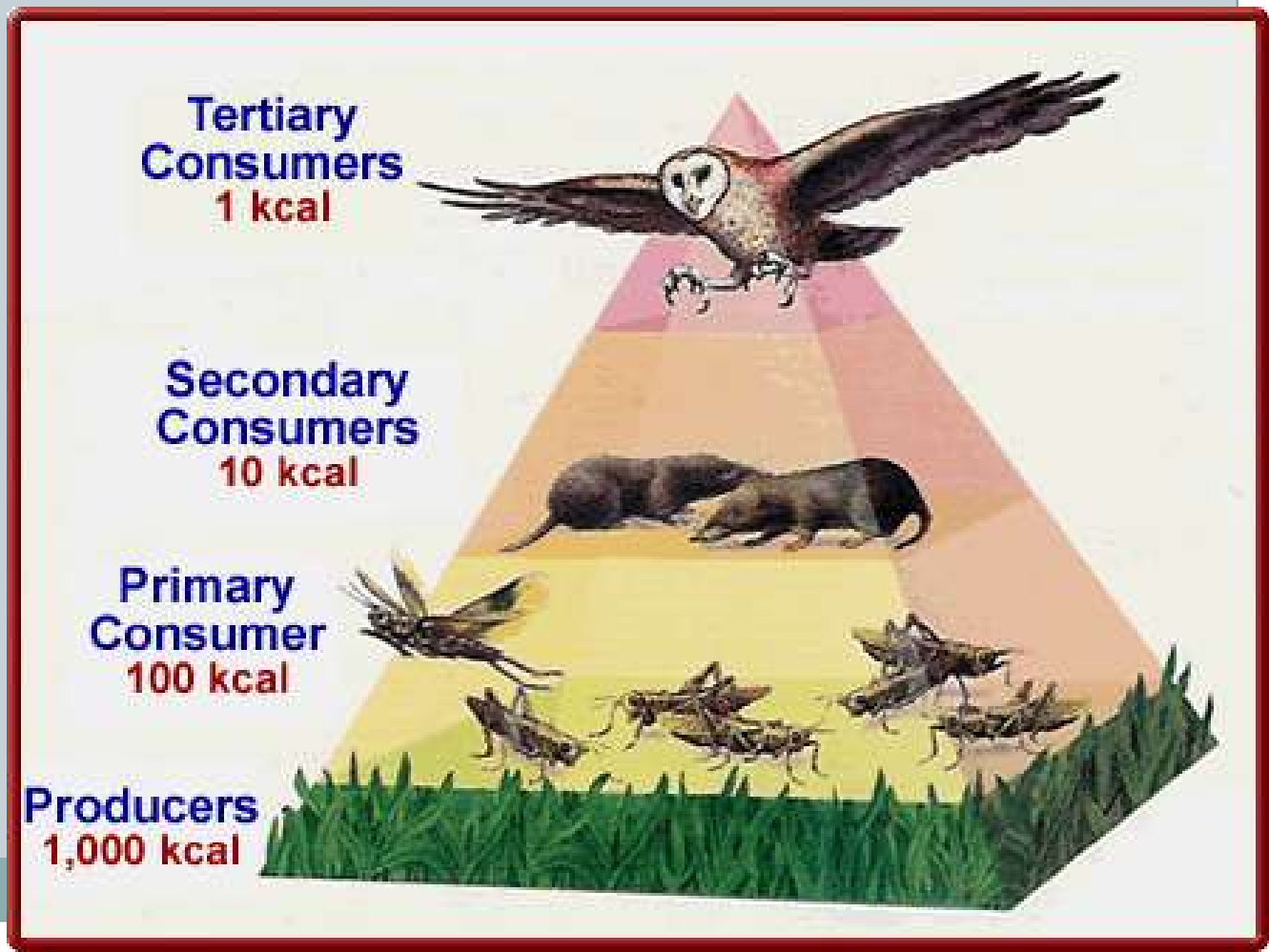


ORGANIZATION IN THE BIOSPHERE

- WHEN WE STUDY FOOD CHAINS AND WEBS, WE FIND A SPECIFIC RELATIONSHIP TO AN ORGANISMS ROLE (PRODUCER VS CONSUMER) AND ITS TOTAL NUMBER
- WE REPRESENT THIS RELATIONSHIP IN A PYRAMID AND CALL IT A:

ORGANIZATION IN THE BIOSPHERE

- PYRAMID OF BIOMASS OR PYRAMID OF ENERGY
  - PRODUCER
  - CONSUMER
    - HERBIVORE
    - CARNIVORE
    - OMNIVORE



ORGANIZATION IN THE BIOSPHERE

- WHERE ARE THE DECOMPOSERS IN ALL OF THIS?
  - THEY ARE EVERYWHERE, AT EVERY LEVEL…
  - WHY? WHAT DO DECOMPOSERS DO?
    - RECYCLE ORGANIC MATTER
  - IS ORGANIC MATTER THE ONLY THING RECYCLED IN ECOSYSTEMS?
    - WHAT ELSE GETS RECYCLED?
      - WATER, OXYGEN, CARBON DIOXIDE, NITROGEN

ORGANIZATION IN THE BIOSPHERE

- DO ALL ECOSYSTEMS LOOK THE SAME?
  - WHY NOT?
  - WHAT DO THEY LOOK LIKE?

Organization of the biosphere

- Taiga
- Tundra
- Grasslands
- Tropical Rainforests
- Desert
- Temperate Forest