

A white flower with a yellow center is positioned on the right side of the image. The background is a dark, textured surface, possibly a piece of bark or a rock, with some dry grass visible at the bottom. The text is overlaid on the left side of the image.

MASTER NATURALIST

PLANT ID

TRAINING



# PLANT ID CLASS OUTLINE

- What is "Native"
- Plant Terminology In General
- Plant ID 101
  - The 3 Basic Identifiers

## -5 Plant Families

- BRASSICACEAE (Mustard Family)
- SCROPHULARIACEAE (Penstemon Family)



Butterflies on Wavy leaf thistle (*Cirsium undulatum*)



# PLANT ID CLASS OUTLINE

- FABACEAE (Pea Family)
- ASTERACEAE (Sunflower Family)
- POACEAE (Grass Family)
- Grasses, Sedges and Rushes  
...oh my!
- It's All ~~Greek~~... Latin to Me.
- Plant Resources

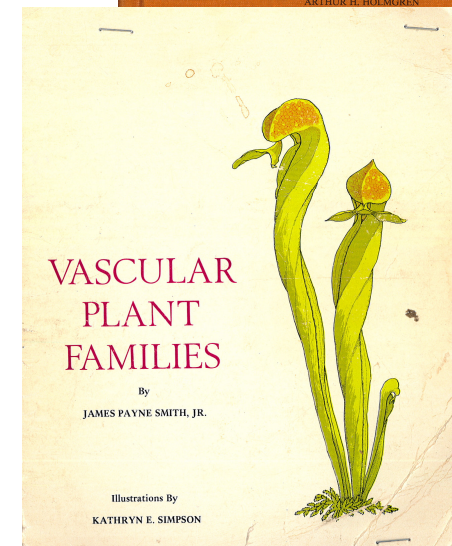
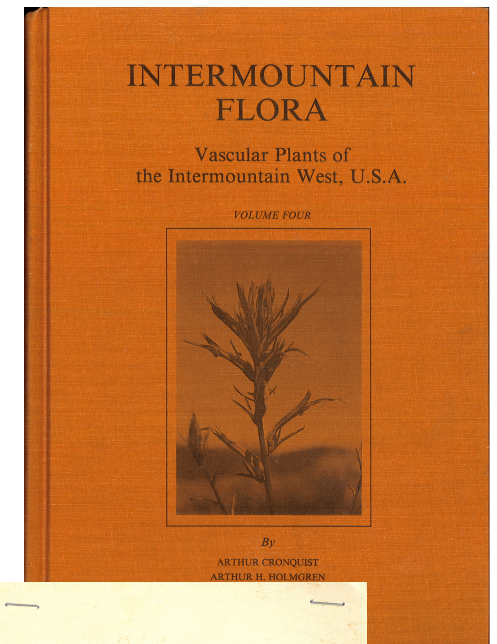
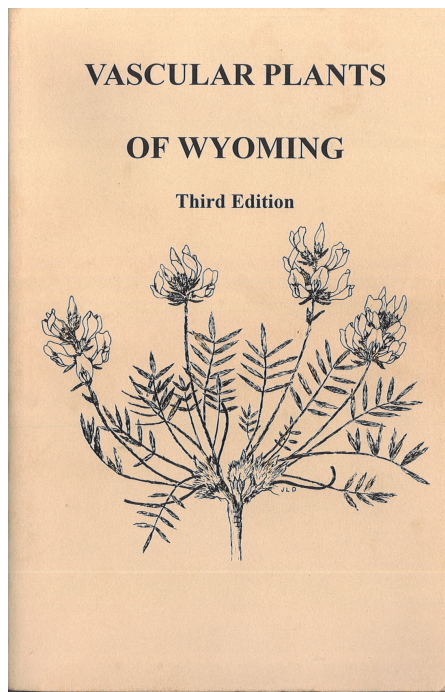
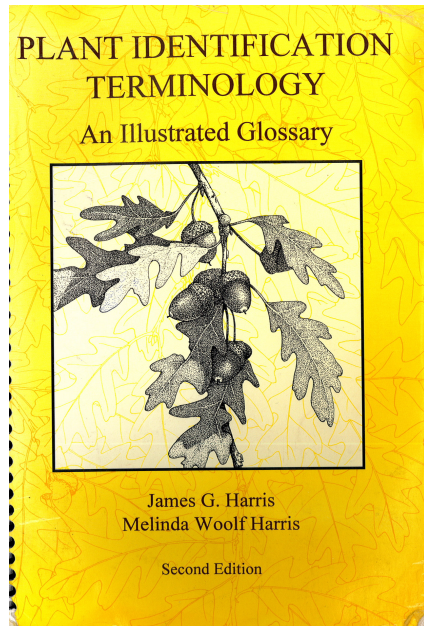


