

# *Design an Ecosystem Poster Project*

For this project you will be designing your own *imaginary* ecosystem, including the living and nonliving components. You may work by yourself or with a partner. No more than two people may work together on the project. You may either hand draw your poster or can design it digitally using software of your choice. Posters will be placed on the walls around the science classroom once you have completed and submitted them.

The project is due at the *beginning* of class on \_\_\_\_\_.

## Requirements:

- Design, draw and describe an ecosystem that contains several species.
- Be sure to include a description of each species niche and habitat. This needs to be typed!
- A food web also needs to be included for your ecosystem.
- Also include at least one of the following relationships: parasitism, commensalism, and/or mutualism



## Materials:

- Poster, paper, colored pencils, pen/pencil and markers or
- Digital design software of your choice to create a poster such as Adobe Photoshop or [Canva](#)

## Task:

1. Decide whether you are working by yourself or a partner and let me know.
2. Design and draw your ecosystem.
3. Here are the requirements for your ecosystem:
  - a. Location: Your ecosystem may be anywhere, including other planets!
  - b. Biological Community: ***Must be creatures that you create!***

Include at least:

- 3 Producers
- 4 Primary consumers (herbivores)
- 2 Secondary and higher level consumers (2 carnivores OR 2 omnivores OR 1 carnivore & 1 omnivore)
- 1 Decomposer

For each species include its:

- Habitat (where in the ecosystem does it live)
- What it eats (if it's an animal) or soil & water requirements (if it's a plant)
- What eats it
- Reproductive behavior (how many offspring, time of year they reproduce)
- Any known usefulness or attractiveness to humans

- c. Physical Components including climate (temperature, amount of precipitation, etc.)
- d. An example of either parasitism, mutualism, or commensalism

## ***SAMPLE ECOSYSTEM***

**Ecosystem:** The Valley

**Producer:** Norse Sea Lily

- Habitat – reservoirs such as Lake Perris
- Reproduction – flowering plant pollinated by mead bees; flowers in early summer
- What it eats – autotroph
- What eats it – Go Fish (roots), Vikings (leaves), Mead Bees (nectar), Lily Weevil (fruit)
- Human use – glue (roots), fibers for fabric (stems), snack food (seeds), decoration (flowers), roofing material (leaves)

**Consumer:** Mead Bee

- Habitat – reservoirs such as Lake Perris
- Reproduction – a single queen lays many eggs which are tended by her daughters
- What it eats – eat nectar and pollen of the Norse Sea Lily
- What eats it – birds
- Human use – often considered a pest

**Consumer:** Go Fish

- Habitat – reservoirs such as Lake Perris
- Reproduction – external fertilization, males protect the nest until the eggs hatch
- What it eats – Norse Sea Lily & other plant roots
- What eats it – MoVal Vikings who like them better than Lilies but not as much as mead bees.
- Human use – sport and food fish

**Consumer:** MoVal Viking

- Habitat – Southern California
- Reproduction – life-long pair bonds, internal fertilization, low birth rate, extensive care of young
- What it eats – Go Fish, mead bees, lilies, cougars, & broccoli
- What eats it – top level consumer (nothing eats it)
- Human use – extremely attractive exotic pets

**Consumer/Decomposer:** Yeast Beast

- Habitat – very limited, only in Mead Bee hives
- Reproduction – large numbers of offspring
- What it eats – nectar and pollen brought to the hive by the bee
- What eats it – excretes mead that the MoVal Vikings drink
- Human use – no known use

**Decomposer:** Ship Worm

- Habitat – reservoirs such as Lake Perris
- Reproduction – lay many eggs, no care of young
- What it eats – eats anything that is dead

- What eats it – birds
- Human use – no known use, humans think they are ugly

**Climate:** Warm tropical climate with moderate temperatures and high average rainfall

**Symbiotic Relationship:** The Mead Bee has a mutualistic relationship with the Norse Sea Lily. The Mead Bee gets nectar from the Norse Sea Lily and the Norse Sea Lily is pollinated by the Mead Bee.

**Ecology – Build Your Own Ecosystem Poster Rubric**

Criteria	Level 4	Level 3	Level 2	Level 1
<b>Knowledge/ Understanding</b>  [ /10]	Includes a balance of biotic and abiotic elements in the ecosystem, and includes only necessary items.  The food web includes all required elements as well as additional information.	Includes a balance of biotic and abiotic elements in the ecosystem.  All required elements are included in the food web.	Includes some biotic and abiotic elements in the ecosystem. Elements may be unbalanced/unnecessary.  All but one of the required elements are included in the food web.	Is missing either abiotic or biotic elements in the ecosystem.  Several required elements are missing.
<b>Communication</b>  [ /10]	All organisms are labelled with a name. All web organisms are labelled as producers or consumers. All consumers are labelled as a herbivore, carnivore, omnivore or decomposer.  Uses vocabulary and terminology of the discipline with a high degree of effectiveness.  The ecosystem is exceptionally attractive in terms of design, layout and neatness.	All required organisms are labelled with a name. All web organisms are labelled as producers or consumers. Most organisms are labelled as a herbivore, carnivore, omnivore or decomposer.  Uses vocabulary and terminology of the discipline with considerable effectiveness.  The ecosystem is attractive in terms of design, layout and neatness.	All required organisms are labelled with a name. Most of the organisms are labelled as either a producer or consumer.  Uses vocabulary and terminology of the discipline with some effectiveness.  The ecosystem is acceptably attractive, through it may be a bit messy.	Few or no labels present on the model/web.  Uses vocabulary and terminology of the discipline with limited effectiveness.  The ecosystem is distractingly messy or poorly designed. It is not interactive.
<b>Thinking/ Investigation</b>  [ /10]	Includes all information about all the species present, and does so in a sustainable way.  The energy needs of the	Includes all information about the species present and includes at least one of each type of species.  There are many	Has included information about some of the species, but is missing a few types of species.  There are producers	Is missing the necessary information for species present in the ecosystem.  There are producers

	producers and consumers have been carefully considered and both will survive indefinitely.	producers in the ecosystem, enough to support the needs of the consumer comfortably.	and consumers in the ecosystem and it should be able to sustain itself for a short period of time.	and consumers in the ecosystem, but not in ample quantity to be self-sustaining.
<b>Application</b> <b>[ /10]</b>	<p>Is able to correctly identify all the biotic interactions with a great amount of thought for sustainability.</p> <p>Is able to make significant links between human interactions and the effects on ecosystems.</p>	<p>Is able to correctly identify the necessary biotic interactions within the ecosystem.</p> <p>Includes a great deal of effects that humans have on the ecosystem.</p>	<p>Is able to identify one biotic interaction within the ecosystem.</p> <p>Includes some minor effects of humans interactions on the ecosystem.</p>	<p>Is missing all biotic interactions.</p> <p>Did not include the effects of human interactions on the ecosystem.</p>