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 threatened 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](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/](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/](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/](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?