Monarch caterpillar on milkweed (*Asclepias speciosa*)



# PLANT ID Helpful Hints!

Read the Entire Couplet  
Learn Your Plant Families  
Bring a friend  
Photographs, line drawings  
Ring Binding  
Try Again!





The background of the slide is a close-up photograph of tall, thin grasses. A bright, circular light flare is visible in the upper left quadrant, creating a lens flare effect across the scene. The grasses are in various shades of green and yellow, suggesting they might be in bloom or have dried slightly. The overall texture is soft and fibrous.

# 4 Types of Plants

**Non-native/Exotic**  
**Natives**  
**Weeds**  
**Noxious Weeds**

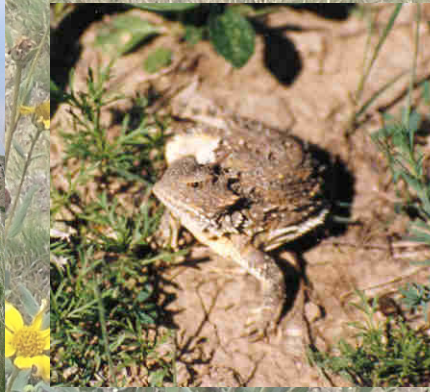


# NATIVE VS. NON-NATIVE

## "NATIVE" PLANT DESCRIPTION

A plant species "that occurs naturally in a particular region, state, ecosystem and habitat without direct or indirect actions of humans"

Federal Native Plant Conservation Committee, 1994





# Weeds



**“A plant that interferes with management objectives for a given area of land at a given point in time.” -J.M. Torell**

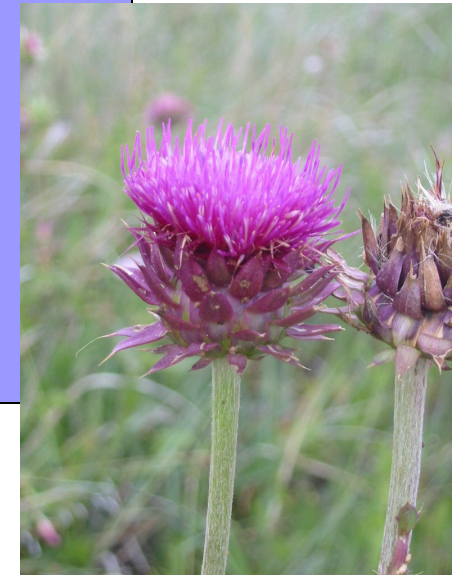




# A FEW WORDS ABOUT NOXIOUS WEEDS...



- Non-native
- Highly aggressive and competitive
- Predators and diseases
- Colorado State law





# A FEW WORDS ABOUT NOXIOUS WEEDS...

FOR MORE INFORMATION  
ON NOXIOUS WEEDS VISIT

THE COLORADO WEED  
MANAGEMENT ASSOCIATION

AT

<http://www.cwma.org>



# Colorado State Noxious Weed List

## A List

[African rue](#) (*Peganum harmala*)  
[Camelthorn](#) (*Alhagi pseudalhagi*)  
[Common crupina](#) (*Crupina vulgaris*)  
[Cypress spurge](#) (*Euphorbia cyparissias*)  
[Dyer's woad](#) (*Isatis tinctoria*)  
[Giant salvinia](#) (*Salvinia molesta*)  
[Hydrilla](#) (*Hydrilla verticillata*)  
[Meadow knapweed](#) (*Centaurea pratensis*)  
[Mediterranean sage](#) (*Salvia aethiopis*)  
[Medusahead](#) (*Taeniatherum caput-medusae*)  
[Myrtle spurge](#) (*Euphorbia myrsinites*)  
[Orange hawkweed](#) (*Hieracium aurantiacum*)  
[Purple loosestrife](#) (*Lythrum salicaria*)  
[Rush skeletonweed](#) (*Chondrilla juncea*)  
[Sericea lespedeza](#) (*Lespedeza cuneata*)  
[Squarrose knapweed](#) (*Centaurea virgata*)  
[Tansy ragwort](#) (*Senecio jacobaea*)  
[Yellow starthistle](#) (*Centaurea solstitialis*)

