

# Population Ecology

## Chapter 4



# Section 1: Studying Ecology

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## GOALS

- ◉ Distinguish between biotic and abiotic factors in an ecosystem
- ◉ Describe how a population, community differ from a species
- ◉ Explain the importance of habitats

# REVIEW:

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- Ecology → study of how organisms interact with each other and with their environment



Annette L. Olson/NBII

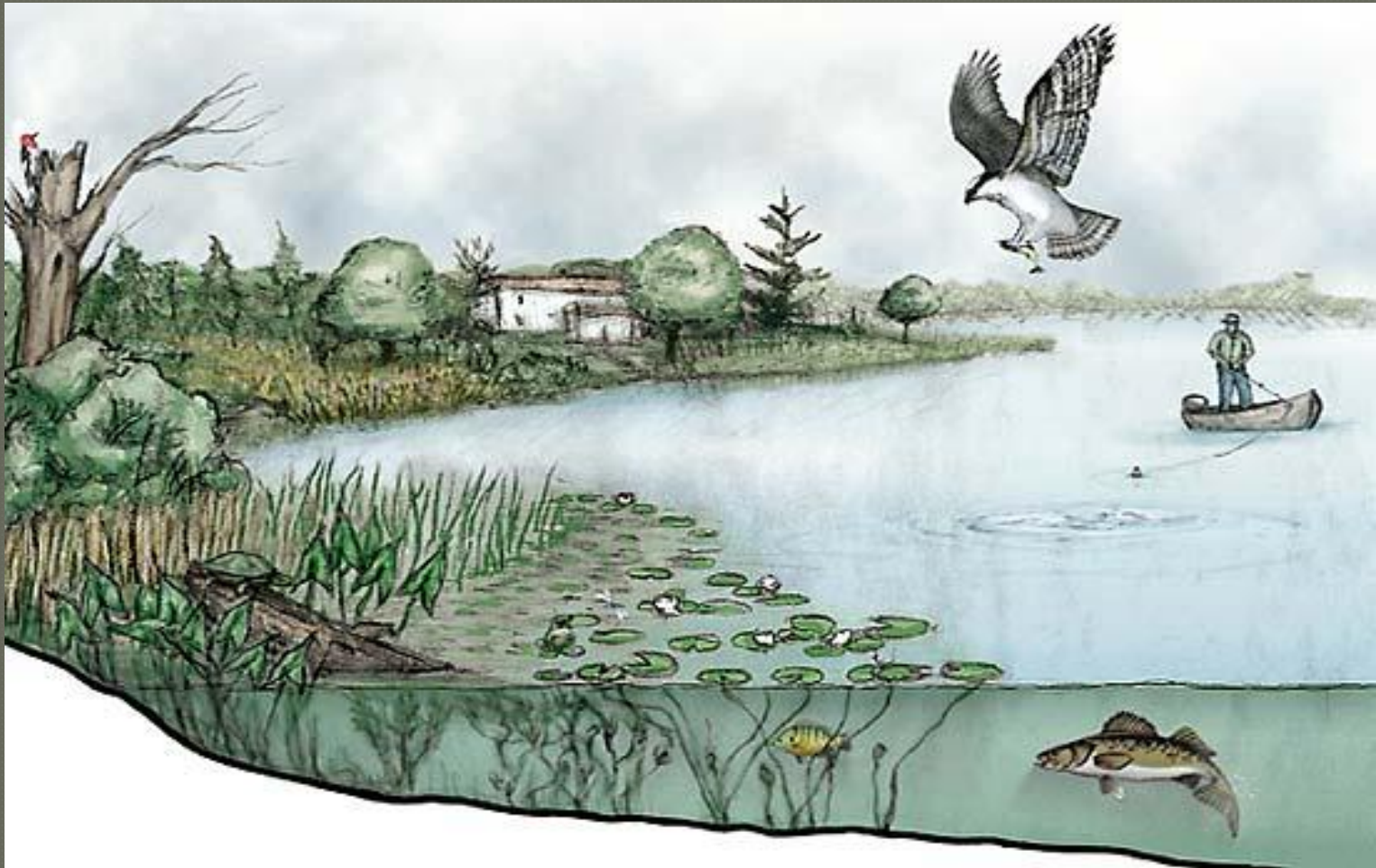


# ECOSYSTEM

- An area where different types of organisms interact with each other and with the environment in a self-perpetuating manner
- Includes all the organisms and the nonliving environment found in a particular place.
- Ex: forest ecosystem, pond ecosystem, vacant lot ecosystem



