

Montana's Noxious Weeds: Plant Identification Basics and Weed Identification

MODULE 2

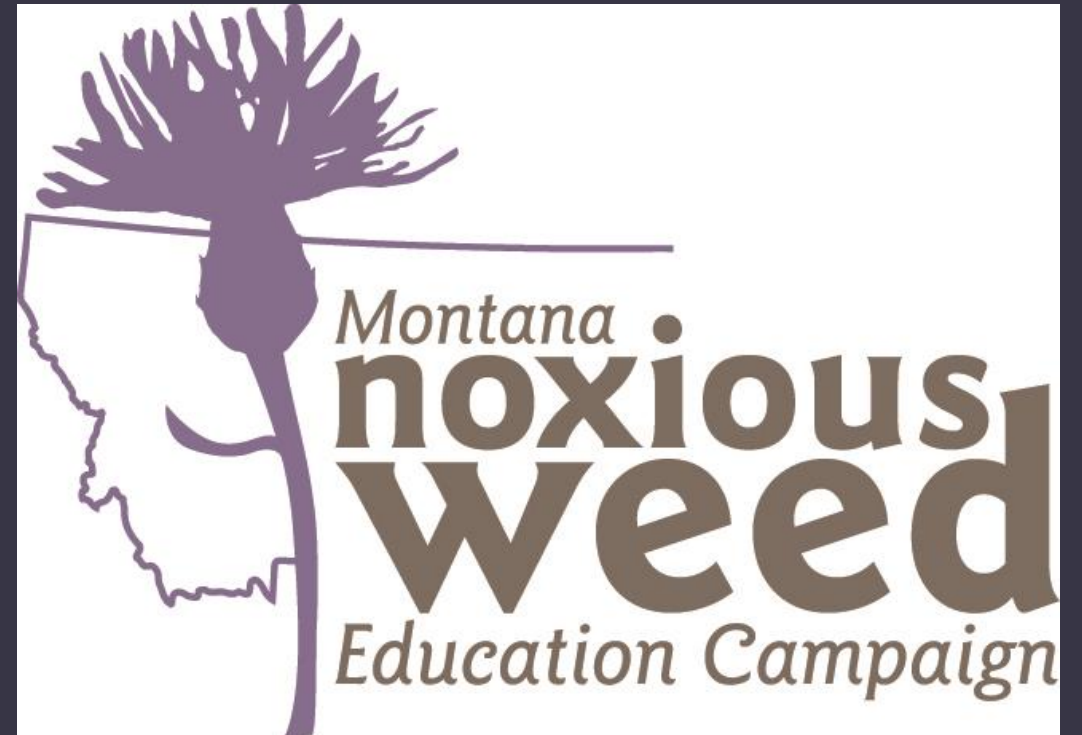
Module Outline—Plant Identification

❖ Lifecycle & Persistence

❖ Grass vs. Forb

❖ Anatomy

- Leaves
- Flowers
- Stems & roots



*The pencil indicates an important diagram, vocabulary term or picture you need to put in your notes.