## B List

[Absinth wormwood](#) (*Artemisia absinthium*)  
[Black henbane](#) (*Hyoscyamus niger*)  
[Bouncingbet](#) (*Saponaria officinalis*)  
[Bull thistle](#) (*Cirsium vulgare*)  
[Canada thistle](#) (*Cirsium arvense*)  
[Chinese clematis](#) (*Clematis orientalis*)  
[Common tansy](#) (*Tanacetum vulgare*)  
[Common teasel](#) (*Dipsacus fullonum*)

[Corn chamomile](#) (*Anthemis arvensis*)  
[Cutleaf teasel](#) (*Dipsacus laciniatus*)  
[Dalmatian toadflax](#), broad-leaved (*Linaria dalmatica*)  
[Dalmatian toadflax](#), narrow-leaved (*Linaria genistifolia*)  
[Dame's rocket](#) (*Hesperis matronalis*)  
[Diffuse knapweed](#) (*Centaurea diffusa*)  
[Eurasian watermilfoil](#) (*Myriophyllum spicatum*)  
[Hoary cress](#) (*Cardaria draba*)  
[Houndstongue](#) (*Cynoglossum officinale*)  
[Leafy spurge](#) (*Euphorbia esula*)  
[Mayweed chamomile](#) (*Anthemis cotula*)  
[Moth mullein](#) (*Verbascum blattaria*)  
[Musk thistle](#) (*Carduus nutans*)  
[Oxeye daisy](#) (*Chrysanthemum leucanthemum*)  
[Perennial pepperweed](#) (*Lepidium latifolium*)  
[Plumeless thistle](#) (*Carduus acanthoides*)  
[Quackgrass](#) (*Elytrigia repens*)  
[Redstem filaree](#) (*Erodium cicutarium*)  
[Russian knapweed](#) (*Acroptilon repens*)  
[Russian-olive](#) (*Elaeagnus angustifolia*)  
[Salt cedar](#) (*Tamarix chinensis*, *T. parviflora*, and *T. ramosissima*)  
[Scentless chamomile](#) (*Matricaria perforata*)  
[Scotch thistle](#) (*Onopordum acanthium*)  
[Scotch thistle](#) (*Onopordum tauricum*)  
[Spotted knapweed](#) (*Centaurea maculosa*)  
[Spurred anoda](#) (*Anoda cristata*)  
[Sulfur cinquefoil](#) (*Potentilla recta*)  
[Venice mallow](#) (*Hibiscus trionum*)  
[Wild caraway](#) (*Carum carvi*)

[Yellow nutsedge](#) (*Cyperus esculentus*)  
[Yellow toadflax](#) (*Linaria vulgaris*)

## C List

[Chicory](#) (*Cichorium intybus*)  
[Common burdock](#) (*Arctium minus*)  
[Common mullein](#) (*Verbascum thapsus*)  
[Common St. Johnswort](#) (*Hypericum perforatum*)  
[Downy brome](#) (*Bromus tectorum*)  
[Field bindweed](#) (*Convolvulus arvensis*)  
[Halogeton](#) (*Halogeton glomeratus*)  
[Johnsongrass](#) (*Sorghum halepense*)  
[Jointed goatgrass](#) (*Aegilops cylindrica*)  
[Perennial sowthistle](#) (*Sonchus arvensis*)  
[Poison hemlock](#) (*Conium maculatum*)  
[Puncturevine](#) (*Tribulus terrestris*)  
[Velvetleaf](#) (*Abutilon theophrasti*)  
[Wild proso millet](#) (*Panicum miliaceum*)



# Noxious Weeds Introduced as Ornamentals



## A List

- Dyer's woad (*Isatis tinctoria*)
- Hydrilla (*Hydrilla verticillata*)
- Mediterranean sage (*Salvia aethiopis*)
- Myrtle spurge (*Euphorbia myrsinites*)
- Orange hawkweed (*Hieracium aurantiacum*)
- Purple loosestrife (*Lythrum salicaria*)

