



Ecosystems and Endangered Species

Summary

Students research a chosen ecosystem and produce a presentation or booklet entitled “My Ecosystem and Its Endangered Species.”

Objectives

- Nevada Science Standards
 - Content Standard L.5.C: Students understand that there is a variety of ecosystems on Earth and organisms interact within their ecosystems.
 - L.5.C.1: Students know the organization of simple food webs.
 - L.5.C.2: Students know organisms interact with each other and with the non-living parts of their ecosystem
 - L.5.C.3: Students know changes to an environment can be beneficial or detrimental to different organisms.
 - L.5.C.4: Students know all organisms, including humans, can cause changes in their environments.
 - L.5.C.5: Students know all plants and animals have adaptations allowing them to survive in specific ecosystems.
 - Content Standard E.5.A: Students understand that living things can be classified according to physical characteristics, behaviors, and habitats.
 - E.5.A.2: Students know the processes of the water cycle, including the role of the Sun.
- Nevada Social Studies Standards
 - Content Standard G5.0: Students use maps, globes, and other geographic tools and technologies to locate and extrapolate information about people, places, and environments.
 - G5.3.1: Identify and use cardinal directions on a compass rose to locate places on a map.
 - G5.3.5: Construct a simple map including a title, symbols, and directions from a bird’s eye view.
 - Content Standard G6.0: Students understand the physical and human features of places and use this information to define and study regions and their patterns of change.
 - G6.3.7: Identify latitude and longitude on a map or globe.
 - Content Standard G8.0: Students understand effects of interactions between human and physical systems and the changes in use, distribution, and importance of resources.
 - G8.3.3: Compare ways people modify the physical environment
 - G8.3.5: Describe ways humans depend on and manage natural resources within their communities.
- Nevada Computer and Technology Education Standards
 - Content Standard 2.0: Students use appropriate productivity tools including, but not limited to, word processing, spreadsheet, database, multimedia, and telecommunications.

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- 2.3.3: Search a database to locate specific information (e.g. electronic sources, telephone book, encyclopedia, and library card catalog).
 - 2.3.5: Explain the purpose of a multimedia presentation using multimedia software
 - Content Standard 3.0: Students use various technology tools to research information and evaluate its accuracy and appropriateness in order to solve problems and make decisions.
 - 3.3.1: Select a research topic or define a problem using technology tools.
 - 3.3.3: Select information for a research topic or problem from a remote resource.
- Common Core Standards for English Language Arts
 - RI.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
 - RI.2: Determine the key idea of a text; recount the key details and explain how they support the main idea.
 - RI.3: Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in a technical procedure in a text, using language that pertains to time, sequence, and cause/effect.
 - RI.4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
 - RI.5: Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.
 - RI.7: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
 - RI.9: Compare and contrast the most important points and key details presented in two texts on the same topic.
 - W.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
 - W.2.a: Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.
 - W.2.b: Develop the topic with facts, definitions, and details.
 - W.2.c: Use linking words and phrases (e.g., *also*, *another*, *and*, *more*, *but*) to connect ideas within categories of information.
 - W.2.d: Provide a concluding statement or section.

Materials

- Biology Textbooks or library resources
- Internet access
- Art Materials for Poster Presentation (if applicable)
- Poster Board for Presentation (if applicable)



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On-Line Resources

- www.epa.gov/gateway/science/ecosystems.html
- www.AnimalArk.org
- www.iucnredlist.org
- www.fws.gov/endangered

Introduction

There are a wide variety of habitats on Earth. Each habitat hosts a unique and diverse array of plants and animals. Together, these habitats and hosted species create a complex, dynamic ecosystem. Removal of one part may send “shock waves” throughout the rest of the ecosystem. For example, when wolves were removed from the Yellowstone National Park area, elk and deer populations significantly increased. These large ungulate populations, still facing the same limited resources, over-consumed the available grasses and tree shoots, killing many plant species. As plants and trees began to disappear, the diversity of birds decreased as well.

Lesson Plan

1. Have each student or group of students select an ecosystem from the following list:
 - a. Freshwater
 - b. Tropical
 - c. Savanna
 - d. Desert
 - e. Temperate Grassland
 - f. Temperate Deciduous Forest
 - g. Coniferous Forest
 - h. Tundra
 - i. Ocean
2. Provide or instruct students to use library resources and/or the internet to research the physical conditions of their chosen ecosystem. The conditions should include but are not limited to:
 - a. Latitude
 - b. Temperature
 - c. Rainfall
 - d. Population
 - e. Unique resources
 - f. Economic value
3. Have students consider how they would get to their chosen ecosystem.
4. Have students describe the flora and fauna present, including an explanations of:
 - a. The food web
 - b. The nitrogen cycle (if applicable to grade level)
 - c. The water cycle
5. Have students also select one endangered species in their chosen ecosystem and explain:



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- a. Why this species is endangered
 - b. How this species can be or is being protected
 - c. What might happen if this species disappears altogether
 - d. One cool fact that is of special interest about this organism
6. Instruct students to put all their information into a booklet, PowerPoint, or Poster presentation.

Assessment

Students are assessed through the following:

- Explanation of the Ecosystem's Physical Conditions = 10 points possible
- Explanation of the Ecosystem's Population = 10 points possible
- Explanation of the Ecosystem's Unique Resources and Value = 10 points possible
- Explanation of Directions to the Ecosystem = 10 points possible
- Explanation of Flora and Fauna Present in the Ecosystem = 10 points possible
- Explanation of the Ecosystem's Food Web, Water Cycle, and Nitrogen Cycle (if applicable) = 10 points possible
- Explanation of the Selected Endangered Species and a Cool Fact = 10 points possible
- Explanation of threats to the Selected Endangered Species and of Possible Results from the Species' Removal = 10 points possible
- Quality of Oral Presentation = 20 points possible