Weed lifecycles & Persistence

❖ Annual

- Example: Yellow starthistle

❖ Biennial

- Example: Houndstongue

❖ Perennial

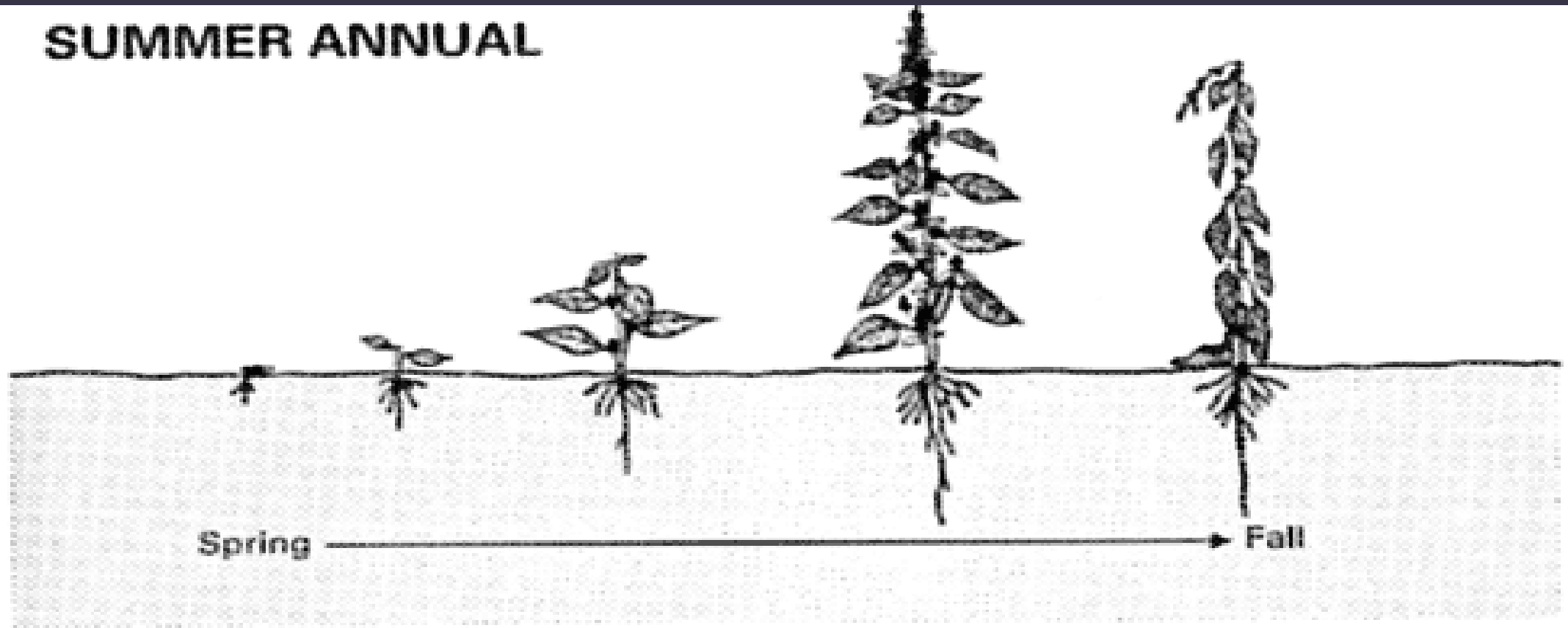
- Example: Spotted knapweed

Houndstongue

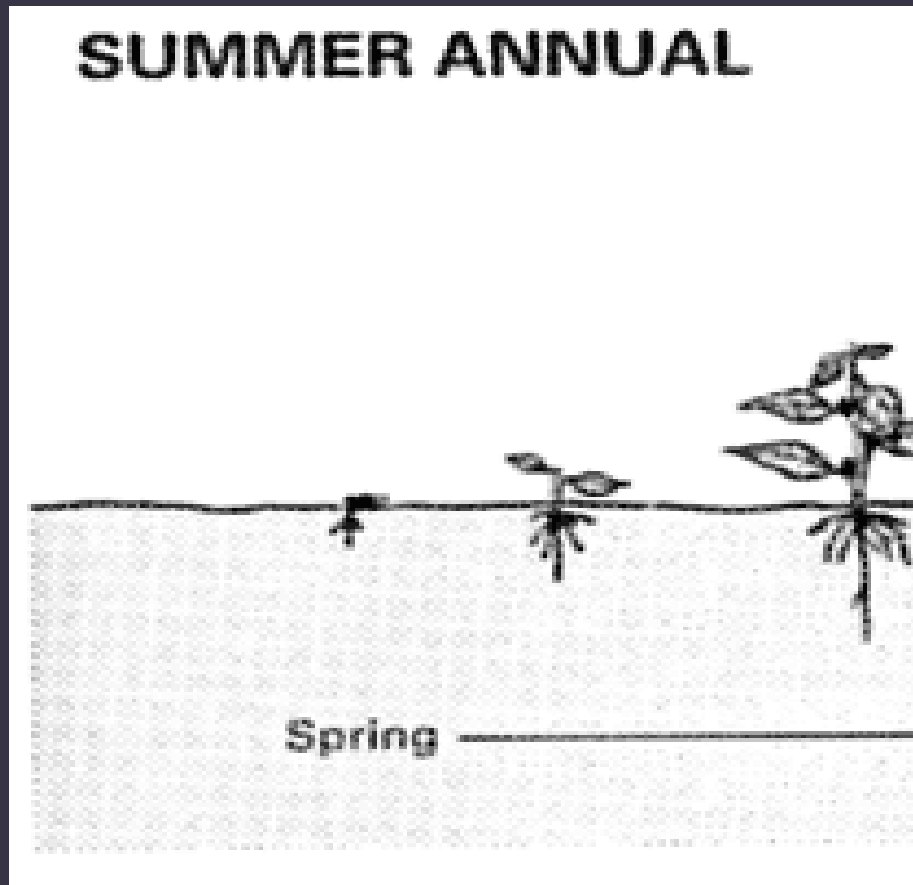


Annual

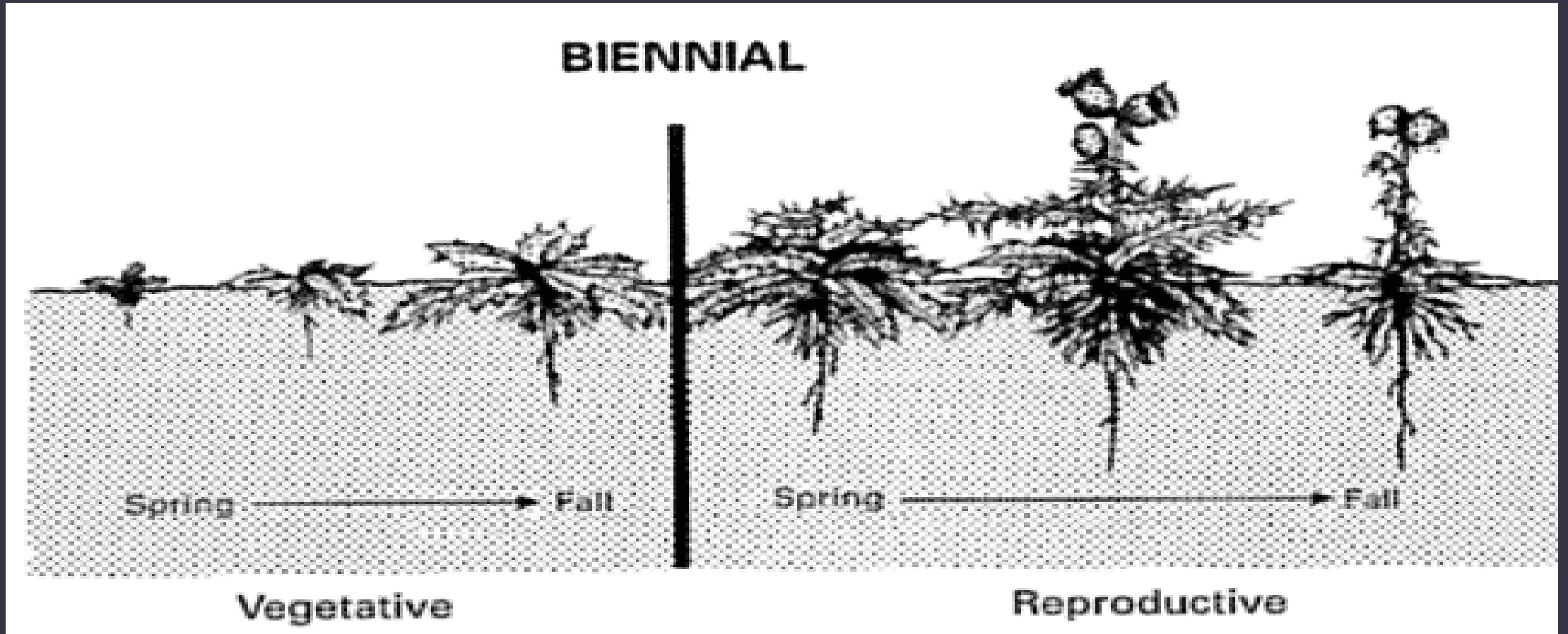
SUMMER ANNUAL



Annual



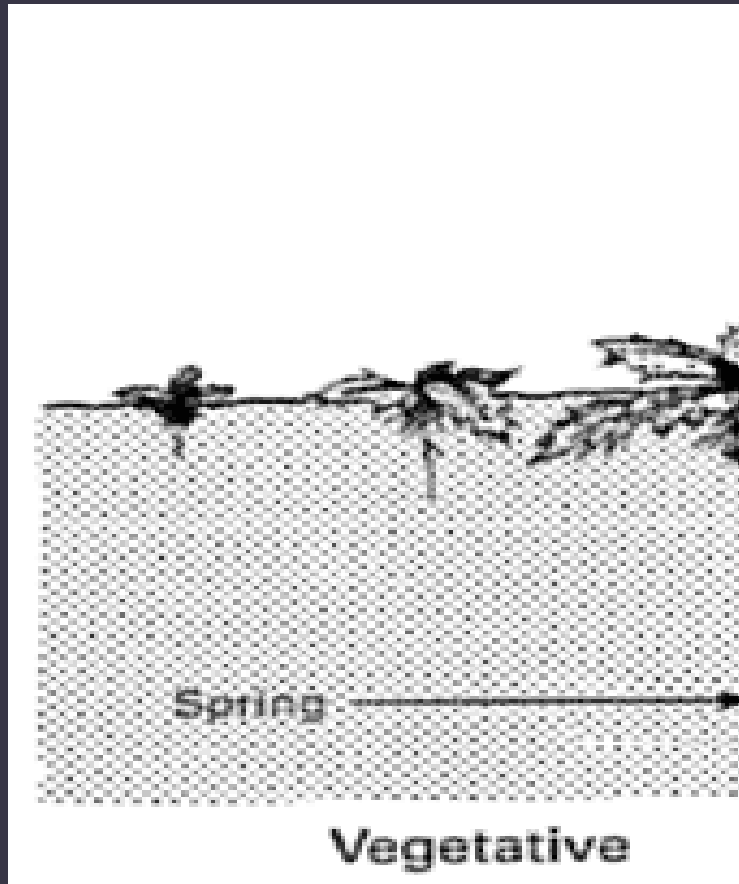
Biennial



Year 1

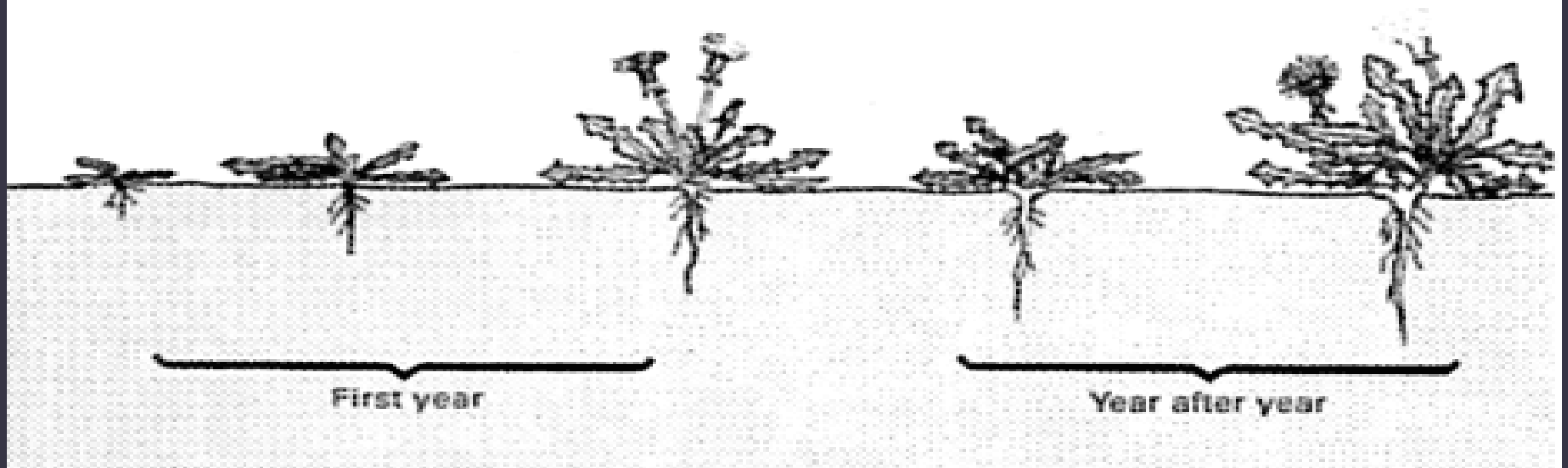
Year 2

Biennial



Perennial

PERENNIAL



Perennial



Rob Routledge, Sault College, Bugwood.org



Bondak Hammeraas, Bioforsk-Norwegian Institute for Ag & Enviro Research, Bugwood.org

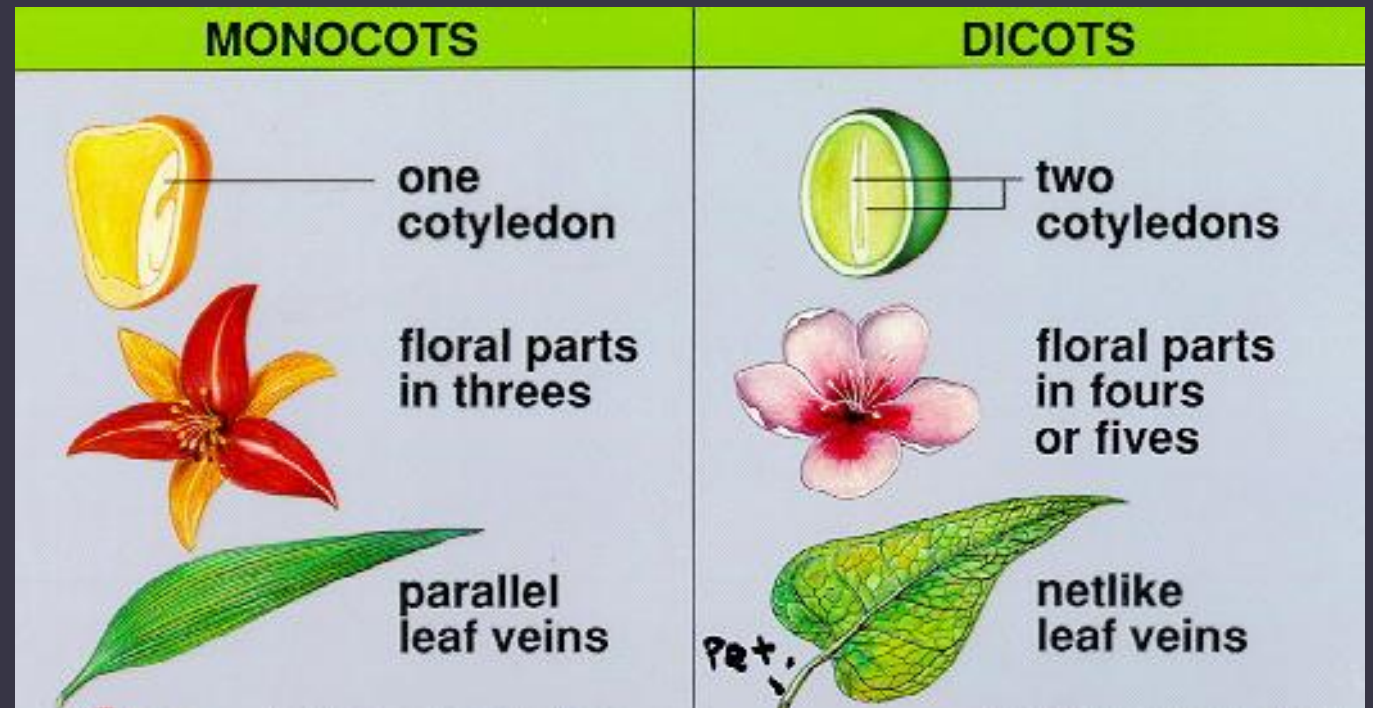
Grass vs Forb

Grass:

- Flowers-not showy, are usually the same color as the leaves and stems
- Leaf veins run parallel
- Stems-jointed and hollow
- Roots-fibrous

Forb:

- Flowers-showy & colorful
- Leaves- net-like veins
- Stems-solid
- Roots-bulb, taproot or fibrous



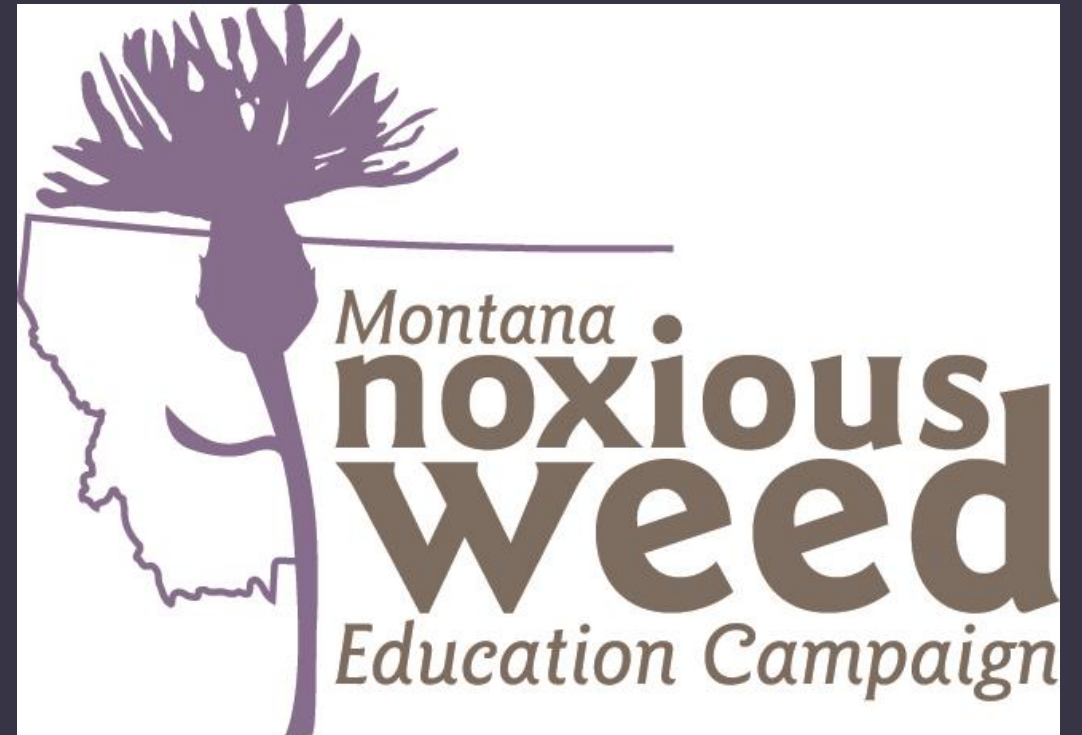
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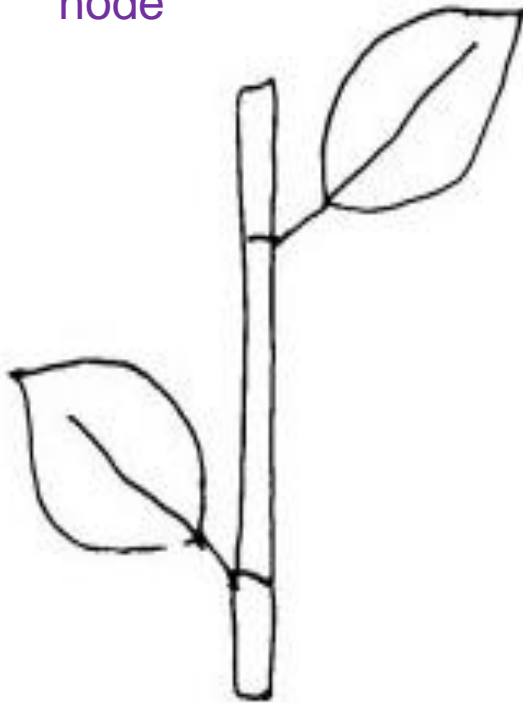
- Leaves
- Flowers
- Stems & roots



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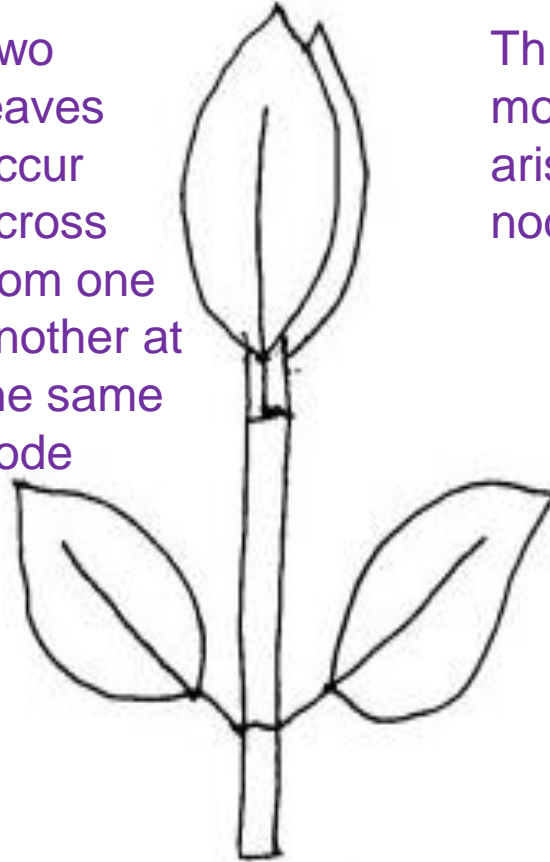
Leaf arrangement: this is one of the first characteristics to observe when trying to identify an unknown plant. Examine the whole stem. Leaf arrangement can sometimes differ at various points along the stem.