## C List

- Chicory (*Cichorium intybus*)
- Common mullein (*Verbascum thapsus*)
- Common St. Johnswort (*Hypericum perforatum*)

## B List

- Absinth wormwood (*Artemisia absinthium*)
- Black henbane (*Hyoscyamus niger*)
- Bouncingbet (*Saponaria officinalis*)
- Chinese clematis (*Clematis orientalis*)
- Common tansy (*Tanacetum vulgare*)
- Common teasel (*Dipsacus fullonum*)
- Corn chamomile (*Anthemis arvensis*)
- Dalmatian toadflax, broad-leaved (*Linaria dalmatica*)
- Dalmatian toadflax, narrow-leaved (*Linaria genistifolia*)
- Dame's rocket (*Hesperis matronalis*)
- Mayweed chamomile (*Anthemis cotula*)
- Oxeye daisy (*Chrysanthemum leucanthemum*)
- Russian-olive (*Elaeagnus angustifolia*)
- Salt cedar (*Tamarix chinensis*, *T. parviflora*, and *T. ramosissima*)
- Scentsless chamomile (*Matricaria perforata*)
- Wild caraway (*Carum carvi*)
- Yellow toadflax (*Linaria vulgaris*)



# Noxious Weeds in Natural Areas

## Ornamentals

Purple loosestrife (*Lythrum salicaria*)

Chicory (*Cichorium intybus*)

Common mullein (*Verbascum thapsus*)

Common St. Johnswort (*Hypericum perforatum*)

Bouncingbet (*Saponaria officinalis*)

Common teasel (*Dipsacus fullonum*)

Dalmatian toadflax, broad-leaved (*Linaria dalmatica*)

Dame's rocket (*Hesperis matronalis*)

Russian-olive (*Elaeagnus angustifolia*)

Salt cedar (*Tamarix chinensis*, *T. parviflora*, and *T. ramosissima*)

Yellow toadflax (*Linaria vulgaris*)

## Other

Canada thistle (*Cirsium arvense*)

Diffuse knapweed (*Centaurea diffusa*)

Leafy spurge (*Euphorbia esula*)

Downy brome (*Bromus tectorum*)

Field bindweed (*Convolvulus arvensis*)

Diffuse knapweed (*Centaurea diffusa*)

Hoary cress (*Cardaria draba*)

Houndstongue (*Cynoglossum officinale*)

Musk thistle (*Carduus nutans*)

Perennial pepperweed (*Lepidium latifolium*)

Quackgrass (*Elytrigia repens*)

Redstem filaree (*Erodium cicutarium*)

Russian knapweed (*Acroptilon repens*)

Common burdock (*Arctium minus*)

Halogeton (*Halogeton glomeratus*)

Johnsongrass (*Sorghum halepense*)

Jointed goatgrass (*Aegilops cylindrica*)

Perennial sowthistle (*Sonchus arvensis*)

Poison hemlock (*Conium maculatum*)

Puncturevine (*Tribulus terrestris*)

Velvetleaf (*Abutilon theophrasti*)

Wild proso millet (*Panicum miliaceum*)