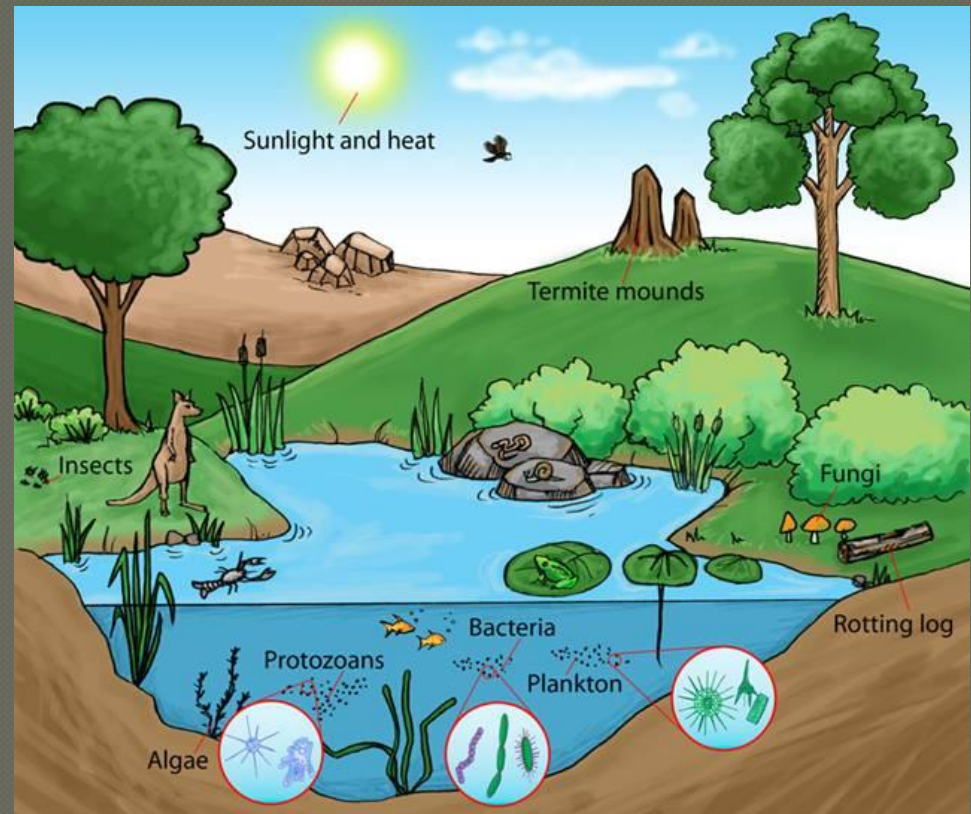
# What ecosystems do you see?





# ECOSYSTEM

- All ecosystems are connected
- In order for an ecosystem to survive...
  - Energy
  - Nutrients
  - Carbon dioxide
  - Water
  - Oxygen, etc.



# BIOTIC

vs.

