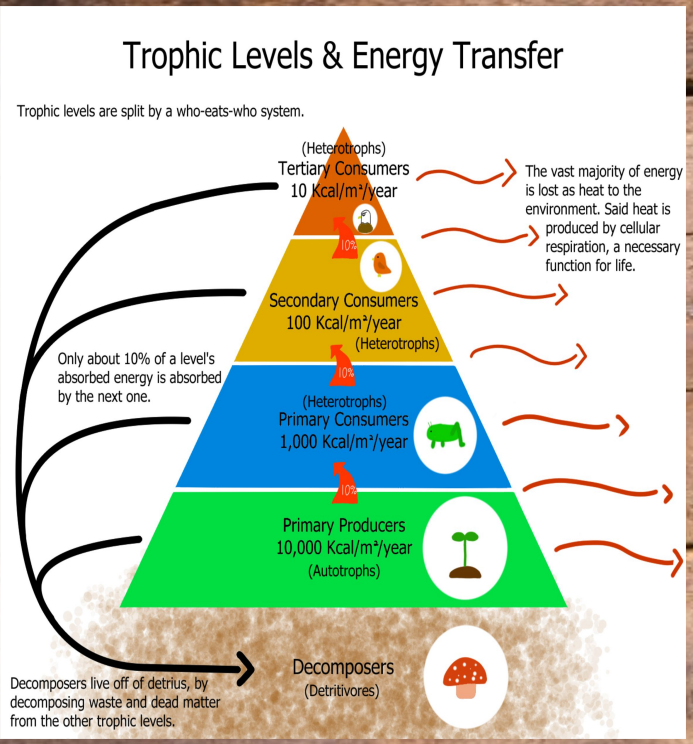


*****VERY IMPORTANT: Make a copy and then work in Slideshow mode using the zoom function to magnify the print.

- Click here: Letter FROM Mr. McKinley

- Required: Your AP Environmental Science notebook assignment is due the first week of school, Wednesday, August 5, 2026. For ease of completion, enlarge the journal pages to 100% and reduce the font size when entering your responses.

- Required: Click here: Welcome Letter TO Mr. McKinley is due by July 24, 2026. No exceptions. This is your opportunity to tell me all about yourself and how you tick! Please send via



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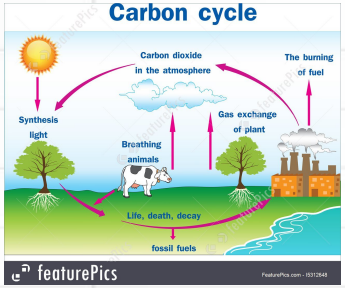
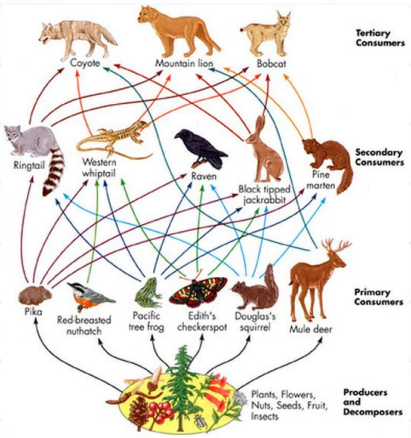
1.8

UNIT 1 REVIEW

This notebook is all about reviewing concepts covered through Unit 1. This review is in order of the unit and goes section by section. I organized it in this way so that you can easily find the slides in our 'Unit 1 Notes' to help you answer the questions effectively.



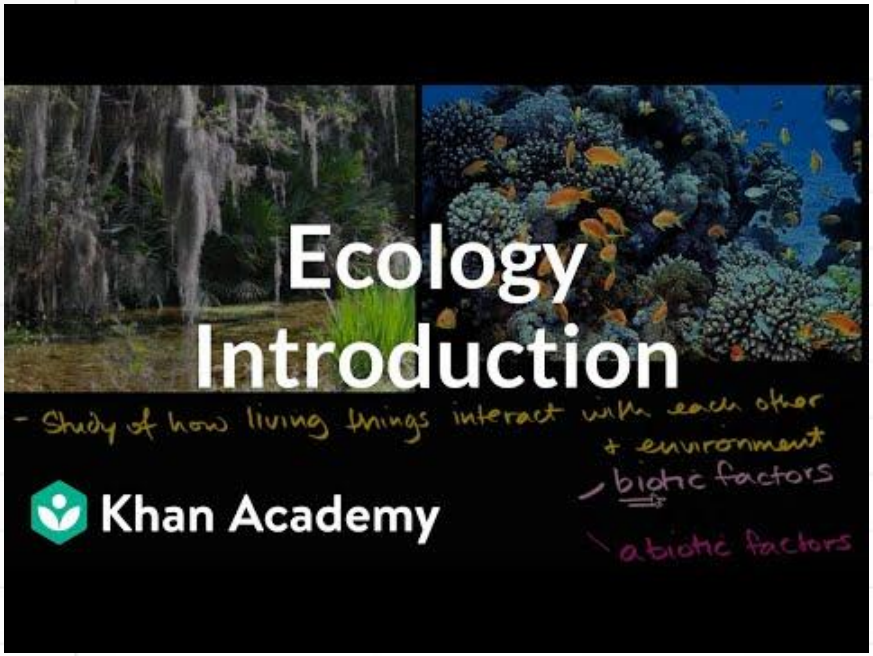


Unit 1 Topic List

1. Introduction into Ecosystems
2. Terrestrial Biomes (project)
3. Aquatic Biomes (project)
4. Biogeochemical Cycles
    a. Carbon
    b. Nitrogen
    c. Phosphorous
    d. Hydrologic Cycle
5. Primary Productivity
6. Trophic Levels
7. Energy Flow; 10% Rule
8. Food Chain and Food Web

Resource Page

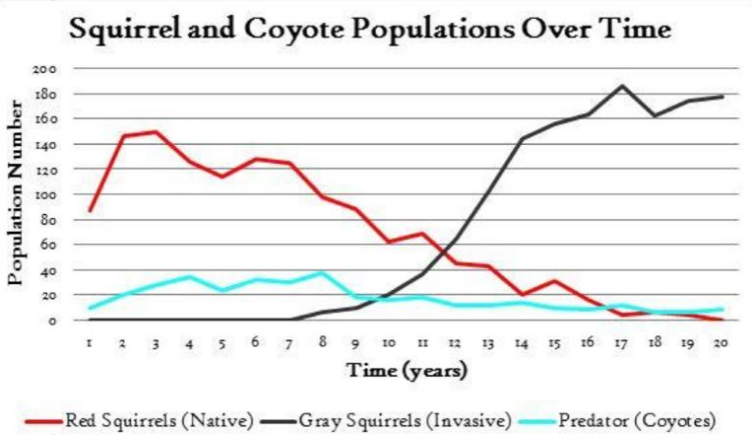
1.1: Introduction to Ecosystems



Helpful Links to Resources

1. Basic Ecosystem Resources
2. Basic Ecosystem Text Explanation
3. Predation Resources
4. Predation Text Explanation
5. Competition Resources
6. Competition Text Explanation
7. Symbiotic Relationship Resources
8. Symbiotic Relationships Text Explanation

1.1: Introduction into Ecosystems



Describe the relationship between gray squirrel population and red

Describe the relationship between the red squirrel and the coyote.