Leaves occur singly at each node



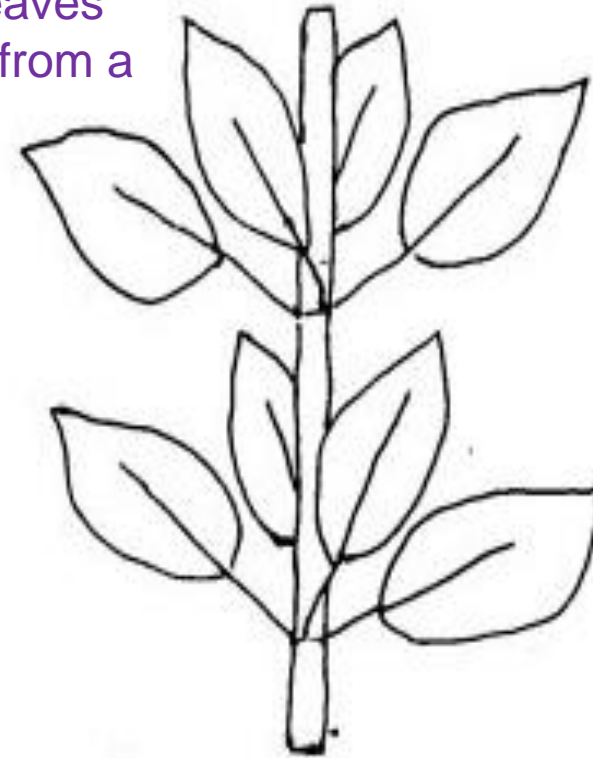
alternate

Two leaves occur across from one another at the same node



opposite

Three or more leaves arising from a node



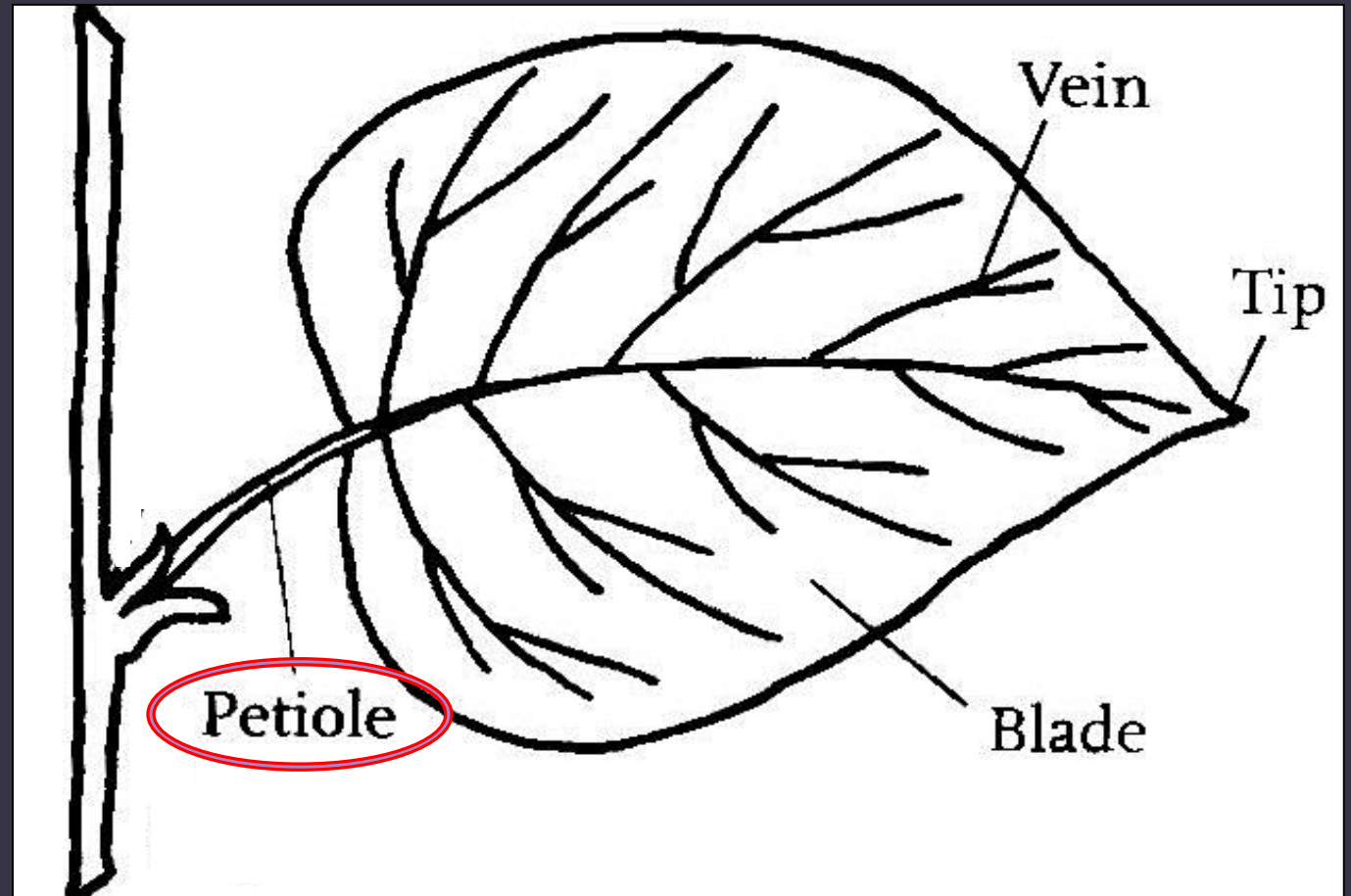
whorled



Leaf parts

Petiole: a leaf stalk

Petiolate: a leaf with a petiole attaching it to the stem

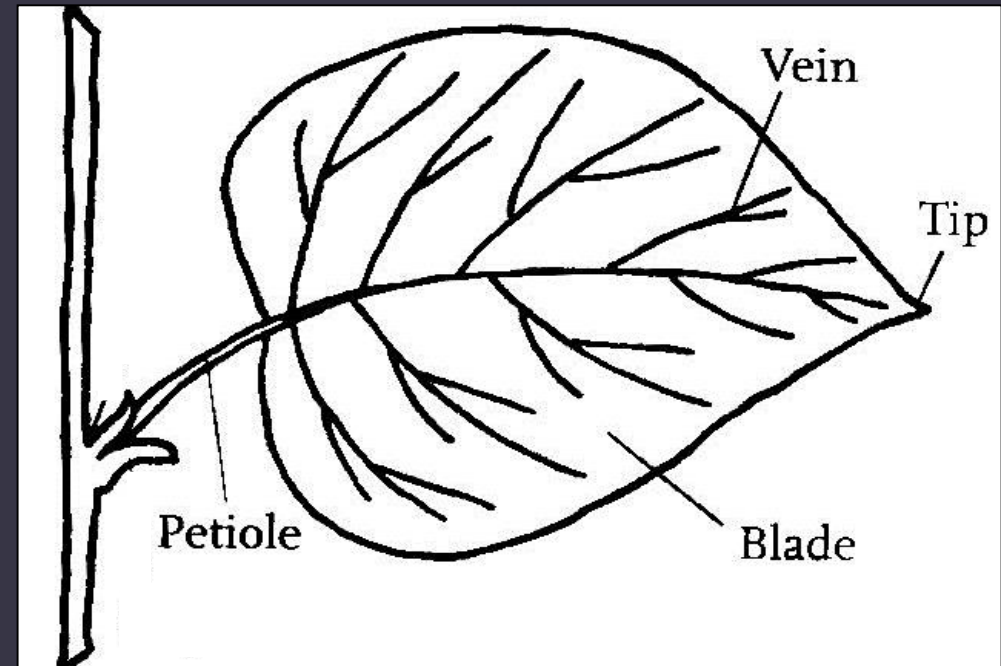
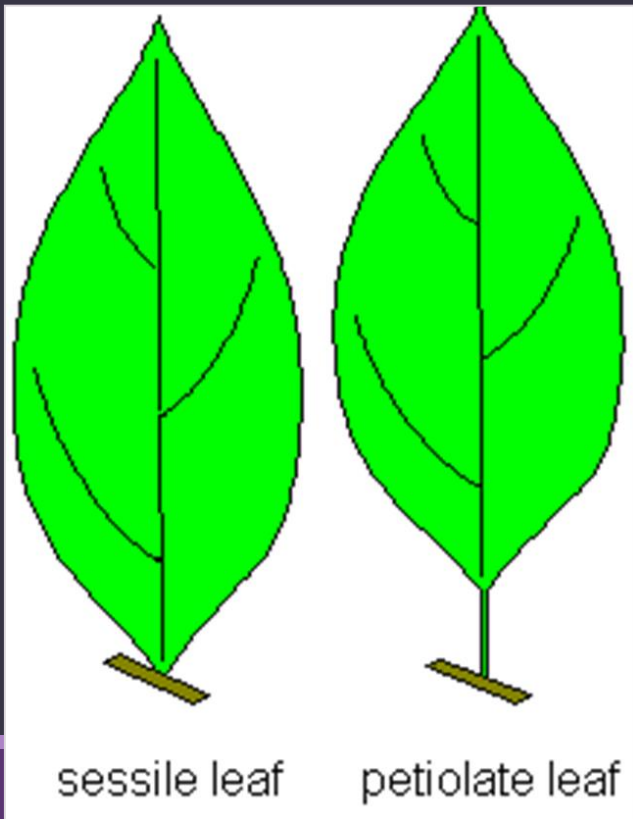


Leaf parts

Petiole: a leaf stalk

Petiolate: a leaf with a petiole attaching it to the stem

Sessile: a leaf without a petiole; attached directly, without a supporting structure

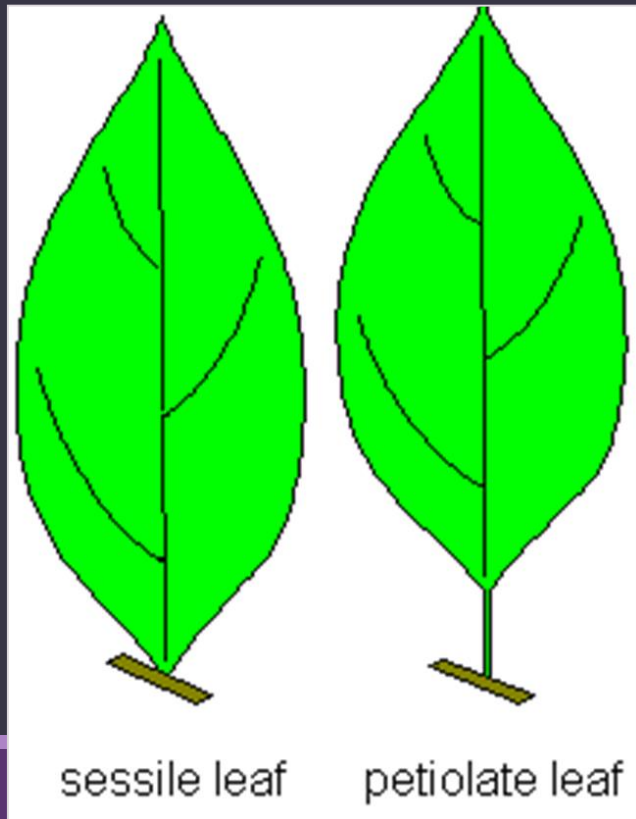


Leaf parts

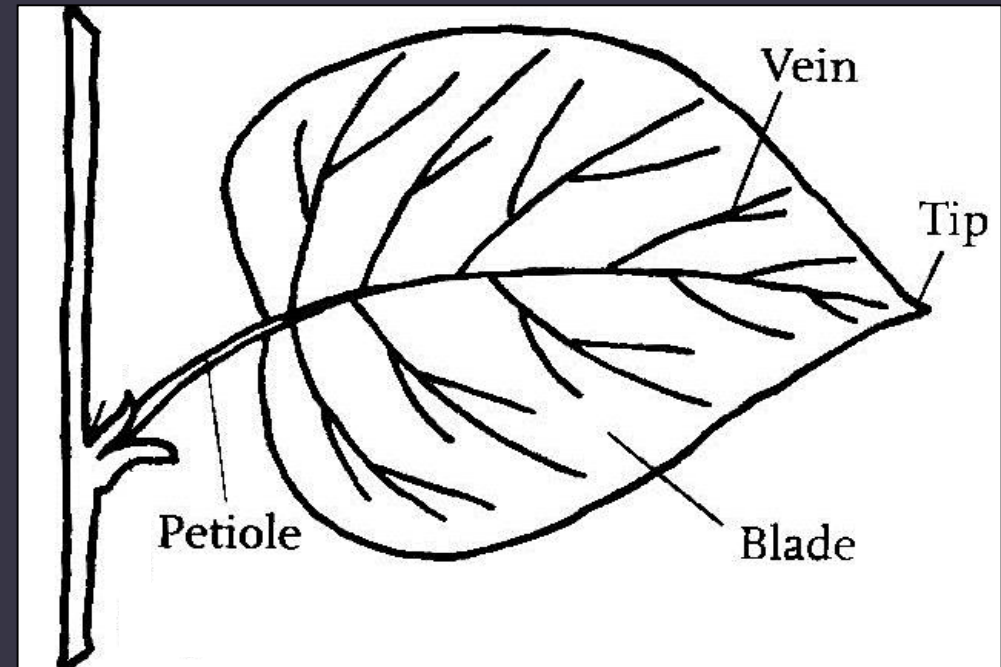
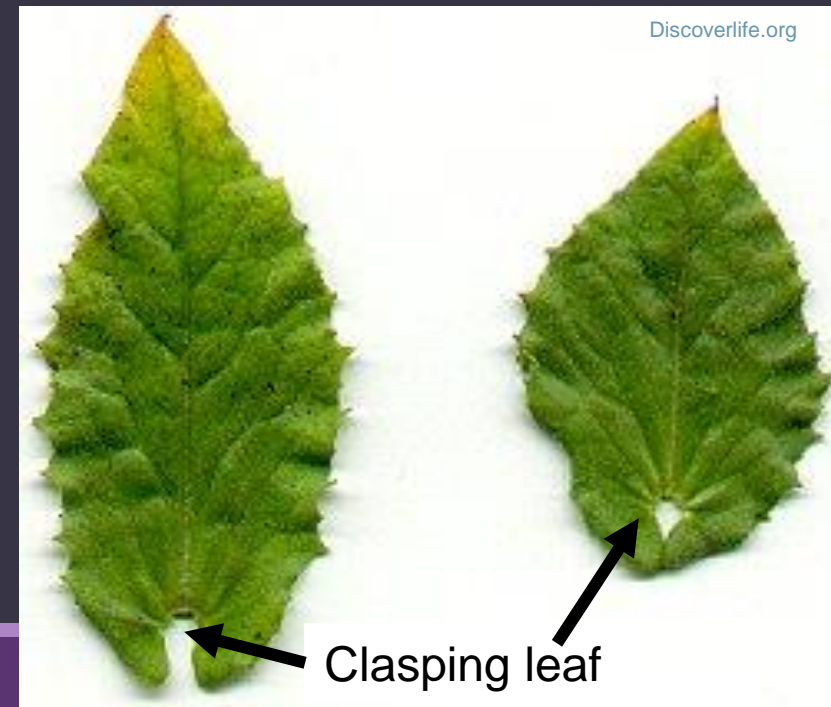
Petiole: a leaf stalk

