



# The Grass Roots!

## LESSON

**GRADE LEVEL** K-8

**CATEGORY** Plants, Animals and Habitats

**TOPIC** Wild Sheep of North America

## LENGTH

Two 45-minute periods

## MATERIALS

- data sheets
- a key to field identification of grasses, flowers, and shrubs
- 1 m<sup>2</sup> frame (use metre sticks and tape four together to make a square)
- optional: plant presses
- transit

## SETTING

Indoors and Outdoors

## GROUP SIZE

Groups of 3–5

## SUBJECT AREAS

Biology and Science

## KEYWORDS

Human impact, milt, natural hazard, predator, redd, salmon run, spawning

## Overview

Students collect data on herbaceous vegetation and compare these to wild sheep forage and range.

## Objectives

Students will be able to:

- classify different grass species wild sheep use for food;
- analyze the distribution of various grasses in an area;
- collect data and apply techniques for vegetation sampling; and
- work in groups cooperatively.

## Background

Wild sheep populations can be limited by the availability and quality of plants. Wild sheep use many different habitats, but they depend largely on grassland areas for food. Prime grassland habitat generally occurs within the dry rain shadows of mountains. Wild sheep may migrate seasonally from low elevations in the winter to high alpine ranges in the summer. However, in some areas Rocky Mountain bighorn and thinhorns may stay at high elevations year-round. From spring to fall, wild sheep feed on the early new growth of grasses, forbs, and shrubs. In the winter, they find food in areas with lower snow depths or areas kept free of snow by wind. Their teeth can cut grass and shrubs down to ground level, allowing them to get the most out of limited areas of habitat.

Minerals are also an important component of sheep diet. Minerals are found in the grasses and forbs as well as mineral licks. Wild sheep can become malnourished and even die if they don't get high quality food. The threat of malnourishment and starvation is greatest during the winter months when food availability and quality is usually low. Factors affecting availability and quality of food include: competition from domestic livestock, loss of range to development, weather, and absence of wild fires.

Unforested, dry, native grasslands cover a small land area. Many of the grassland areas have disappeared because of overgrazing, human settlement, crops, and orchards, and encroachment of forest in-growth. The different species of grasses that once existed are now being lost because of competition from non-native species, fire suppression, and cattle. Grasslands depend on fires to maintain their species composition. Wild fires were once a common event throughout interior forests, helping to control conifer regeneration and returning nutrients to the soil. Occasionally, scorching wild fires created areas of new succulent growth,

which generated new crops of grasses that supplied wild sheep with an abundant food source. Without fires, conifers and forest in-growth tend to encroach upon grassland areas. Today, most wild fires are controlled by forest managers, so the great, uncontrolled fires that once renewed the land are rare. Prescribed or controlled fires have been used to replace wild fire, but this treatment can be costly and only a limited area can be burned.

## Procedure

### Warm Up

Brainstorm ways in which human activities may impact wild sheep habitat.