# 3 MAJOR GROUPS

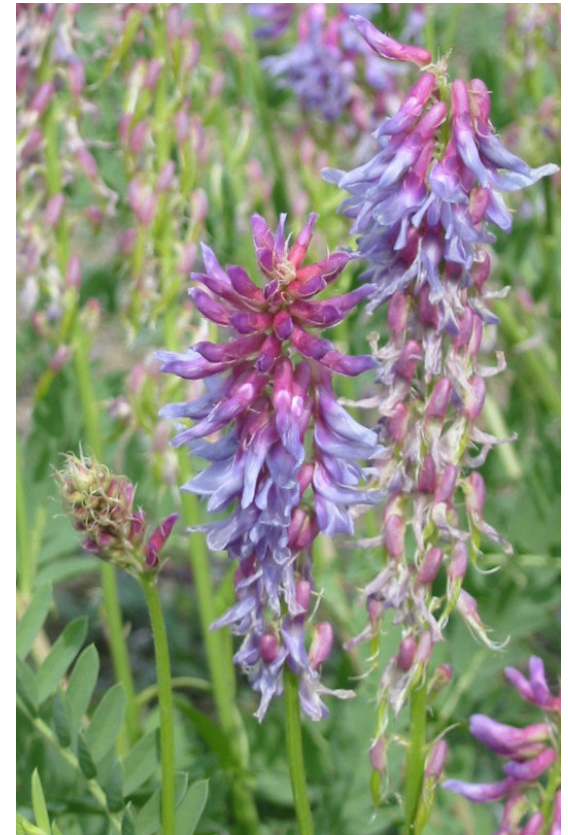
**Fern & Fern  
Allies**



**Gymnosperms**



**Angiosperms**





# SPORE



**Ferns & Fern  
Allies**

# SEED



**Gymnosperms**



**Angiosperms**



# DURATION

## ANNUAL

- Lives for one year or less.
- Puts energy into seed production.



CHEATGRASS (Bromus tectorum)

## PERENNIAL

- Lives longer than three years.
- Puts energy into root system and seed production.



LEAFY SPURGE (Euphorbia esula)

## BIENNIAL

- Typically lives for two years.
- Puts energy into seed production.



TEN PETAL MENTZELIA (Mentzelia decapetala)



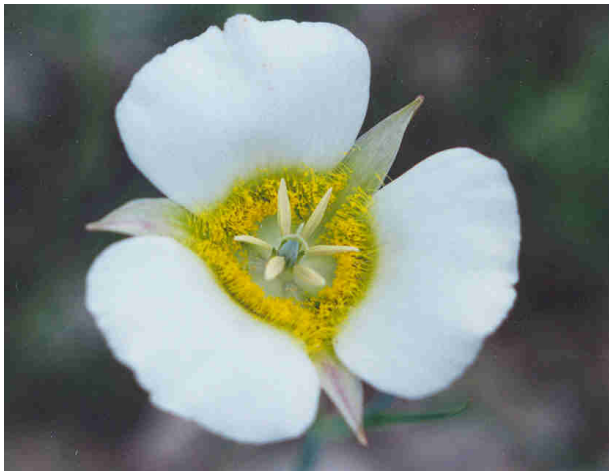
# MONOCOTYLEDON

# DICOTYLEDON

“COTYLEDON” meaning “LEAF”

Parallel  
veination

3-merous



Mariposa lily (*Calochortus gunnisonii*)

Netlike  
veination

4-merous or  
5-merous



Showy milkweed (*Asclepias speciosa*)



# GROWTH FORMS



Ponderosa pine (Pinus ponderosa)



Wood's rose (Rosa woodsii)

**WOODY**  
**GRASSES**  
**TREES**  
**SHRUBS**  
**VINES**

**HERBACEOUS**  
**GRASSES**  
**HERBS**  
**VINES**  
**FORBS**



Sidebells penstemon (Penstemon secundiflorus)

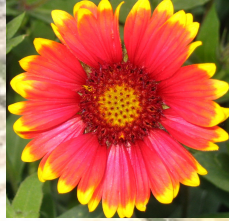


Gaillardia (Gaillardia aristata)

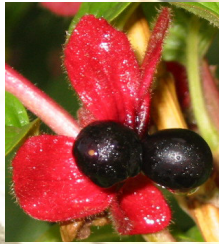


# PLANT ID 101

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**FLOWER SYMMETRY/  
INFLORESCENCE TYPES**



**FRUITS**



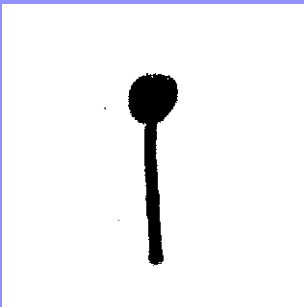
**LEAF  
SHAPES/ARRANGEMENTS**



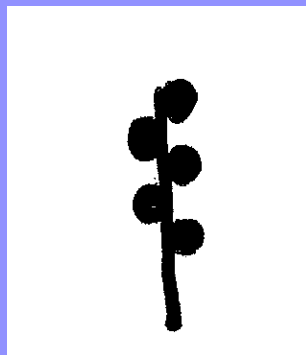
**PLANT FAMILIES**



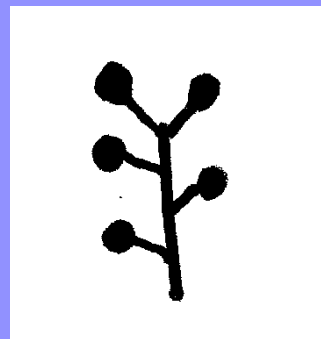
# INFLORESCENCE TYPES



**SOLITARY**



**SPIKE**



**RACEME**



**PANICLE**



# FLORAL SYMMETRY

ACTINOMORPHIC

ZYGOMORPHIC

RADIAL

BILATERAL



Ball cactus (*Pediocactus simpsonii*)