Explain the trend in gray squirrel population between years 16-20.

Describe the impact that Gray squirrels had on the the red squirrel and coyote populations

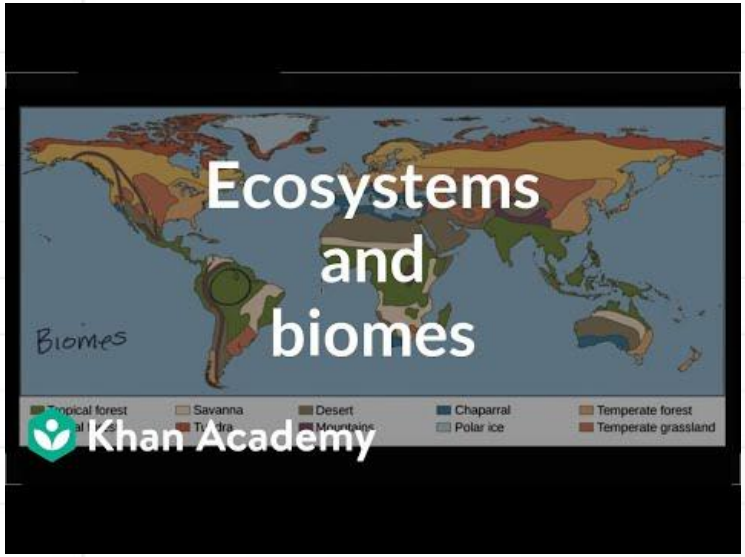
Explain how ***availability of resources*** influences species interactions. Include predator-prey, intraspecific and interspecific competition, and parasite-host

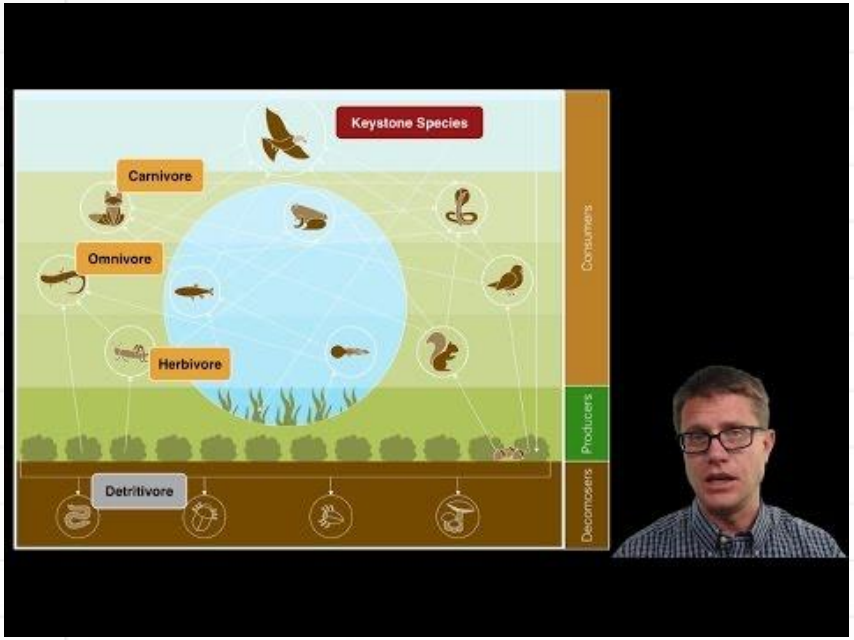
Describe the types of symbiotic relationships (mutualism, commensalism, parasitism) between two species within an ecosystem. Give a specific example of each relationship.

How can resource partitioning reduce the negative impact of competition on survival.

Resource Page

1.2: Terrestrial Biomes

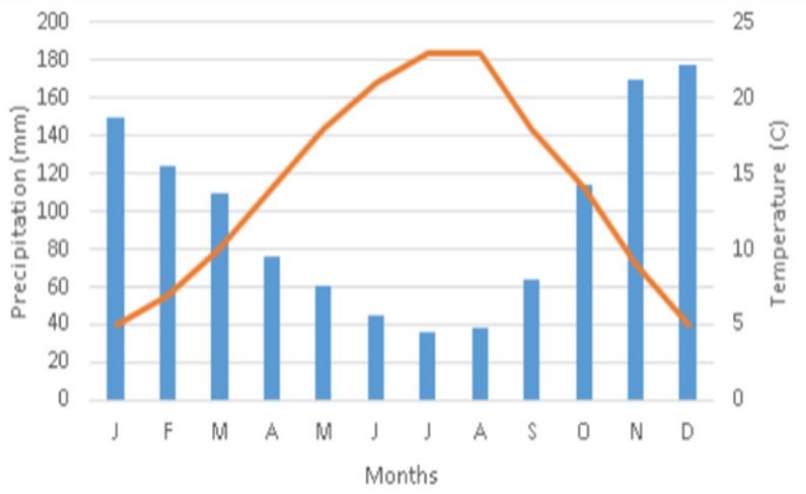




Helpful Links to Resources

1. Biome and Climate Resources
2. Biome and Climate Text Explanation
3. Terrestrial Biome Resources
4. Terrestrial Biome Text Explanation

1.2: Terrestrial Biomes



Describe the relationship between temperature and precipitation.

Explain the relationship between temperature and precipitation.

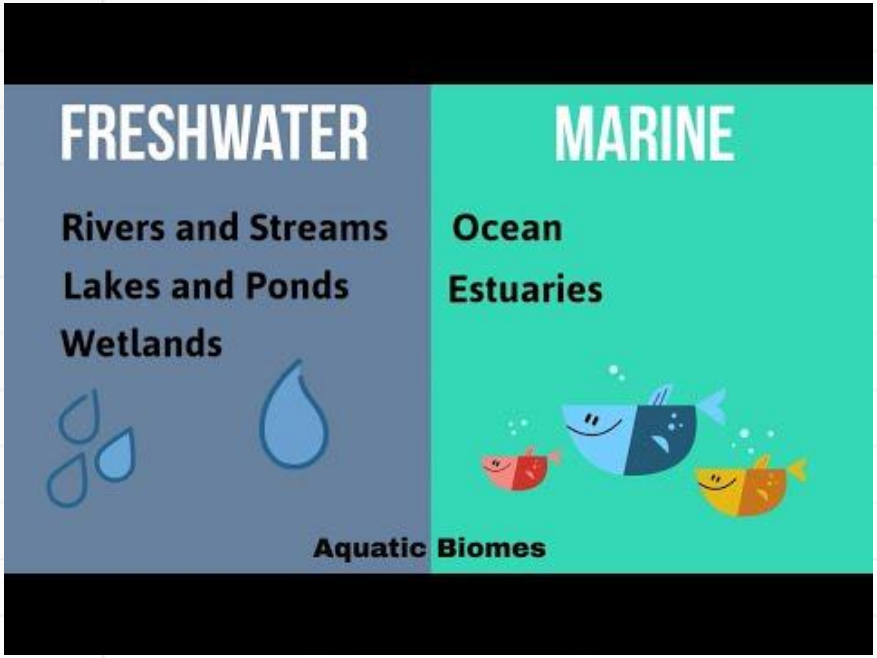
Based on the data, which biome is this climograph most likely from? Why?