Petiolate: a leaf with a petiole attaching it to the stem

Sessile: a leaf without a petiole; attached directly, without a supporting structure



Clasping: a sessile leaf with a base that wholly or partly surrounds the stem

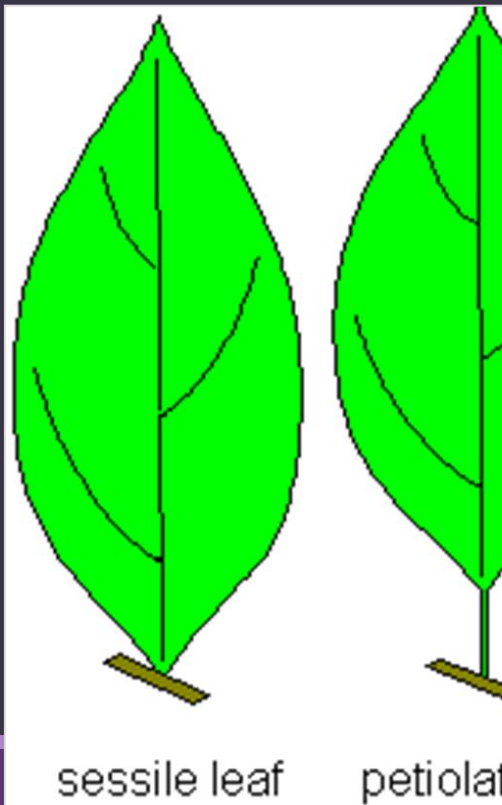


Leaf parts

Petiole: a leaf stalk

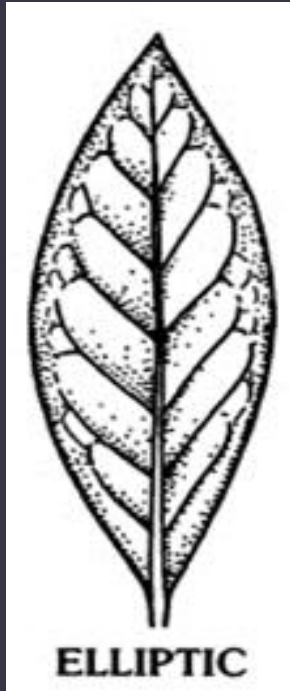
Petiolate: a leaf with

Sessile: a leaf without supporting structure



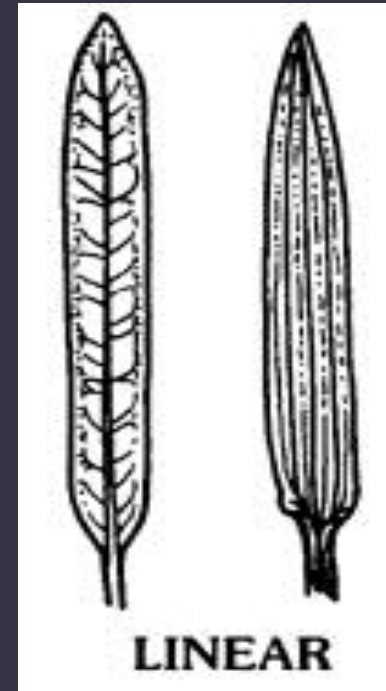
Leaf Shapes

Perennial pepperweed



Example: Perennial pepperweed

Broadest in the middle, narrower at either end



Example: Leafy spurge

Long and narrow with more or less parallel sides



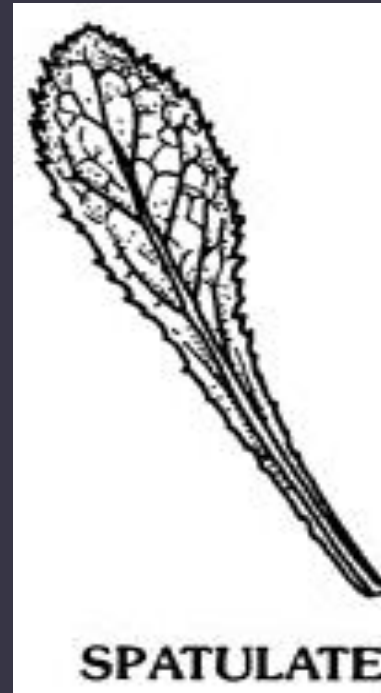
Leaf Shapes

Dyer's woad



Example: Dyer's woad

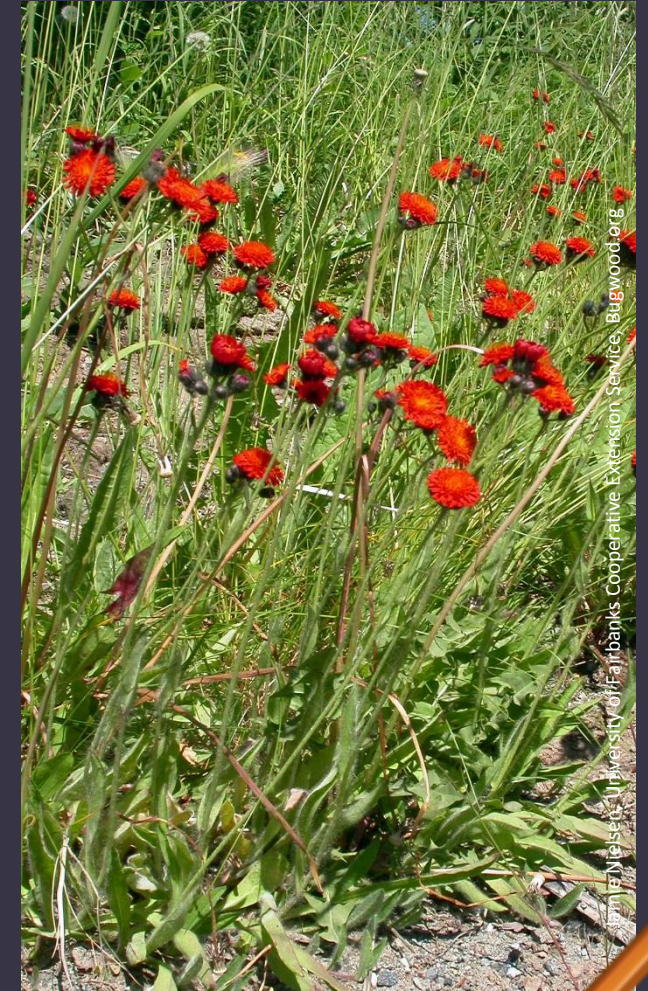
Lance-shaped, much longer than wide, with the widest point below the middle



Example: Orange hawkweed

Like a spatula in shape, with a rounded blade above gradually tapering to the base