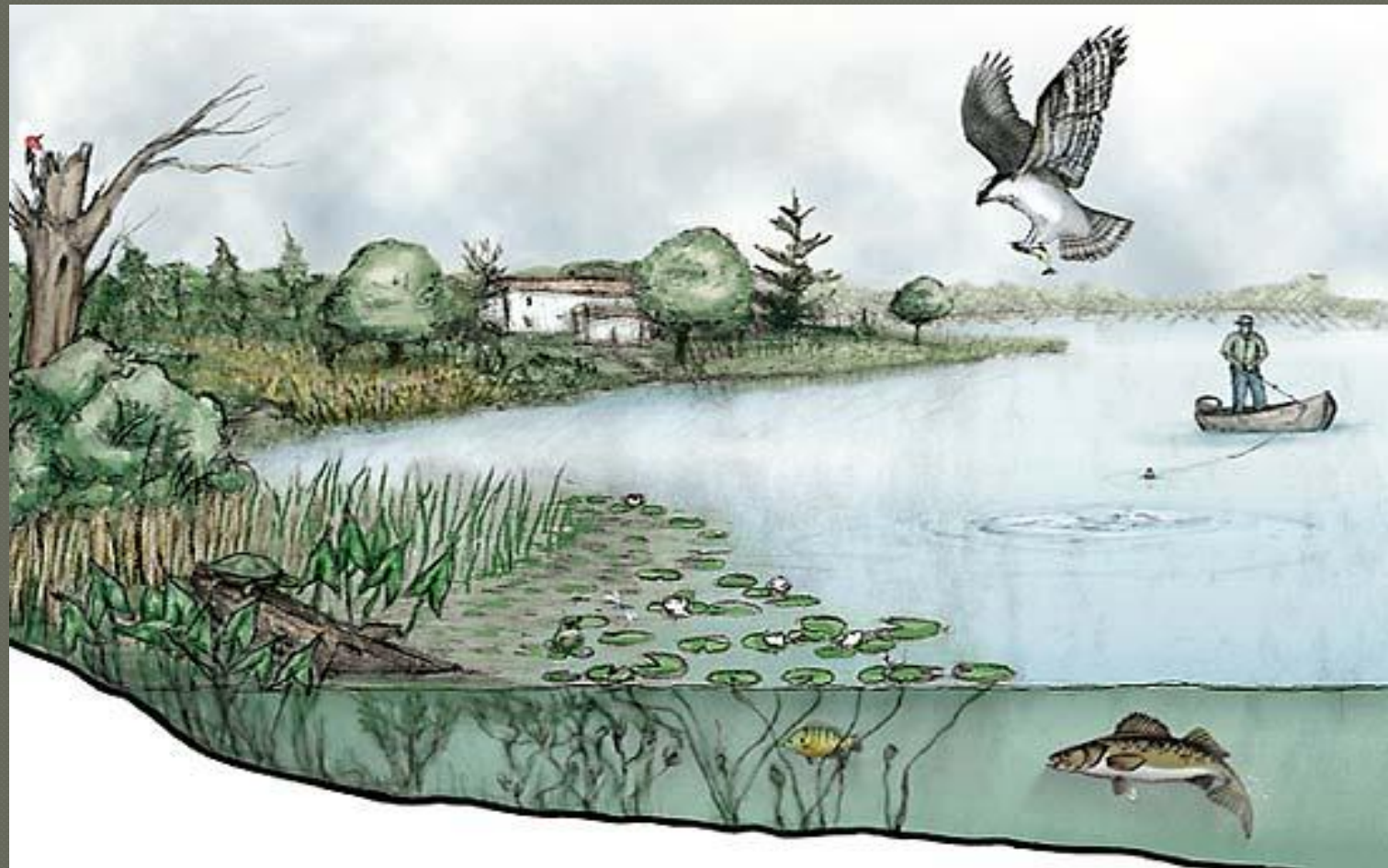
# ABIOTIC

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- Living parts of an ecosystem