Describe the various non-mineral resources that determine the global distribution of biomes.

Pick one biome and describe the adaptations of one plant and one animal to the climate of that biome.

Resource Page

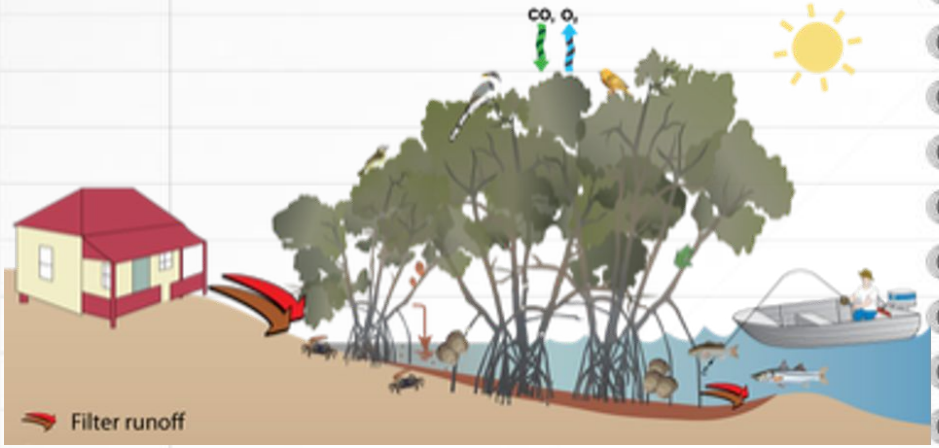
1.2: Aquatic Biomes



Helpful Links to Resources

1. Aquatic Biome Resources
2. Aquatic Biome Text Explanation
3. Freshwater and Wetland Biome Resources
4. Freshwater and Wetland Biome Text Explanation
5. Aquatic Organism Resources
6. Aquatic Organism Text Explanation

1.3: Aquatic Biomes

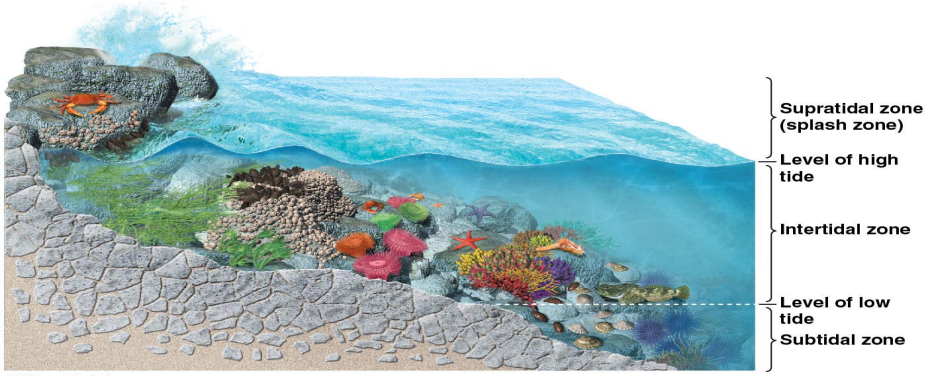


Describe a mangrove swamp

Identify two environmental benefits of mangrove swamps

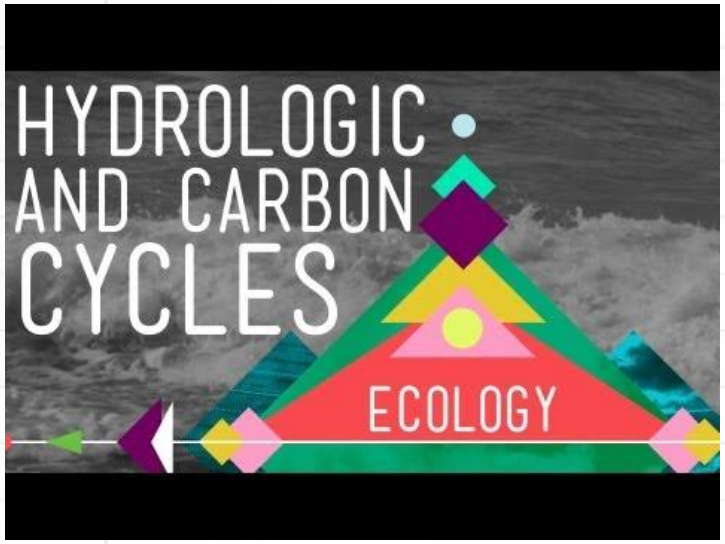
Explain one economic benefit of mangroves

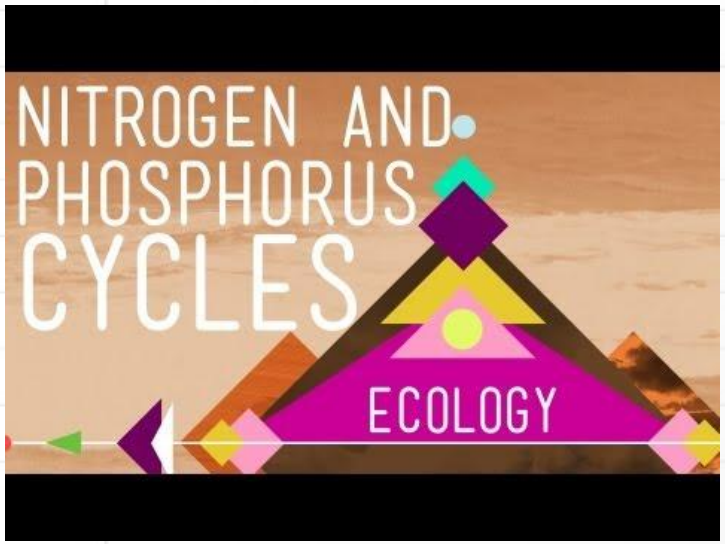
Briefly describe the different zones depicted in the image below.