Large beardtongue (*Penstemon grandiflorus*)



# FRUITS

## DRY FRUITS



Salsify (Tragopogon dubius)

**CYPSELA**



Yucca (Yucca glauca)

**CAPSULE**



Purple mustard (Chorispora tenella)

**SILIQUE**



Wild licorice (Glycyrrhiza lepidota)

**LEGUME**



Mountain mahogany (Cercocarpus montanus)

**ACHENE**



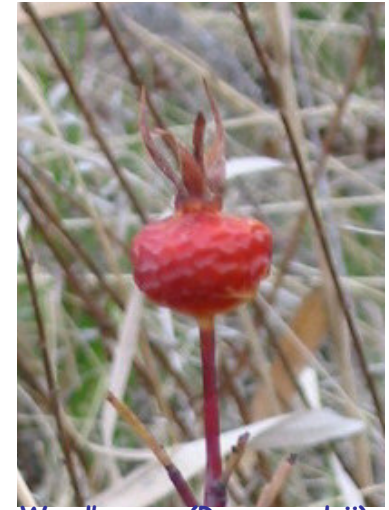
# FRUITS

## FLESHY FRUITS



Strawberry (*Fragaria* sp.)

**ACCESSORY**



Wood's rose (*Rosa woodsii*)

**HIP**



Twinberry honeysuckle (*Lonicera involucrata*)

**BERRY**



Peach (*Prunus persica*)

**DRUPE**



Thimbleberry (*Rubus deliciosus*)

**AGGREGATE**





LEAVES

LEAVES

LEAVES

LEAVES



# LEAF COMPOSITION

**SIMPLE**  
Single  
segment



American plum (*Prunus americana*)



Mountain ash (*Sorbus scolopulina*)

**COMPOUND**  
Two or more  
segments



# LEAF VENATION



Chokecherry (*Prunus virginiana*  
var. *melanocarpa*)

**NET-LIKE**



Mountain ash (*Sorbus scolopulina*)

**PINNATE**



Stream orchid (*Epipactis gigantea*)

**PARALLEL**



Golden currant (*Ribes aureum*)

**PALMATE**



# LEAF ARRANGEMENT



Coyote Willow (*Salix exigua*)

**ALTERNATE**  
1 LEAF PER  
NODE



Cranberry bush (*Viburnum sp.*)

**OPPOSITE**  
2 LEAVES PER  
NODE



horsetail milkweed (*Asclepias subverticillata*)

**WHORLED**  
3 OR MORE  
LEAVES PER  
NODE



# QUIZ

**LIST 5 CHARACTERISTICS ABOUT THIS PLANT FROM THE TOPICS YOU'VE LEARNED SO FAR.**

**DURATION**

**MONOCOT OR DICOT**

**GROWTH FORM**

**FLORAL SYMMETRY**

**FRUITS**

**LEAVES/LEAF ARRANGEMENT**



# PLANT FAMILIES



**POACEAE (Grass Family)**



**BRASSICACEAE (Mustard Family)**



**SCROPHULARIACEAE (Penstemon Family)**



**FABACEAE (Pea Family)**



**ASTERACEAE (Sunflower Family)**



# BRASSICACEAE FLOWERS



Dames rocket (*Hesperis matronalis*)

Flowers 4-merous  
Actinomorphic (Radial)



Wallflower (*Erysimum capitatum*)



Prince's plume (*Stanleya pinnata*)



Purple mustard (*Chorispora tenella*)



# BRASSICACEAE

## FRUITS



Hare's ear mustard (*Conringia orientalis*)

**SILIQUE**



Alyssum (*Alyssum simplex*)