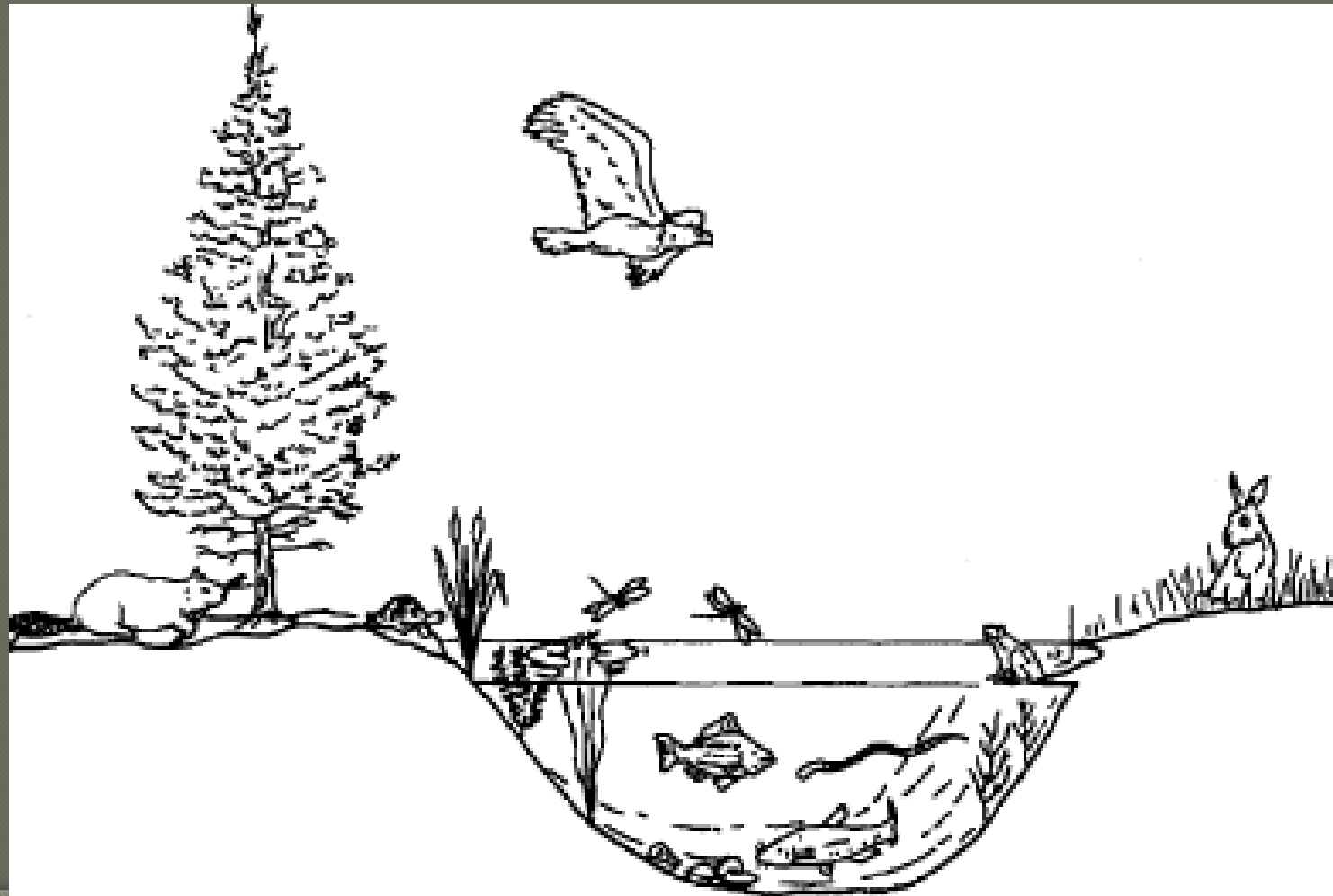


List all the Biotic Factors you see:





List all the Biotic Factors you see:



# BIOTIC

vs.

# ABIOTIC

- Non-living parts of an ecosystem
- Deal with the physical environment
  - Example: water, climate, sunlight, air, soil characteristics (pH level), humidity, salinity