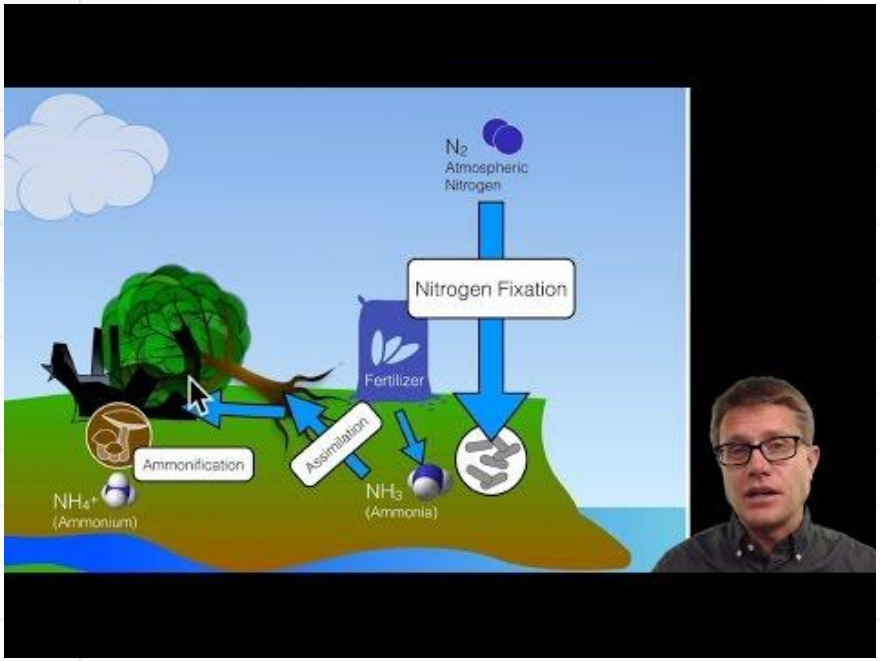


Resource Page

1.4: Biogeochemical Cycles



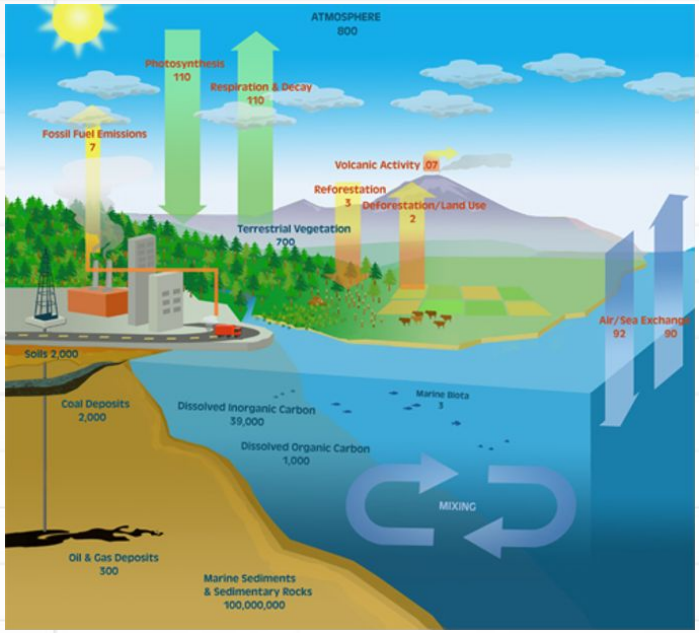


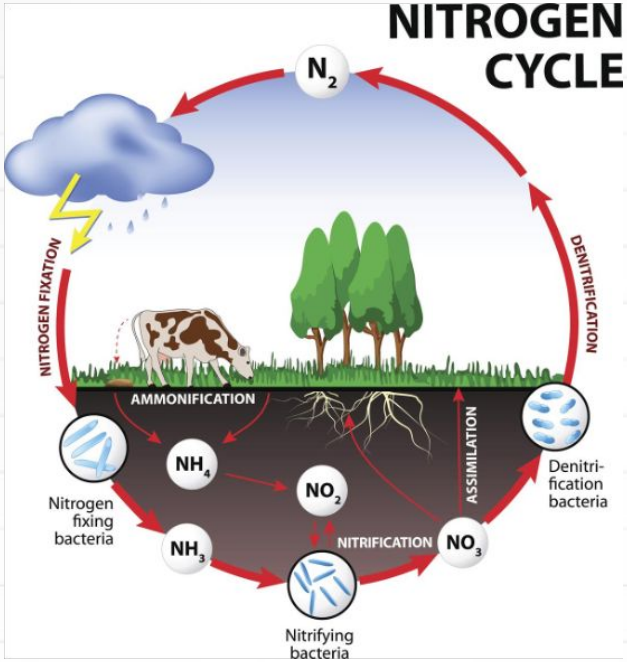


Helpful Links to Resources

1. Biogeochemical Cycles Text Explanation
2. Water Cycle Resources
3. Water Cycle Text Explanation
4. Carbon Cycle Resources
5. Carbon Cycle Text Explanation
6. Nitrogen Cycle Resources
7. Nitrogen Cycle Text Explanation

1.4: Biogeochemical Cycles





Identify two carbon sources and two carbon sinks in the diagram.

Describe the process of nitrogen fixation.

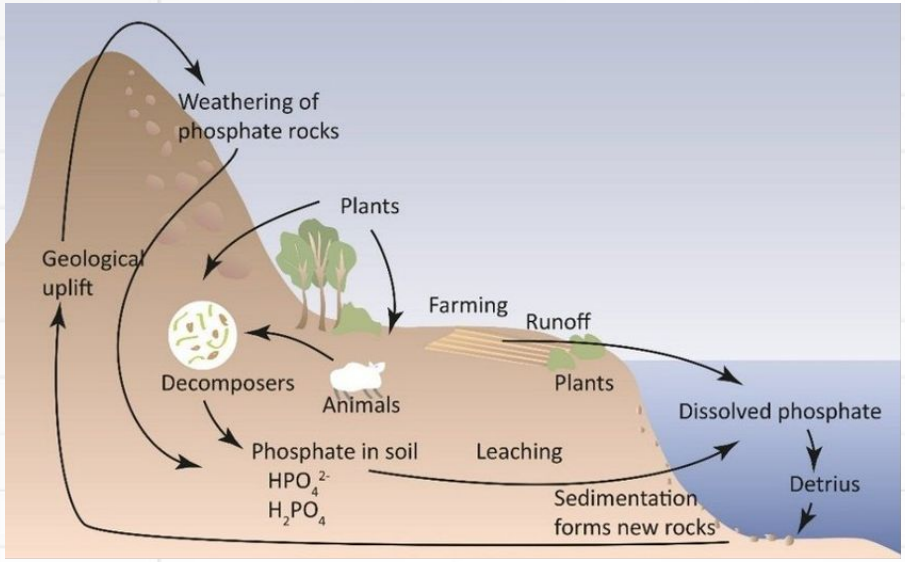
Explain the role of living organisms in the carbon cycle.

Explain the role of bacteria in the nitrogen cycle.

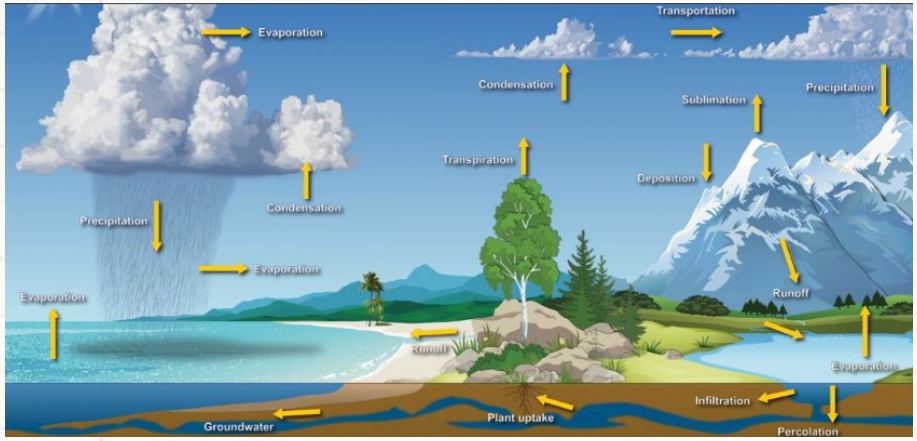
Propose a solution for reducing the the carbon added to the atmosphere from fossil fuel emissions.