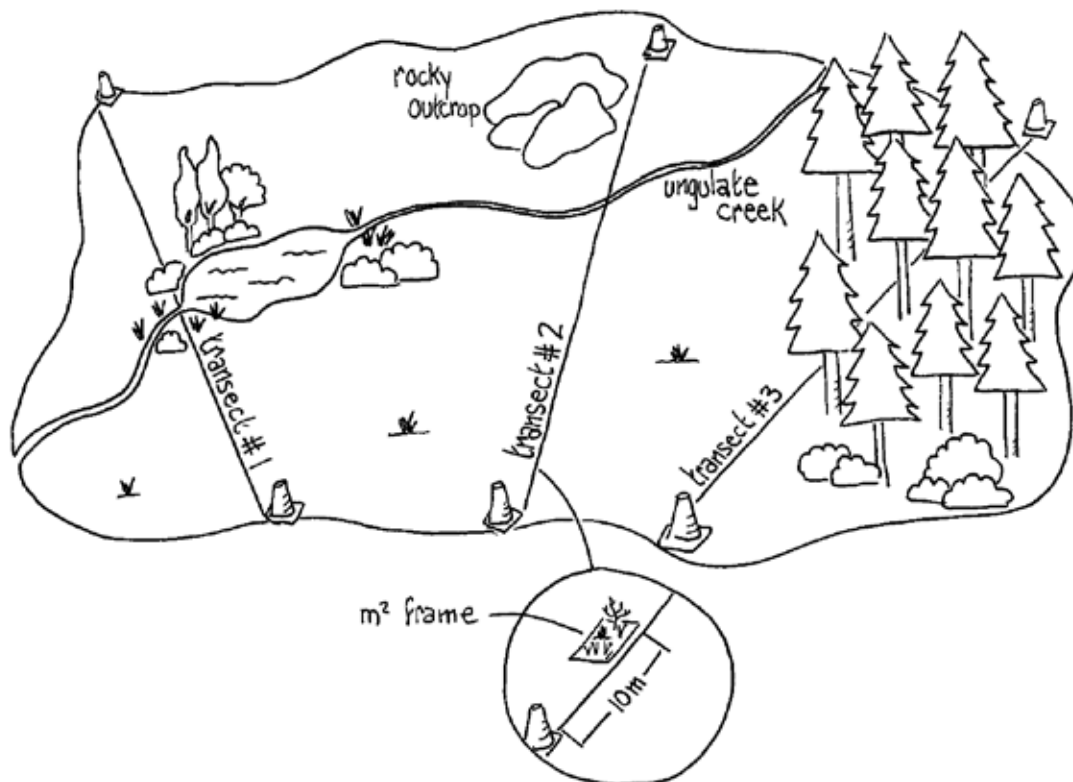
### The Activity

1. Introduce the background on wild sheep habitat. Let the students hypothesize where wild sheep would find suitable forage. Have the students work in small groups. Before taking the students out in the field, conduct a classification exercise on keying out different types of vegetation. Introduce grasses, forbs, and shrubs. Provide examples of each.
2. Choose a site that has a mixture of grassland and forest. Set three transects approximately 100 m in length that will provide a cross section of the area.

3. To complete the survey faster, assign each group a transect (#1, #2 or #3). Each group will conduct a sample every 10 metres on their transect by placing the 1 m<sup>2</sup> frame and recording the different species and their abundance. For example, species #1 is a Salix (willow) and it covers approximately 30% of the 1 m<sup>2</sup> at 10 m. The total percentage for each sample should not exceed 100%. Have the groups do this for the length of the 100 m transect. For each 100 m transect, there should be 10 different sets of sample data.
4. Assign one group the task of collecting a sample or picture of species that students are unable to identify. This group will be responsible for providing the class with a list of names of all species present in the study area.
5. After the data have been collected, students will compile their results. Post the data sheets for each transect on a bulletin board. Have the students, in their groups, analyze the data and draw up their conclusions based on this study.

### Wrap up

Discuss the data and conclusions with the class.



## Assessment

1. Identify five different plant species.
2. List the advantages of wild sheep seasonal migration on the grassland ecosystem.

## Extension

1. Try analyzing soil in different areas.
2. Try "Seed Need" in the Project WILD Activity Guide.
3. Let the students make a field guide for their study area and include pictures and descriptions of the plants.
4. Return to this site during winter and compare what would be available for sheep.
5. Introduce the life cycle of grasses.
6. Try "Food To You!" p. 45 in B.C. Teacher's Guide to the State of the Environment Report.
7. Discuss how ruminants digest food.
8. Try "Build A Grass Plant" p. 183 in Jenepher Lingelbach's Hands On Nature.

## References

Ministry of Environment, Lands and Parks. 1993. State of the Environment Report For British Columbia.

Pohl, R.W. How To Know The Grasses. Dubuque, IA: Wm. C.Brown, 1978.

