Section 3: Rangeland Plants

1. Introduction to Rangeland Plants and Plant Classification
2. Plant Scavenger Hunt
3. Skills Challenge: Plant Identification

Learning Objectives

- Students will learn how to tell the difference between forbs, shrubs, grasses, and grass-like plants.
- Students will collect and identify characteristics of rangelands plants.

Idaho General Education Performance Standards

- LS4-MS-2, LS4-MS-3, LS2-5-2, LS2-5-2, LS4-MS-4, LS2-5-3, LS2-MS-4, LS2-MS-6, PS1-5-2, PS1-5-3, LS1-5-1, LS2-5-4

1. Introduction to Rangeland Plants

Most management decisions on rangelands are made by first knowing the various plants inhabiting them. Knowing the types of plants in an area can help people monitor whether changes on the rangeland are positive or negative. Correctly identifying rangeland plants requires knowledge of plant characteristics and plant types.

Plant Classification

Time: 40-45 minutes
Supplies:

- "Growth Form" worksheet
- "Life Span" worksheet
- "Plant Morphology" worksheet

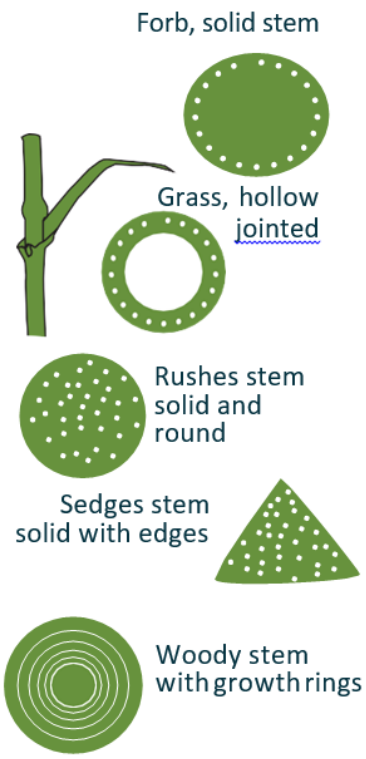
Range plants can be classified and grouped in many different ways, including growth form, life span and origin. We use the morphology of range plants, which describes the physical form and/or external structures of a plant, to help us correctly identify what plants are growing on the rangeland.

Growth Form

We will learn four plant types, or growth forms, that are used to describe rangeland plants. The growth forms include grasses, grass-likes, forbs and shrubs. Rangeland plants can also be described in terms of how much woody tissue they contain (woody vs. herbaceous). This is important because it affects forage value, watershed characteristics of the landscape, habitat characteristics, and fire fuel loads.

Do:

- Using the images below, have students fill out and/or draw plant characteristics in the following table to emphasize the differences between the four growth forms.