Identify 3 nitrogen reservoirs in the diagram

1.4: Biogeochemical Cycles



You will need to 'zoom in' on this diagram.



Explain why phosphorus is often a limiting factor.

Explain the role of weathering in the phosphorus cycle.

Identify 3 phosphorus reservoirs in the diagram

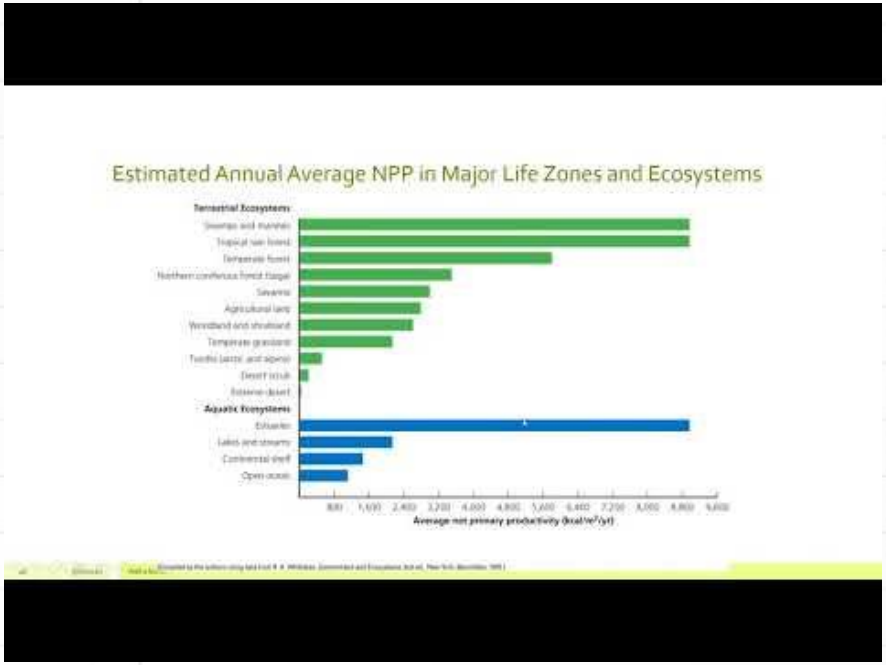
Explain the reservoir interactions in the hydrologic cycle.

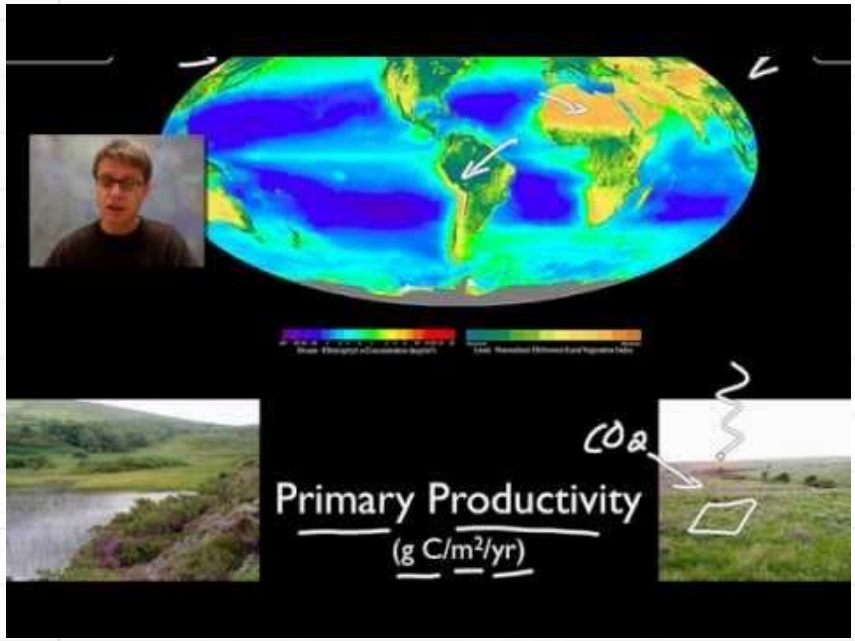
Describe the human impact on the hydrologic cycle.

Identify 3 reservoirs in the diagram.