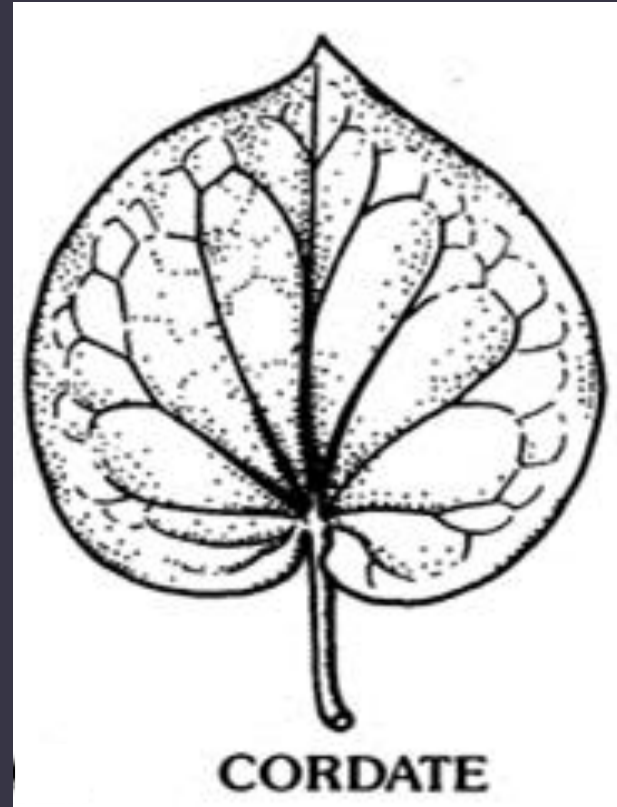
Orange hawkweed



Leaf shapes



Egg-shaped in outline, widest below the middle



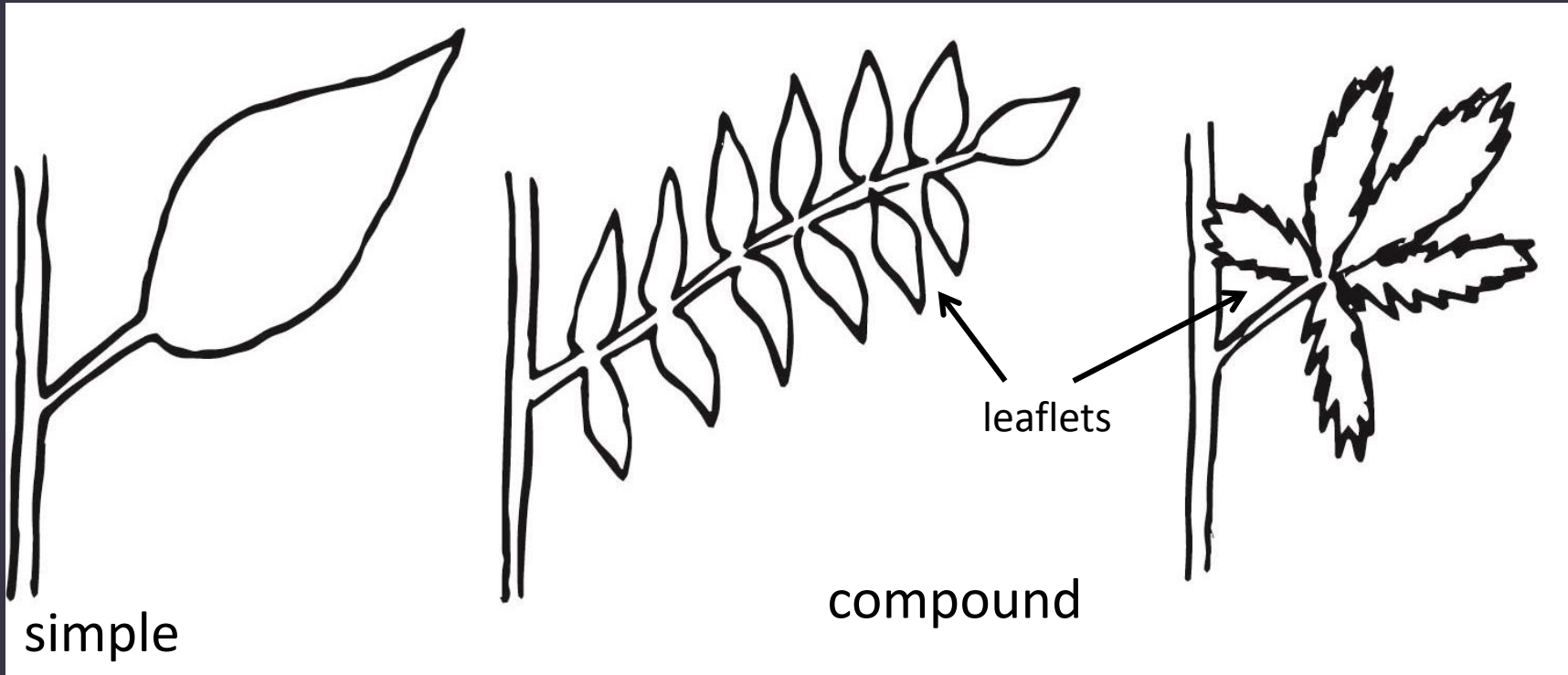
Heart-shaped, with the notch at the base

Example: Japanese knotweed complex



Japanese knotweed

Leaf types



A simple leaf is one that is undivided.

A compound leaf is one that is separated into two or more distinct leaflets.



Leaf types: Simple



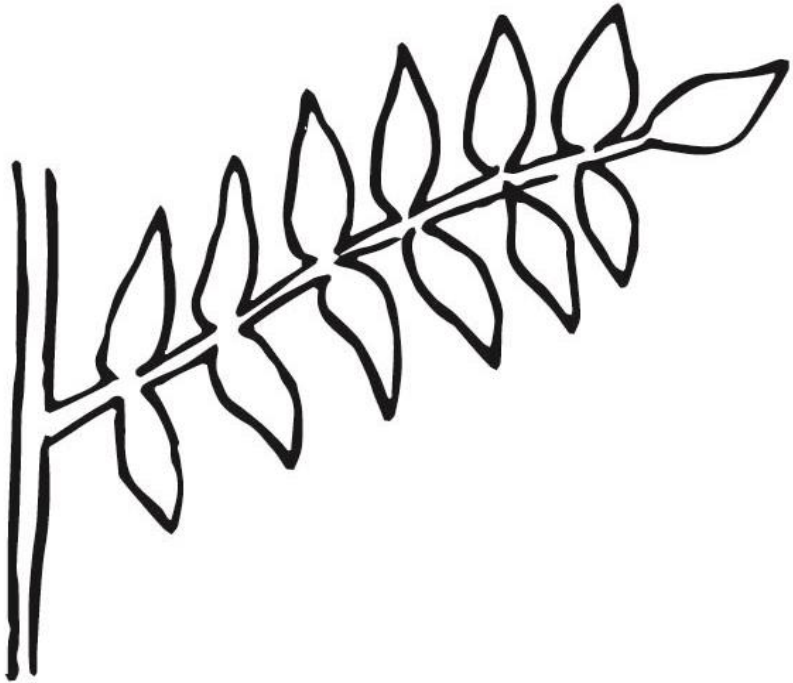
Steve Dewey, Utah State University, Bugwood.org

St. Johnswort

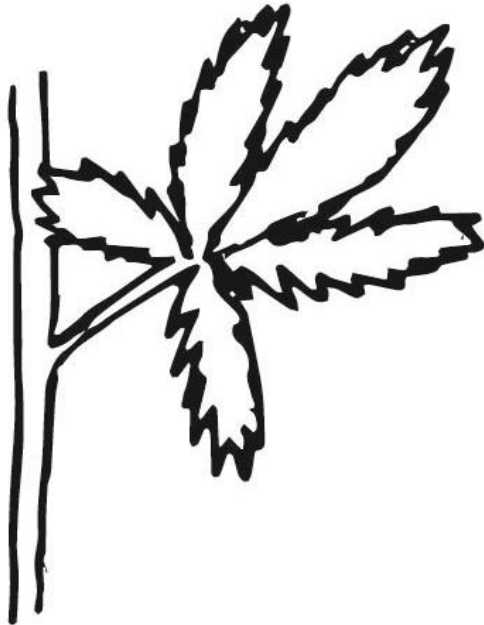
A simple leaf is one that is undivided.



Leaf types



pinnately



palmately

A pinnately compound leaf is one with leaflets arranged on opposite sides of an elongated axis, like a feather.

A palmately compound leaf is one that is divided into leaflets from a common point, like the fingers of a hand.

Leaf types: Compound (pinnately & palmately)



Rob Routledge, Sault College, Bugwood.org

Pinnately

A **pinnately compound** leaf is one with leaflets arranged on opposite sides of an elongated axis, like a feather.

A **palmately compound** leaf is one that is divided into leaflets from a common point, like the fingers of a hand.