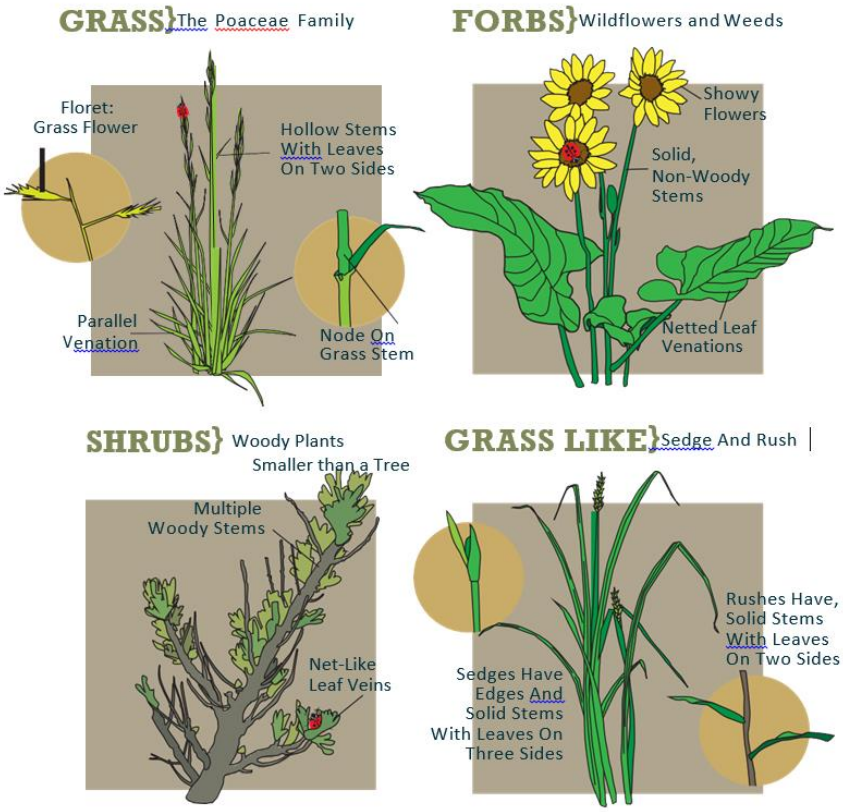


Forbs are plants such as dandelions with showy flowers, netted veins in the leaves, non-woody stems that are also solid, and a taproot. Sometimes we call forbs "broadleaf" plants – they include wildflowers and weeds. Forbs have leaves and stems that die back to the ground each year.

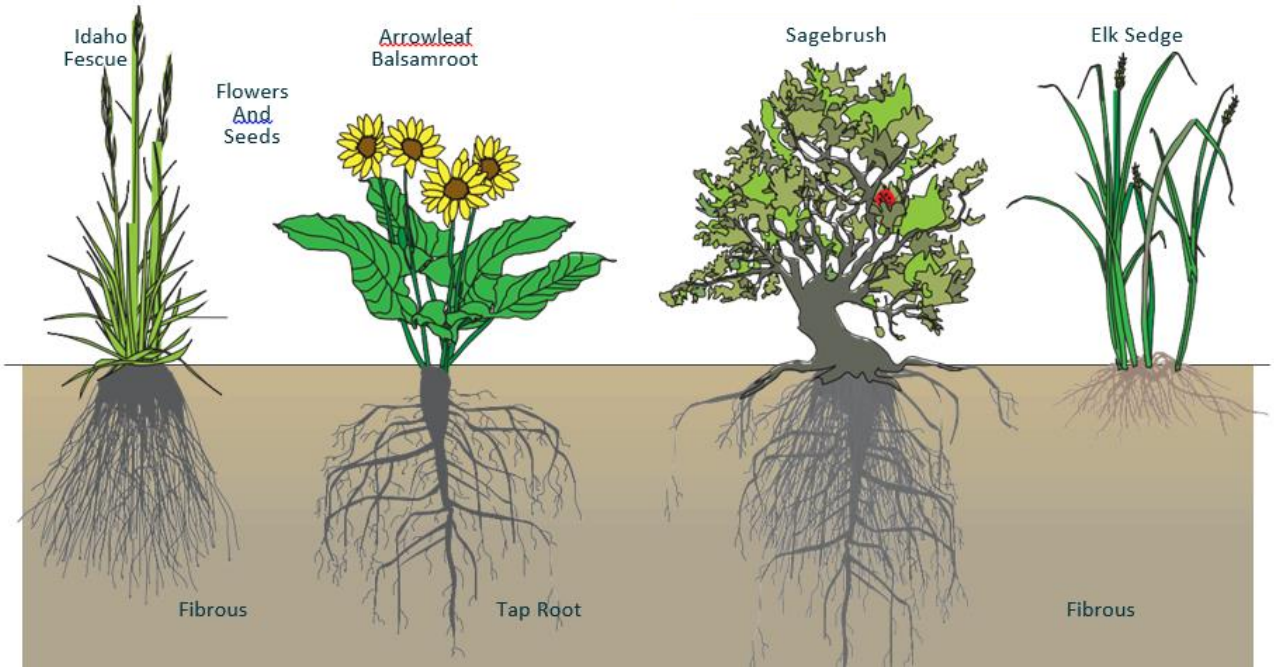
Grasses have hollow, jointed stems that are **herbaceous**, parallel veins in the stems and leaves, and fibrous roots. Grasses do not have colored flowers and they produce grain-like seeds. Sometimes plants we would not think of as grasses, such as wheat and corn are actually grasses.

Grass-like plants look like grasses but have solid stems without joints. They have parallel veins in the leaves. Sedges and rushes are in this group of plants. One of best ways to tell the difference between sedges and rushes is the shape of the solid stems; Sedges have edges (are triangles), and rushes are round.

Shrubs are woody plants that re-grow leaves and flowers on the same stems year after year. Shrubs usually have broad leaves, seeds, and berries that are forage for wildlife. Shrubs differ from trees because they typically have several main stems instead of one main trunk.