Resource Page

1.5: Primary Productivity

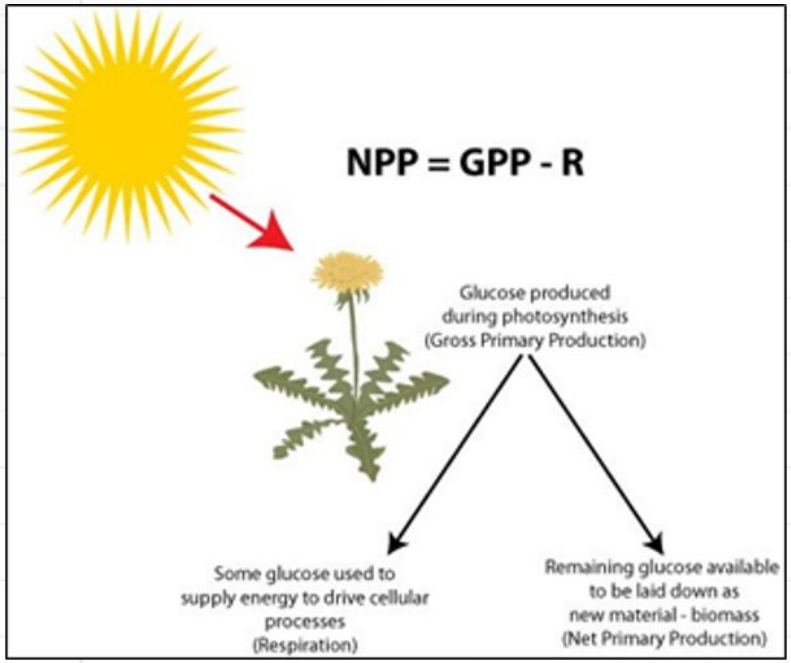




Helpful Links to Resources

1. Primary Productivity Simulation
2. How to Calculate Primary Productivity

1.5: Primary Productivity

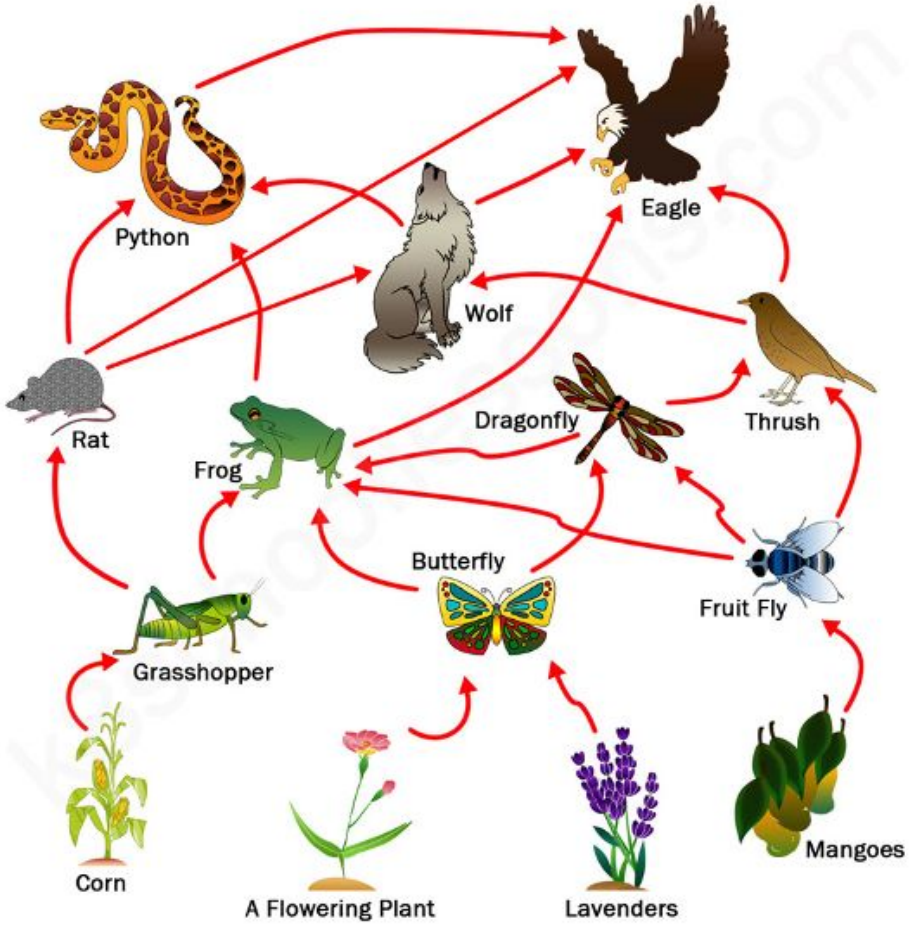


Gross Primary Productivity	-	Cellular Respiration of Producers	=	***Net*** Primary Productivity
GPP	-	R	=	NPP

Describe how aquatic ecosystems have adapted to address low visible light for photosynthesis

The net annual primary productivity of a particular wetland ecosystem is found to be 2,000 kcal/m2. If respiration by the aquatic producers is 18,000 kcal/m2 per year, calculate the gross annual primary productivity for this ecosystem, in kcal/m2 per year?

1.8: Food Chains and Food Webs



Describe the impact of a decline in dragonfly populations.

Frogs and thrush would have to focus on different food sources lowering the population of these new sources and therefore increasing the producer populations

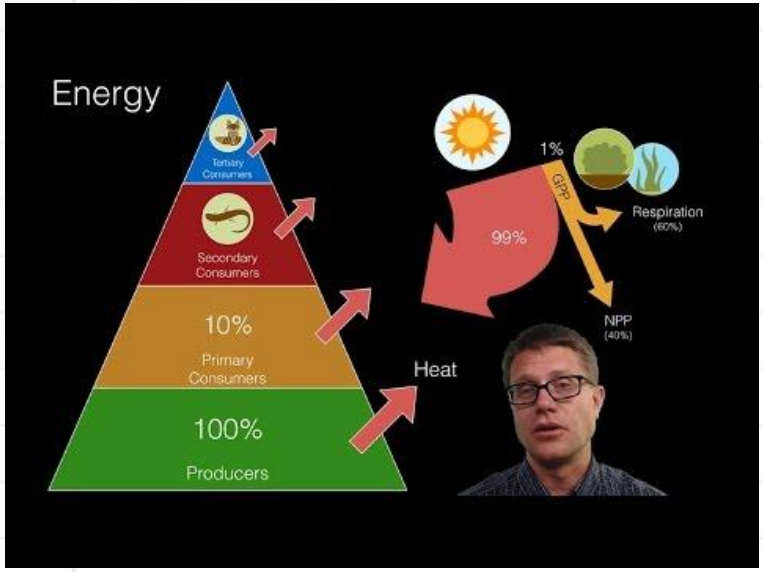
Identify the apex predator in the food web.

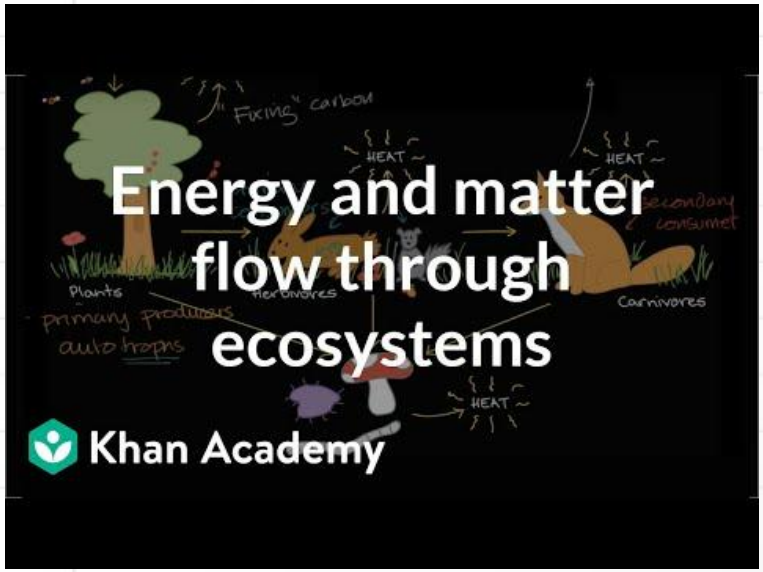
Describe the potential impact of an invasive plant species that outcompetes lavenders.

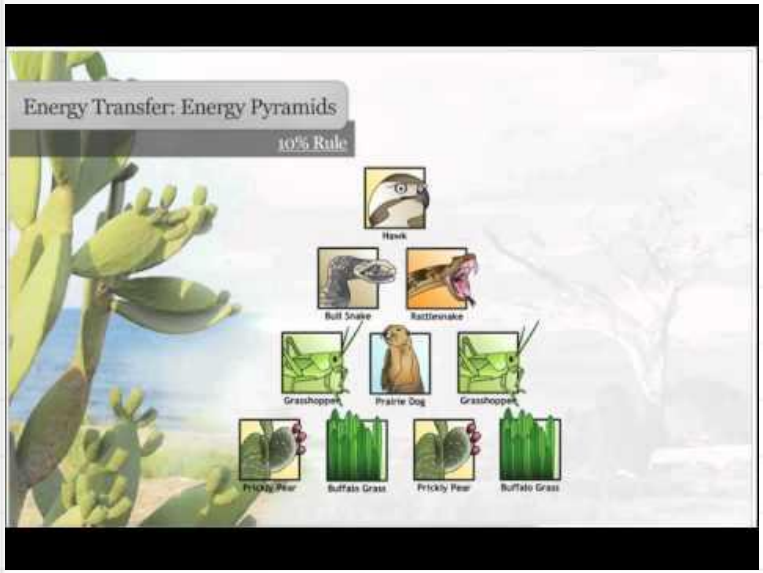
Identify a primary producer, a primary consumer, secondary consumer, tertiary consumer and quaternary consumer.