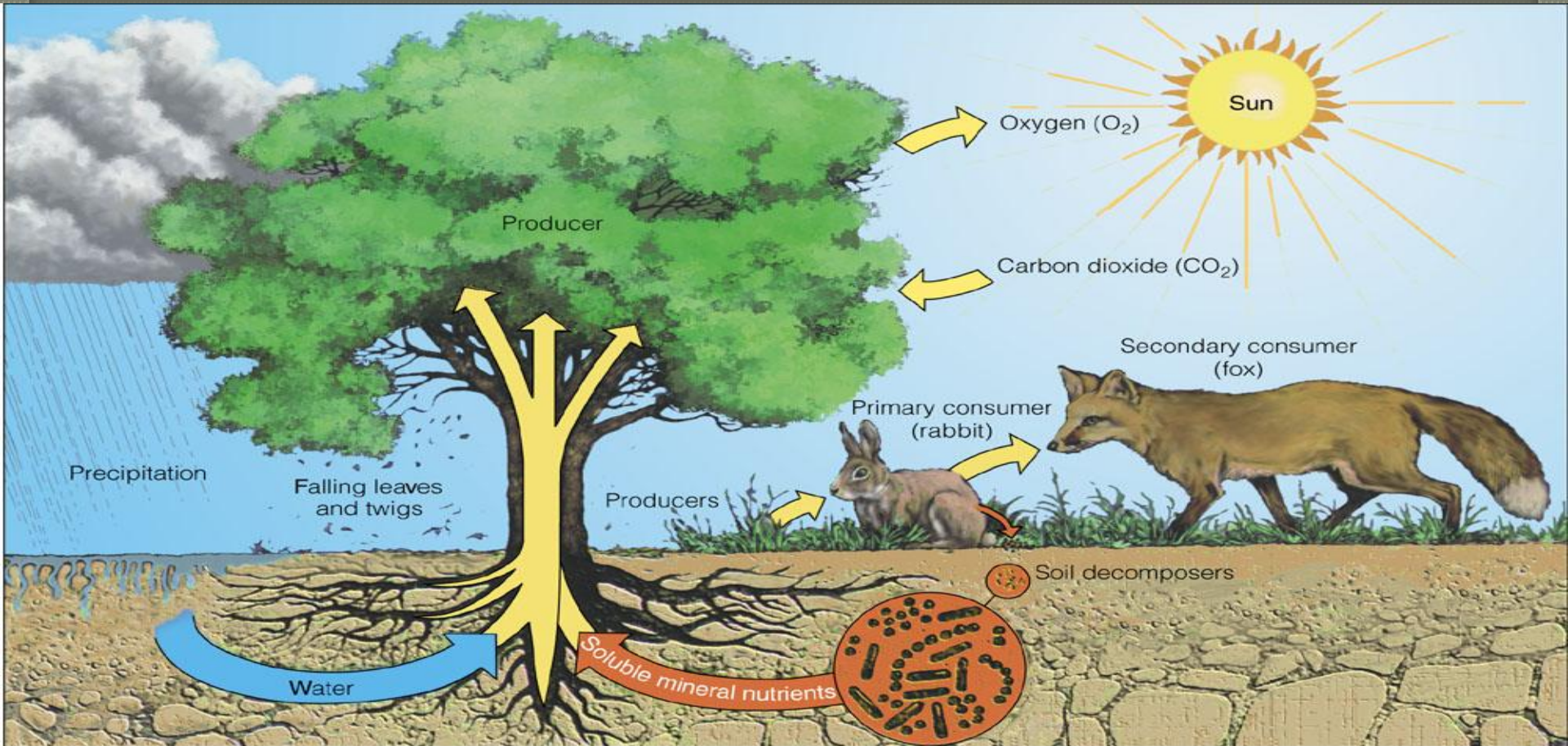


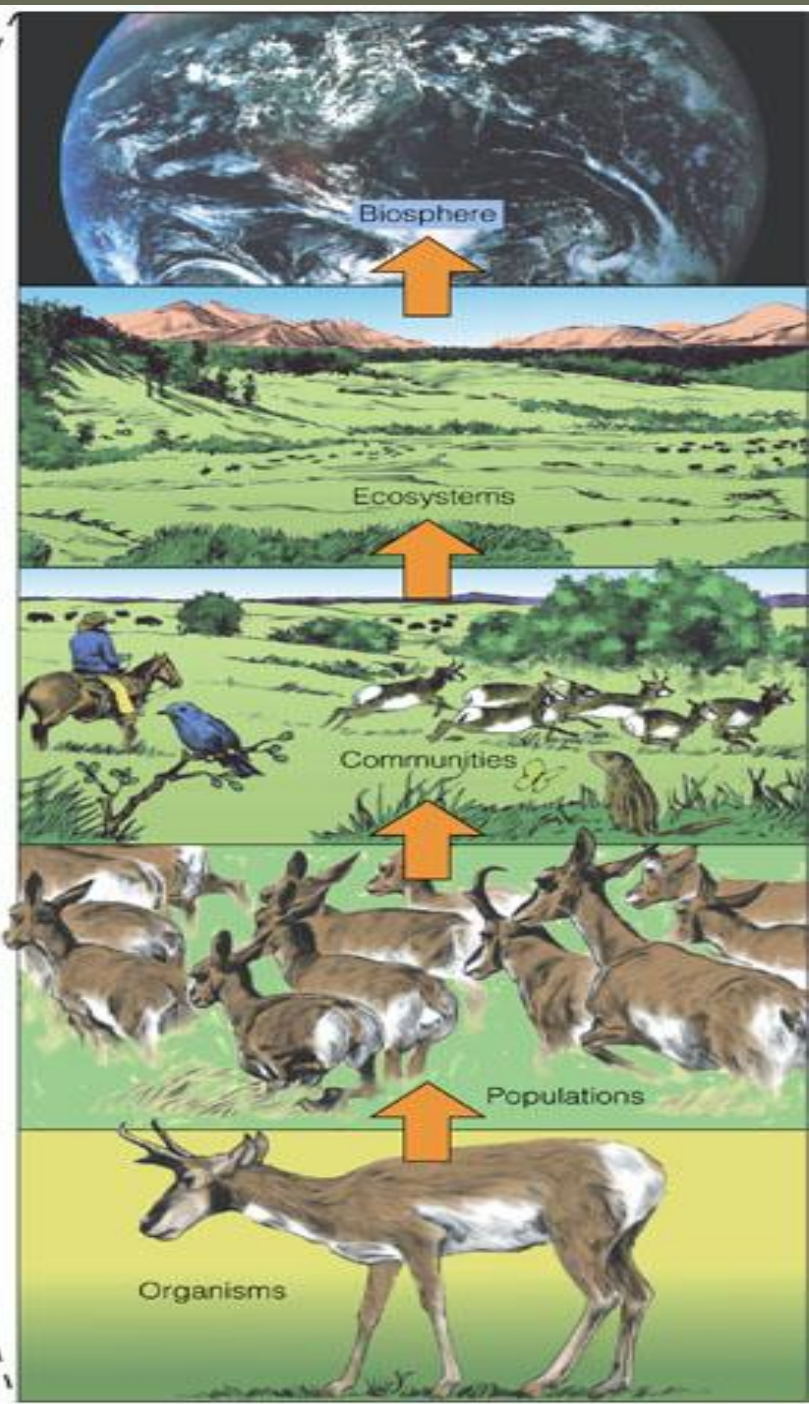
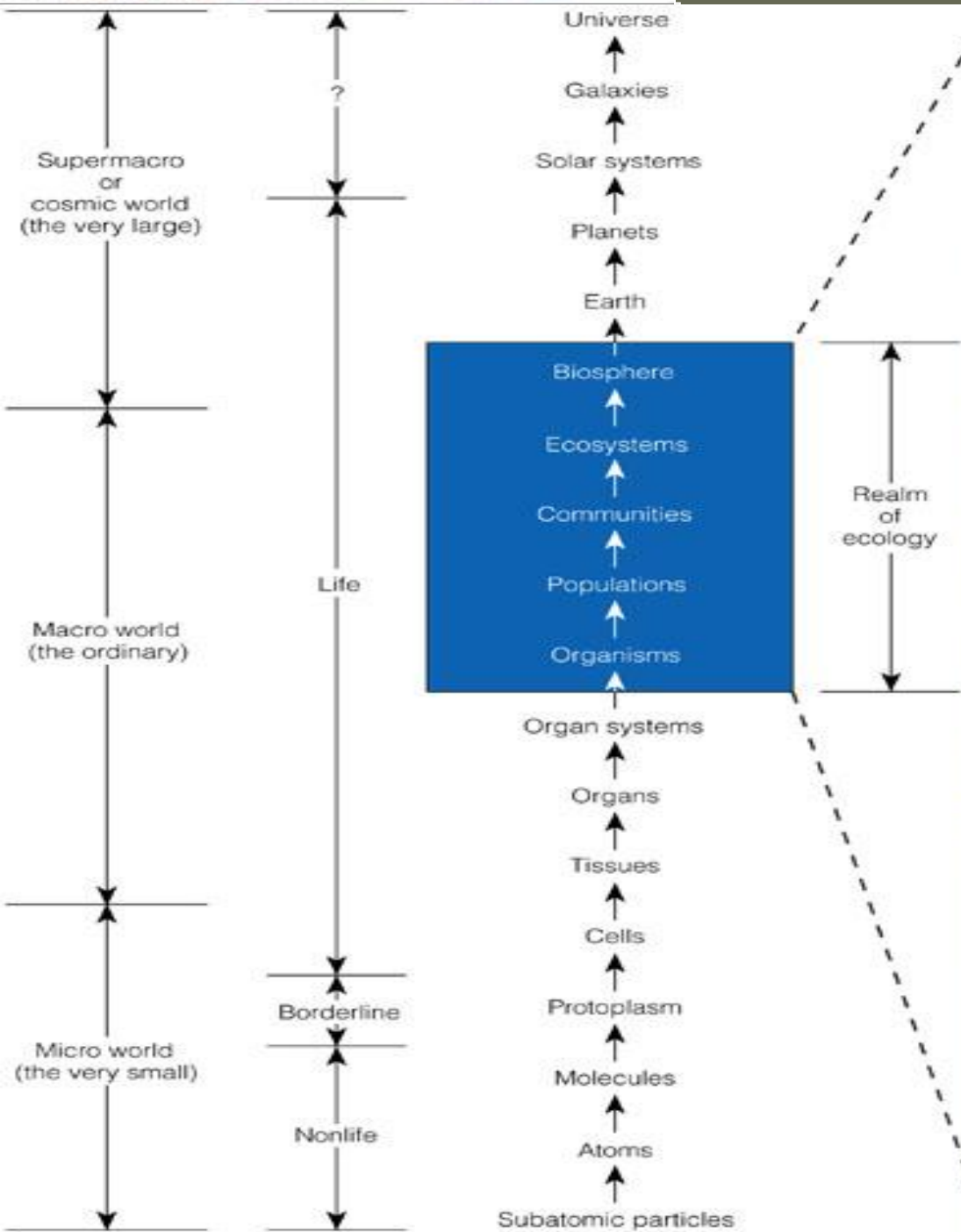
List all the Abiotic Factors you  
see:





# What are some biotic AND abiotic parts of this ecosystem?







# LEVELS OF ORGANIZATION (in an ecosystem)

- Organisms are organized into levels
  - Smallest → most complex
- Each level:
  - has unique properties
  - is influenced by processes at other levels
- Levels → organism, species, population, community, ecosystem, biosphere