ROOTS} Deliver Food and Water

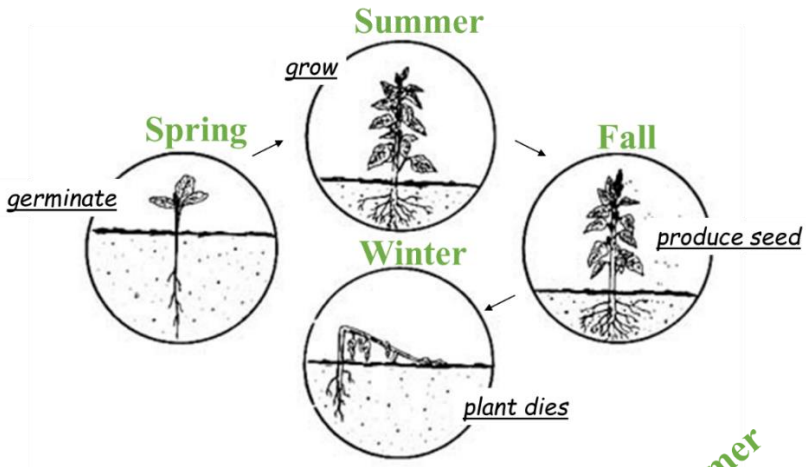


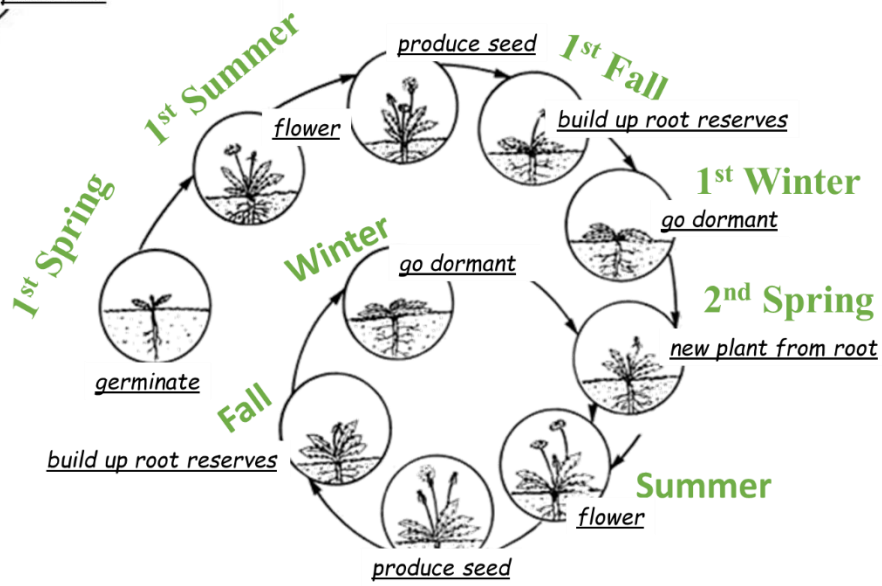
Plant Characteristics	GRASSES	GRASS-LIKES	FORBS	SHRUBS
STEMS --is the stem herbaceous or woody?				
LEAVES --are the leaf veins parallel or netted?				
ROOTS --are the roots fibrous or a tap root				
FLOWERS --are the flowers showy?				

Life Span
The lifespan of a plant refers to the length of time from the germination and sprouting of the plant to the natural death of the plant. In other words, this is how long it takes the plant to grow, flower, produce seeds, and die. Rangeland plants can be classified as **annuals, biennials,** or **perennials.** We will focus on annuals and perennial right now.

Do:
Using the illustrations of the annual and perennial life span have students draw the life cycle for annuals and perennials.

- **Annual** plants live only one growing season. Summer annuals germinate in the spring, complete all growth by the end of the summer, and then die.
- **Biennial** plants live for two growing seasons. During the first growing season, these plants normally form a basal cluster or rosette of leaves. During the second year, they send up a seed stalk that flowers before the plant dies back to the ground at the end of the growing season.
- **Perennial** plants live for several years, and some live up to hundreds of years. The plants produce leaves and stems from the same crown for more than two years. Most range plants are perennials.





Origin

The "origin" of a rangeland plant is the area where it developed and evolved. Knowing the origin of a plant is important because it can affect the way the plant responds to the environment or help predict the spread of species. Rangeland plants can be characterized as either **native** or **introduced** (sometimes introduced species are also called exotic).

- **Native** plants originated where they now occur without the help of humans. They are well adapted to the local climate, soils, animals, and microbes.
- **Introduced** plants are plants occurring outside their natural home range. They have typically been introduced by humans.