Resource Page

1.6-1.7: Trophic Levels and 10% Rule





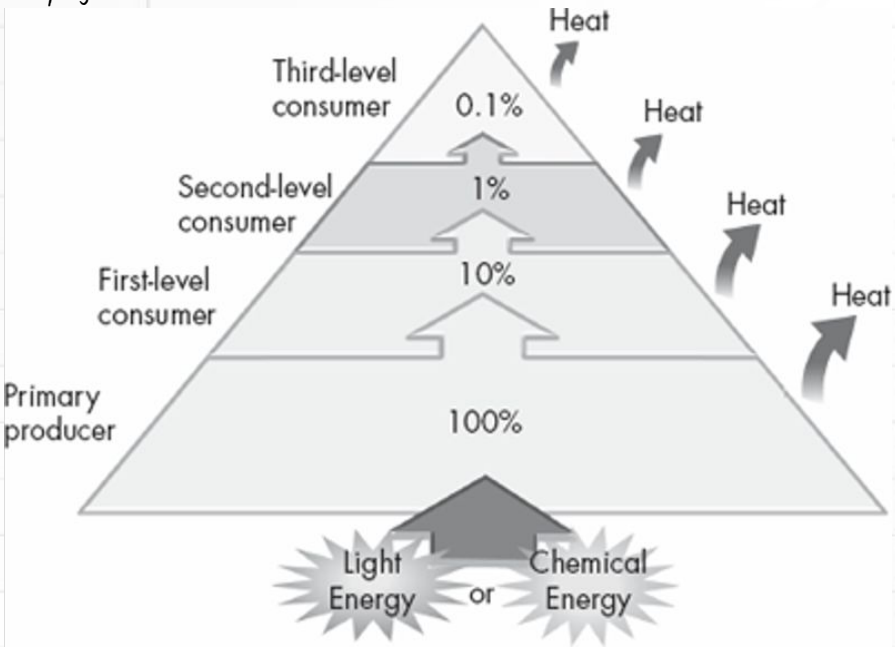


Helpful Links to Resources

1. Energy Flow Resources
2. Energy Flow Text Explanation
3. Trophic Level Resources
4. Trophic Level Text Explanation

1.6-1.7: Trophic Levels and 10% Rule

Use this diagram to help you answer the questions on the next page.



If the energy contained in the primary producer is 2000 kJ, calculate the energy available to the third-level consumer.

Identify an example of a primary producer and a first-level consumer. Explain the relationship between these two organisms.

Explain how the shape of the pyramid reflects the 2nd law of thermodynamics.

APES Scavenger Hunt Directions: Find the items in the following scavenger hunt list! Proof should be obtained digitally in a photograph or video, and compiled into a Google Slides Presentation or video you will present to the class the first week of school. To prove that it was you who did the work, each of the following must appear in each photo you take: YOU must appear in the photo, the item from the list, and a cut out of this waving ape! (on next page) The ape is nice because you can keep it in your wallet or purse during your summer travels!)

Each photo should have a caption which identifies the item from the list and an explanation or connection to an environmental science theme or topic. These will be shown in class. A fantastic example can be seen on YouTube. You will most certainly find out in this video what the ape should be used for.

1. An herbivore eating a producer.

2. Growing crops.

3. An organic food item in the grocery store.

4. A genetically modified food item.

5. 3 or more pieces of litter from a public place.

6. Product made from recycled materials.

7. Renewable energy.

8. A source of freshwater.

9. Nonpoint or point source of pollution.

10. Decomposition.

11. Fossil fuel production, processing, or use

12. Two cars, in same image, differing by more than 20 mpg.

14. A tree you cannot put your arms more than halfway around.

15. An electric or hybrid vehicle in use (i.e., not merely at a dealership, but can be parked)

16. An environmentally positive sight (i.e., something you think is helping the environment)

17. A LEED certified building

18. Source of air pollution that is not an automobile

19. Invasive species

20. Endangered species

21. A non-human thing in the environment you find extraordinarily beautiful

22. Photo from your favorite destination this summer

25. Photo of your favorite marine animal

AP Environmental Legislation

You need to research and write a brief description of some important environmental laws and/or treaties. For this assignment, I recommend you search the internet. If you use a site like Wikipedia, be sure to DOUBLE-CHECK any information you get from there! Wikipedia is susceptible to errors. I would recommend that if you use Wikipedia, use it to get a general understanding, but it can not be used for your final information. Your final sources need to be SCHOLARLY resources. Since these are governmental in nature, .gov sites are best! For each law or treaty, you need to find the following information:

1. Year enacted and year amended (if applicable).
2. Is the law International or American?
3. Describe the function of the law or treaty.
4. State what environmental issues are affected.
5. Name the agency or group responsible for regulation and enforcement (i.e. - U.N., Department of the Interior, EPA, etc.).

You need to create a table like my example below that organizes the important information regarding environmental legislation for the laws/treaties listed below. You may find it easier to do this in landscape orientation to give you more room to work.

Name	Draft & Amendment Year(s)	International or US?	Description	Issue(s) Affected	Agency
Clean Air Act	1963, 1977, 1990	US	To monitor and control air pollutants such as sulfur dioxide, nitrogen oxides, carbon monoxide, particulate matter, ozone, lead, carbon dioxide, volatile organic compounds, mercury. Meant to protect public welfare and health and to regulate emissions of dangerous air pollutants.	Air pollution, human health	EPA

Below is the list of laws/treaties that you need to research. Brief descriptions of each.

1. Clean Air Act (CAA)
2. Clean Water Act (CWA)
3. Comprehensive Environmental Response, Compensation Liability Act (CERCLA)
4. Convention on the International Trade in Endangered Species (CITES)
5. Corporate Average Fuel Economy (CAFE standards)
6. Endangered Species Act (ESA)
7. Energy Independence & Security Act
8. Energy Policy Act
9. Environmental Education Act
10. Federal Food, Drug, and Cosmetic Act (FFDCA, FDCA, or FIFRA)
11. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
12. Federal Water Pollution Control Act
13. Food Quality Protection Act
14. Food Security Act
15. Fish and Wildlife Act
16. General Mining Act of 1872
17. Hardrock Mining & Reclamation Act
18. Hazardous Materials Transportation Act
19. Healthy Forests Initiative (HFI)
20. International Environmental Protection Act
21. Kyoto Protocol (Convention of Climate Change)
22. Law of the Sea Convention (UNCLOS or LOSC)
23. Madrid Protocol (Antarctic Treaty)
24. Magnuson Fishery Conservation and Management Act
25. Marine Mammal Protection Act (MMPA)
26. Marine Protection, Research, and Sanctuaries Act (MPRSA)
27. Mineral Leasing Act
28. Mining Act
29. Montreal Protocol (Convention of Ozone Depletion)
30. National Energy Act
31. National Environmental Policy Act (NEPA)
32. National Park Act
33. National Wildlife Refuge System Act