**SILICLE**



# BRASSICACEAE

## LEAVES



Perennial pepperweed (Lepidium latifolium)

Leaves usually alternate and simple



Hare's ear mustard (Conringia orientalis)



# SCROPHULARIACEAE

## FLOWERS

Flowers 5-merous    Zygomorphic (Bilateral)

5 Stamens



Wholeleaf Indian paintbrush (*Castilleja integra*)



Large beardtongue (*Penstemon grandiflorus*)



# SCROPHULARIACEAE

## FRUITS



Capsule or Berry

Sidebells penstemon (*Penstemon secundiflorus*)



# SCROPHULARIACEAE

## LEAVES

Herbs and shrubs with opposite or alternate leaves, rarely whorled.

Leaves simple to pinnately dissected.



Large beardtongue (*Penstemon grandiflorus*)



Wholeleaf Indian paintbrush (*Castilleja integra*)



Sidebells penstemon (*Penstemon secundiflorus*)



# FABACEAE

## FLOWERS

Herbs, shrubs and trees

Flowers zygomorphic (bilateral)



Golden banner (*Thermopsis divaricarpa*)



Ground plum milkvetch (*Astragalus crassicarpus*)



# FABACEAE

# FRUITS

Fruit a legume or loment



Two groved milkvetch (*Astragalus bisulcatus*)



Ground plum milkvetch (*Astragalus crassicaarpus*)



# FABACEAE LEAVES

Leaves simple, or pinnately or palmately compound

Leaves alternate



Ground plum (*Astragalus crassicaarpus*)



Golden banner (*Thermopsis divaricarpa*)



# ASTERACEAE

## FLOWERS

Herbs and shrubs with involucre heads  
Flowers small, 5-merous, actinomorphic and zygomorphic  
Stamens 5



Indian blanketflower (*Gaillardia aristata*)



Wavy leaf thistle (*Cirsium undulatum*)



Blazingstar (*Liatris punctata*)



RAY  
FLOWERS



DISK  
FLOWERS



Annual sunflower (Helianthus annuus)



# ASTERACEAE FRUITS



Salsify (Tragopogon dubius)

**Cypsela**



Annual sunflower (Helianthus annuus)

**Achene**



# ASTERACEAE LEAVES

Alternate, simple or compound



Wavy leaf thistle (*Cirsium undulatum*)

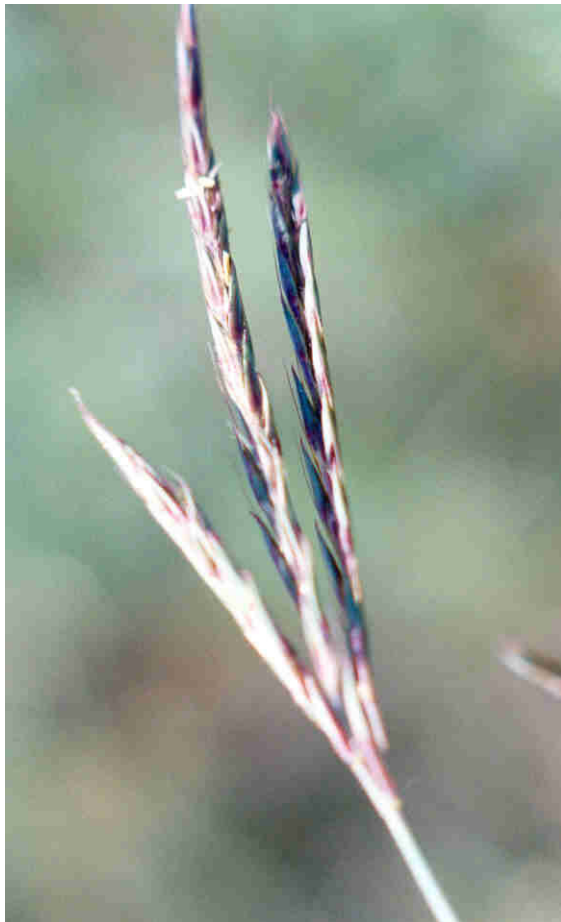


False bineset (*Brickellia eupatorioides* ssp. *eupatorioides*)



# POACEAE FLOWERS

Flowers greatly reduced,  
enclosed in 2 bracts,  
arranged in spikelets



Big bluestem (*Andropogon gerardii*)