Natives and introduced plants may be considered **invasive species**. Invasive plant species spread and establish over large areas and are often more competitive than other plants (e.g., they use the water and nutrients in the soil before desirable species have a chance to grow). Many invasive plants produce a lot of seeds that survival in the soil longer than most desirable plant species and cause economic and/or environmental harm.

Two examples of invasive species on Idaho rangelands are cheatgrass (an invasive, introduced, annual grass), and juniper (an invasive, native, perennial tree).

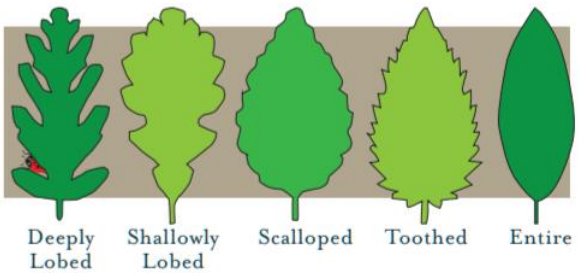
Plant Morphology

When identifying rangeland plants, it is important to pay careful attention to the plant's **morphology.** Here are some of the basic morphological characteristics you should use when identifying plants. *It is much easier to identify plants when their various parts can be described accurately!*

Do:

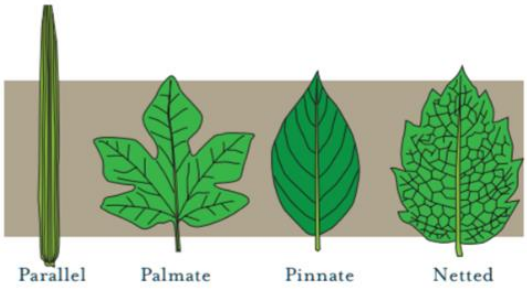
- Review the following characteristics and have students draw each characteristic for practice.

Leaf Edges (or margins)



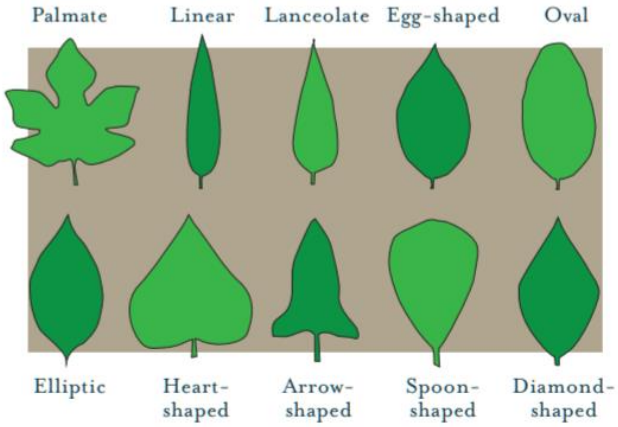
Deeply Lobed	Shallowly Lobed	Scalloped	Toothed	Entire

Leaf Venation



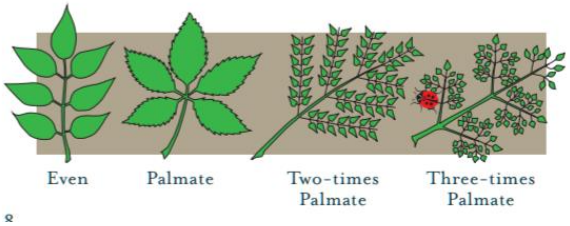
Parallel	Palmate	Pinnate	Netted

Leaf Shapes



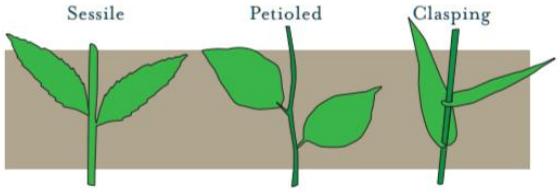
Palmate	Linear	Lanceolate	Egg-shaped	Oval
Elliptic	Heart-Shaped	Arrow-Shaped	Spoon-Shaped	Diamond-Shaped

Leaf Type



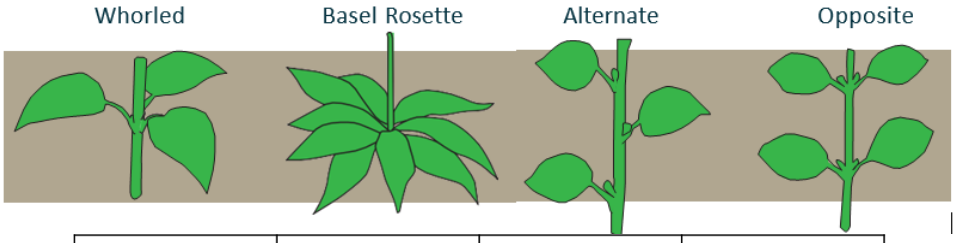
Even	Palmate	Two-times Palmate	Three-times Palmate