# 1.) ORGANISM

- An individual species in an ecosystem.
  - Ex: tree, fox, rose



## 2.) SPECIES

- A group of organisms that can mate with each other and produce fertile offspring.
- Resemble each other in appearance, behavior, genetic makeup
- Ex: red foxes, grizzly bears



### 3.) POPULATION

- ◉ All the members of the same species IN THE SAME PLACE AT THE SAME TIME.
- ◉ Ex: field mice living in corn field, foxes in the woods, people in a city





## 4.) COMMUNITY

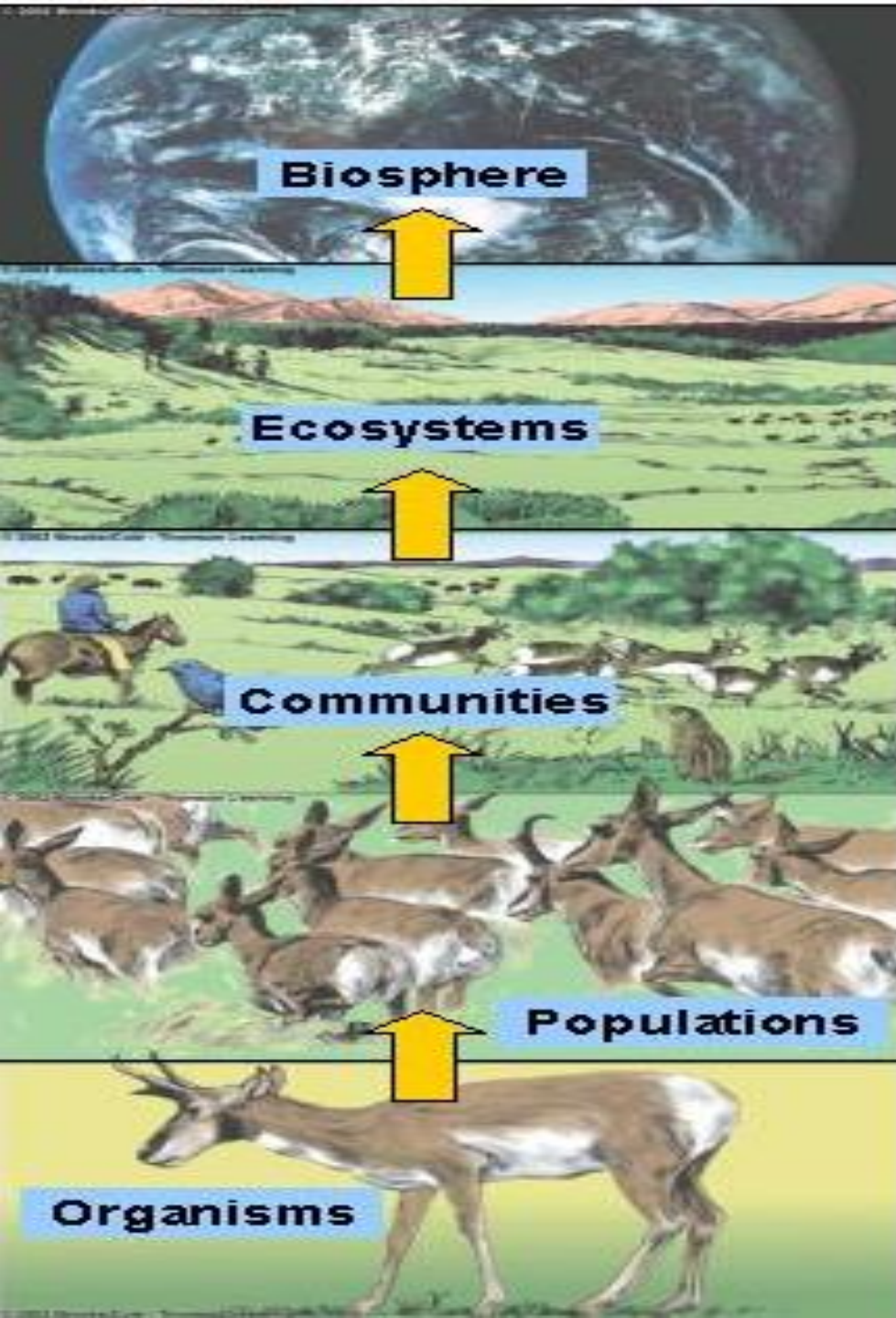
- A group of various species that live in the same place and INTERACT with each other.
- ONLY includes species of living organisms unlike ecosystems
- Redwood forest community:
  - Populations of redwood
  - Populations of microorganisms