34. Noise Control Act
35. Nuclear Waste Policy Act (NWPA)
36. Occupational Safety & Health Act (OSHA)
37. Ocean Dumping Ban Act (ODA)
38. Oil Pollution Act (OPA)
39. Oil Spill Prevention & Liability Act
40. Paris Agreement
41. Pollution Prevention Act (PPA)
42. Refuse Act
43. Resource Conservation & Recovery Act (RCRA)
44. Safe Drinking Water Act
45. Soil & Water Conservation Act
46. Solid Waste Disposal Act
47. Superfund Amendments and Reauthorization Act (SARA)
48. Surface Mining Control & Reclamation Act (SMCRA)
49. Toxic Substances Control Act (TSCA)
50. Wilderness Act

Be Aware of and Enjoy Nature

Go visit a natural area! Some places you may consider visiting include any of the local state parks (we have a lot in our area) or a neighborhood park, forest, open grassy area, anywhere you want to go! While you are there, I would like you to make the following observations:

1. Record the date, time, duration of visit, and location of your outing
2. Record observations on the following things:

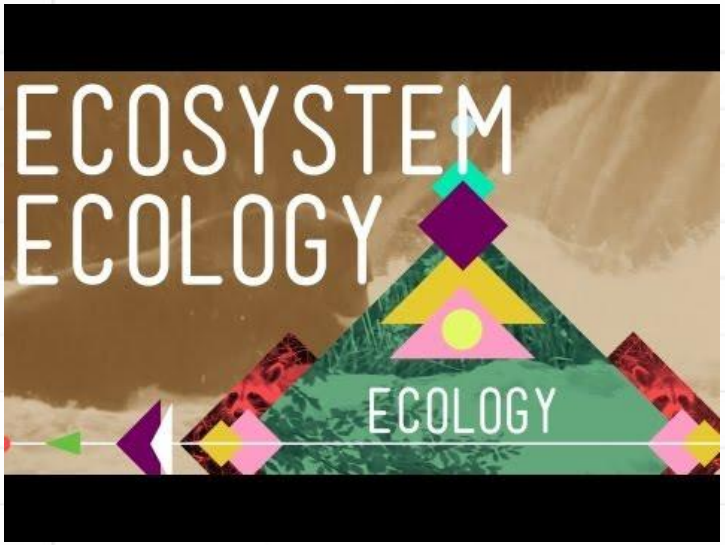
a. Flora (plants)
b. Fauna (animals, fungi, etc.)
c. Geology (rocks, soil, etc.)
d. Weather (today) and Climate (throughout the seasons)

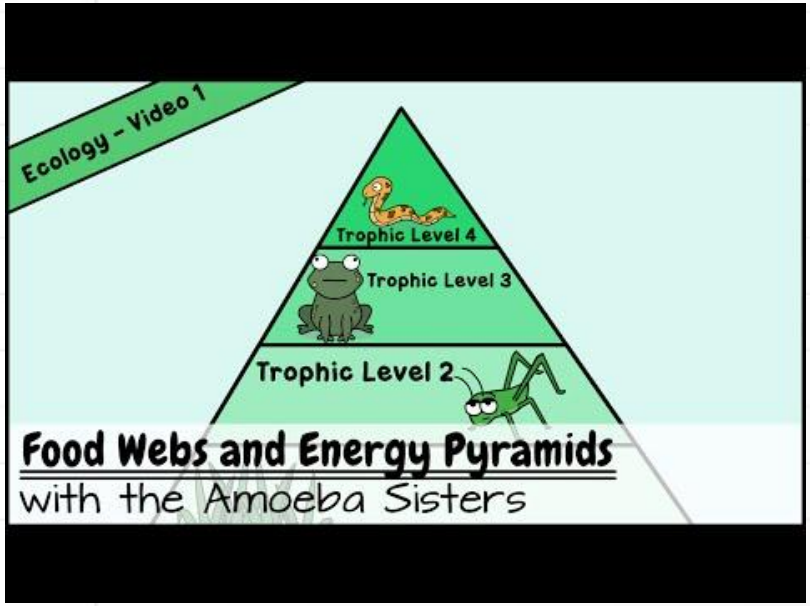
*You don't need to know specific species names for all of the plants and animals and types of rocks and soil you see, but DESCRIBE them. What color are they? How big are they? What are they doing? How are they interacting with each other? This part of the assignment can just be a list, they don't need to be in complete sentences. You can even draw what you see if you would like or take pictures of your surroundings to add to your observations. Once you have made your observations, write a paragraph (in complete sentences) reflecting on the following questions:

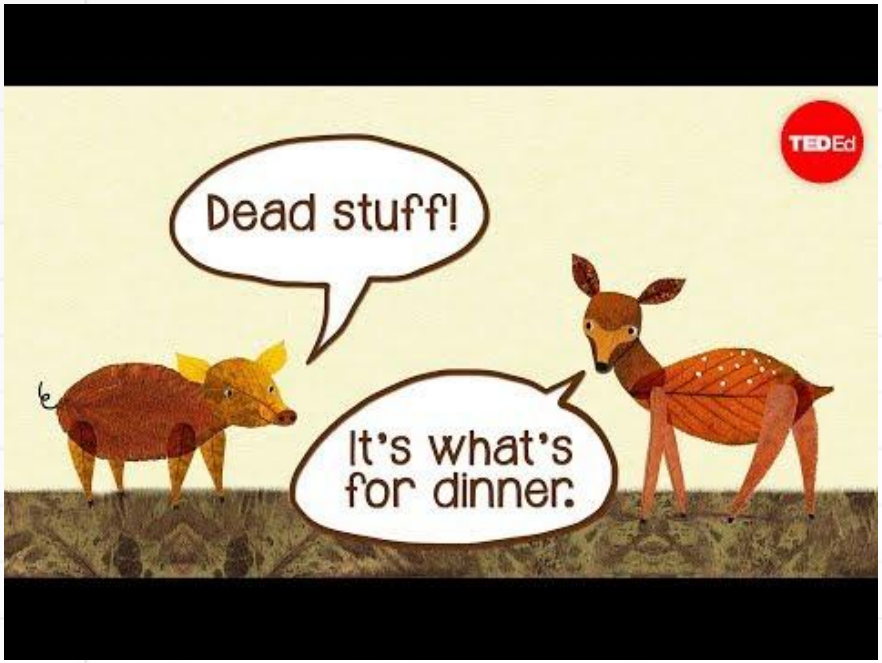
1. What did you encounter?
2. What questions did you wonder as you observed everything?
3. How much and what kinds of human impacts did you notice in that area?
4. How did you enjoy the activity? Your observations and paragraph are due to me on the first day of school.

Resource Page

1.8: Food Chains and Food Webs







Helpful Links to Resources

1. Food Chain and Food Web Resources
2. Food Chain and Food Web Text Explanation
3. Food Web Concepts and Applications
4. Food Chains/Web Khan Academy Article