Leaf Attachment



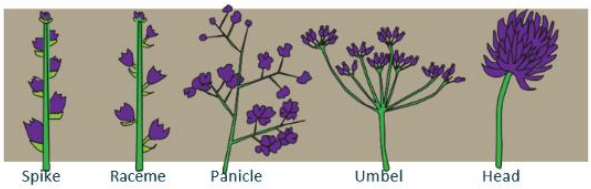
Sessile	Petioled	Clasping

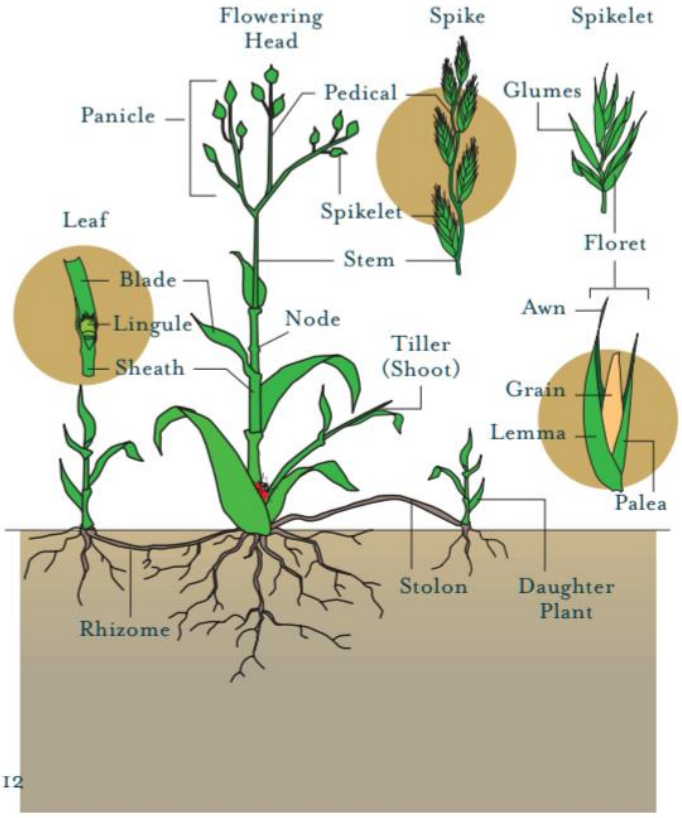
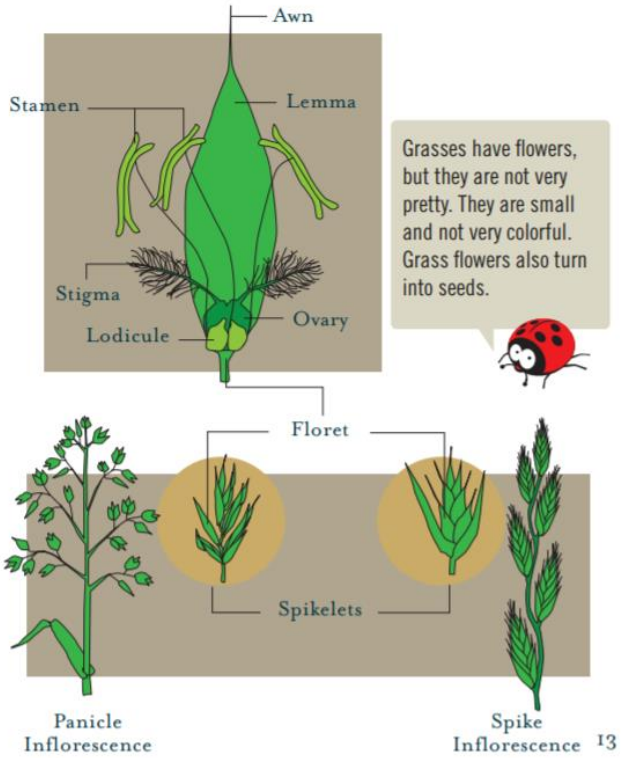
Leaf Arrangement



Whorled	Basel Rosette	Alternate	Opposite

Inflorescence Types



Spike	Raceme	Panicle	Umbel	Head

Grasses have their own set of morphological characteristics.