# 5.) ECOSYSTEM

- All living (biotic) and nonliving (abiotic) things in the environment
- ex: a patch of woods,
- lake or pond, a farm field, your mouth



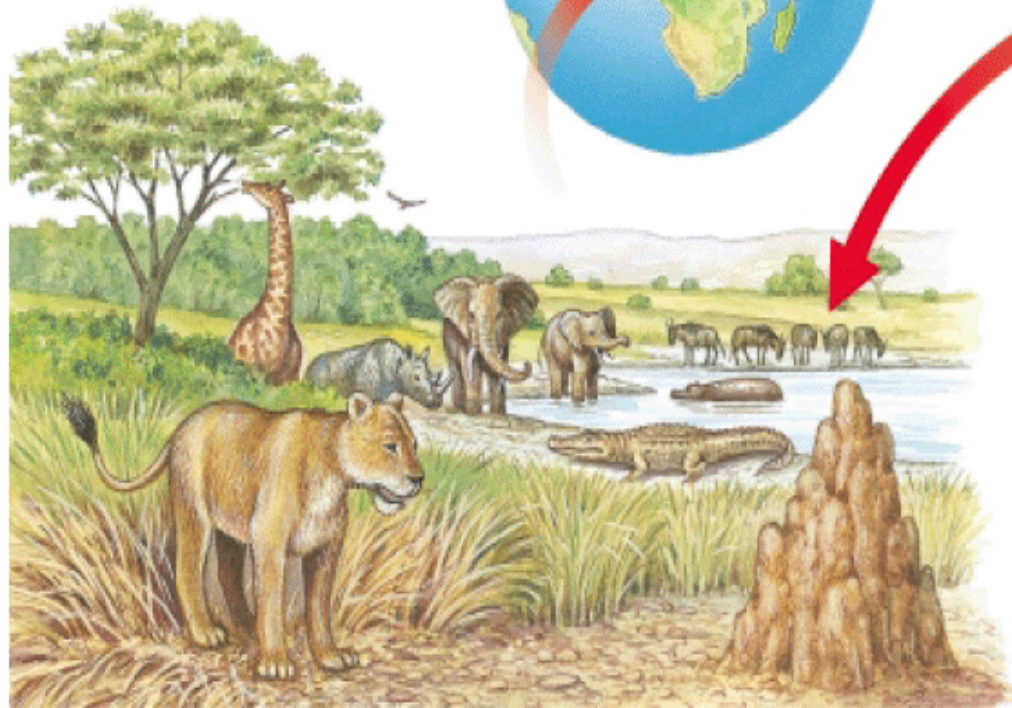


## 6.) BIOSPHERE

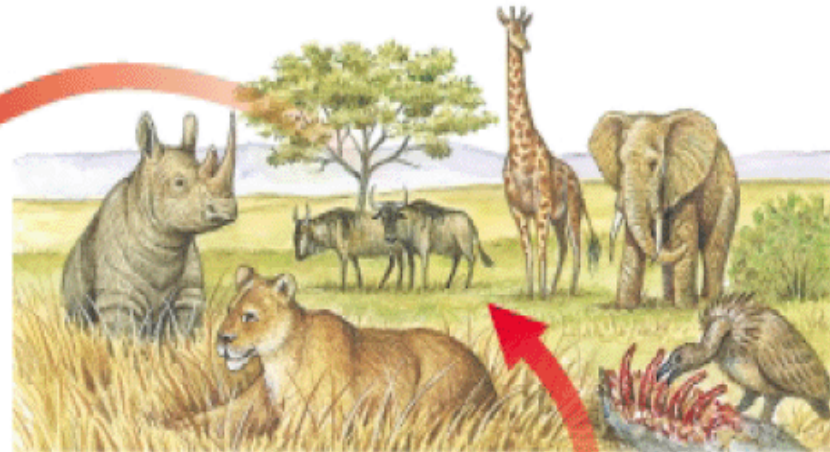
- All parts of the Earth where life is found



Biosphere



Ecosystem



Community



Population



Organism

# RECAP:

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(smallest to largest/most complex)

- ① 1.
- ② 2.
- ③ 3.
- ④ 4.
- ⑤ 5.
- ⑥ 6.

# Levels of Organization

Can you pick out the levels of organization in this ecosystem?

- Name the examples of organism, species, population, community, and ecosystem.





# **Courtyard Ecology**

## **Outdoors Lab w/worksheet**

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