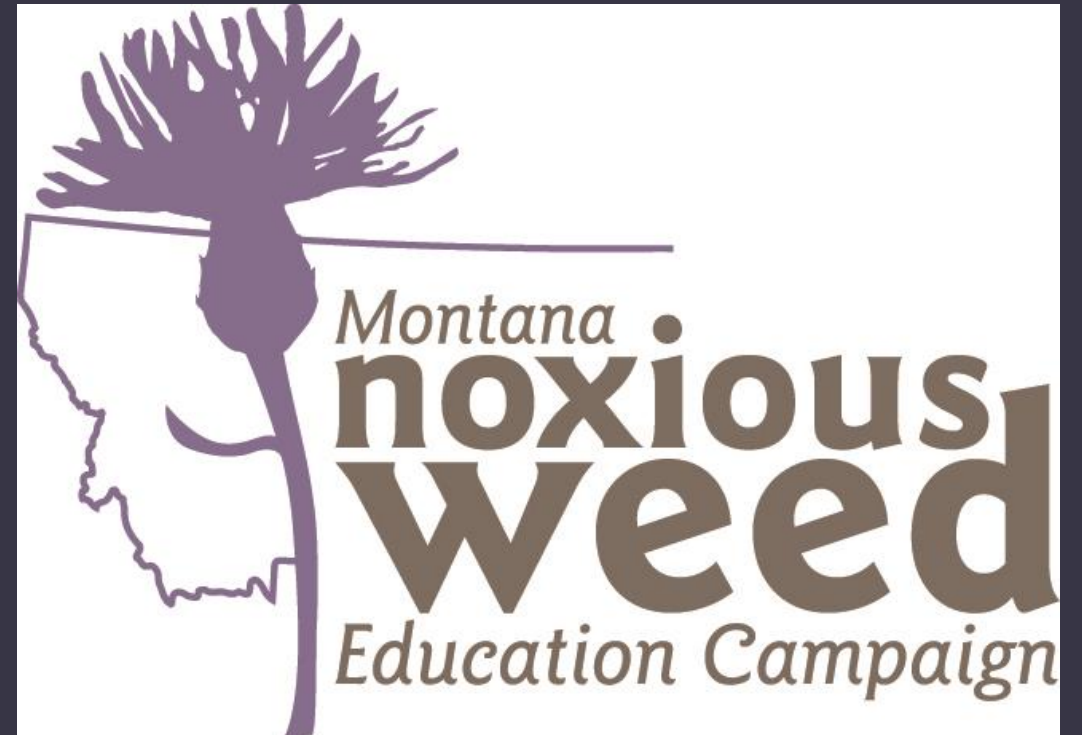


MSNWAC, Montana State University, Bugwood.org

Palmately

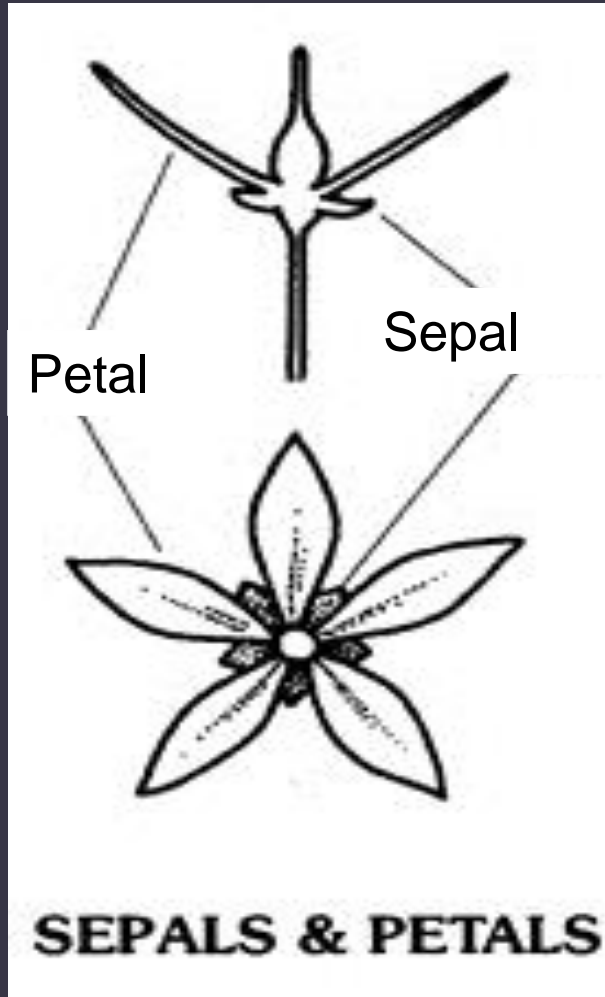
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Flowers



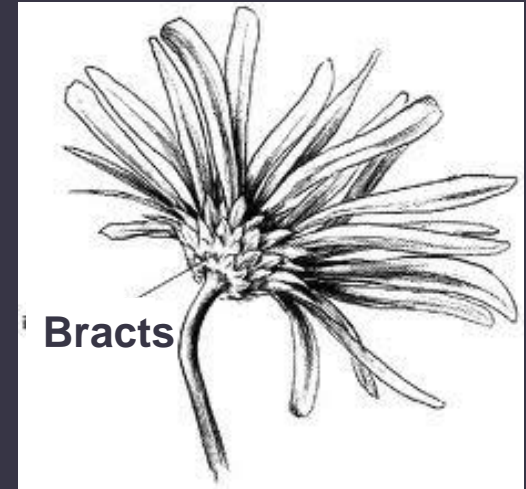
For most flowers, there is an outermost whorl of leaf-like structures called sepals that protect the bud. They are typically small and green, but may be just as colorful as the petals.

The next whorl of leaf-like structures are petals. These may be quite colorful to attract pollinators.

Bracts: An important diagnostic characteristic for knapweeds

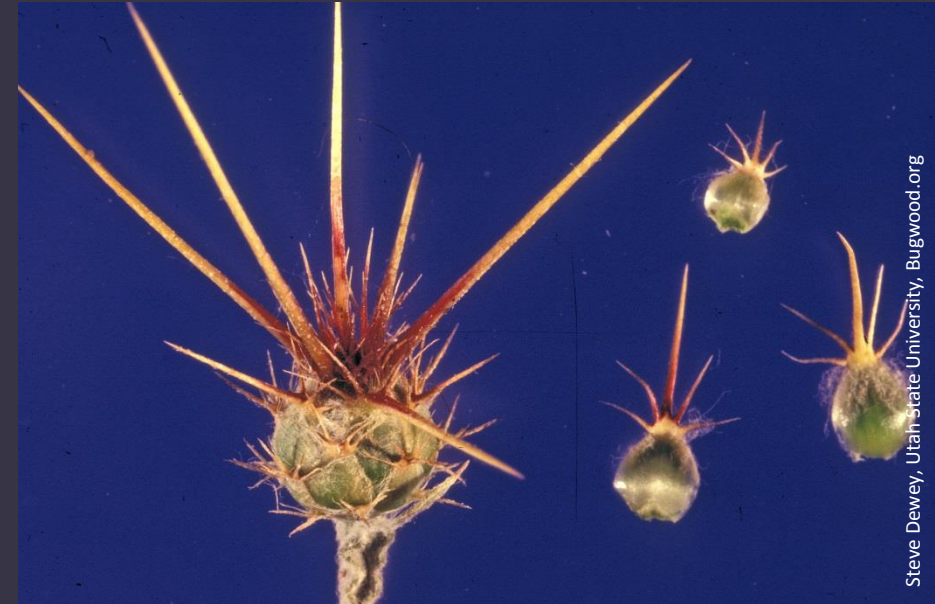
In the sunflower family, the leaf-like structures that surround the base of flowers are referred to as **bracts**.

For knapweeds (*Centaurea* spp.), bracts are one of the most important characteristics for identification. The bracts that appear below the purple petals of the spotted knapweed flower have black tipped edges, which gives the plant a 'spotted' appearance. The edges of diffuse knapweed's bracts are lined with short spines that make the plant prickly when touched. The edges of the bracts of Russian knapweed are almost translucent and papery.



Bracts: Yellow starthistle

The bracts of yellow starthistle have long spines that can measure up to 1 1/2" long.



Bracts

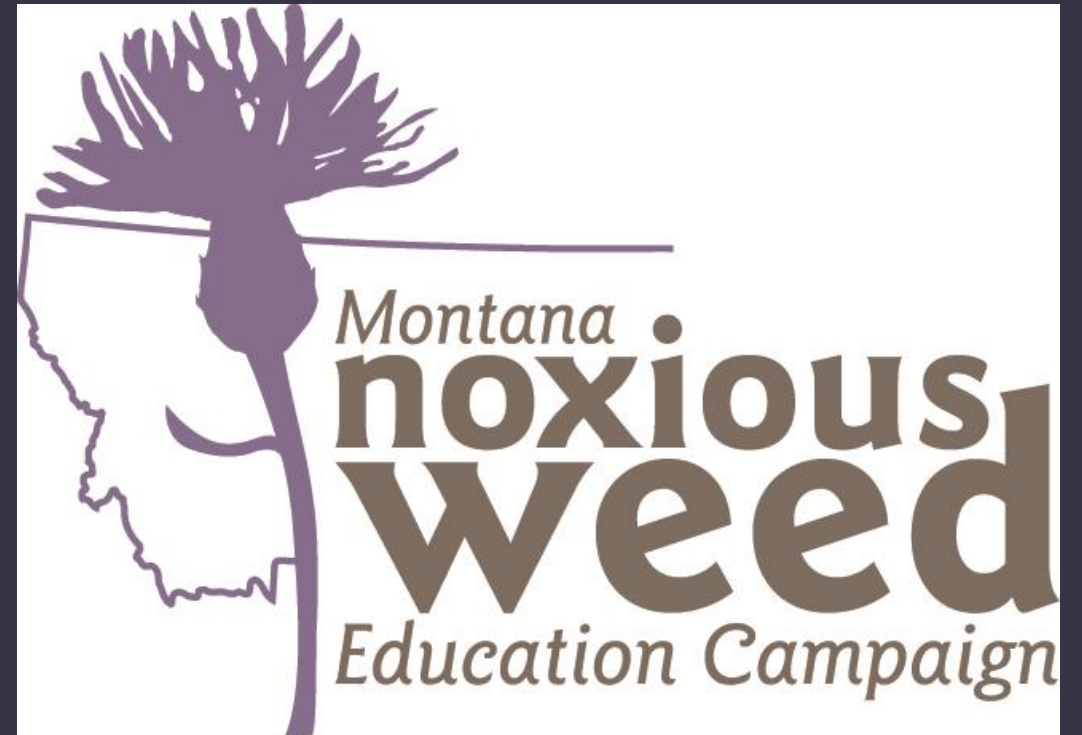
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Stems

There are not many terms to learn regarding stems, but stems are worth examining because they may have unique characteristics that provide clues to a plant's identify. For example, if you think a plant is blueweed, check along the stem for long hairs with dark spots at their base. Yellow starthistle stems are 'winged' in that they look pinched or flattened on each side. Plants in the knotweed complex have hollow stems.



Blueweed

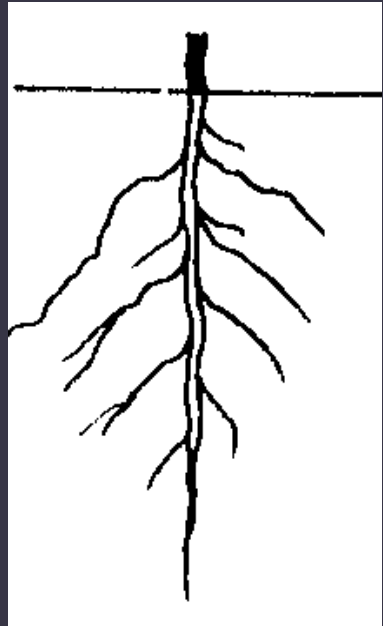


Yellow starthistle



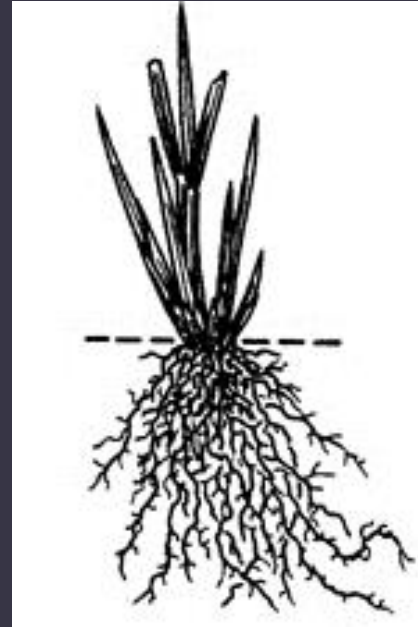
Knotweed complex

Root Systems



Tap-root forms a single, dominant axis that penetrates downward to a considerable depth from which lateral roots sprout

