

# Save Your Ecosystem!

Calling all wildlife lovers, your natural habitats are in danger! Developments are trying to build new buildings on your local ecosystem, and something has to be done - and FAST. It's up to you to research everything you can about the importance of your ecosystem, and defend its right to become a Certified Protected Wildlife Area.

## Performance Task Outline

*Role: Research the following about your ecosystem. Each section in bold should become a heading for part of your presentation/pamphlet.*

1. **Biotic Factors in \_\_\_\_\_ Ecosystem:** List at least 10 found in your ecosystem (be sure to include examples of producers, primary consumers, secondary consumers, tertiary consumers, and decomposers – See Step 4 Below).
2. **Limiting Factors in \_\_\_\_\_ Ecosystem:** Select one population in your ecosystem and tell the following:
  - a. Select one **density-dependent** limiting factor (from your notes) and tell how it could affect this population.
  - b. Select one **density-independent** limiting factor (from your notes) and tell how it could affect this population.
  - c. Check this out if you need more help with limiting factors:  
[https://www.tracy.k12.ca.us/sites/mitrajuarez/Shared%20Documents/chapter05\\_section02.htm](https://www.tracy.k12.ca.us/sites/mitrajuarez/Shared%20Documents/chapter05_section02.htm)
3. **Cycling of Matter in \_\_\_\_\_ Ecosystem:** Display how needed materials move through your ecosystem.
  - a. Use the diagrams below as a guide to *create your own ecosystem-specific diagram* for each type of matter below (look at diagrams for each, then change the images of the land and living things to make them specific to your ecosystem; for example, if your ecosystem is the forest, you won't draw the ocean in your Forest Water Cycle diagram).
  - b. You may need to do additional research (infographics are helpful) to understand how the cycles work so you can accurately create your diagrams. *CAUTION: If your ecosystem does not include some parts of the water cycle, don't include it! Only include the parts of the water cycle that are in your ecosystem!*
    - i. **Carbon Cycle** (Include: Photosynthesis, respiration, decomposition, weathering of rocks, fossil fuels, burning fossil fuels)
      1. Examples:  
[https://d3pl14o4ufnhvd.cloudfront.net/v2/uploads/dfde1dbd-d2dd-4568-9f99-045502b57b65/3ab49404ea11ccc37be41ab40fa21a7300286c59\\_original.jpg](https://d3pl14o4ufnhvd.cloudfront.net/v2/uploads/dfde1dbd-d2dd-4568-9f99-045502b57b65/3ab49404ea11ccc37be41ab40fa21a7300286c59_original.jpg)  
<http://thecarboncycledio.weebly.com/the-carbon-cycle-steps.html>
    - ii. **Nitrogen Cycle** (Include: Fixation, Nitrification, Assimilation, Ammonification, Denitrification. See the following link for more info on each:  
[http://www.ducksters.com/science/ecosystems/nitrogen\\_cycle.php](http://www.ducksters.com/science/ecosystems/nitrogen_cycle.php))
      1. Example: <https://i.ytimg.com/vi/a6cmO-xaZZU/maxresdefault.jpg>
    - iii. **Water Cycle** (Include: Evaporation, Transpiration, Condensation, Precipitation, Surface Runoff, Infiltration, Groundwater)

1. Example:

[http://solutions.3m.com/3MContentRetrievalAPI/BlobServlet?lmd=1386707825000&locale=en\\_US&assetType=MMM\\_Image&assetId=1361759116261&blobAttribute=ImageFile](http://solutions.3m.com/3MContentRetrievalAPI/BlobServlet?lmd=1386707825000&locale=en_US&assetType=MMM_Image&assetId=1361759116261&blobAttribute=ImageFile)

**4. Flow of Energy and Matter in \_\_\_\_\_ Ecosystem**

- a. Create one food web (with ecosystem-specific pictures, correct labels, and correct arrows) using all 10 biotic factors from #1.
  - i. Resource to help with food web: <http://www.whateats.com/>
- b. EXTRA CREDIT: One ecological pyramid using at least 4 of the biotic factors in the food web:
  - i. At least 4 trophic (food) levels
  - ii. Energy that each level has
  - iii. Energy that is lost between each level
  - iv. Resource to help with extra credit: <http://www.bbc.co.uk/education/guides/zqyj6sg/revision>
  - v. Resource to help with extra credit: <https://s-media-cache-ak0.pinimg.com/originals/1f/b2/b5/1fb2b50378afe78b74709b88d87cdfa8.png>

**5. Population Dynamics**

- a. Find one example of each type of symbiotic relationship using organisms from your ecosystem:
  - i. **Mutualism**
  - ii. **Commensalism**
  - iii. **Predator-prey**
  - iv. **Parasitism**

**6. Human Impact**

- a. Research how human development (building neighborhoods, stores, etc.) would negatively impact this ecosystem.
  - i. Select a density-dependent limiting factor (different than the one used in #2) and explain how it might increase for the population in used in #2 because of human development?
  - ii. Are there any protected species that live in the ecosystem that might become extinct because of human development?
  - iii. What would we humans lose if we chose to develop in this ecosystem (think about what we need – is there a reservoir for water, are there lots of trees that provide oxygen and protect against high winds, peace of mind knowing that predators don't need to raid human lands because they have enough food etc. in the ecosystem, a place(s) for recreation that a lot of people enjoy, etc.)?

**Product:** You need to develop a presentation (of your choice) and a physical “take home” pamphlet outlining why your ecosystem deserves the Certified Protected Wildlife Area designation. Both should clearly outline the research you have done, and further describe how human development would negatively impact the ecosystem.

**Assessment:** Use the rubric to guide your research and creation of your products.

**Ecosystems (you have been assigned or have already chosen one of these – this is just for reference):**

Wetland, Deciduous Forest, Rainforest, Estuary, Desert, Mountain, Prairie, Savanna, Coniferous Forest, Taiga.