Blue grama (*Bouteloua gracilis*)



Buffalograss (*Buchloe dactyloides*)



# POACEAE FRUITS

## Caryopsis



Blue grama (Bouteloua gracilis)



Great basin wildrye (Leymus canadensis)



# POACEAE LEAVES

Herbs with linear leaves  
Round hollow culms



Switchgrass (*Panicum virgatum*)



# COMPARISON OF GRAMINOIDS

	<b>POACEAE</b> (grasses)	<b>CYPERACEAE</b> (sedges)	<b>JUNCACEAE</b> (rushes)
<b>Stems</b>	Hollow, round nodes jointed	Solid, 3-sided nodes not jointed	Solid or hollow round nodes not jointed
<b>Leaves</b>	2-ranked open sheath ligule	3-ranked Closed sheath No ligule	3-ranked open or closed sheath No ligule
<b>Flowers</b>	2 bracts (lemma + palea) lodicules No perianth 2-part stigma	Flower subtended by 1 bract (glume, scale) Arranged in spikelets	Usually 6 chaffy tepals Basically cymose and often congested
<b>Habitat</b>	Moist and dry areas	Wet areas	Wet areas
<b>Fruit</b>	Caryopsis 1 seed	Achene 1 seed	Capsule Many seeds



# QUICK FAMILY FACTS

FAMILY	FLOWERS	FRUITS	LEAVES/ STEMS
BRASSICACEAE (mustard family)	4 petals in a cross	Silique or silicle	
SCROPHULARIACEAE (penstemon family)	2+3 petals Zygomorphic		
FABACEAE (pea family)	Zygomorphic	Loment or legume	Usually pinnate
ASTERACEAE (sunflower family)	Composite flower		
POACEAE (grass family)	Greatly reduced, arranged in spikelets	caryopsis	

# QUIZ

**NAME 5 CHARACTERISTICS OF THIS PLANT FROM THE TOPICS YOU'VE LEARNED TODAY AND NAME THE FAMILY.**





**IT'S ALL ~~GREEK~~ ...**

**LATIN TO ME**

# LATIN SPECIES NAMES

Genus + Specific Epithet = Species Name

Penstemon barbatus

5 stamens

Barbed or bearded



# ORIGIN OF LATIN NAMES

## COMMEMORATIVE

Torrey = John Torrey

Lewisia = Meriwether Lewis

nuttallii = Thomas Nuttall

## GROWTH FORM

arboreus = tree

repens = creeping

scandens = climbing

## HABIT

campestris = of fields

arenarius = growing in sand

fluviatilis = of rivers

## MORPHOLOGICAL FEATURE

rubra = red in color

foetidus = foul-smelling

campanula = bell shaped

# Artemisia frigida

## Common names:



-Fringed sage

-Prairie sagewort

-Silver sage

-Mountain sage

-Prairie sagebrush

-Fringed sagebrush

-Little sage

-Pasture sagebrush

-Wormwood

-Fringed wormwood



# Artemisia campestris

Common names:

- Wormwood
- Field sagewort
- Tall wormwood
- Field southernwood
- Field wormwood
- European wormwood
- Sagewort wormwood
- Western sagewort



# OTHER NAMES FOR WORMWOOD

-Absinthe

-Ajenjo

-Green ginger

-Madderwort

-Wermut

-Armoise

9 other species of plants in 3 other families are called wormwood.



# When Teaching Your Own Plant Class

**Humans "Out" and Animals "In"**

**Collecting Plants is Illegal**

**Start Preparing Early**

**Walk Your Route and Tag Plants**

**Be Certain of Your ID**

**Stay On Trail**

# PLANT RESOURCES

PLANTS NATIONAL DATABASE

<http://plants.usda.gov/>

COLORADO NATIVE PLANT SOCIETY

<http://carbon.cudenver.edu/~shill/conps.html>

COLORADO NATURAL HERITAGE PROGRAM

<http://www.cnhp.colostate.edu/>

DESERT USA

<http://www.desertusa.com/>

NATIVE PLANT NETWORK

<http://nativeplants.for.uidaho.edu/>

COLORADO STATE UNIVERSITY HERBARIUM

<http://herbarium.biology.colostate.edu>



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MASTER NATURALIST

PLANT ID

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