



Performance Expectations: Next Generation Science Standards:

MS-LS2-1.

Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

Key Understandings

Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. Threatened and endangered species can be the result of many different factors.

Common Student Misconceptions or Challenges

Students may have heard of species being “endangered” or “threatened” but may not know the history of why we have such categories, what it means to list a species or how to delist a species. They may believe that once a species is on the list they can never come off or that it means they will die out.

Lesson 9: Changes in Local Biodiversity

Understanding rare, endangered or threatened species in local ecosystem.

Grade Level: Middle School 6-8

Essential Question:

Are there rare, endangered or threaten species in your area?

Objectives:

At the end of this lesson, students will:

- *appreciate* that species may be naturally rare, or they may become rare because of changes to their environment.
- *Understand* that organisms may become endangered or threatened due to many causes.

Assessment opportunities:

At the end of this lesson, you will be able to assess students through:

- Having them add to their field guide entries using the info they find.

Background Information

The students will research and add to their field guide entry from previous lessons. They will need to understand:

- Rare species may have limited ranges, or may have few individuals spread over a wide range. Wyoming’s only endangered plant species, the blowout penstemon, is an example of a plant that is abundant in only a small area. Sage grouse is an example of a species that is found in a large area (many states), but the number of individuals is declining.
- There are many species that are “tracked” (monitored by biologists) because they are rare or declining, that are not federally listed as Threatened or Endangered. These other species must also be considered before land use changes are allowed.
- The difference between endangered versus threatened and what do these mean.



Lesson 9: Changes in Local Biodiversity

Understanding Endangered or threatened species

Materials:

- Computers
- Internet
- Research books

Time Commitment:

1-2 45-class period

Preparation:

- Have resources available for students to use for research (computers, books etc.)
- The threatened and endangered species of Wyoming can be found at:
http://www.fws.gov/wyominges/pages/species/Species_Endangered.html
- A much longer list of rare species found in Wyoming is available at:
<http://www.uwyo.edu/wyndd/species-of-concern/>
- The application WISDOM provides information on wildlife, including T&E and sensitive spp, within a polygon selected by the user.
<http://wisdom.wygisc.org/>. This is the most thorough site for Wyoming, but requires a lot of sorting through info by students.
- The USFWS site <http://ecos.fws.gov/ipac/> also provides a list of T&E spp that may be found at or affected by activity in a polygon designated by the user.
- WyoBio provides range maps for species.

Directions:

1. Students will review their list of organisms to determine if any are rare, threatened or endangered species. Have resources available as a class to do this.

2. If they find any, they will determine and write in their lab notebooks:

What are the needs of the species?

How are the needs of the species not being met?

What are historic numbers of the species in the area?

What is causing the decline in the population?

Is anything being done to protect the species?

3. Should something be done to protect the species or help the population numbers increase? If so what? If not why?

