Grasses, Forbs, and Shrubs. Oh My!

Grade: 4-6
Duration of Lesson: 1 week

Brief: Students will learn about rangeland plants and plants native to Montana. They will take quizzes and photograph different species.

Materials:
Grasses, grass-likes, forbs, and shrub handouts
Grasses, grass-likes, forbs, and shrub quizzes
Useful website: Montana Kids-Bluebunch Wheatgrass:
http://montanakids.com/facts_and_figures/state_symbols/state_grass_bluebunch_wheatgrass.htm

Key Terms
Grasses, grass-likes, forbs, shrubs, rushes, sedges, leaf veins, fibrous, hollow, jointed, parallel, taproot, bulbous

Standards / Objectives

Arts Content Standard 2: Students apply and describe the concepts, structures, and processes in the Arts. 2. Visual Arts: Apply knowledge of techniques to create works. End of Grade 8.

Arts Content Standard 4: Students analyze characteristics and merits of their work and the work of others. 1. Evaluate the quality and effectiveness of their own and other art works by applying specific criteria appropriate to the style and offer constructive suggestions for improvement. End of Grade 8.

NGSS 4. Structure, Function, Information Processing
Disciplinary Core Ideas, LS1.A: Structure and Function
Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)

NGSS MS. Interdependent Relationships in Ecosystems
Disciplinary Core Ideas, LS2.C: Ecosystems Dynamic, Functioning, and Resilience
Biodiversity describes the variety of species found in Earth’s terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem’s biodiversity is often used as a measure of its health. (MS-LS2-5)
Introduction:
Grasses are one of the largest families in the plant kingdom. Grasses are classified in six main groups: grazing and forage grasses, turf grasses, ornamental grasses, cereals, sugar cane, and woody grasses. Grass is the main food for many grazing animals. Montana’s state grass is bluebunch wheatgrass. Common grasses found on Montana rangelands are: Blue grama, buffalo grass, wheatgrass, timothy, bluestem, needlegrass, and brome grass. Grass flowers are not showy and leaf veins are parallel. Stems are joined and usually hollow.

Grass like plants look like grass but have different characteristics that make them grass-like. Examples of grass-like plants are rushes and sedges. Flowers are not showy and veins in the leaves are parallel. Stems are solid and not jointed. Sedges have triangular stems and rushes have round stems (“sedges have edges and rushes are round”).

Forbs are broad-leaved, non-woody plants. They usually have very showy flowers. Shrubs are plants with woody stems. They may also be called bushes, especially if they have many branches. They provide food for birds and animals and protect the soil from erosion.

Learning / Inquiry Activities:
1. Discuss the 4 different kinds of plants that make up a rangeland. Ask students if they can come up with examples of each type of plant.


3. Explain the characteristics of grasses and give students the Grasses worksheet and mini quiz. Do the same for grass-like, forbs and shrubs.

4. Hold a photo contest. Have students bring in photos they took of grasses, grass-like, forbs, or shrubs. These photos can be hung on the wall or laid out on the table so students can vote for their favorite photo (tell them they can’t vote for their own photo). Each student will tell the others what kind of plant they took a picture of (grass; grass-like; forb; shrub).
like; forb; or shrub) and how they determined what kind of plant it is. Another alternative is to walk around the school and have students determine what kinds of plants are outside or have students realistically illustrate plants.

We invite you to send photos or information on your experience teaching the lesson to the Montana Department of Agriculture’s Ag in the Classroom brenneman@mt.gov
This lesson was adapted from Agriculture in Montana Schools, http://aginmontanaschools.com/
Rangeland Plants

Montana is a rangeland state. 70% of the land area is rangeland. The four major kinds of plants that make up Montana’s rangeland are: grasses, grass-like plants, forbs, and shrubs.

Grasses are one of the most important kinds of range plants. Not only do they cover more than a fifth of the land surface, but they are the most widely distributed of all plants. They are the soil builder. They help to create rich black prairie soil, and protect the soil from erosion. The grasses include the cereal grains and supply most of the forage for livestock.

GRASSES

- Flowers are not showy and usually are the same color as the stems and leaves.

- Leaves are in two rows on the same stem.

- Veins in the leaves are parallel.

- Stems are jointed and usually hollow.

- Roots are usually fibrous.
Grass Plant Parts

MATCHING:

Grass leaves are usually in ____ rows on the stem
   (a) two      (b) four      (c) three      (d) five

The veins in grass leaves look like ____.

3. The stem in a grass looks like ____
   The stem in a grass looks like ____
   (a) ▼       (b) △       (c) ○       (d) □

4. Grass stems are usually ______
   Grass stems are usually ______.

5. The roots of a grass usually look like ____________
   The roots of a grass usually look like ____
   (a)       (b)

6. Grass flowers are like ________________
   Grass Flowers are like ____

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Grass Like Plants
(Plants that look like grasses)

- Flowers are not showy, usually small and brown

- Veins in the leaves are parallel

- Leaves on 3 sides of stem

- Stems are solid and not jointed

- Stems may be triangular or round

- Roots are usually fibrous
**Grass Like Plants- Plant Parts**

1. Grasslike plant leaves are usually in ____ or ____ rows on the stem.
   (a) two     (b) three     (c) four     (d) five

2. The veins in grasslike plant leaves look like______________.
   (a)  
   (b)  
   (c)  
   (d)  

3. The stem in a grasslike plant looks like______________.
   (a)  
   (b)  
   (c)  
   (d)  

4. Grasslike plant stems are usually ________________.
   (a) jointed     (b) non-jointed

5. A grasslike plant's roots usually look like______________.
   (a)  
   (b)  

6. Grasslike plant flowers are like______________.
   (a)  
   (b)  
   (c)  
   (d)  

**Forbs**

Forbs are broad-leafed, non-woody plants with net like veins in the leaves. Many garden plants and plants we call weeds are forbs. Their flowers are usually colorful and show. The stems die back to the base of the plant each year. These plants may have fibrous, tap, or bulbous roots.

- Flowers are usually showy.

- Leaves have net-like veins.

- Stems are solid

- Roots may be fibrous, tap, or bulbous

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Forb Plant Parts

MULTIPLE CHOICE

The veins in forb leaves look like ____, _____, and _____.

(a)  (b)  (c)  (d)

The stem in a forb looks like ______.

(a)  (b)  (c)  (d)

Forb stems are usually ____________.

(a) jointed  (b) not jointed

A forb’s roots usually look like ______, ______, and ______.

(a)  (b)  (c)  (d)

Forb flowers are usually like __________.

(a)  (b)
Shrubs

Shrubs are woody plants with stems that live over winter and branch from near the base. They are like trees, but usually are smaller. The flowers are usually colorful. The leaves have net-like veins, and are shorter and wider than grass leaves. A shrub has a large taproot or strong, branching roots.

- Flowers are colorful
- Leaves have net-like veins
- Stems are woody with growth rings
- Roots are taproots or strong, branching roots
Shrub Plant

The veins in shrub leaves look like ____, ____ or _____.

(a)  (b)  (c)  (d)

The stem in a shrub looks like _____.

(a)  (b)  (c)  (d)

Shrub stems are usually ______________.

3. Shrub stems are usually ______________.
   (a) jointed  (b) non-jointed

A shrub's roots usually look like _____.

4. A shrub's roots usually look like______________.

(a)  (b)  (c)  (d)

Shrub flowers are usually like _______ or _________.

5. Shrub flowers are usually like ___________ ___________.