Home Ecology Project

Ecosystems exist everywhere. Life finds a way and will adapt to almost any conditions. For this project you must spend at least 30 minutes outside. It can be your yard or courtyard, a small meadow, a nearby park, or if your parents are willing, a larger park, cemetery, arboretum or outdoor area. For at least 30 minutes, walk around and explore the area you decide to use. Take pictures or sketch some of highlights and things you need to find. Think about how this ecosystem works and what part of the ecosystem each living thing fits in. How do they each contribute? How do they each interact with others? What habitats do they inhabit? What needs do they have and how are these fulfilled?

Your job is going to be to use your observations to create an explanation of how your particular ecosystem functions. To do this you can use PowerPoint, word, google slides, etc… It should be digital and include photos or drawings of some of the things you find.

Identify the following:

* At least 5 different plants
* At least 3 insects
* At least 3 larger animals (if you do not see 3, you can assume some that live in the area)
* At least 1 decomposer or detritivore
* At least 3 abiotic factors

Your write-up/presentation needs to have the following slides/sections

* A description of your ecosystem’s environment (include at least 1 pic)
  + Terrain
  + Urban/Suburban/Rural/Remote
* Abiotic factors
* Producers (include at least 2 pic)
  + What did you find?
  + Identify some differences in your producers
* Consumers (include 3 pics)
  + What did you find?
  + Explain which are herbivores/omnivores/carnivores/scavengers/decomposers/detritivores
* Describe the habitat or microhabitat of 2 organisms (pic suggested)
* Explain one food web that exists in your ecosystem
  + Diagram if possible
  + Explain the movement of energy through 3 parts of your web
* Explain any symbioses you found in your ecosystem (pic suggested)
* Explain any competition in your ecosystem (pic suggested)
* Explain any predation in your ecosystem (pic suggested)
* Hypothetically remove a species -describe what would happen to the populations of some of other species
* Describe how humans have affected the ecosystem

Make sure to appropriately use the vocabulary we have learned in this unit. You should use this vocabulary to get your ideas across. (It is not necessary to use all the words)

When you are done email me your project or share it with me at [mrgrimmett@gmail.com](mailto:mrgrimmett@gmail.com)

Make sure to put your name and period in the subject line

Vocabulary

Abiotic Factors – Nonliving parts of an organism’s environment

e.g. Air, Temperature, Moisture, Light, Soil

Autotroph – An organism that uses light energy to create chemical

compounds a.k.a. Producers

Biological Community – A community comprised of interacting populations in

an environment

Biomass – The total weight of living matter at each trophic level

Biosphere – Layer of the Earth where organisms live

(Atmosphere to the bottom of the Ocean)

Biotic Factors – All living organisms that inhabit an environment

Carbon Cycle – A cycle which describes how carbon is used by plants to make

energy, animals eat the plants, and recycle the carbon as CO2

Carnivore – A heterotroph that eats only meat

Carrying capacity - The largest population that an area can support

Commensalism – A symbiotic relationship in which one species benefits and

the other species is neither harmed nor benefits

e.g. Clownfish and Sea Anemones

Consumers – See heterotroph

Decomposers – Break down the complex compounds of dead and decaying

plants and animals into simpler molecules that can be more

easily absorbed.

Ecology – The Study of interactions between organisms & their environment

Ecosystem – Interacting populations in a biological community along with the

abiotic factors

Exponential Growth - If a population has a constant birth rate through time and is never limited by food or disease, it has what is known as exponential growth. With exponential growth the birth rate alone controls how fast (or slow) the population grows.

Food Chain – A model of showing how matter and energy are transferred

through an ecosystem

Food Web – A model that shows all the possible feeding relationships at

each trophic level in a community

Habitat – Where an organism lives out its life

Herbivore – A heterotroph that eats only plants

Heterotroph – An organism that can’t make its own food and feeds on other

organisms

Limiting factors - Anything that restricts the number of individuals living in a population

Mutualism – A symbiotic relationship in which both species benefit

e.g. bees and flower pollen

Niche – The role or position a species has in its environment

Nitrogen Cycle – A cycle which describes how plants use nitrogen in the soil

to make proteins, herbivores or omnivore eat the plant and

use nitrogen to create new proteins, then excrete the

nitrogen in urine

Omnivore – An organism that eats plants and animals

Parasitism – A symbiotic relationship in which one species benefits and the

other is harmed e.g. Brown Headed Cowbirds and egg parasitism

Phosphorus Cycle – A cycle which describes how phosphorus, needed for

growth and development, travels through plants & animals

Population – A group of organisms of all the same species, which interbreed

and live in the same area at the same time. Populations can share

or compete for resources e.g. food, water, mates, shelter

Predator – an animal that naturally preys on others

Prey – an animal that is hunted and killed by another for food

Producers – Organisms that create their own food from the sun’s energy

Pyramid of Energy – Each pyramid level represents how much energy is

available within that trophic level. For each step

increase only 10% of the energy is available. The rest of

the energy is given off as heat.

Symbiosis – A close and permanent association between organisms of

different species

Trophic Level – A feeding step which describes what an organism eats

Water Cycle – How water is used and recycled in an ecosystem