Example: hoary alyssum

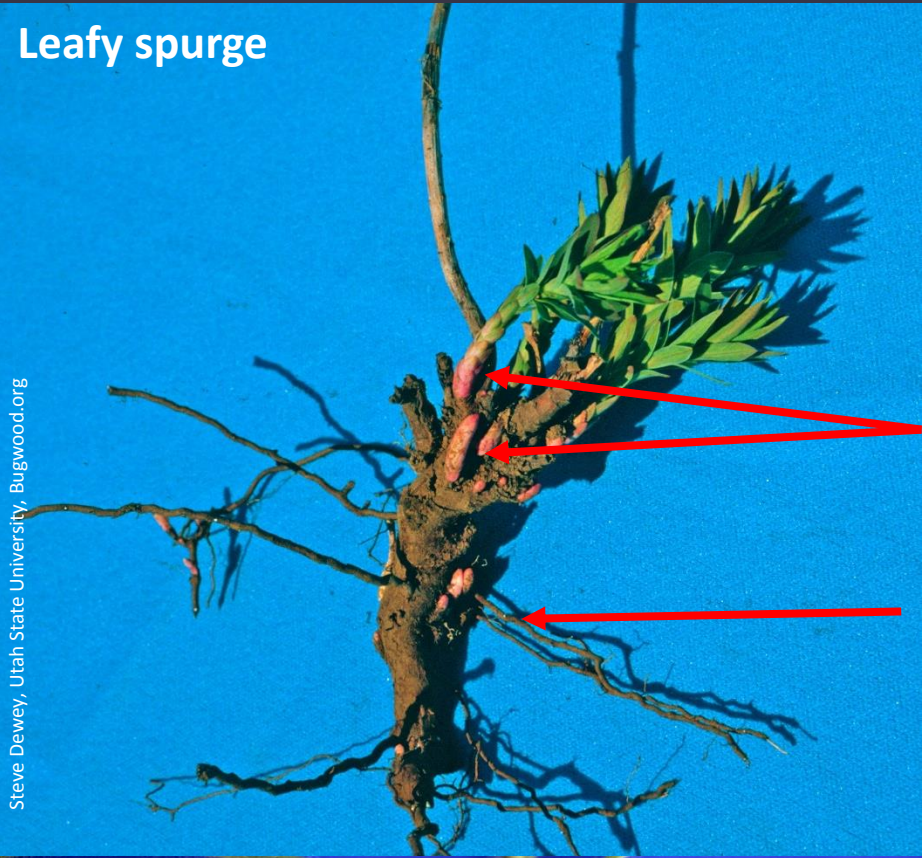


Fibrous densely branching roots that are similar in size, and growth is oriented both outwards as well as downwards

Example: cheatgrass

Leafy spurge

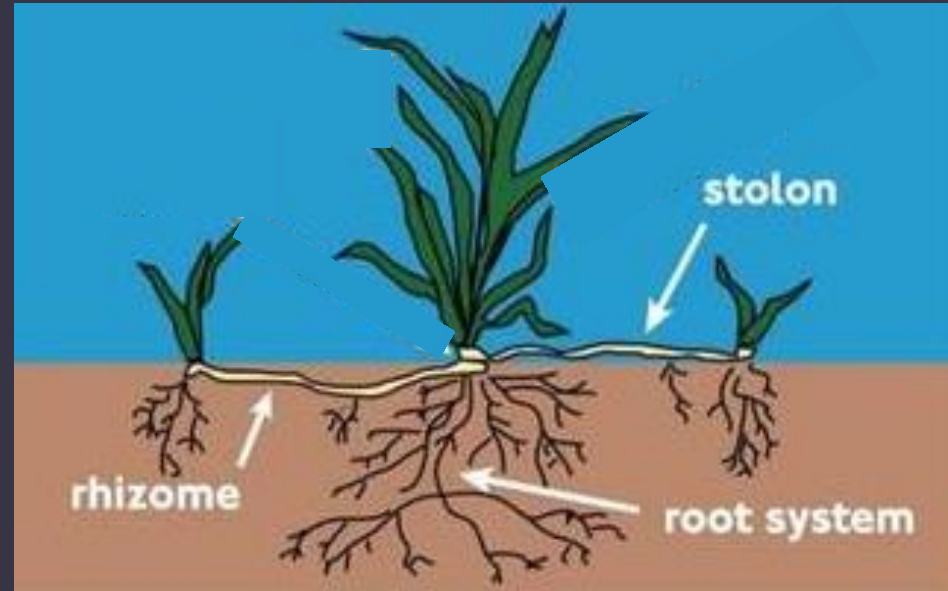
Steve Dewey, Utah State University, Bugwood.org



Pink buds that form new shoots

Rhizomes

Root Systems



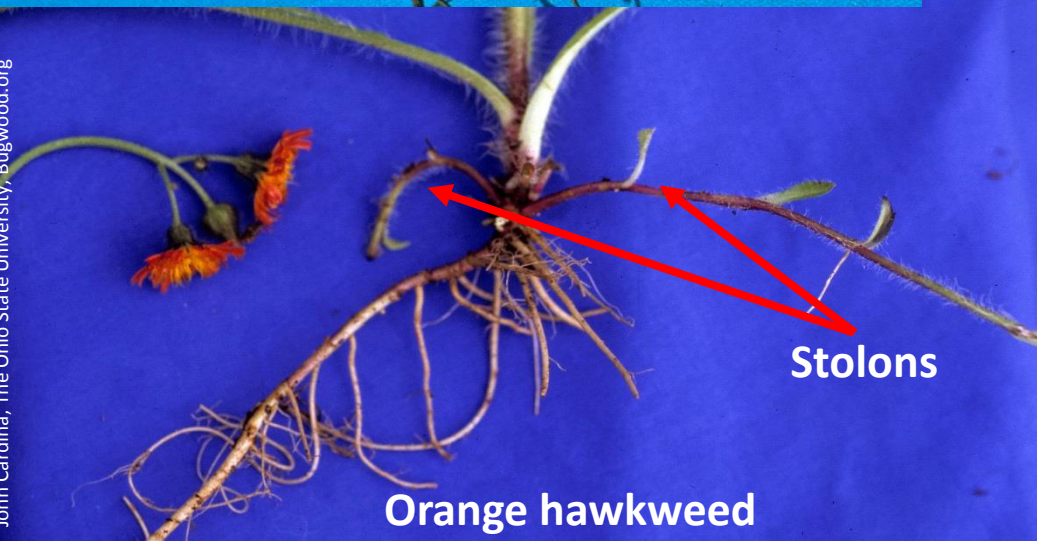
Rhizomes elongated, horizontal, below ground stems that emerge some distance from the mother plant, and give rise to new plants

Examples: leafy spurge, Canada thistle, Russian knapweed

Stolons elongated, horizontal, above ground stems that root at the nodes or at the tip and give rise to a new plant

Example: yellow & orange hawkweeds

John Cardina, The Ohio State University, Bugwood.org



Stolons

Orange hawkweed

Quiz Questions

Quiz Questions

Quiz Questions

Quiz Questions

Quiz Questions

Priority 1A

These weeds are not present or have a very limited presence in Montana. Management criteria will require eradication if detected, education and prevention.

Yellow starthistle

(*Centaurea solstitialis*), annual



Stem



Rosette

Fruits & Seeds



Not currently found in MT

Leaves:

- Deeply lobed with pointed tip
- Cottony hairs
- Greyish-green

Flower:

- Yellow, 1 per stem
- Sharp, straw colored spines



Dyer's woad

(*Isatis tinctoria*), perennial

Leaves:

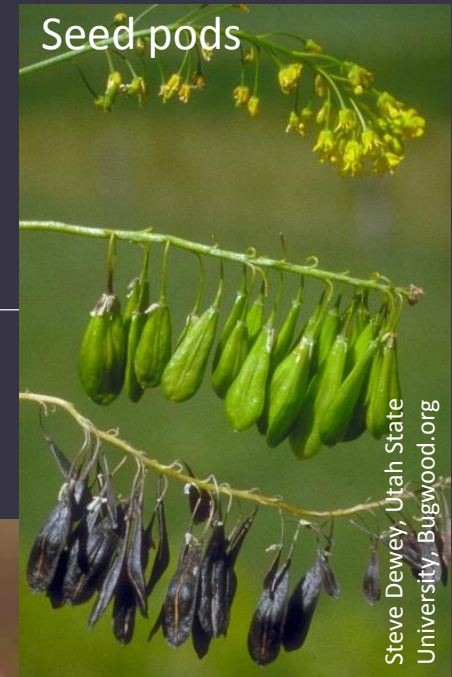
- Bluish-green
- White midrib

Flower:

- Yellow
- Flat topped clusters

Fruit:

- Teardrop-shaped
- Purplish-brown



Priority 1B

These weeds have limited presence in Montana. Management criteria will require eradication or containment and education.

Japanese knotweed complex

Leaves:

- Cordate (heart-shaped) to triangular with pointed tip

Stems:

- Hollow

Flower:

- Greenish-white flowers
- Occur in sprays at branch tip



Purple loosestrife

Leaves:

- Lanceolate
- Opposite or whorled

Stems:

- Square-octagonal in shape

Flower:

- Rose-purple
- Clustered spike
- Multiple flowering branches



The square stem will help you know its loosestrife!

Rush skeletonweed

Leaves:

- Lacks leaves
- Occasional narrow leaves

Stems:

- Reddish
- Coarse, bent hairs on lower portion of stem

Flower:

- Yellow
- Flowers single or clusters of 2-5

Stem



Flower & Seedhead



Scotch broom

Leaves:

- Rounded leaflets

Stems:

- Dark green

Flower:

- Bright yellow
- Pea-like



Examination
